47th Annual Meeting of the Austrian Society of Surgery

Vienna, June 15–17, 2006

Guest Editors:
R. Jakesz, P. Dubsky, G. Prager, and *J. Zacherl*

CONTENTS

Kongressorganisation:
Wiener Medizinische Akademie, Mag. Birgit Kamolz, Alser Straße 4, 1090 Wien

Kongress-Präsident:
o. Univ.-Prof. Dr. Raimund Jakesz

Kongress-Sekretäre:
Dr. Peter Dubsky
Univ.-Prof. Dr. Gerhard Prager
Univ.-Prof. Dr. Johannes Zacherl

Homepage:
www.chirurgenkongress.at

Eingeladene Vorträge mit Abstracteinreichung

I Der visionäre Ausblick in die Zukunft der Mund-, Kiefer- und Gesichtschirurgie

R. Ewers

University Hospital of Cranio-Maxillofacial and Oral Surgery, Wien, Österreich

In allen chirurgischen Fächern steht an erster Stelle die minimal invasive Chirurgie mit all ihren Vorteilen. Mit Hilfe der minimal invasiven Chirurgie wird ein besonderes Augenmerk auf die Navigationstechnologie gelegt um die minimal invasive Chirurgie sicherer zu machen und sie entsprechend auch zu dokumentieren. Durch die Fusion von CT und MRT können in Zukunft die Navigationsmöglichkeiten nicht nur im harten Gewebe, sondern auch im Weichgewebe intraoperativ umgesetzt werden. Als weiterer visionärer Ausblick wird das Tissue Engineering und die synthetischen Knochenaufbaumaterialien unser Fach grundlegend verändern und wesentlich bessere Rekonstruktionen ermöglichen. Als Zwischenstufe wird sicherlich noch die Transplantation z. B. der Zunge oder auch ganzer Gesichtsweichteile Anwendung finden. Die Zukunft aber liegt im Tissue Engineering, die die Ersatzteilchirurgie ersetzen wird.

Die frühzeitige Tumorerkennung und medikamentöse Behandlung wird unser Fach grundlegend verändern und die ausgeprägte ablative Chirurgie nicht mehr nötig machen.

Unser Fachgebiet wird durch die bessere Planungsmöglichkeiten und computertechnologisch orientierte Manipulationschirurgie zu einer miniaturisiertesten Chirurgie mit präziseren Ergebnissen und ästhetischeren Resultaten werden.

Mund-, Kiefer- und Gesichtschirurgie wird zwar immer ein chirurgisches Fach bleiben, aber mit wesentlich größerer Betonung auf Prävention, präziseste Planung und minimal invasive Durchführung unter entsprechenden computertechnologischen Hilfen und Kontrollen sowie Dokumentation. Es ist anzuzweifeln, dass dieses Fachgebiet einmal ein vorwiegend nicht chirurgisches Fach sein wird.

II Pseudomyxoma peritonei: Optimized treatment strategy improves prognosis

D. Sterzing, M. Zünd, J. Lange

Klinik für Chirurgie, St. Gallen, Switzerland

Background. Pseudomyxoma peritonei is a mucinus peritoneal tumor which develops from benign or low-malignant appendix neoplasia. Since the incidence of the disease is about one in a million, experience in the therapeutic management of such rare diseases is often lacking. Standard therapy is the surgical debulking, however in the recent years the concept of cytoreductive surgery with subsequent hyperthermic intraoperative intraperitoneal chemotherapy became more widely accepted.

Methods. Between 1997 and 2004 we treated 18 patients with pseudomyxoma peritonei, in 16 cases we could perform a complete cytoreductive surgery with hyperthermic intraoperative intraperitoneal chemotherapy.

Results. Currently 12 of the patients receiving a complete cytoreduction (75%) have no signs of recurrence with a mean follow-up time of 46 months. Most of these patients had early stages of the disease at primary diagnosis which allows a complete resection. Optimal cytoreductive surgery is very difficult to achieve with patients with advanced stages or with multiple previous operations, thus prognosis is much worse in these cases.

Conclusions. When patients are diagnosed with pseudomyxoma peritonei for the first time, they should be referred immediately to a specialized center to obtain state-of-the-art treatment affording them the best possible prognosis.

III Zytoreduktive Chirurgie beim Ovarialkarzinom

M. R. Zünd, D. Sterzing, T. Kapp, J. Lange

Klinik für Chirurgie, St. Gallen, Schweiz

Grundlagen. Eine zytoreduktive Chirurgie mit intraoperativer Chemotherapie ist ein zunehmend etablierter Behandlungsapproach beim fortgeschrittenen Ovarialkarzinom FIGO IIIb und IIIc als Primärverfahren oder beim Rezidiv. Analog dem Sugarbaker-Verfahren beim Pseudomyxoma Peritonei erfolgt eine vollständige Resektion der makroskopisch sichtbaren Tumorherde und hyperthermer intraoperativer Chemotherapie (HIIC) der Abdominalhöhle mit Cisplatin, anschliessend adjuvante Chemotherapie. Am Kantonsspital St. Gallen wurde dieses Verfahren beim Ovarialkarzinom im Jahr 2001 eingeführt.

Methodik. Prospektive Erfassung aller kurativer zytoreduktiver Eingriffe beim Ovarialkarzinom seit 2001.

Ergebnisse. 31 Patientinnen wurden im Erfassungszeitraum mit der Absicht für eine zytoreduktive Operation und HIIC behandelt. Bei 18 Frauen (58%) konnte die vollständige Behandlung durchgeführt werden. Insgesamt erfolgten 24 Kolonteilresektionen oder Kolektomien, 9 Splenektomien, 11 Cholezystektomien, 2 Magenteilresektionen, 3 Dünndarmteilresektionen, 3 Leberteilresektionen sowie jeweils eine ausgedehnte Peritonektomie. Die Hospitalisationsdauer betrug median 27 Tage (13–79). Bei 12 Patientinnen traten keine Komplikationen im Verlauf auf. 2 Patientinnen mussten wegen einer Anastomoseninsuffizienz resp Hartmannstumpfinsuffizienz reoperiert werden. In 3 Fällen kam es im Verlauf zu einer relevanten Niereninsuffizienz. Die 30-Tage-Letalität betrug 0%. Im Langzeitverlauf ist bisher eine Patientin am Tumorleiden verstorben.

Schlussfolgerungen. Eine zytoreduktive Operation mit HICC ist sowohl beim primär fortgeschrittenen Ovarialkarzinom als auch beim Rezidiv mit einer peritonealen Metastasierung in Betracht zu ziehen. Mit diesem Vorgehen erreicht man eine sehr gute Tumorkontrolle intraabdominal mit einer vertretbaren Morbidität. Die Behandlung des fortgeschrittenen Ovarialkarzinoms ist eine interdisziplinäre Herausforderung für den Chirurgen, Gynäkologen, Anaesthesisten und Onkologen.

IV Qualitätssicherung in der Chirurgie: Behandlungsqualität und Mindestmengen in der Colon- und Rektumkarzinomchirurgie

H. Hauser

Klin. Abteilung für Allgemeinchirurgie, Graz, Österreich

Grundlagen. Voraussetzung für die Optimierung der Therapie des kolorektalen Karzinoms ist die Kontrolle der Behandlungsqualität. Dies beinhaltet die Definition von einzelnen messbaren Qualitätsindikatoren sowie die Erfassung ausreichender Daten des peri- und postoperativen Verlaufs.

Methodik. Entsprechend der Literatur und den von der Arbeitsgruppe Colon/Rectum/Anus der ACO/ASSO erarbeiteten Richtlinien werden für die Behandlungsqualität des kolorektalen Karzinoms wesentliche Parameter sowie Mindestmengen dargestellt und diskutiert. Dabei wird auch die Behandlungsqualität der laparoskopischen Chirurgie des kolorektalen Karzinoms untersucht.

Ergebnisse. Dank standardisierter Operationstechniken, Durchführung der totalen mesorektalen Exzision beim Rektumkarzinom, praeoperativer Radiochemotherapie bei Stadium II und III Rektumkarzinomen, praeoperative Chemotherapie beim Stadium III Kolonkarzinom und adjuvanten Therapieoptionen konnten Lokalrezidivrisiko, Überlebensraten und Kontinenzerhaltunsraten für das kolorektale Karzinom innerhalb der letzten Jahrzehnte wesentlich verbessert werden. Nichtsdestotrotz ist zu erwarten, dass durch Spezialisierung, Verstärkung der interdisziplinären Zusammenarbeit zwischen Radiologen, Chirurgen, Onkologen, Strahlentherapeuten und Pathologen (tumor board) sowie Einführung von Immun- und Antiangiogenesetherapie weitere Behandlungserfolge zu erwarten sind. Aufgabe der Fachgesellschaften ist neben der Entwicklung und ständigen Aktualisierung von Leitlinien die Organisation und Kontrolle der spezifischen Aus- und Weiterbildung. Darüber hinaus sollten kontinuierliche Eigen- und Fremdevaluierungen der chirurgischen Behandlungsergebnisse, Überlebensraten sowie systematisierte Nachsorgeuntersuchungen unterstützt werden. Grundvoraussetzung dafür ist eine flächendeckende EDV-mässige Erfassung und Dokumentation. Während aktuelle Studien zeigen, dass an spezialisierten Zentren minimal invasiv operierte Kolonkarzinome den onkologischen Resultaten der offenen Chirurgie nicht nachstehen, sollte die minimal invasive Rektumkarzinomchirurgie derzeit nur in Rahmen von Studien erfolgen.

Schlussfolgerungen. Die Durchführung einer Qualitätserfassungsstudie für das kolorektale Karzinom ähnlich der Deutschen Studie wäre auch für Österreich wünschenswert.

V The andromeda project. Is still necessary the students examination in surgery?

A. Papageorgiou, S. Meyer-Papageorgiou

AHEPA-Klinikum, Thessaloniki, Greece

Medical students are informed through the press and the electronic medias about well-discussed diseases. Although their teaching level is adapted to their semester level, they are interested in learning of modern and more complicated meanings.

We introduced the Andromeda Project as a teaching method in the surgical education of the students of the 5th and 6th semester. The students became every day a patient's case with complications. They have to propose an adequate therapy and to analyse it. The students work in groups of 4–5 persons. In every case they have to learn at least 10 new surgical meanings and 20 new non surgical meanings. The surgical meanings will be wide discussed. The students have to referate next day about themas related to this case. The non surgical meanings will be shortly analysed too.

This teaching method permits the easy learning of the whole surgical spectrum through the active participation of the students. It is no more necessary to examine the students with the classical form of examination.

Freie Vorträge: AHC: Ist die Leistenhernienchirurgie ohne Kunststoffverstärkung noch zeitgemäß?

001 TAPP hernia repair versus Shouldice herniotomy in groin hernia patients: A single centre experience of a district hospital

G. A. Bernhardt[1,2], G. Köhler[1], R. Pichler[1], E. Krasser[1], G. Gruber[1], K. Gruber[1]

[1]Chirurgische Abteilung, LKH Weiz, Weiz, Austria; [2]Abteilung für Allgemeinchirurgie, LKH Voitsberg, Voitsberg, Austria

In hernia surgery a great number of surgical methods have been introduced yet without a definite superiority of one method compared to another.

To meet the supply in public more and more hospitals offer different operation methods especially mesh techniques. Despite controversial studies in the literature in the last years minimal invasive surgery including hernia surgery has gained popularity in the public.

We retrospectively evaluated all patients with groin hernias operated with either TAPP (transabdominal preperitoneal = laparoscopic mesh technique) or Shouldice (open non-mesh technique) herniotomy in the period of 1998–2005.

A total of 743 patients (mean age 52 years; ranging from 15 to 94), 12% female and 88% male were operated in the study period. There were 185 (24.9%) in the Shouldice group and 558 (75.1%) in the TAPP group (starting with 23 TAPP in 1999 and 144 in 2005). The all over complication rate in the evaluated time period (only major complication, defined as complications which required a re-intervention thus including recurrences) was the same in both groups (1.6%). However the complication rate in the TAPP group is declining over the years starting with 6.9% in 1999 and reaching 0.6% in 2005.

Lower complication rates over the years result from better trained surgeons with higher operation numbers and better technical equipment, especially new partially absorbable lightweight mesh. Longtime experiences are still missing; however lowering complication rates and patient satisfaction might let the TAPP herniotomy become the method of choice.

002 Leistenbruch-Operation in Lokalanästhesie – A single surgeon experience

R. Kawji, A. Prusa, M. Kux, G. Bischof

St. Josef Krankenhaus, Wien, Österreich

Grundlagen. Die Lokalanästhesie (LA) stellt eine bevorzugte Alternative zur herkömmlichen Allgemeinnarkose oder rückenmarksnaher Betäubungsverfahren in der operativen Sanierung von Leistenhernien dar. In spezialisierten Zentren liegt die Rate an LA meist deutlich höher als an anderen Abteilungen.

Methodik. Von April 2004 bis März 2005 wurden alle Patienten mit einseitiger Leistenhernie, welche von einem einzelnen Chirurgen behandelt wurden, retrospektiv analysiert. Die Operation in LA erfolgte nach Prämedikation in leichter Kopftieflage. Unter Verwendung von gepuffertem Xylocain 1% wurden durch den Operateur sowohl die Haut als auch das subcutane Gewebes infiltriert und danach mehrere Depots in der Externusaponeurose gesetzt. Der Verschluss der Bruchpforte erfolgte entweder nach Shouldice oder in Lichtenstein-Technik.

Ergebnisse. Im 12-monatigen Beobachtungszeitraum wurden 54 Patienten im Alter von 20 bis 83 Jahren operiert. Bei 31 Patienten (57,4%) mit einem Durchschnittsalter von 59,4 Jahren konnte die Operation in LA vorgenommen werden, während 19 Operationen (35,2%, durchschnittliches Patientenalter: 43,05 Jahre) in Allgemeinnarkose erfolgten. In 4 Fällen kam eine Spinalanästhesie zur Anwendung. Es war keine intraoperative Konversion zur Allgemeinnarkose notwendig.

Schlussfolgerungen. Nach entsprechender Aufklärung wird die Lokalanästhesie in der operativen Behandlung der Leistenhernie vom Patienten gut toleriert. Durch den Wegfall der perioperativen Überwachung und die Vermeidung von narkoseinduzierten Komplikationen (postoperativer Harnverhalt, Durchgangssyndrom) sind die Voraussetzungen für eine tagesklinische Operation gegeben.

003 Long term results after transabdominal preperitoneal mesh repair (TAPP)-recurrence, chronic pain and impact on sexual function and urodynamics

R. H. Fortelny[1], A. H. Petter-Puchner[1,2], H. Redl[2], K. Puchner[3], C. May[4], K. S. Glaser[1]

[1]2nd Department of Surgery, Wilhelminenspital, Vienna, Austria; [2]Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Vienna, Austria; [3]University of Vienna, Vienna, Austria; [4]Wilhelminenspital, Vienna, Austria

Background. Although Transabdominal Preperitoneal Mesh Repair (TAPP) has become the most frequent laparoscopic technique of inguinal hernia repair, data on long term outcome and chronic pain is scarce-the impact on sexual function and urodynamics is still unclear. In this study we retrospectively examined patients and assessed them for these parameters at least 10 years after surgery.

Methods. 25 patients (22m/3f; 49.2 ± 12.6 years) were physically examined and interviewed for the onset of sensations of inguinal pain or sexual dysfunction correlating to conduction of TAPP. The observation period was 10.6 ± 1.2 years. Furthermore, the short form (SF36) questionnaire, the visual analogue score (VAS) and a urodynamics protocol (measurement of voiding volume) for single day home-use were assessed.

Results. 1 recurrence was detected (occurred within 1 year after surgery). Sexual function and urodynamics were not impaired by TAPP and patients reported a quality of life comparable to the overall population. However, pain during forced movements was reported by 3 patients.

Conclusions. Within a observation period of a decade TAPP yields excellent results in terms of recurrence, patient satisfaction and incidence of side effects. According to literature, chronic pain seems to remain the major concern even after an extended period.

004 Change in anatomy after groin hernia repair

C. Hollinsky, R. Bobak Wieser, S. Sandberg, R. Kocijan

Kaiserin Elisabeth Spital, Vienna, Austria

Background. In patients who undergo repeated laparoscopic inguinal hernia repair, the surgeon is confronted with changes in anatomy compared to the initial operation. The present study addresses these differences and their consequences.

Material and methods. In 264 patients who were operated on by the laparoscopic technique for recurrent inguinal hernia, the primary operation was evaluated. A Bassini operation had been performed in 166 cases, a Shouldice in 35 cases, a Lichtenstein procedure in 39 cases, a plug and patch operation in 10 cases, and laparoscopic hernia repair in 14 cases.

Results. Due to the suture technology employed, the tractus ileopubicus was markedly lifted, while the deferent duct and the spermatic vessels were shifted in many cases. The abdominal muscles were fixed in the median region in the tractus ileopubicus, and Hessert's triangle could not be identified. With regard to plug and patch operations it was found that the internal mesh had grown into a shapeless ball, firmly attached to the surrounding tissue, and in some cases to the small bowel. After Lichtenstein repair and after laparoscopic procedures, recurrent hernias occurred due to mesh movement in all cases.

Conclusions. Suture techniques cause massive changes in anatomy after inguinal hernia repair. This explains the high rate of chronic pain after these procedures. Plug operations should not be performed in this setting because they lead to adhesions with the small intestine in some cases.

005 Austrian multicenter study on unilateral inguinal hernia

M. Scheyer[1], A. Klingler[2], T. Schmid[3]

[1]Allgemeinchirurgie, LKH Bludenz, Bludenz, Austria; [2]Theoretische Chirurgie, Innsbruck, Austria; [3]Abteilung für Allgemeinchirurgie und Thoaxchirurgie, Medizinische Universität Innsbruck, Innsbruck, Austria

Background. With the introduction of endoscopic hernia repair expectations concerning the new laparoscopic techniques were high. The aim of this study of the *Zürser Hernienforum* was to compare the five most frequently applied surgical procedures in Austria (Bassini, Shouldice, Lichtenstein, TAPP and TEP).

Material and methods. An Internet-supported multicenter study on unilateral primary inguinal hernia was initiated. Between August 1998 and December 2001, a total of 757 patients were recruited (randomized: 337; not randomized: 420). Clinical follow-up was 4 weeks, 6 months and then annually. End points of the study were the recurrence rates, intra- and perioperative complications as well as late complications. In the case of 726 patients, sufficient information was obtained for the analysis of the recurrence rate with a mean follow-up period of 3.04 years (range: 0.03–6.88 years).

Results. The recurrence rate of all techniques was 3.6%; tension-free techniques had a recurrence rate of 3.2%, while mesh-free procedures had a recurrence rate of 4.4% ($p = 0.41$, NS). With 2.9%, the conventional procedures had fewer recurrences than the laparoscopic procedures with 5.5% ($p = 0.10$, NS).

Intraoperative complications occurred in 3.5% of cases, postoperative complications occurred in a total of 18%, and late complications were noticed in 12.8%.

Conclusions. The data do not allow for any statistically significant conclusions to be made regarding recurrence rates. However, the total recurrence rate of 3.6% can be considered as a satisfying result for a multicenter study. The relatively high recurrence rate with laparoscopic procedures is unexpected, whereas late recurrences in this subgroup are noteworthy.

006 The transinguinal hernia repair with a memory ring armed light patch

M. Brauckmann[1], **G. Federmann**[2]

[1]Kreiskrankenhaus, Idstein, Germany; [2]Klinikverbund, Bassum-Suhlingen, Germany

Background. In the repair of inguinal hernia a lot of meshes have been used with variable results. Still there is discussion about mesh-size and the space meshes should be placed. Under view of costs and the question, if the treatment could be done amulanz, procedures must be discussed. We report about our experiences with the Polysoft Light Mesh in hernia repair, which is placed preperitoneal with a transinguinal approach.

Material and methods. Starting December 2004 we operated 245 patients with 264 hernias (232 male, 13 female, age 21–92y). The observation was prospective, the control-investigations were dated early postoperative (day 6–10 post operation) and after six months.

Results. We have done the procedure with the Polysoft Patch in 264 hernias, in 21 cases bilateral procedure was done (33 recurrent hernias). 60% of the patients have been operated in ambulant surgery. There have been no intraoperative complications, postoperative we observered one severe (bleeding V. epigastrica sup.) and 17 mild complications (16 haematomas, 1 nerveirritation). We have seen 15 seromas. A reoperation was necessary in 1 case. Postoperative pain was mild. The ultrasound investigation showed that the mesh was in right position in all cases. No recurrent hernia has been observed.

Conclusions. The past results show directly peri- and postoperative good results, which are at least comparable with the established procedures for hernia repair. The method is easy to learn for an experienced surgon and can be used well ambulatory. Caused by preperitoneal placement less irritations of the N. ileoinguinalis are expected.

007 A synthetic cyanoacrylate tissue sealant impairs tissue integration of macroporous mesh in experimental hernia repair

A. H. Petter-Puchner[1,2], **R. H. Fortelny**[2], **R. Mittermayr**[1], **N. Walder**[1], **W. Öhlinger**[1,3], **A. Heinze**[1], **H. Redl**[1]

[1]Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Vienna, Austria; [2]2nd Department of Surgery, Wilhelminenspital, Vienna, Austria; [3]Department of Pathology, LKH Krems, Krems, Austria

Background. Tissue Sealants are discussed as alternative to permanent fixation devices in hernia repair with the aim to reduce perforation associated complications and chronic pain. Sealants can be divided in two groups: synthetic glues (e.g. cyanoacrylate based) and biological products (e.g. fibrin sealant). Whereas beneficial effects of fibrin sealant have been reported in both, experimental and clinical hernia repair, only little data exists on synthetic compounds in this field.

Methods. In 16 Sprague Dawley rats 2 defects per animal were created in the abdominal wall left and right of the linea alba (1.5 cm in diameter), the peritoneum was spared. The lesions were left untreated for 10 days to achieve a chronic condition and were then covered with TI-Mesh ×l (2×2 cm), sealed with Glubran-II. 4 rats were sacrificed on the 17th day, 4 rats on the 28th day, two months and 5 months postOP. The meshes were biomechanically tested and histology was performed.

Results. Tissue integration of meshes was impaired at all timepoints by inpenetrable plaques of glue. At the sites of application elasticity of the abdominal wall was significantly reduced due to non resorbed, rigid glue residues.

Conclusions. Mesh fixation by cyanoacrylate impairs tissue integration, elicits inflammation and reduces implant elasticity.

008 One year experience with a resorbable mesh-fixation in TAPP

R. Schrittwieser, W. Hermann

Abteilung für Chirurgie, LKH Bruck a. d. M., Bruck a. d. M., Austria

Background. During the last decade the TAPP-procedure developed to an important method in the surgery of inguinal hernias Different possibilities of mesh-fixation were used. During the last years there were also offered resorbable fixation systems. The experiences with a 5 mm instrument (easy tac®), which has been used for one year, are reported.

Material and methods. Since march 2005 63 inguinal hernias underwent a TAPP with fixation of the mesh with easy tac®. Meshes with a size of 15x15 cm, made from polypropylene, are used. On a reusable 5 mm instrument a magazin with 5 resorbable pins, each with a length of 6.4 mm, made of PDLL (Poly (D,L)-Lactid), is placed, in order to fix the mesh on muscle or ligaments.

Results. There was no early recurrence of hernia during the first year and there were no complications that led to a reoperation concerning the first 63 operations.

Conclusions. First, temporary results show, that the fixation of the mesh with this resorbable system could be an alternative to so far used fixation systems, that are usually made of metal.

Advantages are, that we can perform the operation without using metal, that there is only few injury of the tissue and that the tissue is not gathered up by the pins.

ÖGU: Evidence Based Medicine in der Traumatologie

009 Traumatische Plexus Brachialis Läsionen: retrospektive Analyse von 108 Fällen

T. Hausner[1], R. Schmidhammer[2], H. Redl[2]

[1]Unfallkrankenhaus Lorenz Böhler, Wien, Österreich; [2]Ludwig Boltzmann Institut für Experimentelle und Klinische Traumatologie am Forschungszentrum für Traumatologie der AUVA, Wien, Österreich

Grundlagen. Verletzungen des Plexus Brachialis betreffen häufig junge und gesunde Patienten und resultieren in meist lebenslang quälenden neurologischen Dysfunktionen. Ziel dieser retrospektiven Kohortenstudie war es, Inzidenz, Diagnose und Behandlung dieser Erkrankungen anhand der Krankengeschichten von 108 Patienten im Zeitraum von 3 Jahren (2001–2003) zu analysieren.

Material und Methodik. Die Krankengeschichten von 108 Patienten, die eine Plexus Brachialis Verletzung erlitten, wurden analysiert. Die Ergebnisse wurden mit der Literatur verglichen.

Ergebnisse. Die wichtigste Ursache für Plexus Brachialis Verletzungen waren Verkehrsunfälle (n = 43 / 40%). 23 Patienten (22%) waren polytraumatisiert, 35 Patienten (32%) erlitten ein Schädel-Hirn-Trauma. Bei 5 Patienten (5%) bestand zusätzlich zur Plexus Brachialis Läsion ein Rückenmarkstrauma. Im Gegensatz zur Literatur (9–13%) fanden wir keine durch Schuss- oder Stichverletzungen hervorgerufene Plexus Brachialis Verletzung. Weder offene Plexus Brachialis Verletzungen noch Begleitverletzungen von großen Gefäßen wurden in diesem Zeitraum beobachtet.

Die klinische Untersuchung war allgemein unzureichend. Elektrophysiologische Untersuchungen wurden bei 22 (=21%) Patienten, MRI bei 12 Patienten (=11%) durchgeführt.

35 Patienten (=33%) zeigten keine klinische Besserung 3 Monate nach Trauma. Fünf dieser 35 Patienten (=17%) wurden einer operativen Behandlung zugeführt. Die klinischen Ergebnisse von drei dieser fünf operierten Patienten waren nicht zufriedenstellend.

Es existiert nur wenig Literatur zu diesem Thema. Die Daten in der Literatur sind kaum miteinander vergleichbar.

Schlussfolgerungen. Das Bewusstsein für die differenzierte Art der Behandlung dieser schweren Verletzung muss gefördert werden. Exakte klinische Untersuchung und Kenntnis über die differenzierte Art der Behandlung dieser schweren Verletzungen ist zu fordern, um die Ergebnisse verbessern zu können.

010 Langzeit-Follow-Up nach Rekonstruktion der Arteria cubitalis im Rahmen einer suprakondylären Humerusfraktur im Kindesalter

P. Konstantiniuk[1], G. Fritz[2], T. Ott[1], U. Gratzer[1], M. Hessinger[1], K. Tiesenhausen[1], T. Cohnert[1]

[1]Klinische Abteilung für Gefäßchirurgie, Graz, Österreich; [2]Universitätsklinik für Radiologie, Medizinische Universität Graz, Graz, Österreich

Grundlagen. Die suprakondyläre Humerusfraktur ist im Kindesalter die häufigste, ellbogennahe Fraktur und ist in ca. 2% der Fälle von einer Verletzung der A. cubitalis begleitet. Ziel der vorliegenden Arbeit war es, Langzeitergebnisse hinsichtlich Morphologie der Rekonstruktion, Wachstum und Durchblutung zu präsentieren.

Methodik. Im Zeitraum zwischen Juni 1990 und Juni 2004 wurden von unserer Abteilung 12 Kinder mit obiger Verletzung behandelt. Mit einer Nachbeobachtungszeit vom 7,7 Jahren (1,2–14,2) wurden im Seitenvergleich klinisch Unterarmlänge, Unterarmvolumen sowie duplexsonographisch der Blutfluss im Unterarm untersucht.

Ergebnisse. Alle Rekonstruktionen waren offen, in der Hälfte der Fälle war der rekonstruierte Bereich ektatisch (im Extremfall hatte eine heute 20jährige Frau einen Durchmesser der Rekonstruktion von 6 mm, während die Arterie brachialis lediglich einen Durchmesser von 2,5 mm zeigte). Hinsichtlich Unterarmlänge, Unterarmvolumen sowie Unterarmblutfluss zeigte sich kein Unterschied im Seitenvergleich.

Schlussfolgerungen. Die Rekonstruktion der A. cubitalis im Kindesalter ist effektiv und bleibt in aller Regel offen. Sie neigt zu Ektasien und sollten aus diesem Grunde lebenslang nachverfolgt werden.

011 Makro/Mikroreplantationsmanagement an der oberen Extremität. Eine multidisziplinäre Herausforderung

D. Hager, H. Schöffl, G. Huemer, O. Kwasny

Unfallchirurgie, AKH Linz, Österreich

Grundlagen. Makro/Mikroamputationsverletzungen der oberen Extremität sind ein gewaltiger Schaden an köperlicher Patientenintegrität und für die Behandler mit höchstem Anspruch an mehrere Disziplinen gebunden. Rettungskette, Anästhesie, Operateur und Nachsorge müssen optimal sein. Noch im Spitalsaufenthalt beginnt die Ergotherapie, die im Rehabilitationszentrum fortzusetzen ist!

Material und Methodik. An der Unfallchirurgie AKH Linz wurden von 2000 bis 2005 4 Makroreplantationen an 3 männlichen Patienten durchgeführt. Das Patientenalter betrug durchschnittlich 47 Jahre [42, 48, 52].

Es wurden im gleichen Zeitraum 37 Langfinger, davon 18 Daumen und 6 Mittelhände an 39 Patienten, davon 26 männliche und 13 weibliche replantiert (inkomplette Amputationen ausgenommen). Das Durchschnittsalter der Patienten betrug 43 Jahre [2; 76].

Ergebnisse. Alle 4 Hände bzw. 1 Unterarm wurden erfolgreich replantiert.

Komplikationen: am Unteram 1 Ellenplattenlagerfistel, die revidiert wurde. 1 Unterarmbeugemuskelverkürzung mit

konsekutivem Streckdefizit aller Langfinger, daher Sehnenverlängerung.

In Mikroreplantationen: 2 Spätinfekte wegen Wundheilungsstörung und 5 venöse Thrombosen an 3 Daumen, 2 Langfinger. Es mussten diese amputiert, danach rekonstruiert werden (Daumendistaktion / Daumenaufbau mit Beckenkammspan und Lappenplastik).

1 Mittelhand wurde wegen Hypothermieschaden wieder amputiert.

Schlussfolgerungen. Makroreplantationen an der oberen Extremität sowie Mittelhandamputationen sind aufgrund verbesserter Unfallpräventionsmaßnahmen heutzutage selten.

Daumen/Langfingeramputationen sind aber immer noch Routinearbeit für den Mikrochirurgen.

Nur wenn eine adäquate Amputat- und Patientenversorgung, das reibungslose Funktionieren der Rettungskette sowie die interdisziplinäre Zusammenarbeit inklusive Rehabilitationsmaßnahmen und ständiges Training in komplexer Handchirurgie und Mikrochirurgie (Ärzte und Pflegepersonal) gewährleistet sind, kann eine Abteilung unserer Meinung nach als high level Replantationszentrum gelten.

012 Therapeutic angiogenesis in reconstructive surgery

R. Mittermayr, M. Hofmann, T. Sindelar, M. Cerny, S. Pfeifer, H. Redl

Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Vienna, Austria

Background. In woundhealing a sufficient angiogenesis is of pivotal interest for restoration of tissue continuity and functionality. In reconstructive surgery co-morbidities (e.g. DM II, peripheral vascular disease) and ischemic/hypoxic conditions due to free tissue transfer (especially when prolonged) could be tremendous. In this context several factors were already tested to evaluate pro-angiogenic properties.

To induce/support angiogenesis exogenously in a local manner, different growth factors (GF) delivered in a fibrin matrix were tested *in vitro* as well as *in vivo*.

Results. The different GF suspended in the fibrin matrix are released properly to adjacent milieu as confirmed by *in vitro* studies. In addition, the released GF retain biological activity which was seen by positive signal acquired by bioluminescence scanning in an *in vivo* transgenic mouse model. It was further seen that VEGF Receptor 2 (Flk-1/KDR) which is of imminent importance in physiological woundhealing is not only upregulated by exogenous $VEGF_{165}$ but also by other growth factors. A further finding was that the way of administration also influences the VEGF-R2 activity. However, fibrin sealant (FS, =fibrin matrix) alone resulted in an increased VEGF-R2 activity. In addition it was shown that FS acts as a dual tool (support flap adherence and is hemostatic) in flap surgery which results in enhanced flap viability compared with quilting suture technique. Adding growth factors (e.g. VEGF, PDGF) to the FS further improves flap outcome without observable systemic influence.

Conclusions. Therapeutic angiogenesis in reconstructive surgery is a potent strategy. To deliver the GF locally FS was not only effective as a biodegradable matrix but showed also support of tissue adherence as well as hemostatic properties. The key receptor in angiogenesis (VEGF-R2) is not only activated by $VEGF_{165}$ which is well known but also by other growth factors which could play an important role in future therapeutic angiogenesis.

013 Das intubationspflichtige schwere Schädel-Hirn-Trauma beim alten Patienten

R. Kdolsky

Universitätsklinik für Unfallchirurgie, Wien, Österreich

Im Jahre 2003 wurden an der Univ. Klinik für Unfallchirurgie, Wien, insgesamt 49 Patienten jenseits des 60. Lebensjahres mit einem Schädel-Hirn-Trauma mit Raumforderung und/oder klinisch neurologischen Zeichen behandelt. Es handelte sich um Monoverletzungen (n = 44) beziehungsweise um polytraumatisierte Patienten mit der führenden Diagnose eines SHT (n = 5).

13 Patienten waren zwischen 60 und 70 Jahre alt, 13 Patienten zwischen 70 und 80, und 23 Patienten älter als 80 Jahre. Die Unfallursache war ein Verkehrsunfall bei 9 Patienten, Alkoholabusus bei 7 Patienten; bei den verbleibenden 33 Patienten handelte es sich um Stürze oder der Unfallhergang ließ sich nicht klären.

5 Patienten wurden osteoklastisch trepaniert. Davon überlebte ein Patient (Subduralhämatom / 67a) und heilte ohne fassbares neurologisches Defizit aus, vier Patienten verstarben trotz Entlastung.

Eine Intubation war bei insgesamt 18 Patienten erforderlich. Acht der 18 Patienten waren zwischen 60 und 70 Jahren alt; vier der acht Patienten überlebten, einer (Subduralhämatom / 67a; s.o.) ohne fassbares neurologisches Defizit, zwei Patienten konnten mit Ausfällen einer neurologischen Rehabilitation zugeführt werden, ein Patient verblieb im Mittelhirnsyndrom III und blieb ein Pflegefall.

Die übrigen 10 intubationspflichtigen Patienten waren älter als 70a; alle Patienten verstarben. Sieben verstarben innerhalb von 48h nach dem Unfall, drei Patienten verstarben in weiterer Folge auf der Intensivstation nach durchschnittlich 3 Wochen.

Das schwere Schädel-Hirn-Trauma mit Raumforderung und/oder klinisch neurologischen Zeichen ist beim alten wie auch beim geriatrischen Patienten ein lebensbedrohlicher Zustand. Die Akkumulation von Verletzungsschwere, reduzierter Kompensationsmöglichkeit des alten Organismus und respiratorische Insuffizienz machen eine daraus erforderliche Intubation beim geriatrischen Patienten zu einer therapeutischen Handlung ohne reelle Hoffnung auf Erfolg.

Eine statistische Wahrscheinlichkeit von unter 1% Überlebenschance beim über 70-jährigen Patienten mit schwerem SHT sollte Anlaß geben, mit einem größeren Kollektiv eine allgemein gültige Behandlungsrichtlinie zu erstellen.

014 Emergency room management of patients with blunt major trauma: Evaluation of the "MSCT protocol" exemplified by an urban trauma center

P. S. Weninger, W. Mauritz, H. Hertz

Lorenz Boehler Trauma Hospital, Vienna, Austria

Background. Early management of patients with blunt major trauma represents a challenge for trauma teams. Stand-

ard diagnostic procedures may not detect the full extent of injuries, especially in unconscious patients. Conventional radiography (CR), diagnostic peritoneal lavage (DPL), focused assessment with sonography for trauma (FAST) and even computed tomography (CT) have its limitations and, as reported recently, seem to be inferior to multislice computed tomography (MSCT) protocols.

Material and methods. Retrospective study comparing 2 cohorts of blunt major trauma patients. The "CT-scan first" cohort (n = 185) had a MSCT prior to resuscitation; the "resuscitation first" cohort (n = 185) had diagnostic procedures (CR, FAST, CT) after resuscitation. All patients had an ISS ≥ 17 and at least one life threatening injury of head, thorax or abdomen with an abbreviated injury score (AIS) ≥ 4, and survived at least until admission to the ICU. TRISS analysis was performed, SAPS II was calculated, emergency room (ER) stay, surgery, intensive care unit (ICU) stay, total in-hospital stay and survival were evaluated and statistically analyzed.

Results. The mean Injury Severity Score (ISS) of the study population (n = 370) was 27.1 ± 10.9. 77.6% of the patients were male, 22.4% female with a mean age of 42.1 ± 17.7 years. Demographic data were comparable in both cohorts. The full extent of injuries was definitively diagnosed after 12 ± 9 minutes in 92.4% of the "CT-scan first" patients while definitive diagnosis was possible after 41 ± 27 minutes in only 76.2% of "resuscitation first" patients. Total ER time (70 vs. 104 minutes), surgical procedures (159 vs. 186 minutes), ICU stay (13.6 vs. 16.8 days) and total in-hospital stay (29.0 vs. 32.5 days) were significantly shorter in "CT-scan first" patients.

Conclusions. Immediate MSCT in patient with blunt major trauma leads to more accurate and faster diagnosis. These patients had shorter ER, ER-OR and ER-ICU times. The "CT-scan first" algorithm seems to be safe and effective. If followed by adequate fluid resuscitation the administration of contrast medium to patients in traumatic shock has no negative effects on renal function.

015 Drogenscreening bei Frischverletzten

M. Figl[1], L. E. Pelinka[1], P. Weninger[1], W. Mauritz[2], H. Hertz[2], A. Kroepfl[1], R. Schmidhammer[1], M. Walchetseder[3], W. Buchinger[3], H. Redl[1]

[1]Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Wien, Österreich; [2]UKH Lorenz Böhler, Wien, Österreich; [3]Abteilung für Unfallchirurgie, Weinviertelklinikum Horn, Horn, Österreich

Grundlagen. Die Frage, ob vor einem Unfall Drogen eingenommen worden sind und um welche Drogen es sich handelt, ist für die im Rahmen der chirurgischen Versorgung erforderliche Anästhesie wesentlich. Viele Patienten sind allerdings nicht bereit oder nicht in der Lage (u.a. Polytraumapatienten, bewusstseinsgetrübte oder bewusstlose Patienten), diese Frage zu beantworten. Ziel unserer prospektiven Multicenter Studie war es, Daten über Drogenkonsum in Österreich zu sammeln um festzustellen, ob Drogen im Harn bei Frischverletzten nachweisbar sind und um welche Drogen es sich handelt.

Patienten und Methodik. Als Studienorte wurden das UKH Lorenz Böhler, das UKH Linz und die unfallchirurgische Abteilung des Waldviertelklinikums Horn gewählt.

Frischverletzte Unfallpatienten jeden Schweregrades deren Verletzung eine operative Versorgung in Narkose oder Regionalanästhesie erforderte wurden in die Studie aufgenommen.

Unmittelbar nach Aufnahme im Krankenhaus wurden Urinproben aller Patienten gesammelt. Die Proben wurden mit dem Drogenschnelltest Triage 8® Immuno-Assay (Firma VIVA-Diagnostika, Köln, Deutschland) gleichzeitig auf Opiate, Methadon, Kokain, Barbiturate, Amphetamine, Cannabinoide, Benzodiazepine und trizyklische Antidepressiva getestet.

Die Durchführung und Dokumentation erfolgte im Labor der einzelnen Studienorte. Die Datensammlung und Auswertung erfolgte im Ludwig Boltzmann Institut für Experimentelle und Klinische Traumatologie in Wien.

Ergebnisse. Es wurden 664 Patienten (320 aus Wien, 193 aus Linz, 151 aus Horn) in die Studie aufgenommen. Bei 642 Patienten handelte es sich um isolierte Verletzungen vor allem der Extremitäten (ISS <16). 22 Patienten waren polytraumatisiert (ISS >16).

243 Patienten wurden positiv auf eine oder mehrere Substanzen getestet. Am häufigsten wurden Benzodiazepine (138 Patienten), gefolgt von Opiaten (88 Patienten) und Cannabinoiden (39 Patienten) gefunden.

Schlussfolgerungen. Der relativ hohe Anteil positiv auf Drogen getesteter Patienten unterstützt die Forderung nach einem Drogenscreening bei allen Unfallpatienten, deren Verletzung eine Operation erfordert.

016 Polysaccharide powder versus gelatin thrombin in liver and spleen trauma

J. Reichetseder[1], A. Schultz[2], M. Kaipel[2], M. Leixnering[1], A. Khadem[2], H. Hertz[1], H. Redl[2]

[1]Lorenz Böhler Unfallkrankenhaus, Vienna, Austria; [2]Ludwig Boltzmann Institute of Experimental and Clinical Traumatology and Research Center for Traumatology of AUVA, Vienna, Austria

Background. Due to the blood supply and the tissue structure of the liver and spleen rupture of one of these organs is often associated with massive hemorrhage. In order to preserve the injured organs topical hemostatic dressings are used in addition to conventional surgical methods.

Aims. In this crossover study the efficacy of polysaccharide powder (ARISTA®) compared to gelatin thrombin granules (FLOSEAL®) was tested in a standardized combined liver and spleen rupture model in swine under hemorrhagic shock conditions, coagulopathy and hypothermia.

Materials and methods. A standardized hypovolemic shock was induced in 7 anesthetized pigs. Body core temperature was reduced to 35°C and coagulopathy simulated by heparinisation. A standardized 4 × 4 cm penetrating wound was created in the liver and spleen and 30 % of blood volume withdrawn to achieve severe hypovolemic shock. After initial shock treatment and blood pressure stabilisation primary treatment was performed with ARISTA®. If complete hemostasis could not be achieved treatment was converted to FLOSEAL® to stop bleeding.

Results. In none of the 7 pigs bleeding could be stopped by ARISTA®. In contrast we achieved complete hemostasis in all pigs with FLOSEAL®.

Conclusions. FLOSEAL® is superior to ARISTA® to achieve hemostasis in combined liver and spleen rupture in

pigs under hemorrhagic shock conditions, hypothermia and coagulopathy.

017 Ergebnisse bei der Versorgung von Humeruskopfmehrfragmentfrakturen des älteren Menschen mit der inversen Delta-III Schulterprothese

M. Klein, B. Hinkenjann, B. Scherger, P. A. Ostermann

Klinik für Unfall-, Wiederherstellungs- und Orthopädische Chirurgie, Bocholt, Deutschland

Grundlagen. Wie sind die mittelfristigen klinischen und radiologischen Ergebnisse nach Implantation der inversen Delta-III- bei Mehrfragmentfrakturen des proximalen Humerus verglichen mit den konventionellen Frakturprothesen?

Material und Methodik. Zwischen 07/2002 und 06/2005 wurden 20 Delta-III-Prothesen bei bestehender dislozierter Mehrfragmentfraktur des proximalen Humerus implantiert. 20 Patienten (14w, 6m) mit einem Durchschnittsalter von 77 Jahren (64–90 Jahre) und einem Follow-up von durchschnittlichen 23 Monaten (6–41 Monate) wurden klinisch und radiologisch nachuntersucht. Die postoperativen funktionellen Ergebnisse wurden mit dem Constant-Score, DASH-Score, SF-36 und dem modifizierten ASES-Score erfasst.

Ergebnisse. Funktionell wurde postoperativ im Vergleich zu den herkömmlichen Prothesensystemen ein sehr hohe Werte für die Scores gefunden. 2 Patienten wiesen postoperativ Komplikationen auf. Bei einem Patienten luxierte die Schulterprothese 2x. Es konnte jeweils jedoch die geschlossene Reposition ohne weiteren Eingriff erfolgen. Bei einem Patienten kam es zu einem Gelenkinfekten (Frühinfekt), der nach viermaliger Jet-Lavage ohne Explantation der Delta-III-Prothese beherrscht werden konnte.

Schlussfolgerungen. Aus den hervorragenden funktionellen Ergebnissen nach Implantation der inversen Delta-III-Prothese bei primärer Versorgung dislozierter Humeruskopfmehrfragmentfrakturen, lässt sich schließen, dass die Indikation zur Implantation dieses Prothesentyps deutlich weiter als bisher üblich gefasst werden sollte.

ACE I

018 Influence of completion surgery in differentiated thyroid cancer on post-operative complications

J. Busch, M. Gesslein, F. Franke

Waldkrankenhaus St. Marien, Erlangen, Germany

Background. Ectomy of differentiated thyroid cancer (DTC) often demands bitemporal surgical procedures (BSP). A suspicious instantaneous section or a carcinoma revealed in the final histology may necessitate modified surgical strategies or a completion surgery. Whether a BSP leads to higher post-operative complications (POC) is to be investigated.

Methods. In a randomised controlled study 189 patients with DTC were retrospectively examined. Depending on the number of surgical interventions to total thyroidectomy, patients were divided into two groups. Vocal chord palsy, secondary haemorrhage, hypocalcaemia and the necessity of parathyroid-gland-reimplantations were examined.

Results. 157 patients had papillary, 32 follicular thyroid cancer. Due to the cancer classification, in 85 patients there was no completion surgery necessary. In 18 cases the instantaneous section led to thyroidectomy during the same session. 11 underwent completion surgery on the same day, 75 after several days. There were no significant differences of the complication rate in the two groups. Hypocalcaemia (40% vs. 42%) is the most frequent complication with significantly more affect on reimplantations of the parathyroid glands. In comparison patients with BSP show significantly more hypocalcaemia after the second operation than after the first.

Conclusions. Altogether the aggravated surgery conditions in BSP seem to have no effect on the rate of complications. The hightened traumatisation of the parathyroid glands in extended thyroidectomy should be considered.

019 Minimal invasive Varioscope©-assistierte Thyreoidektomie (MIVARAT)

P. Sungler, J. Hutter, H. J. Stein

Chirurgische Universitätsklinik, Salzburg, Österreich

Grundlagen. 1999 hat Shimizu, später Inabnet und Gagner die ersten endoskopischen Schilddrüsenoperationen mit Gasinsufflation über einen zentralen Zugang durchgeführt. Japanische Autoren reizten zwecks Narbenvermeidung am Hals Zugänge über Axilla und Brustwarze aus. Miccoli entwickelte analog der Parathyreoidektomie die videoassistierte Thyreoidektomie weiter, andere Zentren folgten.

Patienten und Methodik. Wir haben mittels kopfgetragenem Varioscope mit 2.9–9facher Vergrößerung, Zoom, Autofokus, koaxialem Licht sowie integriertdigitalem Videokamerasystem schrittweise den Kocherschen Kragenschnitt minimiert. Das Patientenkollektiv war limitiert auf immunhyperthyreote Strumen < 35 ml Volumen, Strumazysten, autonome Adenome sowie Knoten unklarer Dignität jeweils < 30 mm. Die Lobektomie, Thyreoidektomie und zentrale Halslymphknotendissektion erfolgte analog der Regeln der konventionellen Technik. Vor allem zu Beginn der Operation ermöglicht das Varioscope der Assistenz per Monitor Einblick ins Operationsgebiet.

Ergebnisse. Seit 2004 haben wir 48 Patienten mit MIVARAT operiert, Durchschnittsalter 46,3 a (18–71 a), davon 44 Frauen, 4 Männer. Die Operationszeit zum Vergleichskollektiv Ø 9 Minuten länger. Die postoperative Hospitalisierung war mit 39 versus 57 Stunden kürzer, es wurde keine Rekurrensparese verzeichnet. 16 Patienten wurden lobektomiert, 14 vollständig thyreoidektomiert, 14 near-total thyreoidektomiert. Die Hautschnittlänge betrug Ø 26 mm (22–28 mm), das Schilddrüsenvolumen betrug 20–35 ml.

Schlussfolgerungen. Im Gegensatz zu anderen minimal invasiven Verfahren eignet sich diese Methode vor allem für kleine Immunthyreoititiden, da entzündliche Verwachsungen keine Kontraindikation darstellen, wie auch für Patienten mit Autonomie und Zysten. Sowohl die Thyreoidektomie wie auch eine zentrale Halslymphknotendissektion lassen sich aus dem minimierten Zugang unkompliziert mit Standardintrumentarium durchführen.

Aus den kosmetischen Bedürfnissen heraus erklärt sich die hohe Prävalenz jüngerer Frauen im Patientenkollektiv.

020 Thyroid carcinoma in cervical cyst – individual treatment by example of four cases

G. Klein, E. Bareck, D. Depisch

a.ö. KH, Wr. Neustadt, Austria

Background. The medial cervical cyst is a residuum of the embryonic development of the thyroid gland. Sometimes parts of thyroid tissue are found within this cyst. Malignant conversion is rare. In literature only a few hundred cases are documented.

Methods. By example of four cases we demonstrate diagnosis, therapies and follow up of thyroid carcinomas in cervical cyst, which occurred in our institute within the last decade. Also we compared our data with the available literature.

Results. In two cases after extirpation of a medial cervical cyst by chance histology shows a papillary thyroid carcinoma. Because of the stadium of the tumor-T1 (TNM classification 5th edition) and negative sonography and scintigraphy no further surgery was performed (Follow up 43–126 months).

Once during a thyroid surgery a cervical cyst was detected and removed.

As well in the cyst as in the thyroid gland the histology showed a multifocal papillary thyroid carcinoma. Thyroidektomie and radio iodine therapy have been done (Follow up 43 months).

In another case after resection of a medial cervical cyst the histology showed a papillary thyroid carcinoma-T4 (TNM classification 5th edition). Thyroidektomie was enclosed and we discovered a papillary microcarcinoma in the gland. A radio iodine therapy was performed too (Follow up 54 months).

Conclusions. Thyroid carcinoma in the cervical cyst is a rare incident. A prae- or operative diagnose is difficult. We only had papillary carcinoma in our group of patients. The treatment of this disease must by very individual, because of the minimal experience there is.

021 Hypocalcaemia without hypoparathyroidism – a complication after thyroidectomy?

J. Ott[1], R. Promberger[2], M. Karik[1], A. Pisecker[1], M. Hermann[1]

[1]Kaiserin Elisabeth Spital der Stadt Wien, Department of Surgery, Vienna, Austria; [2]University of Vienna, Department of Surgery, Vienna, Austria

Background. The impairment of parathyroid function is a typical complication after thyroidectomy. Symptoms of hypoparathyroidism are caused by low serum calcium levels. However, we observed patient with postoperative hypocalcaemia despite normal Parathormon-values.

Methods. In a prospective study we monitored PTH- and calcium-levels, before skin incision, after resection of the first and the second thyroid lobe and 3 hours, 1, 2 and 3 days after the operation including follow up examinations.

Results. We observed 9 patients (7 females, 2 males) with regular PTH-levels, but serum calcium below normal range 5–47 weeks after thyroidectomy. On average PTH-value declined from a preoperative value of 21 pg/ml to a minimum of 1 pg/ml (4.8%) three hours after the operation and parathyroid function couldn't recover until the 14th postoperative day (8.2; 39%). Calcium-kinetics showed a minimum value on the first postoperative day (1.82 mmol/l). 7 out of 9 patients (77.8%) developed calcium-related symptoms. At follow-ups PTH-levels within normal range were found in these patients whereas calcium-levels remained low leaving the patients in need for calcium and/or vitamin D supplementation.

Conclusions. In patients with long-term-hypocalcaemia after thyroidectomy PTH-levels may lie within the normal range, obviously a sign of maximally stimulated PTH secretion. We suppose that there is not enough functional parathyroid tissue left to compensate hypocalcaemia by physiological transient secondary hyperparathyroidism. Therefore, we assume that these patients have parathyroid gland insufficiency despite "normal" PTH-values.

Make physiological calcium regulation and therefore calcium-levels within the normal range possible. Thus a postoperative complication has to be assumed.

022 Minimal invasive Varioscop©-assistierte Parathyreoidektomie (MIVARAP) bei primärem Hyperparathyreoidismus (pHPT)

P. Sungler, J. Hutter, H. J. Stein

Chirurgische Universitätsklinik der PMU, Salzburg, Österreich

Grundlagen. Seit Gagner 1996 von der ersten endoskopischen Parathyreoidektomie berichtete, wurden weltweit weitere endoskopische (transmammillär, transaxillär), lateral-cervicale, wie auch gaslose, videoassistierte Zugänge entwickelt. Da sich der anteriore Zugang zur Nebenschilddrüse durch den Kocherschen Kragenschnitt bestens bewährte, haben wir diesen Zugang unter Zuhilfenahme eines Varioscopes minimiert. Varioscope ist ein kopfgetragenes Mikroskop mit 2,9–9facher Vergrößerung, Zoom, Autofokus, Koaxiallicht sowie digitalem Videokamerasystem.

Patienten und Methodik. Wir beschreiben den minimal invasiven anterioren Zugang mittels einer Inzision von 15 mm, wodurch auch eine notwendige bilaterale Halsexploration durchgeführt werden kann. Die Exploration erfolgt analog der konventionellen Technik, wobei mittels des Varioscopes trotz minimalen Zugangs auch die Assistenz per Monitor einen guten Einblick ins Operationsgebiet hat.

Ergebnisse. Wir haben 24 Patienten mit pHPT operiert, das Durchschnittsalter war 61,5 a (20–81 a), davon 16 Frauen / 8 Männer. Die Operationszeit mit Ø 38 Minuten ident mit dem historischen Kollektiv, es fand sich keine Rekurrensparese oder Nachblutung. Bei allen Patienten erfolgte ein intraoperatives Parathormonmonitoring sowie eine Schnellschnittuntersuchung. Da sich diese Methode durch schrittweise Zugangsminimierung aus dem konventionellen Zugang entwickeln lässt, ist die Lernkurve steil.

Schlussfolgerungen. Durch die MIVARAP kann der gewohnte Zugang selbst nach Voroperationen beibehalten werden, somit ist eine spezielle Ausbildung nicht notwendig, es erübrigt sich auch weiteres Spezialinstrumentarium. Durch die Vergrößerung ist die Präparation der Strukturen, insbesondere des Nervus laryngeus recurrens sicherer und schneller möglich. Bei Versagen dieser Technik führt eine geringe Schnitter-

weiterung dennoch zu einem guten kosmetischen Ergebnis. Durch die Monitorübertragung ist das Teaching für Kollegen und Studenten sowie eine objektive Videodokumentation der Nervenpräparation möglich.

023 CT-MIBI-Bildfusion: präoperative Lokalisationsdiagnostik bei reaktivem Hyperparathyreoidismus

T. Sauper, C. Profanter, R. Prommegger

Klinische Abteilung für Allgemein- und Transplantationschirurgie, Medizinische Universität Innsbruck, Innsbruck, Österreich

Grundlagen. Ein erfolgreiches Auffinden aller pathologisch veränderten Epithelkörperchen sowie möglicher Ektopien bei reaktivem Hyperparathyreoidismus verlangt eine verlässliche präoperative Lokalisationsdiagnostik. Die Bildfusionstechnik (CT-MIBI) verspricht eine hohe diagnostische Genauigkeit, die eine intraoperative Exploration erleichtert. Ziel unserer Studie war es, die korrekte Anzahl und Position der vergrößerten Nebenschilddrüsen zu beschreiben.

Methodik. Im Rahmen einer prospektiven Studie erfolgte bei 31 konsekutiven Patienten mit reaktivem Hyperparathyreoidismus die präoperative Lokalisationsdiagnostik als Bildfusion mittels Dünnschicht CT und MIBI-SPECT. Die Ergebnisse der MIBI-SPECT alleine und die CT-MIBI-Bildfusion wurden durch 2 unabhängige Radiologen befundet, und die Resultate mit der Anzahl und Position der intraoperativ gefundenen vergrößerten Nebenschilddrüsen verglichen.

Ergebnisse. Die CT-MIBI-Bildfusion ergab beim sekundären Hyperparathyreoidismus (22 Patienten) eine Sensitivität von 79% und beim tertiären Hyperparathyreoidismus (9 Patienten) eine Sensitivität von 100% bezüglich Erkennung der Position bzw. Ektopie vergrößerten Nebenschilddrüsen. Vergleichend dazu zeigte der MIBI-SPECT eine Sensitivität von 29% bzw. 38%. Diese Art der Bildfusion ermöglichte uns eine deutliche Erleichterung bei der Exploration. 4 Patienten hatten eine persistierenden sekundären Hyperparathyreoidismus und konnten durch die Operation geheilt werden.

Schlussfolgerungen. Die CT-MIBI-Bildfusion mit einer Gesamtgenauigkeit von 90% ist der MIBI-SPECT als präoperative Lokalisationsdiagnostik deutlich überlegen. Sie kann auch an existierenden CT- und MIBI Einrichtungen angewandt werden. Wir empfehlen diese Art der Diagnostik beim reaktiven Hyperparathyreoidismus.

024 Wenig invasive offene unilaterale Halsexploration mit präoperativer Lokalisationsdiagnostik und intraoperativem PTH-Monitoring. Prospektive Evaluierung

M. Pramhas, A. Stückler, R. Roka

1. Chirurgie, KA Rudolfstiftung, Wien, Österreich

Grundlagen. Chirurgisch-ablatives Vorgehen stellt die etablierte Therapie bei primärem Hyperparathyreoidismus dar. Während bis vor wenigen Jahren die bilaterale cervicale Exploration beinahe immer notwendig war, erlaubt mittlerwele eine verbesserte Lokalisationsdiagnostik und und der PTH-Quick-Essay ein deutlich geringeres OP-Trauma und kürzere OP-Zeiten.

Im folgenden Bericht beschreiben wir das therapeutische Konzept an der Chirurgischen Abteilung / KAR sowie die Ergebnisse an 110 Patient/Innen, operiert 2000–2005, hinsichtlich Rezidivhäufigkeit, Komplikationen und Patientenzufriedenheit.

Schlussfolgerungen. Die durch die verbesserte prä- und intraop. Diagnostik ermöglichte reduziert – invasive Technik bringt akzeptable Ergebnisse bei grösserem Patientenkomfort.

025 Diagnostic innovations for gastro-entero-pancreatic neuroendocrine carcinomas

H. Cerwenka

Universitätsklinik für Chirurgie, Graz, Austria

Background. Localization of the primary tumor and complete detection of metastases of gastro-entero-pancreatic neuroendocrine carcinomas (GEP-NEC) often cause considerable difficulties.

Methods. The clinical value of new methods for tumor localization and detection is discussed using data from the recent literature and own experiences.

Results. Spiral CT and somatostatin receptor scintigraphy (SRS) still represent the basic diagnostic tools. SRS offers a detection rate of 70% for primary tumors and of 90% for liver metastases. Especially for CT lesions without depiction at SRS, DOPA-PET-CT is recommended. With this technique foci as small as 5 mm are detectable. Fluoro-18-deoxyglucose (FDG) is hardly taken up by slowly growing neuroendocrine tumors and thus FDG-PET-CT may be used for diagnosis of rapidly growing, aggressive tumor subtypes. Intraoperatively, CEUS (contrast-enhanced ultrasonography) with S-hexafluoride microbubbles is of special importance; it is applicable for detection of both primary tumors in the pancreas and metastases in the liver. CEUS is possible immediately after microbubble injection without time interval. However, due to adverse events reported in the literature, caution is recommended in patients with cardiovascular high risk situations.

Conclusions. For a selected group of patients DOPA-PET-CT and intraoperative CEUS offer valuable additions to the current diagnostic spectrum for localization of primary tumors and detection of metastases of GEP-NE-carcinomas.

026 Exact detection of small neuroendocrine tumors of the head of the pancreas: Intraoperative wire localization of non-palpable lesions – Report of two cases

M. O. Biebl, B. Durnthaler, H. Nehoda, T. Sauper, M. Lanthaler, W. Mark, C. Profanter, R. Margreiter, R. Prommegger

Department of General and Transplant Surgery, Medical University Innsbruck, Innsbruck, Austria

Background. Exact localization and estimation of size in neuroendocrine pancreatic tumors is mandatory for successful enucleation, however may be difficult because of small size and deep intraparenchymal localization.

Methods. Localization and size of neuroendocrine pancreatic tumors is determined preoperatively by multimodal biochemical and imaging techniques. Intraoperatively, the culprit lesion is confirmed by ultrasound using a 8 MHz linear

transducer, and enucleation performed under palpatory control. Small and poorly palpable lesions are marked with wire under intraoperative sonographic control, followed by guided tumor excision.

Results. We successfully identified and wire marked two small insulinomas (mean diameter 1.5 cm) of the pancreatic head in two patients. Tumor localization was deep within the parenchyma and close to the main pancratic duct (1) and the superior mesenteric vein (1), respectively. In both cases the tumor was identified and marked correctly. In one patient with a non-capsulated and lobulated insulinoma between the bile duct and main pancreatic duct, the pancreatic duct was lacerated by the wire, which however could be uneventfully repaired intraoperatively. Both tumors could be enucleated following the wire, and correct localization confirmed by pathology.

Conclusions. Intraoperative ultrasound-guided wire localization allows for exact intraoperative identification of otherwise non-palpable small neuroendocrine tumors of the pancreatic head.

VIDEO: HDTV – high definition television: Der Operationsfilm in hochauflösender Fernsehtechnologie – eine neue Dimension

027 Laparoscopic total anorectal reconstruction following abdominoperineal resection for rectal cancer

P. Metzger[1], M. Hofmann[2], R. Schiessel[1,2]

[1]Department of Surgery, Danube Hospital / SMZ-Ost, Vienna, Austria; [2]Ludwig Boltzmann Research Institute for Surgical Oncology, Vienna, Austria

Background. In 20% of the patients with rectal cancer rectal amputation is still necessary. For many patients a permanent stoma is not acceptable. In this case it is possible to reconstruct the function of the sphincter with dynamic graciloplasty. Until now such a laparoscopy has not been described, therefore the technique will be shown in the video.

Materials and methods. After thorough preparation of the bowel the patient is positioned in Lloyd-Davis-position. The laparoscopic part of the operation is done using 5 ports. A laparoscopic standard instrument is used, additionally LigaSure-Atlas und Endo-GIA are applied. The complete mesorectal excision is carried out with preservation of the hypogastric nerve.

The procedure is carried out synchronously from perineal with a separate team avoiding early perineal gas loss. The specimen is extracted peranally. After pneumoperitoneum discharge and lavage of the small pelvis, the M. gracilis from the left thigh is isolated, transfered to the perianal region and the descending colon pullthrough. After creation of a loop with the translocated muscle around the drawn through colon and electrode implantation the perineal stoma is sewed in. Afterwards laparoscopic inspection of the haemostasis, attachment of a protective stoma, subcutaneous implantation of the pulse transmitter for the gracilis and connection with the electrodes.

Results. Total anorectal reconstruction after rectal cancer has been carried out in 50 patients as a primary operation and in 14 patients as a secondary operation. The laparoscopic performance is a technical challenge for the surgeon, the patient benefits from lower trauma.

028 The technique of intersphincteric resection with axial colonic pouch for low rectal cancer

R. Schiessel[1,2], M. Hofmann[2]

[1]Department of Surgery, Danube Hospital / SMZ-Ost, Vienna, Austria; [2]Ludwig Boltzmann Research Institute for Surgical Oncology, Vienna, Austria

Background. Rectal cancer in the lower third can be treated with intersphincteric resection preserving the external sphincter, if an infiltration of the sphincter or the proximate organs can be ruled out. The video shows the procedure of the operation.

Material and methods. The operation is carried out after preparation of the bowel with x-prep and clysmol under antibiotic prophylaxis in modified Lloyd-Davis-position.

The intervention consists of:

1. abdominal total mesorectal excision,
2. peranal intersphincteric resection,
3. formation of an axial colon pouch,
4. pulling through of the colon and the coloanal anastomosis and
5. protective stoma.

It is possible to conduct the abdominal part of the operation by laparoscopy.

Results. It has been shown in 150 patients that this procedure is a good operation for low rectal cancer. The median tumor distance from the anal margin was 3 cm (1–5 cm). The protective stoma was closed after 6 weeks on an average, the complication rate was 7.7%, the lethality 0.8%.

Applicable for this procedure are tumours of the lower third of the rectum with extensions in to the anal canal and large villous adenomas of the lower third of the rectum.

Contraindications are T4 tumours, undifferentiated tumours and patients with insufficient function of the sphincter.

Conclusions. The procedure that was developed here in Vienna, is now applied in many countries such as France, Italy, Germany and Japan with great success. We showed that this technique has satisfactory long-term results in functional and oncologic respects.

029 Technique of Sacral Nerve Stimulation (SNS)

G. Novi[1], B. Holzer[1,2], C. Ausch[1,2], A. Schmalzbauer[1], R. Schiessel[1,2]

[1]Department of Surgery, Danube Hospital / SMZ-Ost, Vienna, Austria; [2]Ludwig Boltzmann Research Institute for Surgical Oncology, Vienna, Austria

Background. SNS is a very effective therapy in urinary as well as in faecal incontinence (FI). The most important indications are ideopathic FI and FI due to neurological reasons

as shown in various studies. Now the technique of SNS shall be presented in this video.

Materials and methods. First step in this minimal invasive intervention under general anaesthesia needles have to be introduced in the foramina sacralis dorsalia (S2–S4) bilaterally. Following test-stimulation with an external generator test electrodes or a permanent "tined lead" electrode is implanted. During the testing, the electrodes are fixed by the use of OP-Site-film to the skin. The external stimulation is continued during a period of 2 weeks to evaluate the influence on continence status.

Results. Since 1998 we perform acute needle testing and electrode implantation as described. After 10 to 14 days the electrode location showing the best functional result is evaluated so that the permanent electrode and the generator can be implanted. The development of the tined- lead- electrode 18 months ago made it possible to implant the permanent electrode already for the test phase. This requires an adequate anamnesis and a good motoric response during acute intraoperative testing. If the patients diary shows a significant amelioration of the continence status, the generator is implanted in the already prepared subcutanous pocket in the of the buttock under local anaesthesia.

Conclusions. The SNS is a minimal invasive technique for FI treatment. The development of the tined-lead-electrode makes a further reduction of anaesthesias possible.

Österreichische Gesellchaft für Chirurgische Forschung: Funktionelle Erkrankungen – von den Grundlagen zur angewandten Therapie

030 The PAUL-Procedure – Ein neues „From bench to bedside" Konzept zur Therapie kongenitaler Bauchwanddefekte

T. Meyer[1], K. Schwarz[2], K. Ulrichs[3], B. Höcht[1]

[1]Abteilung für Kinderchirurgie, Chirurgische Universitätsklinik, Würzburg, Deutschland; [2]Anatomisches Institut, Universität des Saarlandes, Homburg Saar, Deutschland; [3]Experimentelle Chirurgie, Chirurgische Universitätsklinik, Würzburg, Deutschland

Grundlagen. Neben dem direkten Verschluß kleiner kongenitaler Bauchwanddefekte werden zur Therapie großer Defekte nicht- und teil-resorbierbare, künstliche Materialien eingesetzt. Im Zeitalter des „Tissue Engineerings" stellt sich die Frage, in wie weit biokompatible Materialien für die Therapie der o.g. Bauchwanddefekte geeignet sind.

Material und Methodik. Im Rahmen einer medianen Laparotomie wurde Wistar WU-Ratten (75–100 g; je Gruppe n > 6 Tiere) ein 1×2 cm großer, alle Schichten umfassender Bauchmuskelstreifen entfernt und ein jeweils 1×2 cm großes PTFE (Dual-Mesh®), Polypropylen (Prolene®) oder ein biokompatibles Netz (=*PAUL-Procedure*) implantiert. Täglich wurde das Abdomen auf die Bildung einer Narbenhernie beurteilt und das Körpergewicht bestimmt. Nach einem 6 Wochen wurde das Abdomen erneut eröffnet, der Grad der Adhäsion zum Intestinum ermittelt und das eingebrachte Material sowohl zur histologischen als auch tensiometrischen Beurteilung entnommen.

Ergebnisse. (1) Alle Tiere zeigten eine physiologische Wachstums- und Gewichtskurve. (2) Ein Tier (Prolene®) entwickelte eine Narbenhernie. (3) Im Gegensatz zu den Polypropylen-Netzen zeigten sowohl das PTFE- als auch das biokompatibles Netz nur eine geringe bis keine Adhäsion zum Intestinum. (4) Währen sich in der vergleichenden tensiometrischen Beurteilung von nativem und implantierten Materialien eine sehr hohe Stabilität für die nicht-resorbierbaren künstlichen Materialien ergab, wies das implantierte biokompatible Netz (PAUL-Procedure) durch die *in vivo* stattfindenden Remodelierungsvorgänge ähnliche Charakteristika wie eine unbehandelte Bauchdecke auf.

Schlussfolgerungen: Die vorliegenden Ergebnisse zeigen, dass das PAUL-Procedure zur Therapie der kongenitalen Bauchwanddefekte komplikationslos eingesetzt werden kann. Erste Versuchsergebnisse als weitere Schritt „from banch to bedside" liegen im Großtiermodell (Göttinger Minipig, n = 10) bereits vor.

031 Perioperative Kinetik inflammatorischer Serumparameter unter antibiotika-induzierter Endotoxinämie bei präoperativer single-shot Antibiose in der kolorektalen Chirurgie

E. Schröpfer[1], T. Meyer[1], H. Reith[2], A. Thiede[1]

[1]Chirurgische Universitätsklinik, Würzburg, Deutschland; [2]Chirurgische Klinik II, Konstanz, Deutschland

Grundlagen. Ziel der vorliegenden Studie war es, Zytokinverschiebungen und Endotoxinwerte im prä-, inter- und postoperativen Verlauf in Abhängigkeit zweier unterschiedlicher Antibiotika (Ertapenem = Invanz® und Moxifloxacin = Avalox®) zu bestimmen.

Material und Methodik. In eine genehmigte prospektive Studie wurden bisher 11 Patienten (Durchschnittsalter: 70,89 Jahre) mit einem Rektumkarzinom eingeschlossen. Pro Patient wurde über einen Zeitraum von 3 Tagen insgesamt 9 Blutproben entnommen. Fünf Patienten wurde je 1 g Invanz® und sechs Patienten je 400 mg Axalox® verabreicht. Neben der Bestimmung der Leukozytenzahl sowie des c-reaktiven Proteines (CRP), wurden die Werte für Endotoxin, IL-6, IL-8, IL-10, Procalcitonin (PCT), Neopterin und TNF-α bestimmt.

Ergebnisse. Die Endotoxin-Level zeigten bei Avalox® einen initialen Anstieg, mit folgendem Abfall. Bei Invanz® war ein konstanter Anstieg zu verzeichnen. Endotoxin erreichte Maximalwerte von 3,45 EU/ml (Avalox®) und 2,47 EU/ml (Invanz®). IL-6 ergab bei allen Patienten einen Anstieg, wobei diese unter Invanz® signifikant höher waren. Gleiches zeigte sich für die Bestimmung von Neopterin und TNF-α. Lediglich beim PCT lagen die Invanz®-Werte unter denen der Patienten, die mit Avalox® behandelt worden waren. Neopterin zeigte als einziger Wert kein Anstieg, sondern ein Abfall der Werte (4h nach Antibiose). IL-8 zeigte die deutlichsten Unterschiede zwischen den o.g. Antibiotika.

Schlussfolgerungen. Im Rahmen dieser ersten Vorstudie zeigte sich, dass für Endotoxin als Früherkennungsparameter die differenzierte Auswahl des applizierten Antibiotikums eine

entscheidende Rolle spielt. Mit dem hier dokumentierten Modell, lässt sich die Kinetik der pro- und kontrainflammatorischen Serum-Parametern der ersten drei postoperativen Tage zeigen, in denen weder bildgebende Verfahren, noch das Drainagesekret immer richtungweisende Informationen über mögliche Komplikationen geben können.

032 A novel protective effect of Betaine (Trimethylglycine) on endothelial function

O. Stanger[1], W. Hitzl[1], B. Paulweber[1], C. Hufnagl[1], E. More[1], M. Stühlinger[2], P. Ueland[3]

[1]St. John's Hospital, Salzburg, Austria; [2]Medical University Clinic, Innsbruck, Austria; [3]Department Pharmacology, Bergen, Norway

Background. Homocysteine (Hcy) inhibits NO production, in part, by accumulating asymmetric dimethylarginine (ADMA) in endothelial cells. We investigated the effects of acute hyperhomocysteinemia (oral methionine loading test, oMLT) and of Hcy-lowering treatments with oral folic acid (8 weeks) and betaine (24 hours) on ADMA and NO in healthy adults.

Methods. 64 subjects (57 ± 4 years, Hcy >12 µmol/L) were randomized to receive either placebo or 0.4 mg, 1 mg and 5 mg folic acid. A three-phase, randomized, cross-over trial was then conducted to compare the effects of betaine (6 g), oMLT and oMLT after betaine pretreatment on the formation of ADMA, with a wash-out period of 4 weeks before each of the study days.

Results. All doses of oral folic acid and betaine significantly reduced plasma Hcy concentrations (–9 to 17%), whereas placebo did not affect Hcy. ADMA plasma concentrations were not affected by placebo, betaine or folate at any dose. NO bioavailibility was significantly improved in the treatment group with 5 mg of folic acid. Acute hyperhomocysteinemia induced a significant concomitant increase of ADMA that was nearly completely inhibited by pretreatment with betaine.

Conclusions. 1) High-dose folic acid (5 mg) reduces plasma homocysteine and improves NO bioavailibility. 2) Betaine decreases Hcy significantly within hours. The decline of Hcy through either folic acid or betaine intake is not accompanied with decrements of ADMA (1 to 60 days). Acute hyperhomocysteinemia is correlated with a concomitant ADMA increase that may be diminished by pretreatment with betaine. This novel effect may have protective implications for vessel function and pathology.

033 Structural and functional remodeling of decellularized xenogeneic arteries into neovessels

H. Bergmeister[1], R. Plasenzotti[1], E. Rieder[2], I. Walter[3], W. Sipos[4], U. Losert[1], G. Weigel[5]

[1]Abteilung für Biomedizinische Forschung, Vienna, Austria; [2]Kliniche Abteilung für Allgemeinchirurgie/Medizinische Universität Wien, Vienna, Austria; [3]Institut für Histologie/ Veterinärmedizinische Universität Wien, Vienna, Austria; [4]Klinik für Schweine/ Veterinärmedizinische Universität Wien, Vienna, Austria; [5]Klin. Abteilung für Herz-Thoraxchirurgie/Medizinische Universität Wien, Vienna, Austria

Acellular matrix allografts preserved by multistep detergent and enzymatic techniques, demonstrate promising results with regard to high patency rates and graft remodeling. Xenografts will be rejected chronically and subsequent crosslinking is mandatory to attenuate the immunologic degradation of the matrix. However, crosslinking fixation impairs desired matrix recellularization. In this study we investigated the biocompatibility of noncrosslinked, small diameter vascular implants, which were decellularized by a new decellularization technique, developed in our laboratory.

Femoral arteries (10 × 1.5 mm) from pigs were decellularized (Triton X-100, Na-deoxycholate, Igepal CA-630, ribonuclease treatment). Fifty percent of the implants were surface heparinized. Prostheses were implanted into the abdominal aorta of 64 rats for either 10 days, 4 weeks, 3 or 6 months. Retrieved specimens were evaluated by histology, immunohistochemical staining, scanning electron microscopy and by isometric tension studies in vitro.

Graft patencies did not differ significantly between the heparinized and non-heparinized groups (100% vs 87.5 %). Both conduits showed repopulation with endothelial cells and myofibroblasts within 10 days. An early inflammatory response in the adventitial layer disappeared within 6 months. After 6 months the morphology of the conduits was nearly identical with the aorta of the host. Aneurysm formation occurred in only 12.4 % of the implants. The remodeled vessels showed approximately 20 % contractility of the native aorta after 6 months.

These data indicate, that xenogeneic arteries preserved with this method elicit only a transient inflammatory response, which does not interfere with graft stability and comprehensive remodeling of the conduits into neovessels.

034 Sodium Cellulose Sulfate (NaCS) as a novel method for microencapsulation of pancreatic cells

P. Stiegler[1], V. Stadlbauer[2], S. Schaffellner[1], F. Hackl[1], F. Iberer[1], O. Hauser[3], C. Lackner[4], K. Tscheliessnigg[1]

[1]Department for Transplantation Surgery, Medical University Graz, Graz, Austria; [2]Department for Gastroenterology and Hepatology, Medical University Graz, Graz, Austria; [3]Austrianova, Vienna, Austria; [4]Department for Pathology, Medical University Graz, Graz, Austria

Background. Diabetes mellitus will affect more than 150 millions of people worldwide in the near future. Novel, more physiological forms of therapy, such as whole organ or cell transplantation, are emerging. The use of xenogenic islet cells is a possibility to overcome the shortage of human donor organs. Microencapsulation seems to be a promising method for immunoprotection. Sodium cellulose sulfate (NaCS) has not been tested for pancreas islet cells yet.

Methods. An insulin-producing cell line (HIT-T15) is encapsulated in NaCS in cooperation with Austrianova, Vienna. Cell vitality and cell growth are monitored with a Cell Growth Determination Kit that is MTT based. Insulin secretion upon glucose stimulation with basal medium containing different amounts of glucose is monitored using a Mercodia High Range Rat Insulin ELISA. Tissue cuts are performed and apoptosis is detected using different staining methods and DNA labeling.

Results. Encapsulated and non-encapsulated cells show comparable cell growth rates, dependent on the glucose con-

centration in the medium. Cell death occurs within the islet-like cell clusters in both groups. Both, encapsulated and non-encapsulated cells react upon stimulation with different glucose concentrations equally. However, the reaction time of encapsulated cells shows a lag of 10 minutes for the peak insulin secretion.

Conclusions. In conclusion our results show that encapsulation of pancreatic islet cells in NaCS does not alter neither cell growth and vitality, nor glucose responsiveness and insulin secretion. This is to our knowledge a novel finding that makes NaCS a promising tool for microencapsulation of islet cells.

035 Creating a prevascularised site for islet transplantation using a V.A.C.®-GranuFoam™ and HBO in rats

P. Stiegler[1], V. Matzi[2], S. Schaffellner[1], V. Stadlbauer[3], H. Klemen[2], C. Lackner[4], F. Smolle-Jüttner[2], E. Pierer[1], F. Iberer[1], K. Tscheliessnigg[1]

[1]Department for Transplantation Surgery, Medical University Graz, Graz, Austria; [2]Department for Thoracic Surgery and Hyperbaric Medicine, Medical University Graz, Graz, Austria; [3]Department for Gastroenterology and Hepatology, Medical University Graz, Graz, Austria; [4]Department for Pathology, Medical University Graz, Graz, Austria

Background. Islet cells are highly vascularised in the pancreas and this physiological vessel structure is damaged during the isolation process. Isolated islet cells are dependent on diffusion of oxygen and insulin independency can not be achieved because of graft dysfunction due to hypoxia. The aim of this study was to show, that it is feasible to create a prevascularized site in rats using a V.A.C.® GranuFoam™ and HBO to induce angiogenesis.

Methods. The V.A.C.®-GranuFoam™ is implanted in the abdominal subcutaneous tissueof 40 rats. HBO is administered at different time-points for at least one week after implantation to a maximum of 2 weeks prior and 2 weeks after implantation. After the experiments, the blood flow in the V.A.C.®-GranuFoam™ is measured using Doppler ultrasound and the V.A.C.®-GranuFoam™ is explanted and processed for histology and immunohistochemistry to assess angiogenesis.

Results. It is feasible to create a prevascularised site in the subcutaneous fatty tissue of rats using a V.A.C.®-GranuFoam™ and HBO. Angiogenesis is not induced without HBO within one months after implantation of the V.A.C.®-GranuFoam™ but within 2 weeks after implantation of the system and HBO therapy. Vessels are not only distributed in the outer parts of the V.A.C.®-GranuFoam™, the whole sponge-like V.A.C.®-GranuFoam™ is pervaded by new vessels.

Conclusions. As ischemically damaged islet cells are likely to undergo cell death or loose functionality due to hypoxia, the use of the V.A.C.®-GranuFoam™ and HBO might be a promising method to create a prevascularised site to achieve better results in islet transplantation.

036 Acute rejection following small bowel transplantation: Mechanistic insights using cDNA microarray technology

S. Scheidl[1], G. Brandacher[1], H. Weiss[1], A. Amberger[1], F. Offner[2], R. Margreiter[1], A. Klaus[1]

[1]Department of General, Thoracic and Transplant Surgery, Innsbruck, Austria, [2]Department of Pathology, Academic Teaching Hospital, Feldkirch, Austria

Background. Despite dramatic improvements in immunosuppression in recent years, small bowel transplantation still suffers from high rates of graft rejection. In order to examine components of acute small bowel allograft rejection we performed a large scale gene expression profiling employing oligonucleotide microarray technology.

Methods. Full length heterotopic small bowel transplantation was performed in rats. Brown Norway rats served as donors, Lewis rats as recipients. Control groups consisted of isogeneic transplants and untreated animals. Graft samples were obtained on POD 7. Grafts were inspected and macroscopically rejecting areas of both ileum and jejunum exzised. Formalin fixed samples were stained and histologically evaluated for rejection. RNA was isolated from liquid nitrogen frozen small bowel tissue using standard protocols. Labeled RNA was hybridized to Affymetrix® Rat Genome 230 2.0 Arrays which contain 31000 probe sets. Gene expression data obtained was normalized and analysed using open access bioinformatics software and online databases. 2-fold expression change was used as cut-off.

Results. Comparison of gene expression between allogeneic and isogeneic group yielded 1035 genes with at least 2-fold expression change (Allogeneic vs. Controls: 1533 genes, Isogeneic vs. Controls: 497 genes). Among the genes that show strongest upregulation during allograft rejection Cxcl9, Ccl7, arginase 1, lipocalin 2, IDO, Heme oxygenase and iNOS can be found.

Conclusions. We performed for the very first time a broad screening for factors involved in small bowel allograft rejection. Expression data implicate involvement of yet incompletely defined mechanisms in small bowel allograft rejection while confirming participation of well characterized factors.

037 The acellular matrix as a scaffold for tissue reconstruction: Cell-mediated immune response toward decellularized porcine as well as human vascular material

E. Rieder, A. Nigisch, M. Kasimir, H. Bergmeister, F. Mühlbacher, E. Wolner, P. Simon, G. Weigel

Univ. Klinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria

Background. Bioscaffolds derived from extracellular matrix have been used in numerous tissue engineering applications. As it has already been shown that a decellularized vascular matrix elicits a reduced humoral immune response in vivo, this study focuses on the human cell-mediated immune reaction toward xenogeneic as well as allogeneic acellular tissue in vitro.

Methods. Whole human and porcine pulmonary roots were either sterilized with antibiotics or sequentially decellu-

larized. Human peripheral blood mononuclear cells (PBMC) were co-cultured (5d) with either tissue specimens (n = 20) or extracted tissue proteins (0.25 µg/µl, n = 10) of native or acellular allogeneic as well as xenogeneic pulmonary arteries and proliferative response was measured in a tritiated thymidine incorporation assay. Results are expressed as stimulation indices (SI) compared to non-stimulated proliferation control.

Results. Neither tissue specimens nor protein extracts of human vascular material induced mononuclear cell stimulation (SI < 2). Native porcine specimens (34.0 ± 5.8, SI ± SEM) as well as protein extracts (19.2 ± 5.7) stimulated PBMC proliferation. Decellularization of porcine material significantly reduced immune-cell proliferation when whole tissue specimens (3.0 ± 1.4, $p < 0.001$) were examined, whereas extracted proteins of acellular porcine scaffolds still induced PBMC proliferation (11.2 ± 4.4).

Conclusions. Using this well established in vitro immunoassay, we could show for the first time, that acellular xenogeneic vascular tissue seems not superior to conventional homografts, as potential extractable immunogenic residues within the decellularized matrix still stimulated PBMC proliferation. These results indicate that – with respect to the immune response – the porcine acellular vascular matrix as scaffolds for tissue engineering has to be thoroughly evaluated prior further clinical trials.

038 Inhibition of p38-MAPK activation suppresses chronic allograft vasculopathy

R. Öllinger[1], M. Thomas[1], M. Bilban[2], P. Kogler[1], M. Maglione[1], M. Hermann[1], A. Erat[2], K. Yamashita[2], A. Usheva[2], M. P. Soares[2], F. H. Bach[2], J. Troppmair[1], R. Margreiter[1]

[1]D. Swarovski Research Lab/Medical University Innsbruck, Innsbruck, Austria; [2]Beth Israel Deaconess Medical Centre/Harvard Medical School, Boston, United States

Background. The p38-MAPK pathway is crucial in pathological events like inflammation, oxidative stress and abnormal proliferation. To date there are no findings that address the role of p38-MAPK in chronic allograft vasculopathy, which involves accumulation of vascular smooth muscle cells (VSMCs) in the neointima. The purpose of this study was to understand the role of p38-MAPK in allograft vasculopathy.

Methods. Mouse and human VSMCs were stimulated with 10% FCS in presence or absence of the p38-MAPK inhibitor SB239063. Expression levels of total and phosphorylated p38-MAPK and key cell cycle regulators were detected by western blot. Proliferation was measured by [^{3}H]-thymidine incorporation. Cell cycle progression was analyzed by flow cytometry. *In vivo*, C57BL/6 aortas were grafted into Balb/c mice treated with SB239063 or vector as a control. Grafts were analyzed four weeks after transplantation for p38-MAPK activation (immunoflourescence, western blot) and neointima formation.

Results. Rapid activation of p38-MAPK was observed after FCS stimulation. SB239063 significantly suppressed VSMC proliferation by inhibition of cell cycle progression at the G0/G1 phase through decreased protein levels of cdk2 and transcription factor YY1, known as a promotor of DNA and protein synthesis. *In vivo*, neointimal lesions mainly consisting of VSMCs showed profound activation of p38-MAPK. SB 239063 treatment significantly suppressed neointima formation as quantified by neointima/media ratio.

Conclusions. Inhibition of p38 activation is effective in suppressing VSMC proliferation *in vitro* and *in vivo*. Thus targeting p38-MAPK might become a potent strategy in the treatment of vascular proliferative diseases like chronic allograft vasculopathy.

039 Laparoscopic azygo-portal disconnection procedure with a bipolar feedback controlled sealing system in a porcine model

A. Shamiyeh[1], J. Danis[1], J. Zehetner[1], R. Hubmann[2], W. Wayand[1]

[1]Ludwig Boltzmann Institute for Operative Laparoscopy, Linz, Austria; [2]2. Interne Abteilung, AKH, Linz, Austria

Background. To prove the feasibility of a new minimally invasive procedure for the devascularisation of the proximal stomach and distal esophagus to prevent recurrent variceal bleeding in portal hypertension in a new animal model.

Material and methods. 20 pigs were operated on. Portal hypertension was created by laparoscopic clip ligation of the portal vein on 20 pigs. After two weeks the azygo-portal disconnection procedure was performed with the LigaSure®-ATLAS instrument.

Results. 16 pigs out of 20 survived both operations. 2 died during introduction of anaesthesia, one due to a cardiac arrest (second operation). One pig died due to necrosis of the gastric and oesophageal wall. Autopsy (2 weeks later) showed that there was a complete arterial devascularisation. At autopsy none of the remaining 16 pigs had esophageal varices or necrosis of the stomach or oesophagus.

Conclusions. Laparoscopic azygoportal disconnection is a less invasive method for the prevention of rebleeding. Therefore the LigaSure® instrument seems to be safe.

Freie Vorträge: Leber

040 Recurrence after liver resection for hepatocellular carcinoma in cirrhotic and noncirrhotic patients

M. Lanthaler[1], M. Biebl[2], A. Weissenbacher[2], R. Margreiter[2], H. Nehoda[2]

[1]Department of General & Transplant Surgery, University Hospital Innsbruck, Innsbruck, Austria; [2]Department of General and Transplant Surgery, University Hospital Innsbruck, Innsbruck, Austria

Background. Hepatocellular carcinoma (HCC) is rarely seen in non-cirrhotic livers in the western world and HCC in cirrhotic livers are known to have a high recurrence rate.

Patients and methods. Between October 2003 and August 2005 a total of 16 patients (3 female, mean age 68.7 ± 6.6 years) were operated for HCC. 6 right hepatectomies (3 extended), 3 left hepatectomies (1 extended), 2 segmental resections and 5 non-anatomical resections were performed. Patients with (group A, n = 10) or without cirrhosis (group B,

n = 6) were compared with parametric and non-parametric tests as indicated, significance assumed if $p < 0.05$.

Results. Mean operating time was 245 ± 79 minutes in group A and 267.5 ± 57 in group B. Tumour diameter was 7.44 (1.5–22) cm in group A and 11.25 (4.5–16) cm in group B. All but one patient of group B had histologically tumour-free margins. Two patients had to be reoperated for bleeding or bileleak. After a mean follow-up of 22.5 months one patient in each group had died. Recurrence was seen in 3 patients of group A and 3 patients of group B after 16.1 ± 2 months. One of them underwent re-operation.

Conclusions. Liver resection for HCC even in cirrhotic livers is feasible with a low complication but high tumour recurrence rate. Tumour recurrence in non-cirrhotic livers seems to correlate with tumour size.

041 Hepatozelluläres Karzinom: Wertigkeit der Therapieverfahren Chemoembolisation versus Operation

T. P. Kratt, L. Joel, R. Viebahn, A. Kosieck

Chirurgische Universitätsklinik, Tübingen, Deutschland

Grundlagen. Bei Patienten mit hepatozellulärem Karzinom (HCC) ist die Therapieform, vor allem bei fortgeschrittenen Befunden, gelegentlich schwierig festzulegen. Kann eine weniger invasive Methode (Chemoembolisation) bessere Resultate bezüglich Komplikations- und Überlebensrate erzielen? Welchen Stellenwert hat die Leber-Transplantation?

Material und Methodik. Retrospektive Untersuchung: 309 Patienten mit einem HCC an einer Chirurgischen Universitätsklinik im Verlauf von 11 Jahren. Davon waren 216 Fälle unter Studienbedingungen auswertbar.

Ergebnisse. Geschlechtsverteilung bei 216 Patienten: Verhältnis Männer : Frauen 5,5 : 1. Das mittlere Alter bei Erst-Diagnosestellung lag bei 60 Jahren (Range 11-83 Jahre). Die mittlere Nachbeobachtungszeit nach Erstdiagnosestellung lag bei 8 Jahren (Range 24–204 Monate).

Präinterventionelle Patientenverteilung und Vergleich der stadienabhängigen Therapiemethoden der Pat. im Stadium II (43 Pat.– 20%) bzw. Stadium III (64 Pat.– 30%) bzw. Stadium IVa / keine Fernmetastasen (81 Pat.– 37%) sowie Stadium IVb (28 Pat.– 13%) mit Erfassung der Komplikations-, Morbiditäts- und Mortalitätsraten sowie des Langzeitverlaufs nach Chemoembolisation bzw. nach Leberteilresektion vs. Lebertransplantation einschl. Berücksichtigung des Spontanverlaufs bei Patienten ohne Therapiewunsch.

Schlussfolgerungen. Bei potentiell operablem, nicht metastasierten HCC Stadium I bis III ist im Vergleich zur Chemoembolisation die operative Therapie mit kurativer Zielsetzung das Verfahren der Wahl. Domäne der Lebertransplantation ist das Stadium II; vereinzelt kann aber auch bei lokal fortgeschrittenem Tumor mit Lymphknotenmetastasierung noch eine Heilung erreicht werden. Im Stadium III erzielen Leberteilresektionen einschl. Ausräumung der lokoregionären Lymphknoten-Kompartimente zufriedenstellende Ergebnisse (Heilung in 50%).

042 Liver metastasis treated by optimized high-tech radiofrequency ablation

H. G. Weiss[1], A. Klaus[1], W. Mark[1], G. Brandacher[1], P. Kovacs[2], M. Haidu[2], R. Margreiter[1], R. Bale[2]

[1]Department of General, Thoracic and Transplant Surgery, Innsbruck, Austria; [2]Department of Radiology, Medical University Innsbruck, Innsbruck, Austria

Background. In patients with extended liver metastasis, multiple comorbid conditions or tumor infiltration in central vascular pedicles surgical therapy may not be suitable. Alternatively, radiofrequency (RF) ablation is considered in those patients. RF ablation in the liver is hampered by various parameters such as anatomical adjacencies of surrounding organs including heart, lungs, esophagus, stomach and bowel. This study describes a novel technique for optimized ablation by use of laparoscopic liver packing.

Material and methods. Three patients who were not suitable for surgical liver resection were included in this ongoing pilot study. In general anestesia laparoscopic liver mobilisation was performed. The liver was packed using swabs soaked with 5% glucose solution. Thereby all metastasis in the liver were isolated from the adjacent organs. The patients were subsequently treated by RF ablation which was carried out by means of navigated CT-guidance. Then all swabs were removed laparoscopically.

Results. Laparoscopy could be carried out in all patients without morbidity and mortality. All visible tumors (n>5, range of particular tumor size: 2.6–4 cm) of the liver could be reached by navigated CT-guided radiofrequency ablation (11–15 RF-probes/patient). Liver packing effectively prevented organ injury in all patients. Patients were discharged from hospital on postoperative day 4. A follow-up CT-scan after three months described sufficient focal tumor necrosis in all patients.

Conclusions. For the first time a multimodular treatment including laparoscopic liver packing and High-tech RF ablation is described for patients with liver metastasis unsuitable for surgical resection.

043 Computer-assisted placement of multiple probes for ablation of malignant liver tumors

R. Bale[1], M. Haidu[1], P. Kovacs[1], W. Jaschke[1], H. Weiss[2]

[1]Department of Radiology, Innsbruck, Austria; [2]Department of General, Thoracic and Transplant Surgery, Medical University Innsbruck, Innsbruck, Austria

Background. The success of radiofrequency ablation (RFA) depends on the distribution of the probe(s) in the tumor. Our purpose was to develop and evaluate a novel method for computer-assisted liver tumor puncture for RFA.

Material and methods. A total of 35 patients underwent RF-ablation in 43 sessions (29 metastases, 53 HCCs; 207 needles). A 2.5 mm contrast-enhanced helical CT scan was obtained in maximal expiration. Depending on the size of the tumor (0.5–11 cm, mean size: 2.8 cm) pathways for the placement of 1–11 radiofrequency needles were planned on the Treon navigation system. 21 sessions were performed with the multipolar Celon RF device, 22 sessions with the unipolar Cooltip device, respectively. After sterile draping the Atlas

aiming device was adjusted using the navigation system. In maximal expiration the probes were advanced through the targeting device to the predefined depth. After determination of the accuracy of needle placement with a fusion of the intraoperative CT with the planning CT the radiofrequency ablation was performed.

Results. Image-fusion revealed a needle displacement within 1–9 mms (mean 4.3 mm). The mean duration from the planning CT to the verification CT was 40 minutes. Follow-up contrast enhanced control-CTs (mean follow-up time: 5.5 months) revealed recurrences in 3/53 HCCs (5.7%) and 3/29 (10.3%). 3 HCCs and 1 metastasis could be successfully retreated.

Conclusions. The novel method allows for precise positioning of radiofrequency probes in liver lesions. Navigation allows for a precise planning and execution of the ablation procedure.

044 The Radio Frequency Ablation (RFA) of colorectal liver metastases in the hand of the surgeon – indications and techniques

L. Mirow, P. Hildebrand, M. Kleemann, U. Roblick, C. G. Bürk, H. P. Bruch

Universitätsklinikum Schleswig-Holstein, Campus Lübeck, Lübeck, Germany

Background. Up to 50% of all patients with colorectal carcinomas develop liver metastasis in the course of her illness. In 70–80 percent of the cases a resection not is possibly, because of vague organ infestation, central tumour localization, locally to advanced primary tumour or presurgical liver dysfunction. To improve the dissatisfactory courses without therapy and under palliative chemotherapy it is necessary to use alternative therapy drafts. As an ideal procedure the RFA has proved itself in this connection.

Material and methods. In the period from the 2/2000 to the 12/2004 in our department 72 patients where treated conventionally surgically as well as 8 patients on laparoscopic way of a RFA. In 54 cases we carried out a simultaneous liver resection.

Results. Under use of the advantages of the surgical action (diagnostic aspect, intraoperative ultrasound, excellent accessibility also with critical position, injury risk of neighbouring organs minimized, vascular occlusion) complications appeared only in 5 cases. With four patients it concerned conservatively controllable accompanying reactions. In one case the patient had to become reoperated because of a bleeding after liver resection. A mortality related with the operation was not to be registered.

Conclusions. The RFA of colorectal liver metastases also shows in the hand of the surgeon a sensible and potent extension of the therapeutic spectrum in the therapy of this suffering. She is poor in complication and technically simply practicable. Compared with interventional application the newest results point even clearly to advantages concerning oncological criteria in favour of the surgical RFA.

045 Laparoscopic assisted ultrasound-guided radio-frequency ablation of colorectal liver metastases in 21 patients

N. P. Zuegel[1], M. Kox[1], G. Van den Bossche[2]

[1]Centre Chirurgical, Viscerale et Generale, Centre Hospitalier Emile Mayrisch, Esch-Sur-Alzette, Luxembourg; [2]Centre Oncology, Centre Hospitalier Emile Mayrisch, Esch-Sur-Alzette, Luxembourg

Background. The objective is to report our initial results and experience of 21 patients with colorectal liver metastases treated with radio-frequency ablation (RFA). Most patients were unsuitable for resection. Treatments were performed under general anaesthesia using laparoscopic assisted ultrasound-guided single or cluster water-cooled electrodes (Cool Tip, Radionics System, *Tyco* Healthcare International). Subjects with > 5 lesions or lesions of maximum size > 80 mm were excluded.

Results. 2003–2005. Twenty-one patients (14 males), mean age 71.4 years (range 54–81). A total of 32 laparoscopic assisted ultrasound-guided RFA were performed (mean 1.5, range 1–3 RFA/patient). The median ablation time per patient was 41.1 min (15–70). There was one associated minor complication (biliom). Median hospital stay per treatment was 1.5 days (1–6). Primary follow-up with serial computed tomography scans ranged from 2 to 12 months (median 4 months) after the initial RFA. The mean number of metastases was 2.5 (1–5), mean maximum diameter was 39 mm (10–75). 17 (80%) had stable/treated extra-hepatic disease. Over eighty percent received chemotherapy. Complete necrosis was obtained in 11 of 21 patients (52%) and in 23 of 52 lesions (44%). During a mean follow-up of 11 months (2–24), 15 (71%) patients were still alive.

Conclusions. Historical survival with chemotherapy alone is 11 to 14 months, suggesting RFA has a positive impact on overall survival. Laparoscopic assisted ultrasound-guided RFA is a useful adjunct to chemotherapy in those patients with liver-predominant disease and is a well tolerated procedure for the treatment of nonresectable colorectal liver metastases.

046 Impact of lymphangiogenesis in colorectal livermetastases

S. F. Schoppmann[1], A. Fenzl[1], D. Tamandl[1], M. Bodingbauer[1], M. Schindl[1], B. Herrberger[1], E. Schwanzer[1], P. Harald[1], B. Grünberger[2], B. Teleky[1], T. Grünberger[1], F. Längle[1]

[1]Universitätsklinik für Chirurgie, Medizinische Universität, Wien, Vienna, Austria; [2]Universitätsklinik für Onkologie, Medizinische Universität, Wien, Vienna, Austria

Background. Colorectal cancer is a common cause of death throughout the world, and the liver is the most common metastatic-locus in this disease. As in many types of cancer, the lymphatic system is one of the main pathways for generalisation in colorectal cancer.

Aim of this study was to investigate the prognostic role of lymphangiogenesis (LMVD), lymphovascular invasion (LVI) and the lymphangiogenic growth factor VEGF-C in a

cohort of primary colorectal carcinomas and their corresponding liver metastases.

Materials and methods. Forty-seven patients with colorectal cancer (CRC) and liver metastases (CRCLM) were included into this study. VEGF-C proteinexpression, LMVD, LVI and lymphatic vessel size (LVS) were evaluated by immunhistochemistry.

Results. A significant association was calculated between LMVD and LVI in CRCs ($p = 0.001$) as well as in CRCLMs ($p = 0.0001$). LMVD-CRC correlated significantly with LMVD-CRCLM ($p = 0.007$) and LVI-CRCLM ($p = 0.036$).

A significant association was found between CRC-LVI and the lymph-node status at primary surgery ($p = 0.04$).

In a mean observation time of 36 months univariate survival analysis showed a significant difference in disease-free survival (DFS), and a clear trend in overall survival (OS) between patients with and without LVI in CRC ($p = 0.0148$ and $p = 0.14$, respectively).

VEGF-C-expression in tumor-cells of CRC had a significant influence on the OS in univariate survival analysis ($p = 0.0391$). A statistically significant difference in DFS and OS between patients with and without VEGF-C-expression in CRCLM was observed. ($p = 0.0019$ and $p = 0.0101$, respectively).

Conclusions. These data provide evidence for an important role of lymphangiogenesis and lymphovascular invasion in the prognosis of patients with CRCLMs.

047 Genetic fingerprinting in metachronous colon cancer

B. Jech[1], S. Kappel[1], C. Langner[2], B. Wolf[1], B. Teleky[1], E. Roth[1], R. Jakesz[1], D. Kandioler[1]

[1]Universitätsklinik für Chirurgie, Vienna, Austria; [2]Institut für Pathologie, Karl Franzens Universität, Graz, Austria

Background. The prevalence of second primary (metachronous) colon cancer is 2–5%. Aim of the study was to investigate whether the tumors develop independently in the individual patients.

Material and methods. In 19 patients with metachronous colon cancer, 38 tumors were analyzed.

Genes which appear frequently mutated and involved in colon cancer carcinogenesis, like the p53 tumor suppressor gene and the k-ras proto-oncogene were sequenced in order to characterize the genetic background.

Results. P53 mutations could be detected in 14 of 38 (36%) metachronous colorectal carcinomas. Most of the patients (53%) had p53 mutations in one of their colon cancers only and more frequently in the first lesion (10 vs 4; p = n.s.)

Two patients (2/19; 11%) showed identical p53 mutations in the metachronous lesions. In both cases codon 248 of the p53 gene was involved. Additionally these patients had identical K-ras mutations.

Overall, k-ras mutations were present in 21 of 38 (55%) metachronous cancers. K-ras mutations were more frequent in the second lesion (7 vs. 14).

The median interval between the first and second lesion was 29 months (range 4–107 months).

Conclusions. The majority of metachronous colon cancers in this cohort developed independently as demonstrated in their genetic diversity.

However, in two patients we could demonstrate that the individual metachronous colon cancers were identical from the genetic point of view. The coincidence of a distinct p53 mutation together with the presence of k-ras-mutation and the development of metachronous colon cancer might represent a distinct genetic susceptability or carcinogen involvement.

Freie Vorträge: Mammakarzinom: Sentinel-Lymphknoten

048 Follow-up data after sentinel node biopsy alone for breast cancer

K. Ammann, R. Köberle-Währer, M. Knauer, E. Wenzl, A. Haid

Abteilung für Allgemein- u. Thoraxchirurgie, Landeskrankenhaus Feldkirch, Feldkirch, Austria

Background. In patients with early breast cancer sentinel node biopsy (SNB) proved to be an accurate procedure for axillary staging with significantly reduced morbidity. Medium- and long-term observational studies are needed to establish, whether SNB alone is able to prevent locoregional recurrence without impairing long-term survival.

Methods. 298 patients with invasive breast cancer were subjected to SNB in a prospective trial. Lymphatic mapping was performed with blue dye and radiocolloids. 180 patients had SNB alone (group 1), while 118 subsequently underwent axillary dissection (AD; group 2). In 10 patients AD was omitted despite the tumor burden in the SN. Clinical follow-up studies were performed at regular intervals. The mean follow-up time was 47 (7–90) months in group 1 and 46 (1–87) in group 2.

Results. Sentinel nodes were identified in 286 out of 298 patients (96%). One patient in group 1 developed axillary and simultaneous supraclavicular lymph node recurrence. After AD regional relapses have so far not been observed. One ipsilateral local recurrence was detected in each group. Five patients in group 1 and 15 in group 2 developed distant metastases. Three out of six and eight out of nine patients, respectively, died of their advanced disease. All patients with SN tumor infiltration not subjected to AD are alive and well.

Conclusions. Axillary recurrence is rare after sentinel node biopsy alone. Its rate is comparable to that after AD, even in patients with SN micrometastases. These conclusions are confirmed by reports in the literature.

049 Rezidive und Überleben nach Sentinel Node Biopsie mit obligater Axilladissektion versus Sentinel Node Biopsie mit anschließender Axilladissektion ausschließlich bei positivem Sentinel Node – eine retrospektive Analyse von 3159 Fällen der Austrian Sentinel Node Study Group

P. Konstantiniuk[1], C. Tausch[2], S. Roka[3], R. Koeberle-Wuehrer[4], S. Poestlberger[5], D. Hecke[5], M. Jagoutz-Herzlinger[6], S. Woelfl[7], R. Reitsamer[8], P. Schrenk[2]

[1]Universitätsklinik für Chirurgie, Graz, Österreich; [2]2. Chirurgie, AKH, Linz, Österreich; [3]Universitätsklinik für Chirurgie, Wien, Österreich; [4]Chirurgie, LKH, Feldkirch, Österreich; [5]Barmherzige Schwestern, Linz, Österreich; [6]Gynäkologie, Krankenhaus Lainz, Wien, Österreich; [7]Pathologie, AKH, Linz, Österreich; [8]Spezielle Gynäkologie, Salzburg, Österreich

Grundlagen. Obwohl die Sentinel Node Biopsie sich beim Mammakarzinom weltweit als Standardtechnik etabliert, existieren noch keine Überlebensdaten aus prospektiv randomisierten Studien und auch keine aus Vergleichsstudien mit gutem Design. Ziel dieser Arbeit ist es, Rezidive und Überleben zu evaluieren.

Methodik. 3159 Patientinnen mit unilateralem, unizentrischem und nicht metastasiertem Brustkrebs wurden hinsichtlich Lokalrezidiv, axillärem Rezidiv, Fernmetastasen und Überleben nachuntersucht. Es erfolgte eine Gruppeneinteilung, Gruppe I jene Fälle der Trainingsphase (n = 658), in denen Axilladissektion obligat war, Gruppe II jene Fälle der Anwenderphase (n = 2501), in denen eine Axilladissektion nur bei positivem Sentinel durchgeführt wurde.

Ergebnisse. Die Axillarezidivrate war in Gruppe I 1%, in Gruppe 2 0,3%. Es gab keine signifikanten Unterschiede zwischen beiden Gruppen hinsichtlich Lokalrezidivrate, axillärer Rezidivrate, Fernmetastasen und Überleben.

Schlussfolgerungen. Die vorliegenden Ergebnisse bestätigen, dass die Sentinel Node Biopsie vom onkologischen Standpunkt aus nicht schlechter ist, als die klassische Axilladissektion.

050 Das multizentrische Mammakarzinom als neue Indikation zur Sentinel Node Biopsy

M. Knauer[1], P. Konstantiniuk[2], A. Haid[1], M. Riegler-Keil[3], M. Janauer[4], R. Reitsamer[5], E. Wenzl[1], P. Schrenk[6]

[1]Abteilung für Allgemein- und Thoraxchirurgie, Feldkirch, Österreich; [2]Medizinische Universität, Graz, Österreich; [3]Abteilung für Gynäkologie, Wilhelminenspital, Wien, Österreich; [4]Abteilung für Gynäkologie, Krankenhaus Lainz, Wien, Österreich; [5]Abteilung für Gynäkologie, Medizinische Privatuniversität, Salzburg, Österreich; [6]2. Chirurgie, AKH, Linz, Österreich

Grundlagen. Das multizentrische Mammakarzinom galt bislang als Kontraindikation für eine Sentinel Node Biopsy (SNB). In einer prospektiven, multizentrischen Studie der Österreichischen Arbeitsgruppe Sentinel Node Biopsie (ASNSG) wurde die Durchführbarkeit und Sicherheit der SNB bei 142 Patientinnen mit invasivem multizentrischen Karzinom mit jener bei 3216 Patientinnen mit unizentrischem Mammakarzinom verglichen.

Methodik. Zwischen 1996 und 2004 wurde bei 3730 Patienten an 15 Zentren der ASNSG eine SNB durchgeführt und die Daten in eine Multicenter-Datenbank eingegeben. 142 Patienten wiesen ein multizentrisches Mammakarzinom auf.

Ergebnisse. Intraoperativ wurden durchschnittlich 1,67 SNs entfernt (Identifikationsrate 130/142, 91,5%). Bei 60,8% (79/130) zeigte sich eine Metastasierung im Sentinel Node, von diesen wiederum in 60,8% (48/79) ein Befall weiterer axillärer Lymphknoten. Eine Axilladissektion wurde bei 126 Patienten durchgeführt, wobei sich eine falsch-negativ-Rate von 4,0% (3/75) zeigte.

Sensitivität, negative predictive value und overall accuracy waren 96,0%, 93,3% bzw. 97,3%. Bei 91% der Patientinnen wurde eine modifiziert radikale Mastektomie durchgeführt, bei 9 % eine BET. Bislang zeigte sich nach einer mittleren Nachbeobachtungszeit von 28,8 Monaten kein axilläres Rezidiv. Verglichen mit den 3216 Patienten mit unizentrischem Karzinom zeigte sich eine signifikant erhöhte Rate an SN- und Non-SN-Metastasen bei vergleichbaren Detektions- und FN-Raten.

Schlussfolgerungen. Bei Einhaltung geforderter Qualitätsrichtlinien und guter Zusammenarbeit von Chirurgischer, Pathologischer und Nuklearmedizinischer Abteilung sehen wir das multizentrische Mammakarzinom als neue und sichere Indikation zur SNB.

051 Hypoxia inducible factor-1alpha correlates with VEGF-C expression and lymphangiogenesis in breast cancer

S. F. Schoppmann[1], A. Fenzl[1], M. Schindl[2], T. Bachleitner-Hofmann[1], K. Nagy[2], M. Gnant[1], R. Horvat[2], R. Jakesz[1], P. Birner[2]

[1]Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria; [2]Klinisches Institut für Pathologie, Medizinische Universität Wien, Vienna, Austria

Background. The transcription factor hypoxia inducible factor-1alpha (HIF-1alpha) plays a crucial role in tumor progression by regulating angiogenesis, cell survival and drug resistance. HIF-1alpha is also implicated in biological functions under normoxic conditions and recent data provide evidence for a possible role in tumor lymphangiogenesis by regulating the lymphatic vascular endothelial growth factor-C (VEGF-C).

In breast cancer, lymphatic vessel invasion by tumor cells and subsequent metastasis to axillary lymph nodes is a critical point in progression of the disease with severe therapeutical and prognostic implications. Aim of this study is to investigate the role of HIF-1alpha in VEGF-C expression, lymphangiogenesis, and lymphatic vessel invasion (LVI) in lymph node positive breast cancer.

Materials and methods. Lymphatic microvessel density (LMVD), LVI, HIF-1alpha and VEGF-C protein-expression were evaluated by immunohistochemistry in 119 cases of lymph node positive invasive breast cancer.

Results. There was a significant correlation between HIF-1alpha and VEGF-C ($p = 0.026$, $r = 0.204$, Spearman's coefficient of correlation). Further a significant association between

HIF-1alpha-expression and the amount of peritumoral lymphangiogenesis LMVD was seen ($p = 0.014$, Mann-Whitney test). LMVD correlated significantly with LVI ($p < 0.001$, Mann-Whitney test). HIF-1alpha was an independent prognostic factor for overall and disease free survival in uni- and multivariate analysis ($p = 0.027$, $p = 0.029$, $p = 0.025$, respectively, Cox regression).

Conclusions. Our data provide evidence for a possible role of HIF-1alpha as regulator of tumor-associated lymphangiogenesis in human breast cancer and emphasizes the promising status of HIF-1alpha as a therapeutical target against tumor progression and metastasis.

Freie Vorträge: Schrittmachertechnologie, Herzchirurgie

052 Epidural pacemaker for spinal-cord-stimulation – real option for patient with "non-reconstructable" chronic critical limb ischemia

M. Tomka[1], T. Ott[1], P. Konstantiniuk[1], A. Baumann[1], W. Amann[2], T. Cohnert[1]

[1]Department of Vascular Surgery, University Hospital Graz, Graz, Austria; [2]Department of Vascular Surgery, LKH Villach, Villach, Austria

Background. In an effort to increase limb survival and reduce amputation rate our patients with chronic critical limb ischemia were treated by implanting a pacemaker for spinal cord stimulation. The primary aim was sufficient pain management, secondary aim prevention of amputation by best medical treatment. Before SCS treatment all conservative methods of revascularisation and improvement were performed.

Material and methods. Between December 1998 and December 2005, 31 patients were evaluated in a retrospective study suffering from end-stage peripheral vascular disease, either Fontaine Class 3 or 4 limb ischemia. All patients by the mean age of 70.5 years were observed with a mean follow-up of 21.6 months.

Results. Major amputation could be prevented in 24 (77.4 %) of 31 patients. For 7 patients (22.6 %) the major amputation was indispensable. A sufficient pain reduction could be achieved in all SCS-treated patients.

Conclusions. Adhering strictly to the indication criteria for SCS-implantation this method proved to be a good option to decrease ischemic pain and to gain limb salvage in over three quarter of patients. All interventions on these high risk patients were performed in local anaesthesia and no severe complication was observed. SCS represents an effective and safe therapy for patients with chronic non-reconstructable critical limb ischemia.

053 N. phrenicus-Stimulation bei transvenöser linksventrikulärer SM-Elektrodenimplantation

T. Schwierz[1], S. Winter[2], J. Nesser[2], R. Függer[1]

[1]Chirurgische Abteilung, a. ö. KH der Elisabethinen, Linz, Österreich; [2]II. Interne Abteilung, a. ö. KH der Elisabethinen, Linz, Österreich

Grundlagen. Bei der anatomischen Variabilität können eine Reihe von Schwierigkeiten die ideale Positionierung einer LV-Elektrode erschweren. Eines dieser Probleme ist die N. phrenicus-Stimulation.

Material und Methodik. Retrospektive Analyse (Inzidenz von Phrenicusstimulation, Korrekturen, Spätergebnisse) von 266 LV-Elektrodenpositionen (4/99–7/05).

Ergebnisse. 14% der LV-Positionen zeigten intraoperativ Phrenicusstimulation (10V-Test). Statistisch war Phrenicusstimulation lediglich vom Stimulationsort abhängig (laterale Vene 6/85, 7%; posterolaterale 24/123, 20%; posteriore 7/34, 21%; anterolaterale 0/24, 0%). CRT-Indikation (dilatative CMP, ischämische CMP, schrittmacherinduzierte CHF, sonstige), Elektrodentyp (easytrak 1 bzw. 2, attain, easytrak 3, sonstige) und Patientengeschlecht zeigten keine Signifikanz.

Die Phrenicusstimulation ließ sich in 10/37 Fällen durch Umpositionieren der Elektrode in derselben Vene dauerhaft beheben, in 10/37 durch Umsetzen in eine andere Vene. Bei 11/37 Fällen, wo eine Umpositionierung wegen der Venenanatomie, Reizschwelle, Elektrodenstabilität oder dem RV-LV Abstand nicht ging, wurde eine hohe Phrenicusreizschwelle (>5V) bei niedriger Pacing-Reizschwelle (<1,5V) belassen. 7 Patienten blieben beschwerdefrei, 1 Patient oligosymptomatisch, 3 Patienten erhielten eine Spätrevision. Bei 6/37 Patienten wurde zur stabilen Elektrodenverankerung an geeigneter Stelle intraoperativ der Elektrodentyp gewechselt. Diese 6 Patienten blieben beschwerdefrei.

Bei 2 der Spätrevisionen erreichte man durch einen anderen Elektrodentyp stabile Positionen in anderen Venen. In 1 Fall wurde das Aggregat getauscht, um durch Ansteuerung eines geeigneten Stimulationspfades die Phrenicusstimulation zu beseitigen.

Schlussfolgerungen. Stufenschema zur Behebung intraoperativ auftretender Phrenicusstimulation:

1. Umpositionieren der Elektrode in derselben Vene
2. andere Vene
3. bei sicherem Abstand zwischen Phrenicus- und Pacingreizschwelle Position belassen
4. anderer Elektrodentyp zur stabilen Verankerung an anderer Position
5. ultima ratio: Aggregattausch

054 Permanent ventricular resynchronization in a patient with hypoplastic left heart syndrome – case report

D. Vondrys[1], M. Pinter[2], E. Sames-Dolzer[1], G. Tulzer[2], C. Gross[1], R. Mair[1]

[1]AKH Linz, Linz, Austria; [2]LFKK Linz, Linz, Austria

Background. Ventricular resynchronization with multisite pacing in heart failure patients results in the improvement of myocardial performance. Cardiac resynchronization therapy

(CRT) with multisite pacing is effective and established method for the treatment of heart failure in adults.

Time limited studies in children with congenital heart disease have shown that single-site right ventricular or biventricular pacing results in increased arterial blood pressure and increased cardiac output in the postoperative period.

Patients and methods. A male newborn with HLHS underwent a Norwood procedure in April 2005.

He was readmitted several times due to ventricular failure and severe tricuspid insufficiency.

After several courses of Levosimendan we decided to perform a bidirectional Glenn and a tricuspid valve repair at the age of 8 months. We implanted temporary pacing wires for ventricular resynchronisation. This had shown to be very effective in the ICU, so we implanted an epicardial permanent multisite pacing system after 4 days.

Results. Permanent multisite pacing showed shortening of QRS duration, improved systolic blood pressure, cardiac index and contractility as well as BNP reduction.

Conclusions. Permanent ventricular resynchronization in a patient with single ventricle could extend the indication for permanent palliation and delay transplantation.

055 VATS for left ventricular pacing lead implantation in biventricular resynchronization: A simplified 2-ports technique

S. E. Gabor[1], G. Prenner[2], A. Wasler[2], M. Schweiger[2], K. Tscheliessnigg[2], F. Smolle Jüttner[1]

[1]Department of Thoracic and Hyperbaric Surgery, Graz, Austria; [2]Department of Transplantation, Medical University Graz, Graz, Austria

Background. Economic restrictions in medicine are an increasing problem, especially in surgery: Cardiac resynchronization therapy for treatment of heart failure requires transvenous insertion of both a right ventricular and left ventricular pacing lead. Implantation of the lead by way of the coronary sinus often fails. We developed a simple video-assisted surgical technique (VATS).

Methods. 16 patients (m: 10; w: 6; mean age: 62.7 yrs; range: 46–76 yrs) with heart failure underwent transvenous insertion of the right atrial sensor lead and the right ventricular pacing lead. In all of them transvenous implantation of the left ventricular pacing lead failed. In right-lateral decubitus position and under single-lung ventilation a camera port and a flexible instrumentation port were inserted in the 4th intercostal space. A T-shaped incision was made lateral to the phrenic nerve and an electrode was screwed in. The lead was guided subcutaneously to the pacemaker.

Results. Mean skin-to-skin operating time was 53 ± 18 min, no conversion to thoracotomy was necessary. Chest tubes were removed after a mean of 1.6 ± 0.5 days and the patients were discharged after a mean of 4 ± 1.3 days. Intraoperative and postoperative pacing thresholds at 1 and 7 months were satisfactory in all cases, there was no lead dislocation. All but 3 patients had an improvement of their NYHA function class. There was neither surgical morbidity nor mortality.

Conclusions. Video assisted thoracoscopy over two ports seems to be an excellent alternative procedure for epicardial lead implantation. The additional costs are minor.

056 Evaluation of consecutive series without observation of an incidence using deep sternal wound infection in adult cadiac surgery as an example

R. G. Schistek[1], S. Wegenkittl[2], F. Unger[1]

[1]Universitätsklinik für Herzchirurgie, Salzburg, Austria, [2]Fachhochschule Salzburg, Salzburg, Austria

Background. In cardiac surgery series of annual procedure related observations are often too small for standard statistical evaluation. For purposes of quality management it is necessary to know and understand statistical weight of occurring or non occurring incidences.

Material and methods. 1449 consecutives operated in the period from January 2003 till December 2005 who in our STS based Database "Cardiac" were evaluated for incidence of sternal deep wound infection. In a computer 50, 100 and 500 procedures were simulated and the occurrence of a series without an incidence of a wound infection at a risk of 1, 2 and 3% were counted.

Results. The incidence of deep wound infection within 30 days was 1.93 percent. The likelihood of seeing no incidence in a series of 500 simulated cases for a risk of 1% was 0.7%, in a series of 100 37% and in a series of 50 60%. For a risk of 2% no zero series was see in 500 cases, in 100 14, in 50 37%. With a risk of 3% in the series of 100 4.9% were found without an event and 22% in the series of 50.

Conclusions. Seeing a series of 100 cases without any infection does not necessarily mean, that the infection rate has dropped. It also could have increased to 3%, as indicated by a chance 1 to 20, that no case can be seen in 100. Simulating real clinical situations can so visualize the role of random in small series.

ACE II: Thyroidektomie en principe bei gutartiger Knotenstruma. Was ist gesichert? Was ist Zukunft?

057 Papillary thyroid carcinoma in graves disease – impacts on surgical strategy

N. M. Kreischitz[1], Y. Lazzaro[2], C. Ensinger[3], I. Schnegg[4], R. Prommegger[1]

[1]Department of General and Transplant Surgery, Medical University of Innsbruck, Innsbruck, Austria; [2]Department of Internal Medicine, Medical University of Innsbruck, Innsbruck, Austria; [3]Department of Pathology, Medical University of Innsbruck, Innsbruck, Austria; [4]Department of Nuclear Medicine, Medical University of Innsbruck, Innsbruck, Austria

Background. Hyperthyroidism rarely is associated with thyroid carcinoma. Thyroid stimulating hormone (TSH) is suppressed in Graves disease. As TSH is the main stimulatory agent to thyreocytes, its suppression in Graves disease theo-

retically should protect from associated thyroid carcinoma. The aim of this study was to investigate the high rate of associated thyroid papillary carcinoma in Graves disease in our recent series.

Material and methods. A retrospective study was conducted in patients operated on for Graves disease in our department from January 2004 until December 2005. The patients were evaluated for clinical symptoms, ultrasonographic and scintigraphic investigations, duration of Graves disease, indications for surgery, as incidence, type, stage and outcome of associated papillary thyroid carcinoma, respectively.

Results. 45 patients (35 females, 10 males, mean age: 48 yrs, range: 18–73 yrs) were operated on for Graves disease. In 6 patients (4 females, 2 males, mean age: 43 yrs) associated papillary thyroid carcinomas were incidentally found in histology. All patients had microcarcinomas with tumor diameters ranging from 1.7 to 8 mm. In one patient lymph node metastases were detected and removed in the lateral neck compartment. Subtotal resection, total resection and Duhamel operation were performed. Three patients received radioiodine therapy postoperatively. To date all six patients are alive and have no detectable recurrences or metastases.

Conclusions. In contrast to an earlier hypothesis Graves disease is in high correlation to papillary microcarcinoma. Therefore, we changed our strategy for patients with Graves disease and associated nodules to total thyroidectomy.

058 Quality of life after total thyreoidectomy

R. Asari[1], C. Passler[2], K. Kaczirek[1], B. E. Niederle[1], C. Scheuba[1], B. Niederle[1]

[1]Universitätsklinik für Chirurgie, Vienna, Austria; [2]KH Floridsdorf, Vienna, Austria

Background. After total thyreoidectomy patients are dependent on hormone replacement therapy. This could affect the quality of life (QOL) negatively. This study aimed to evaluate health related QOL after total thyreoidectomy at 5 years after surgery.

Patients and methods. During a period of 3 years 1117 patients underwent thyroid surgery of whom 553 (49.5%) had total thyroidectomy. Male to female ratio was 1:2.8 and mean age 51.2 years.

284 of 553 patients (51.4%) were available for follow up. QOL was analysed by a modified questionnaire including 8 questions matched to indication of surgery, physical comfort postoperative symptoms if present and well being of patients.

Results. In general QOL after surgery was rated better than before surgery. 129 patients (46%) indicated better, 140 (49%) same and only 15 (5%) patients worse QOL after surgery. Patients with hyperthyroidism hat the highest improvement in QOL after surgery (84%).

Conclusions. The majority of patients report an improvement in their QOL 5 years after total thyroidectomy. The hormone replacement therapy was accepted and tolerated by all patients. The dependence on thyroid hormone replacement therapy should not affect the decision for total thyreoidectomy in an experienced center.

059 What is "evidence-based" in thyroid surgery for benign disease?

G. Wolf, H. Cerwenka, M. Lemmerer, E.M. Braun

Abteilung für Allgemeinchirurgie, Endokrinchirurgie, Medizinische Universität Graz, Graz, Austria

Background. Any surgical procedure has to be scientifically evaluated, which is done best by rating the level of evidence in the literature.

Material and methods. An electronic search was performed be viewing the literature (PubMed, Medline, 1985–2005; Lit. Service Henning) to find the level of evidence in the following parameters in benign thyroid surgery: 1) Calcitonin Screening; 2) Identification of the Laryngeal Nerve; 3) Op-procedure and Nerve palsy; 4) Hypoparathyroidism, parathyroid identification and Op-procedure; 5) total thyroidectomy (TTX) vs. subtotal TX in benign disease; 6) Minimal-invasive procedures and technical variants; 7) Neuromonitoring; 8) technical innovations (IOUS, magn. lenses, vessel sealing systems etc).

Results. 1) In 653 publications the prevalence of C-Cell carcinoma in goiter was 0.78 %, calcitonin screening recommended. 2) In 9 studies in 15000 pt. a significant advantage is evident in nerve preparation, in prospective trials nerve palsy is > 1%. 3) A significant ($p < 0.01$) influence in TTX vs. subtotal TX on nerve palsy is evident, the same is true 4) for hypoparathyroidism. 5) No benefit in results for en-principe-TTX, the standard being subtotal functional adequate TX for benign goitre. 6) Minimal procedures have significant ($p < 0.001$) better cosmetic results, but equal complications. 7) No prospective randomized trials exist to qualify neuromonitoring. 8) Technical innovations have to be evaluated.

Conclusions. The standards in benign thyroid surgery are well defined in the literature, some further trials have to elucidate the value of certain innovations.

ACE II: Komplikationen nach totaler Thyroidektomie

060 Total thyroidectomy in multinodular goitre

R. Asari[1], C. Passler[2], K. Kaczirek[1], B. E. Niederle[1], C. Scheuba[1], B. Niederle[1]

[1]Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria; [2]KH Floridsdorf, Vienna, Austria

Background. In recent years the tendency to replace traditional subtotal by total thyroidectomy in patients with multinodular goitre is increasing. Complication rates associated with total thyroidectomy vary between 1–50 % in the literature. The aim of this study was to evaluate the frequency of postoperative complications after total thyroidectomy in a retrospective series.

Methods. In a period of three years 1117 patients underwent thyroid surgery. 553 (49.5%) patients were treated by total thyreoidectomy. In case of malignancy central and / or lateral lymphnode dissection was performed additionally to

total thyroidectomy. Autotransplantation of parathyroid glands was performed on demand. Male to female ratio was 1:2.8 and mean age 51.2 years. A total of 85 (15.3%) patients had been operated on before.

Results. Histological diagnosis was multinodular goiter in 274 (49.6%) patients and thyroid carcinoma in 186 (33.6%). Hyperthyroidism was observed in 93 (16.8 %) patients. Persistent hypoparathyroidism occurred in 1.6 %, and temporary hypoparathyroidism was noted in 9.4%. Permanent palsy of the recurrent laryngeal nerve occurred in 0.2 %, and temporary palsy in 4.2 % (1094 nerves at risk).

Conclusions. In the hands of experienced surgeons total thyroidectomy is a save procedure and seems to be the treatment of choice even in multinodular disease.

061 Radical surgery of benign thyroid's disease – more complications or specification of surgeons?

E. Bareck, G. Klein, D. Depisch

Abteilung für Allgemein-, Gefäßchirurgie, a.ö. KH Wiener Neustadt, Wiener Neustadt, Austria

Background. Doing more radical surgery in benign thyroid disease, dissection of the recurrent laryngeal nerve (RLN) and not less than two parathyroid glands are required at our department since 2000.

Material and methods. From 1996 to 2005 841 patients were operated primary because of benign thyroid's disease by two comparable surgeons: 26 total thyroidectomis (TT), – Grave's disease excluded –, 156 hemithyroidectomis (HT), 174 unilateral subtotal resections (uSR), 201 bilateral subtotal resections (bSR), 215 unilateral subtotal resection combined with contralateral hemithyroidectomy (uSR + HT).

Rate of reversible/ permanent palsy of RLN was 4.0%/ 0.4%, – rate of temporary/ permanent hypoparathyroidism 1.6%/0.6%.

Results. From 1995 to 2000 the total rate of unilateral palsy of RLN (reversible and permanent) was 6.2%, according to the operative procedure: 1.7% in HT, 8.5% in bSR, 0% in uSR, 0.9% in uSR + HT. The rate of hypoparathyroidism was less than 1% in all parts.

From 2001 to 2005 we can see decreasing of SR, as same as HT and uSR + HT increase. More radical surgery has changed the absolute number of RLN palsy: 3.1% in TT, 5.6% in HT, 3.6% in bSR, 0% in uSR, 3.3% in uSR + HT.

According to hypothyroidism: 0.6% in TT, 0% in HT, 0% in bSR/uSR, 3.7% in uSR + HT.

Conclusions. More radical surgery of benign thyroid disease changes the relation of complications and a selection of thyroid surgeons is visible. Belonging to the low rate of permanent complications more radical treatment should be enforced.

062 Der chronische postoperative Hypoparathyreoidismus – eine oft unterschätzte Folgeerkrankung

T. Bohrer[1], I. Pasteur[2], M. Tronko[2]

[1]Zentrum für Operative Medizin, Julius-Maximilians Universität Würzburg, Würzburg, Deutschland; [2]Institute for Endocrinology and Metabolism, Ukrainian Academy of Sciences, Kiev, Ukraine

Grundlagen. Der postoperative permanente Hypoparathyreodismus ist eine komplexe endokrinologische Folgeerkrankung und bisher klinisch nicht ausreichend systematisch untersucht. Ziel unserer Studie war es, die Symptome und Folgeerkrankungen dieser Komplikation nach Eingriffen an Schild- und Nebenschilddrüse umfassend und detailliert zu analysieren.

Patienten und Methodik. Die Untersuchung wurde in der Ukraine durchgeführt, wo post-Chernobyl das weltweit größte Kollektiv an Patienten existiert. 20 Patienten mit symptomatischen, permanenten Hypoparathyreoidismus nach Schilddrüsenkarzinomoperation, wurden aus einer Grundgesamtheit von 69 Patienten randomisiert ausgewählt. Es erfolgte die Bestimmung des Parathormons $[PTH]_{i.S.}$ und des Calciums $[Ca]_{i.S.}$, eine umfassende Anamnese, klinische Untersuchung und Fragebogenerhebung. Sowohl ein Symptom- als auch Belastungsscore wurden ermittelt, zusätzlich eine Faktorenanalyse durchgeführt. 20 Patienten, die ebenfalls post-Chernobyl an der Schilddrüse operiert worden waren, *ohne* eine Hypoparathyreoidismus zu entwickeln, dienten als Kontrollkollektiv.

Ergebnisse. $[PTH]_{i.S.}$ der Hypoparathyreoidismuspatienten betrug 6,32 ± 4,81 pg/ml (NR: 20–70 pg/ml), $[Ca]_{i.S.gesamt}$ unter Calciumsubstitution 1,92 ± 0,24 mmol/l (NR: 2,1 – 2,6 mmol/l). Die häufigsten tetanischen Symptome dieser Patienten waren Parästhesien (55% der Patienten), Krämpfe in den Extremitäten (50%) sowie Muskelschwäche mit 45%. Häufigste körperliche Befunde waren Zahnschmelzdefekte (60%), Haarausfall (65%) und trockene Haut (65%). 65% der Patienten klagten über Reizbarkeit und 50% über eine zunehmende depressive Stimmungslage. Typische Spätfolgen waren bei 20% der Patienten eine Sehkraftverschlechterung, je 10% eine Hörminderung und ein Nierensteinleiden (signifikant zur Kontrollgruppe $p < 0,05$). 1/3 der Patienten wiesen eine larvierte Form auf.

Schlussfolgerungen. Unsere Evaluation zeigt eine eigenständige, schwere Folgeerkrankung, die bisher zu wenig beachtet worden ist. Der postoperative, permanente Hypoparathyreoidismus muss konsequent behandelt werden.

063 Reoperation for acute haemorrhage after thyreoidectomy

R. Promberger[1], J. Ott[2], R. Kokoschka[2], F. Kober[2], C. Tschismarov[3], E. Zadrobilek[3], M. Hermann[2]

[1]University of Vienna, Department of Surgery, Vienna, Austria; [2]Kaiserin Elisabeth Spital der Stadt Wien, Department of Surgery, Vienna, Austria; [3]Kaiserin Elisabeth Spital der Stadt Wien, Department of Anaesthesiology, Vienna, Austria

Background. Postoperative haemorrhage is a typical complication after thyroid surgery. Reoperation is usually an urgent but routine procedure (1.7 % Rosato). In rare cases,

however, bleeding can result in a life-threatening situation due to severe airway obstruction.

Methods. We carried out a retrospective study including a standardized protocol to analyse diagnosis, surgical therapy, cause, and first signs of haemorrhage.

Results. In our 298 patients, first signs of bleeding were the continous blood flow into the redon-drain (57%), the increasing circumference of the neck (23.8%), bleeding from the wound (19.8%) and dyspnoe (7.4%). The indication for reoperation is analysed in detail. The mean time lapse until postoperative haemorrhage obvious was 6hours (range 0–64.5h). The interval between initial surgery and reoperation was 6.8 hours (range 0–73.4h).

The bleeding was in 49.7% of arterial origin, 22.5% venous, 6.7% both and in 21.1%, there was no evidence of source. 6 patients could not be intubated, one could be managed by mask insufflation and in 5 patients, tracheotomy was inevitable. The aim of our study is to establish "risk-management" for thyroid surgery.

Conclusions. Airway obstruction can become a life-threatening problem when acute postoperative haemorrhage occurs. Therefore, an early clinical detection is paramount. We can recommend the standardized routine measurement of the neck's circumference as a simple but most effective indicator. In case of difficult airway and the impossibility of conventional intubation, alternative tools, especially the new glide scope® should be available to improve the access to the larynx under view and to avoid urgent tracheotomy.

Videositzung AMIC: Komplikationen in der endoskopischen Chirurgie

064 Management of complications following reflux surgery

W. Feil[1], T. Filipitsch[1], P. Jiru[1], P. Feil[1], M. Riegler[2]

[1]EKH Wien, Vienna, Austria; [2]AKH Wien, Vienna, Austria

Between 5/04 und 1/06 16 patients underwent reoperation following previous reflux surgery. n = 6 patients were primarily operated in our institution (re-OP-rate 2.2%), n = 10 patients elsewhere.

Indication for re-OP in our n = 6 patients (all following Nissen) were: n = 1 slipping with aspiration on p.op. d 2, n = 1 telescope phenomenon on p.op. d 4, n = 1 secondary achalasia, n = 3 hiatal stricture).

Indication for surgery in n = 10 external patients (n = 11 following Nissen) was: slipping a/o telescope phenomenon (n = 7), recurrent achalasia (n = 1), stricture (n = 1), esophageal perforation during cardiomyotomy (CMT) (n = 1).

n = 14 re-OPs were performed laparoscopically (n = 8 Toupet, n = 2 Nissen, n = 2 CMT & Toupet bzw. Nissen, n = 1 Dor, n = 1 fundophrenicopexy), n = 2 re-OPs open (n = 1 fundophrenicopexy, n = 1 re-CMT & Toupet), n = 4 of them following open surgery.

Conversion rate and postoperative lethality were 0.

n = 1 patient needed short time ventilation due to aspiration (complication rate: 6.2%).

n = 14 patients started to return to oral diet the same day, n = 14 patients were dismissed between p.op. d 4 – 5. All patients were controlles prospectively. n = 12 patients are symptom free, n = 3 patients present symptoms infrequently, n = 1 patient more frequently.

Conclusions. The main reasons for reoperation following reflux surgery are hiatal strictures at the hiatus, slipping of the plication a/o telescope phenomenon.

Nissen plication seems to provoke more complications (75% of reoperated patients had previous Nissen).

Reoperations following reflux surgery can be performed with excellent results laparoscopically, even after open surgery. The surgical treatment of complications a/o failures following reflux surgery should only be reserved for specialized centers of competence.

065 Austrian experiences with redo-antireflux-surgery

H. F. Wykypiel[1], P. Steiner[1], A. Klingler[1], F. Granderath[2], R. Pointner[2], G. Wetscher[3]

[1]Klinik für Allgemein- und Transplantationschirurgie, Innsbruck, Austria; [2]A. ö. KH Zell am See, Zell am See, Austria; [3]Allgemeinchirurgie/KH Schwaz, Schwaz, Austria

Background. From 1996, the entire number of fundoplications performed in Austria increased dramatically favoring the laparoscopic technique. Despite good results some patients experience failure of antireflux surgery and therefore require redo surgery if medical therapy fails to control symptoms. The aim of the study was to describe the refundoplication policy in Austria with evaluation of the postoperative results.

Methods. A questionnaire was sent to all Austrian surgical departments at the beginning of 2003 with questions about redo-fundoplications (number, techniques, intraoperative complications, history, migration of patients, preoperative work-up, mortality and postoperative long-term complaints), but it also included questions about primary fundoplications (number, technique, postoperative symptoms).

Results. Out of 4504 primary fundoplications performed in Austria since 1990, 3952 have been carried out laparoscopically. In median 31 months after the primary operation, 225 refundoplications have been performed, laparoscopically in the majority of patients. The Nissen or the partial posterior fundoplication were the preferred techniques. The conversion rate in these was 10.8%, mainly due to adhesions, lacerations of the spleen, the stomach and the esophagus. The mortality rate after primary fundoplications was 0.04%, whereas after refundoplications it was 0.4%, all of them accounting for an open approach.

Conclusions. Laparoscopic refundoplications are widely accepted as a treatment option after failed primary antireflux surgery in Austria. However, the conversion rate is six times higher and the mortality rate is ten times higher than that of primary antireflux surgery. Therefore, redo fundoplications require extensive experience.

Freie Vorträge: Proktologie

066 Laparoscopic-assisted resection-rectopexy: A rectospective analysis of the functional result

D. Weimann

Klinik für Allgemein- und Visceralchirurgie, Klinikum Ludwigsburg, Ludwigsburg, Germany

Background. The purpose of this research was to assess the functional outcome and the impact of quality of life in 34 patients after resection-rectopexy for outlet-obstruction and rectal prolapse and fecal incontinence.

Materials and methods. Data of surgery were recorded prospectively and sampled retrospectively. The follow-up data were sampled by telephone interview regarding frequency of stool, constipation or diarrhea, recurrence, fecal incontinence severity index (FISI) using a standardized questionnaire.

Results. From March 2000 till November 2005 34 patients (32 females, 2 men; mean age 62.5 [17-93] years) underwent resection-rectopexy. Indications for surgery were outlet-obstruction caused by sigmoidoceles in 12 patients and rectal prolaps with or without fecal incontinence in 22 patients. The overall perioperative mortality was 0%. 10 operations (29%) were performed in open surgery, 24 in the laparoscopic manner (71%). The laparoscopic procedure took in mean 194 (100-320) min, the open 125 (90-260) min. Complications required reoperation occured in 3 patients (9%).

22 patients (65%) were interviewed (18 laparoscopic-assisted, 4 open surgery). The mean follow-up time was 13 (2–36) months. 1 patient (5%) had a recurrent rectal prolapse. 6 patients (27%) were complaining about constipation, 2 patients (9%) about diarrhia. For 13 patients with pre- and postoperative fecal incontinence the FISI were at mean 28 (4–45), 14 (0–39) respectivly. There has been no differences in the two methods in the functional results.

Conclusions. As the FISI is an intrument for Quality of Life it is shown, that laparoscopic-assisted resection-rectopexy is a feasible procedure even for rectal prolaps with fecal incontinence.

067 Obstructive Defecation Syndrome (ODS) treated by Stapled Transanal Rectal Resection (STARR) – Indication, technique, complications

M. Glöckler, M. Abrahamowicz, S. Riss, A. Longo

Departmnet of Surgery, St. Elisabeth Hospital, Vienna, Austria

Background. Rectal intussusception and rectocele are viewed as mechanical alterations causing Obstructed Defecation Syndrome. Both can be characterised as a prolapse-like redundancy occluding the distal rectum. The STARR procedure is a technique by which this prolapse is removed, thereby unblocking the rectal lumen and achieving an effective symptom control (> 90% in long-term studies). The feasibility and safety of the technique has been evaluated.

Material and methods. Between 1999 and 2005 550 patients (female 89.4%; mean age 55.7, range 20–90) were operated on. Selection criteria: severe outlet obstruction, evaluated by an ODS score from 0–40, intussusception and/or rectocele in cinedefecography, ineffectiveness of non-surgical therapies. In all cases the internal rectal prolapse was repaired by transanal double stapler resection. In a follow-up period of 3 months postoperative morbidity and recovery time were rated.

Results. Mean procedure time was 31 minutes (18–90). The mean height of the specimen measured 6.5 cm (sd 1.4) anteriorly and 5.9 cm (sd 1.5) posteriorly. Histological inspection proved that all specimens were full-wall resections. Postoperative pain (VAS 0–10) was low (mean 1.6; range 0–8). The most relevant postoperative complications were bleeding (3.1%) and substenosis of the staple line (1.1%). A frequent side effect was urgency (4 weeks postoperative 15.5%, 3 months 8.1%). Episodic incontinence of soft faeces occurred in 2.1%. No abscess, sepsis or fistula was observed. The return to normal activity was possible after a mean of 5.9 days (range: 1–38).

Conclusions. STARR is a feasible and safe procedure based on a new concept of ODS.

068 Doppler guided hemorrhoidal artery lagation – 5 years of experience

S. H. Arnold, M. Scheyer

Allgemeinchirurgie, Landeskrankenhaus, Bludenz, Austria

With a high prevalence and incidence of over 50%, hemorrhoidal disease is the most common disease of the anal region. 10–20% of this patients need a surgical treatment. In 1995, Morinaga et al. presented the minimally invasive technique of ligation of hemorrhoidal artery (HAL) where the main arteries are ligated with a special designed proctoscope under the guidance of a Doppler flowmeter. From January 2000 to December 2005 we treated 511 Patients (304 men, 207 women, average age 50 years) with HAL. 40% of all patients were treated in local anästhesia. We performed 2 to 16 ligations, it is depending on the stadium of piles disease. Only 15% of our patients need a postoperativ pain therapy. We can show, that the complication rate is low, we had no major complications. All stadiums of piles were treated. The HAL is painless, sucessfull and with a high comfort for the patients and now established as an alternativ to all other methods in treatment of hemorrhoids.

069 Rectal Anal Repair – A new method in treatment of III / IV degree hemorrhoids

S. H. Arnold, M. Scheyer

Allgemeinchirurgie, Landeskrankenhaus, Bludenz, Austria

In 1995, Morinaga (Japan) reported an new technique in treat of hemorrhoids. By an specially proctoscope coupled with a Doppler transducer the hemorrhoidal arteries are looked for and ligated. Now this method (HAL) is established yet as an alternativ to all other methods in treatment of hemorrhoids. But residual prolapse however, has been reported in 13% for stage III and 60% for stage IV hemorrhoids. So in the last year we developed an new proctoscope to treat extensiv hemorrhoids. This proctoscope has a 5 cm long longitudinal slit on the side. So we can perform a longitudinal running suture at the site of the hemorrhoid. Tying of the suture leads to an

uplift of the prolapsed tissue into the rectum (TRM – transanal rectal mucopexy). By the RAR (Rectal-anal repair) as a combination of the classical HAL and the TRM anal cushing and their remaining function are preserved and the normal anatomy is restored. We like to report about our results with this technique by our first 76 patients.

AMIC I

070 Combined impedance- and ph-monitoring of the esophagus in patients with symptoms of gastro-esophageal reflux disease

J. Lenglinger[1], M. Eisler[1], A. Baldinger[1], C. Ringhofer[1], G. Prager[2], E. Cosentini[2], J. Zacherl[2], M. Riegler[1]

[1]Chirurgische Funktionsdiagnostik, Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria; [2]Abteilung für Allgemeinchirurgie, Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria

Background. Gastro-esophageal reflux disease (GERD) is associated with typical (heartburn, regurgitation, dysphagia) and atypical symptoms (cough, hoarseness, globus sensation, chest pain). Aim of this study was to compare the results of combined impedance- and pH-monitoring with those of pH-monitoring depending on symptoms.

Methods. Between May 2005 and January 2006 combined impedance- and pH-monitoring (Sleuth, Sandhill, USA) was performed in 73 patients (45 female, age 52.7 [21–83] years) with typical and atypical GERD symptoms. Impedance was recorded 3, 5, 7, 9, 15, and 17 cm and pH 5 cm above the lower esophageal sphincter. Antisecretory medications were discontinued 10 days earlier. Symptoms were entered by the patients pushing buttons on the data logger. Symptom association probability (SAP) was calculated using all 5-minute time windows preceding symptoms and all containing reflux episodes. Diagnostic criteria for GERD were pathologic acid exposure (pH<4 during >6.3 of total recording time, or >9.7% in upright, or >2.1% in recumbent position), >73 reflux episodes, or SAP>95%.

Results.

	pH-Monitoring	Impedance-Monitoring (additionally identified patients)		
Symptoms	Pathologic Acid Exposure	> 3 Reflux Episodes	SAP > 95% (all refluxes)	No GERD
Typical+ atypical n = 50	13 (26%)	4 (8%)	9 (16%)	25 (50%)
Typical n = 13	6 (46%)	1 (8%)	0	6 (46%)
Atypical n = 10	1 (10%)	0	0	9 (90%)
Total n = 73	**20** (27%)	**5** (7%)	**9** (12%)	39 (53%)

In 34 of 73 (46%) symptomatic patients reflux-associated pathology was revealed by combined impedance- and pH-monitoring. In 14 (41%) of these patients pH-monitoring was not abnormal (p = 0.045; Mann-Whitney rank sum test).

Conclusions. In this group of patients with typical and atypical symptoms GERD was diagnosed significantly more often by combined impedance- and pH-monitoring than by pH-monitoring alone.

071 Laparoscopic toupet hemiplication for treatment of GERD: morbidity, complications and long-term results

C. Rabl, B. H. von Rahden, M. Baschata, H. J. Stein

Department of Surgery, Paracelsus Medizinische Privatuniversität, Salzburg, Austria

Background. Laparoscopic fundoplication is widely used for surgical treatment of gastroesophageal reflux disease.

Patients and methods. We report about our results with laparosopic antireflux surgery, using the hemiplication method according to Toupet. Between January 1999 and December 2005, 106 patients (61 male, 45 female) with proven GERD have undergone laparoscopic fundoplication (median age 47 [20–76] years).

Results. Laparoscopic fundoplication is technically feasible in most cases (no conversions to open surgery in the current series). The operating times are comparable to open surgery (median 122 [88 to 156] minutes. Short- and long-term results with the laparoscopic Toupet must be estimated good to excellent: Over 90% of the patients were satisfied with the procedure, and would have it done again. This correlates with long-term resolution of reflux symptoms in 95% of the cases (median follow-up 21.5 [4–75] months). 3 patients (2.8%) required re-operation, early during the postoperative course (within 3 months), because of severe dysphagia. 3 additional patients received laparoscopic refundoplication for GERD recurrence (repeated onset of clinical reflux symptoms and morphologic proof of desintegration of the fundoplication).

The morbidity of the procedure accounted for 7.5%, with a severe gas bloat syndrome in 3 cases (2.8%) and dysphagia requiring dilatation in 5 cases (4.7%).

Conclusions. Laparoscopic Toupet hemiplication is a feasible and successful method for treating patients with GERD. The Toupet procedure is preferred in our hands, because of the good results achieved with the standard use of this approach.

072 Reflux surgery: Nissen or Toupet?

T. Filipitsch[1], P. Jiru[1], P. Feil[1], M. Riegler[2], W. Feil[1]

[1]EKH Wien, Vienna, Austria; [2]AKH Wien, Vienna, Austria

Between 5/04 und 1/06 288 consecutive patients (15a–86a) underwent reflux surgery at the EKH Wien in an open prospective clinical trial. (n = 272 1. OP, n = 16 re-operations).

Endoscopy, esophageal manometry and 24 hr pH-metry (from 9/05 impedance measurement) were performed preoperatively.

271 operations were performed by 1 surgeon, who assisted in all other cases (n = 17). 286 operations (n = 272 1. OPs, n = 14 re-OPs) were performed laparoscopically, 2 re-operations open.

Hiatal reconstruction was done in all cases. Additionally n = 170 Nissen, n = 115 Toupet and n = 3 Dor plications were performed. 14 patients underwent additional cardiomyotomy (CMT) due to achalasia.

Mean operation-time was 52 minutes. In 4 cases a suction device was used for small bleeders (n = 3 short gastrics, n = 1 liver capsule). Bleeders were controlled with UltraCision (n = 2) or local hemostyptics (n = 2).

Conversion rate and postoperative lethality were 0. Postoperative complication rate was 0.7 % (n = 2 re-OPs).

Patients went back to oral diet the same day and were dismissed (95%) on p.op. d 3.

Reoperation rate was 2.2 % (n = 6). Reoperations were necessary in Nissen patients only (n = 1 slipping, n = 1 telescope phenomenon, n = 1 secondary achalasia, n = 3 hiatal strictures).

All patients were reexamined clinically. There was no difference between Nissen and Toupet reflecting reflux control.

Conclusions. Laparoscopic reflux surgery can be performed using standardized procedures with excellent results and minimal risk in spezialized centers of competence.

Nissen and Toupet equal in reflux control.

Rate of postoperative dysphagia and reintervention rate are significantly lower following Toupet, even when the Toupet group includes all patients with motility disorders.

073 Laparoscopic oncologic procedures in Austria

H. Weiss, A. Klaus, R. Margreiter

Department of General, Thoracic and Transplant Surgery, Medical University Innsbruck, Innsbruck, Austria

Background. Laparoscopy has gained increasing influence in all aspects of general surgery. However, little information is available on the current use of minimally invasive approaches in oncologic procedures.

This study evaluates the status of laparoscopy in oncologic patients.

Material and methods. All Austrian surgical departments are invited to take part in an survey regarding the expertise in laparoscopic oncologic procedures in 2005. By means of a questionnaire they are asked for annual numbers of laparoscopic procedures, oncologic laparoscopy in esophagus, stomach, gall bladder, liver, pancreas, small and large bowel as well as thoracoscopic procedures.

A descriptive analysis is carried out.

Results. Rate of questionnaire return will be depicted. Data will be presented including all sections of the questionnaire.

Conclusions. This is the first nationwide survey to evaluate the use of minimal invasive techniques in oncologic patients at a time of incomplete consensus on this topic.

074 Laparoscopic surgery for colorectal malignancies

P. Razek, C. Kienbacher, K. Pinnisch, A. Tuchmann

SMZ Floridsdorf, Vienna, Austria

Background. Laparoscopic colorectal resections are feasible and offer several benefits as less pain, less morbidity, improved reconvalescence and better quality of live. Although large-scale randomised trials support its use, the place of laparoscopic colectomy for cancer is controversial.

Material and methods. Between January 1999 and December 2005, 305 patients underwent laparoscopic colectomy. Of these, 104 patients had colorectal malignancies. Clinical characteristics, operative findings and postoperative results are reported. Outcomes were short term morbidity and mortality, number of positive resection margins, local recurrence, port-site recurrence, metastasis and overall survival.

Results. 55 of the patients were men and 49 were women with a mean age of 65.5 years. The mean follow up was 21 month. 9 patients had metastatic disease at the time of surgery. 5 patients were converted to open surgery due to bulky disease (n = 2) or for anatomic reasons (n = 3). Mean operative time was 210 minutes and mean postoperative hospital stay was 7 days. Overall complication rate was 25%. Perioperative mortality was 2.9%.

Follow up showed one patient with local recurrence and another one with port-site metastasis. 9 patients died, 7 due to progression of disease and 2 for cardial reasons.

Conclusions. The laparoscopic approach is a viable option for patients with colorectal malignancies.

075 Technique of laparoscopic total mesorectal excision (TME) – which method of haemostasis?

P. Metzger[1], C. F. Stellwag[2], N. Hoelbling[1], A. Eichwalder[2], K. Richter[2], M. Hofmann[3], R. Schiessel[1,3]

[1]Department of Surgery, Danube Hospital / SMZ-Ost, Vienna, Austria; [2]Department of Surgery, Landesklinik Waldviertel, Horn, Austria; [3]Ludwig Boltzmann Research Institute for Surgical Oncology, Vienna, Austria

Background. From 01.01.2001 to 31.12.2005 42 laparoscopic interventions for rectal cancer have been performed in two specialised departments.

Material and methods. 19 resections with anastomosis in the middle of the rectum, 12 resections with anastomosis in the lower rectum, 3 intersphincteric resections, 2 low anterior resections with coloanal anastomosis, 1 rectal exstirpation with graciloplasty and 5 rectal exstirpations were performed using Ultracision (UC; n = 11) or Ligasure (LS; n = 31) without vascular ligation or clipping. TME was performed with a modification of classic Heald-technique. The specimen were extracted by a minilaparotomy with adominal-wall protection. Anastomosis was performed by the use of circular staplers in 31 cases or manually in 5 cases.

Results. Haemostasis was perfect with UC and LS as well. No major bleeding occured. No patient needed blood transfusions. There was no significant difference in anastomotic leakage, number of resected lymphatic nodes or specimen length.

Patients who underwent laparoscopic resection had a significant reduction of median hospitalisation time (8.4 vs. 11 days), earlier intestinal peristalsis, lower blood loss (160 vs. 600 ml), lower needs for analgetics (3.5 vs. 6.8 opioids per day) and shorter operating time (175 vs. 237 min). A re- surgery was necessary in 2 cases with bleedings and 1 case suffering from anastomotic leakage.

During the mean follow-up of 19 months no relapse was found, one patient suffered from diffuse liver metastasis.

Conclusions. Laparoscopic TME can be performed with minimal blood loss with UC and LS. The method of choice depends on the experience of the surgeon.

076 The natural course of asymptomatic inguinal hernia – a prospective ten year study in adults and children

E. Schwanzer[1], R. Függer[2], J. Ott[3], M. Sieber[3], E. Horcher[4], R. Jakesz[1]

[1]Department of Surgery, Division of General Surgery, University of Vienna, Vienna, Austria; [2]Abteilung für Chirurgie, Krankenhaus der Elisabethinen, Linz, Austria; [3]University of Vienna, Vienna, Austria; [4]Klinische Abteilung für Kinderchirurgie, University of Vienna, Vienna, Austria

Background. As laparoscopic procedures become more widespread, surgeons may identify defects in the abdominal wall before they become symptomatic.

With continued refinements and advancements in laparoscopic inguinal hernia repair, the question of whether to repair the defects at the time of their discovery or to prolong the time of observation is an issue in the presence, furthermore in the near future. We investigated the occurrence of primary asymptomatic groin hernias and their expansion to symptomatic inguinal hernias within ten years.

Patients and methods. Bilateral laparoscopic inspection of the internal inguinal ring was carried out in 240 patients undergoing laparoscopy for cholecystectomy (77.1%), appendectomy (18.8%), explorative laparoscopy (2.5%) and laparoscopic adheasiolysis (1.7%).

Inguinal examination and collection of facts pertaining inguinal complaint at five- and ten-year-follow-up were carried out by two blinded examiners.

Results. Previously unidentified and asymptomatic inguinal hernias were discovered in 14 (2.7%), male-to-female-ratio 9:5, of 240 patients, 1–82 years old (mean 41.7), undergoing laparoscopic procedures. Ten defects (62.5%) were direct, six (37.5%) indirect. All defects were smaller than 3 centimetres. Six patients (male-to-female-ratio 2:1) with asymptomatic inguinal defects developed a symptomatic groin hernia within ten years. Within the same period of time 24 (13.1%) out of 183 patients with evidence of absent inguinal abdominal wall defect showed an inguinal hernia.

Conclusions. We conclude 2.7 percent of a mixed population develop a symptomatic groin hernia without pre-existent inguinal abdominal wall defect in a period of ten years. Surgery is not mandatory for all indirect inguinal hernias. Asymptomatic hernias can be observed if they are not enlarging.

077 Laparoscopic appendicectomy: results and complication rates of 3000 cases in a single centre study

D. Tusek, H. J. Gassel

Evangelisches Krankenhaus, Mülheim, Germany

Background. Laparoscopic approach for acute appendicitis is still controversially discussed. Differing data concerning operating time and complication rates have impeded the general breakthrough of the laparoscopic technique. The value of laparoscopic approach is critically assessed by comparison of our large series of laparoscopic appendicectomies with data on conventional appendicectomy.

Material and methods. We have retrospectively analysed the data of 3226 laparoscopic appendicectomies performed between 1992 and 2006 at our institution. Patient history, complication rates, conversion rate und operating time as well as costs of therapy were assessed. These data were compared with the results of several metaanalyses of actual studies.

Results. At our institution all patients with suspected appendicitis were routinely operated on by laparoscopic means on a 24 h service. The most common complication was wound infection (0.8%) followed by intraabdominal abscess formation (0.7%). The differentiated analyis of our data showed that particulary those patients who presented with advanced stages of appendicitis had the highest benefit from the laparoscopic approach. Comparing our data with data from the recent literature on conventional appendicectomy revealed a significantly lower infection rate following laparoscopic approach (1.1 vs 8.3%).

Conclusions. Today, laparoscopic appendicectomy is a safe procedure and complications are rare (overall 4–7%). Siginificant advantages are reduced operating times, better cosmetic results, particularly in advanced stages of inflammation. The rate of septic complications can be particularly reduced by consequent perioperative antibiotic prophylaxis and a standardized operation technique. Thus, today the laparoscopic approach should be chosen for all patients presenting with symptoms suspicious of appendicitis.

078 Management of biliodigestive fistulas. Results and chances of using laparoscopy

B. Walzel, P. Patri, M. Silles, K. Pinnisch, A. Tuchmann

Hospital Floridsdorf, Vienna, Austria

Background. Biliodigestive fistulas, a very rare complication, account for about 1% of all non-malignant cases of biliary calculus. Taking the patients at our Surgical Department, we investigated whether laparoscopy might be performed in patients with these findings.

Patients. Between 08 90 and 12 05 we operated 52 patients with a cholecystointestinal fistula (35 f, 17 m, 52–92 yrs.). 35 of them presented with sclero-atrophic cholecystitis.

32 fistulad lead to the duodenum, 4 to the stomach and one to the colon. 15 patients had a gallstone ileus.

Methods. In 38 cases the initial situation was the reason for primary open surgery. 24 times we started with laparoscopy but only three times it was possible to carry it through to the end. After severing the fistula with an endolinear staple, oversewing was carried out at the colon (n = 2) or the duodenum (n = 1). Subsequently a cholecystectomy was performed by laparoscopy. In two cases an ERCP and a gallstone extraction had to be done pre-operatively.

In all other 11 patients open surgery was required.

Results. The three patients who had undergone laparascopy showed no postoperative complications. Among the 11 patients where laparoscopy had to be changed to open surgery in mid-operation, there was one case of suture insufficiency at the duodenum. Nine of the total of 49 patients treated with conventional surgery died of internal complications.

Conclusions. Biliodigestive fistulas and gallstone ileus are both caused by a long history of biliary calculi. Only in rare cases it is possible to perform laparoscopy.

Österreichische Gesellschaft für Thorax- und Herzchirurgie: Thoraxchirurgie

079 A 5 year experience with the da Vinci robot in thoracic surgery

J. Bodner, F. Augustin, T. Schmid

Department of General, Thoracic and Transplant Surgery, Medical University Innsbruck, Innsbruck, Austria

Background. We report our institutional experience concerning diagnostic and therapeutic thoracic interventions with the da Vinci robot.

Material and methods. From June 2001 to January 2006, 42 patients (20 males and 22 females aged from 18 to 82 years) with intrathoracic lesions were operated on with the da Vinci robotic system. This consisted of 22 thymectomies, four resections of a paravertebral neurinoma, one ectopic mediastinal parathyroidectomy, one lymphangiomectomy, one resection of an ectopic goiter, mediastinal metastasectomy after thyroid carcinoma, seven esophageal procedures and 5 pulmonary lobectomies.

Results. 37 procedures (88.1%) were completed successfully with the robot. An open conversion (n = 5, 11.9%) was necessary in two lobectomy cases, in one thymectomy, in the mediastinal metastasectomy and in one patient with a large paravertebral tumor, all due to surgical problems. There was no relevant blood loss in any other procedure. The 30 days mortality of all 42 patients was 0%. One redo-operation was necessary after an esophageal dissection and one lower complication was observed The resection margins of all specimens were tumor free. The median overall operation time was 150.5 minutes (range 54–370) including 110 minutes (range 39–354) for the robotic act.

Conclusions. Different thoracic procedures have been proven to be feasible and safe when performed with the robot. The benefits of the da Vinci system show to advantage most in tiny and difficult to reach anatomic regions as is the mediastinum. For pulmonary lobectomies, however, the lack of robotic stapler devices and bended instruments hinder a complete robotic accomplishment.

080 Die minimal invasive Behandlung des Hämathothorax

P. Wurnig, S. Watzka, N. Pridun

Abteilung für Thoraxchirurgie, Otto Wagnerspital Wien, Wien, Österreich

Hämathothorax ist ein unter Umständen lebensgefährliches Krankheitsbild, dessen Aufmerksamkeit von chirurgischer Seite notwendig ist. Wir bearbeitenen in dieser Studie den Stellenwert der Thoraxchirurgie mit seinen minimalinvasiven Techniken.

Von Jänner 1999 bis Jänner 2005 wurden 103 Patienten mit dieser Diagnose an unserer Abteilung aufgenommen. 1. Schritt ist die Thoraxdrainage. 101 Patienten wurden darauf folgend mit einer Videothorakoskopie versorgt. Alle Patientendaten wurden retrospective erhoben, 94 Patienten konnten in dem Nachuntersuchungszeitraum kontaktiert und begutachtet werden. Im Beobachtungszeitraum wurde nach 6 Wochen eine Lungenröntgenkontrolle & ein Lungenfunktionstest nach 6 Monaten erhoben.

101 Patienten wurden einem VATS unterzogen, mittlere Operationsdauer war 43 ± 23 min, Umstieg auf eine Thorakotomie war in einem Fall (0,9%) erforderlich, mittlere Drainagedauer war 7 Tage, mittlerer Spitalsaufenthalt war 11 Tage, die perioperative Mortalität war null. In 17 Fällen (16,3%) traten postoperative Komplikationen auf (Parenchymfisteln, 1 Hornersyndrom, 1 postop. Hämatom, und in 2 Fällen Parästhesien im Bereich der Operationswunde nach ventral ausstrahlend. Alle Komplikationen wurden konservative behandelt. Das Lungenröntgen und 6 Wochen postop. zeigte in allen Fällen sehr gutes Ergebnis, die Lungenfunktion war nach den Kriterien von Siemon in 89 (94,6%) ein ausgezeichnetes Ergebnis und in 5 Patienten 8 5,3%) ein gutes Ergebnis. 2 Patienten, die keine operative Versorgung in der Intalphase hatten, benötigten später eine Thorakotomie mit Dekortikation wegen einer schlechten Lungenfunktion.

Videothorakoskopie in der Behandlung des Hämatothorax ist aus unserer Sicht nicht mehr wegzudenken. Mit direkter Blutstillung, Absaugen aller Koagel zur vollen Entfaltung der Lunge erzielten wir in fast allen Fällen ein sehr gutes Ergebnis.

081 Tachocomb® vs. Vivostat® vs. control-group: Protection of the cervical esophagogastrostomy after esophagectomy and reconstruction with stomach interposition

V. Matzi, J. Lindenmann, C. Porubsky, A. Maier, F. M. Smolle-Juettner

Department of Surgery, Division of Thoracic and Hyperbaric Surgery, University Medical School, Graz, Austria

Background. According to recent literature anastomotic leakage of the cervical esophagogastrostomy is reported as the most frequent complication in 10–30% after esophagectomy and reconstruction with stomach interposition.

The aim of this pilot-study was to compare the use of a protective fleece-bound sealing versus autologous fibrin-glue versus a control-group concerning the incidence of anastomotic leakage.

Methods. From 01/00 to 08/05, 142 patients were treated by esophagectomy and reconstruction with retrosternal or orthotop stomach interposition. The cervical esophagogastrostomy was always hand-sutured using PDS 3.0. The entire study-population was operated by one senior surgeon.

The distribution in the Tachocomb® (n = 41), Vivostat® (n = 35), as well as control-group (n = 66) followed as a consequence of availability of the respective test substances. Since Vivostat and/or Tachocomb were not available during the whole study period, randomization was not possible.

Results. Anastomotic leakage occurred in 18 patients (12, 67 %): 10 (7.04%) of them were observed in the control-group, 6 (4.2%) in the Tachocomb® group and 2 (1.4%) in the Vivostat®-group.

Clinical, endoscopic and radiomorphological signs of anastomotic leakage occurred from 9th–14th postoperative day. Standard management was debridement and early VAC application which allowed oral nutrition with a semi-liquid diet. 3 patients received additional stent implantation for sealing the leakage.

Conclusions. Despite the limitations of a non-randomized study, Vivostat® seems to be beneficial in order to reduce the leakage rate of cervical gastro-esophageal anastomosis.

082 Metabolic effects of oral supplementation of α-Ketoglutaric acid and 5-Hydroxy-methyl-furfural in preoperative nutritional support of lung surgery

A. Maier[1], V. Matzi[1], J. Lindenmann[1], T. Boessner[2], K. Oettl[3], H. Juan[4], T. Mujkic[1], F. M. Smolle-Juettner[1], J. Greilberger[3]

[1]Division of Thoracic and Hyperbaric Surgery, Department of Surgery, Medical University, Graz, Austria; [2]Department of Anesthesiology, Medical University, Graz, Austria; [3]Institute of Physiological Chemistry, Centre of Medical Physiology, Medical University, Graz, Austria; [4]Institute of Biomedical Research, Medical University, Graz, Austria

Background. Preoperative micronutrient supplementation have shown to reduce complications, shorten recovery and decrease the use of hospital resources.

In a clinical pilot study, the metabolic effects of α-Ketoglutaric acid (α-KG) and 5-Hydroxy-methyl-furfural (5-HMF) were evaluated with the goal to increase preoperative exercise capacity and decrease oxidative stress parameters.

Patients and methods. Ten consecutive patients admitted for lung surgery due to non small cell lung cancer were allocated to the study protocol. All patients received preoperative nutritional guidelines according general recommendations. In 5/10 (study group), a supplementation of 8 g α-KG and 0.8 g 5-HMF/day, for 10 days were additionally done. Spiroergometric evaluations were carried out on day 1 and day 10 of the study protocol. Blood samples for determination of oxidative stress parameters (Carbonyl proteins and Malon-di-aldehyd) were taken on day 1 and in the operating, room just before resection treatment.

Results. Spiroergometric re-evaluation showed a siginificant increase of VO_2max ($p = 0.00033$) in favour of supplementation with α-KG and 5-HMF. Determination of oxidative stress parameters showed a significant reduction of Carbonyl proteins ($p = 0.0002$) for the study group. The malondialdehyde levels showed no significant difference ($p = 0,414$).

Conclusions. Despite the limitations of a pilot study, simple oral supplementation using a combination of α-KG and 5-HMF of preoperative nutrition with the metabolic effects of increasing the exercise capacity and reduction of the oxidative stress injury may therefore be one of the central steps introducing a multimodality approach in fast track surgery programs.

083 Vacuum assisted closure system versus conservative management in the treatment of cervical anastomotic leakage after esophagectomy and gastric pull-up

V. Matzi, J. Lindenmann, C. Porubsky, A. Maier, F. M. Smolle-Juettner

Department of Surgery, Division of Thoracic and Hyperbaric Surgery, University Medical School, Graz, Austria

Background. Anastomotic-leakage in patients with cervical esophagogastromy is frequently reported in literature and main-responsible for the high postoperative morbidity. The aim of this study was to evaluate the effect of the VAC-System in comparison to conservative management in the treatment of cervical anastomotic-leakage.

Methods. From 01/00 to 08/05, 14 patients suffering from leakage of the cervical esophagogastrostomy were treated with Vacuum Assisted Closure system. As soon as the first clinical signs of anastomotic-insufficiency were observed, surgical debridement was performed and the VAC-system was applicated with 125 mmHg suction. From 01/95 to 12/97, the case histories of 11 patients with cervical anastomotic-leakage and conservative management were compared with the study-group concerning nutrition, hospital stay and complications.

Results. After daily change of the VAC-system normal oral nutrition could be performed in the study group. No post-interventional complications like pneumonia, local abscess or sepsis were observed. Mean hospital stay ranged from 12–35 days (mean 18.6 days) in comparison to 17–95 days (mean: 33.4 days) in the control group.

In the control-group nutrition was just possible in all cases over the nasogastric tube, every patient suffered from painful gastric acid-related skin inflammation. Pneumonia due to aspiration was observed in 3 patients, thrombosis developed in 2 patients.

Conclusions. In comparison to the conservative management, the application of the VAC-system represents a safe and efficient approach in the treatment of cervical anastomotic-leakage. Furthermore, patient's comfort could be increased and mean hospital stay could be shortened significantly.

084 Fleece bound sealing prevents pleural adhesions

V. Getman[1], E. Devyatko[2], E. Wolner[1], S. Aharinejad[3], M. Mueller[1]

[1]Department of Cardiothoracic Surgery, Medical University Vienna, Vienna, Austria; [2]Department of General Surgery and Transplantology, Medical University Vienna, Vienna, Austria; [3]Department of Anatomy and Cell Biology, Medical University Vienna, Vienna, Austria

Background. To assess the value of haemostatic fleece (HF) in prevention of pleural adhesions in an experimental animal model.

Methods. 40 rats were randomly assigned to four equal groups. All animals underwent bilateral thoracotomy in general anaesthesia. In group 1 standardized defects of 5 mm were generated in the visceral and the opposite parietal pleura without further coverage. In group 2 a 5 mm piece of HF (TachoSil®) was applied onto the intact visceral and opposite parie-

tal pleura. In group 3 a standardized pleural defect was completely covered by HF. Same kind of defect was only partially covered by HF in group 4 animals. Five animals of each group were sacrificed 6 weeks and five animals 12 weeks after surgery. During autopsy the area of the defect was excised with adjacent structures and specimens were evaluated histologically.

Results. Autopsy at 6 weeks revealed the fleece widely unchanged and covered by a smooth serous membrane. After 12 weeks the fleece had been completely resorbed. Histological studies revealed the area of the defect covered by regular mesothelium. All animals of group 1 showed marked bilateral pleural adhesions in the area of the defect, whereas no adhesions were found in groups 2 & 3. In group 4 animals pleural adhesions were detected only in the area without fleece coverage.

Conclusions. In this experimental model HF prevented the development of pleural adhesions. This property may have clinical impact in patients with some probability of re-thoracotomy enabling to reduce the risk of pleural adhesions significantly.

085 VIP and analogues as novel therapy in primary pulmonary hypertension

V. Getman, M. Mueller, E. Wolner, W. Mosgoeller

Department of Cardiothoracic Surgery, Medical University Vienna, Vienna, Austria

Background. To compare the potential of vasoactive intestinal peptide (VIP) and VIP-analogues ex vivo on rat & human lung arteries as novel drugs for treatment of primary pulmonary hypertension (PPH).

Methods. VIP and analogues of the peptide were synthetically produced (Pichem, Austria). VIP-analogues were designed by single aminoacid exchanges. The peptides were evaluated on 40 rat and 40 human pulmonary arteries. We investigated "ex vivo" the dose response as blood vessel relaxation. From the freshly operated lungs primary cell cultures were produced and incubated with Fluorescent labelled peptides to observe their specific cell binding.

Results. Vip relaxed the arteries as expected differently from the analogues. In direct comparison between equimolar amounts of VIP and analogues the differences were significant. Peptides which were found inactive for vasorelaxation and labelled with the Fluorochrome Cy-3 bound specifically to the membrane of the cells.

Conclusions. The vasodilatory effect of VIP can be modified by exchange or excision of aminoacids. Peptides without relaxation still bind to cells with VIP-receptors; they can be used as tumor cell marker.

086 Life tissue platform, a new research management tool for surgeons

M. Mueller[1], V. Getman[1], E. Wolner[1], W. Mosgoeller[2]

[1]Department of Cardiothoracic Surgery, Medical University Vienna, Vienna, Austria; [2]Institute für Krebsforschung, KIM-1, Vienna, Austria

Background. The legal issues on tissue ownership for human tissue obtained in the course of surgical procedures are not uniformly regulated. We were interested in a platform for the testing of new drugs in human lung arteries. Such a platform may be used to develop new treatment strategies, based on research on viable human tissue, obtained during thoracic surgery.

Methods. All procedures were approved by the national ethical committee. Together with the expertise of the leading Austrian law school and the national health authorities, we defined a procedure, which provides "safety of investments" and avoids a conflict of interest between the patient and the clinic or surgeon. 40 fresh lung specimens harvested during surgery for lung cancer were processed directly in the OR and pulmonary arteries dissected from the unaffected lung tissue. We investigated new vasoactive peptide analogues, designed for pulmonary hypertension.

Results. Arteries survived and responded to extracorporeal treatment for several hours. Ex vivo testing in fresh human pulmonary arteries revealed significantly different vasoactivity of some new analogues ($p < 0.01$).

Conclusions. The method avoids problems with species other than human, reduces the need for laboratory animals and accelerates pharmaceutical developments. It was successfully used to investigate the efficacy of new vasoactive peptides for drug development and the innovative logistics provides new role for research in thoracic surgery.

087 Bronchiolitis obliterans: Validation of a rat lung transplant model

P. Paulus, K. Krenn, N. Sela, S. Taghavi, W. Klepetko, D. Abraham, S. Aharinejad

Medical University of Vienna, Vienna, Austria

Bronchiolitis obliterans (BO) is a severe long-term complication in lung transplantation. Patients with bronchiolitis obliterans syndrome (BOS) have increased broncho-alveolar lavage MMP-9 concentrations. However, whether an experimental BO rat model can be useful for understanding the molecular mechanisms of BO, including the MMP-9 pathway, remains unclear. The aim of this study was therefore to establish a BO rat model of unilateral orthotopic lung transplantation, and to assess the pulmonary MMP-9 expression in this model. BO was induced by transplantation of Fisher F344 rat lungs to Wistar Kyoto (WKY) rats. The animals were divided in 4 groups of $n = 4$: Two allograft-groups (F344-WKY) with termination at 4 or 8 weeks after transplantation, and two isograft-groups (WKY-WKY) with termination at 4 or 8 weeks. All transplanted and native lungs were examined histologically for BO. Pulmonary proMMP-9 and active MMP-9 expression was analyzed by Western Blotting. Histologically, the allografts showed fibrosis and leukocyte infiltration characteristic for BO. These findings were absent in the native lungs and isografts. MMP-9 expression in the allografts was significantly increased at 8 weeks versus 4 weeks post-transplant ($p = 0.036$), whereas MMP-9 expression did not significantly change in the native lungs and isografts. BO-characteristic alterations in histology and pulmonary tissue MMP-9 expression levels in the BO rat model similar to those in BOS patients indicate that the F344-WKY model is a validated model of BO. Therefore, this model may be beneficial in studies on molecular mechanisms of BO and in development of novel therapeutic strategies against BO.

088 Donor total lung capacity predicts recipient total lung capacity after size-reduced lung trans plantation

C. Aigner[1], P. Jaksch[1], G. Winkler[1], S. Taghavi[1], G. Marta[1], W. Wisser[1], G. Dekan[2], W. Klepetko[1]

[1]Department of Cardio-Thoracic Surgery, Vienna, Austria; [2]Department of Pathology, Medical Universtiy Vienna, Vienna, Austria

Background. Size-reduced lung-transplantation has only recently gained a widespread use, especially for highly urgent recipients. However, it is still not considered standard procedure in most centers. It has the potential to alleviate donor organ shortage by allowing the use of oversized grafts for small and pediatric recipients. Limited data exist on preoperative parameters predicting functional outcome after lung-transplantation in general and especially after size-reduced lung-transplantation.

Patients and methods. All 98 patients undergoing primary lung-transplantation in a 2 years period, including 27 size-reduced lung-transplantations, were retrospectively analysed. Preoperative functional parameters were – after correction of estimated values according to the amount of size reduction-correlated to postoperative functional assessment. Actual and predicted total lung capacity (TLC) of transplant recipients and predicted TLC of donors was compared with the best post-operative TLC achieved within 12 months after transplantation.

Results. In 27 cases size-reduced lung-transplantation was performed. Downsizing was achieved by lobar-transplantation (n = 9), split lung-transplantation (n = 2) or peripheral segmental resection (n = 16). There was a statistical highly significant ($p < 0.01$) correlation between the donor TLC and the best recipient TLC achieved after transplantation (Pearson's correlation coefficient 0.675). No statistical significant correlation was seen between pre-operative recipient actual TLC and best post-operative TLC ($p = 0.87$, Pearsons's correlation coefficient 0.415). In standard lung transplant recipients post-operative TLC was correlated to both, donor predicted TLC ($p < 0.01$, Pearsons's correlation coefficient 0.509) and actual preoperative recipient TLC ($p < 0.01$, Pearsons's correlation coefficient 0.667).

Conclusions. Postoperative recipient TLC in size-reduced lung transplantation can be predicted by donor TLC rather than preoperative recipient TLC.

089 Korreliert der Tumorregressionsgrad mit dem Langzeitüberleben bei neoadjuvant behandelten Bronchialcarcinomen?

M. Lindner[1], A. Morresi-Hauf[2], O. Thetter[1], M. Lisakowska[3], F. Fend[3]

[1]Klinik für Thoraxchirurgie, Gauting, Deutschland; [2]Institut für Pathologie, Gauting, Deutschland; [3]Institut für Pathologie, Klinikum Rechts d. Isar, München, Deutschland

Grundlagen. Multimodale Therapiekonzepte ermöglichen die Operation von lokal fortgeschrittenen NSCLC. Ziel der Studie war festzustellen, ob die morphologische Regressionsgraduierung am Op-Präparat eine prognostische Aussage hinsichtlich des Langzeitüberlebens bei neoadjuvant vorbehandelten und operierten Bronchialcarcinomen erlaubt.

Patienten und Methodik. 84 Patienten mit lokal fortgeschrittenem, nichtkleinzelligen Bronchialcarcinom im Stadium III A wurden retrospektiv analysiert. Das Tumorstadium wurde bei allen Patienten vor Beginn der Induktionstherapie mittels transbronchialer Biopsie oder Mediastinoskopie histologisch gesichert. Nach Durchführung einer platin-basierten Chemotherapie im neoadjuvanten Ansatz wurde der Response radiologisch evaluiert. Alle Patienten wurden einer kompletten Tumorresektion und regionären Lymphadenektomie unterzogen. Die morphologische Beurteilung der Tumorregression erfolgte nach Junker. Tumorregression und Resektionsstatus wurden mit dem Langzeitüberleben korreliert.

Ergebnisse. Bei kompletter R0 Tumorresektion und dem Nachweis von < 10% vitalen Tumorgewebe (Regressionsgrad 2b und 3) ergibt sich ein für den Patienten signifikanter Überlebensvorteil.

Schlussfolgerungen. Bei Patienten mit lokal fortgeschrittenem NSCLC kann bei gutem Ansprechen auf neoadjuvante Chemotherapie durch den multimodalen Therapieansatz ein Überlebensvorteil erzielt werden. Die Identifikation klinischer und biologischer Parameter, die eine Responseprädiktion erlauben, ist ein wichtiges Ziel zukünftiger Untersuchungen.

090 Long-term survival of surgery for pulmonary metastases from colorectal carcinoma

A. Kirschbaum, G. Friedel

Klinik Schillerhöhe, Gerlingen, Germany

Background. Occuring of pulmonary metastases after treated colorectal carcinoma represents a frequent problem. Is the primary tumor controlled and do the metastases appear respectable, there is an indication for operation. Our clinical material was analyzed with regard to long-term survival.

Methods. A restrospective study was undertaken in 107 patients (middle age 60 years), who were operated from 1985–2000. There was a rectum cancer in 57 times and a colon cancer in 50 times. In 57% of the cases a sternotomy occurred with the aim of resection on both sides.

A R0-Situation was reached in 92%.

Results. There were no postoperative complications in 91%. The mortality was 1%. After 5 years 41% were alive in the R0 group compared to 0% in the R2 group. The disease free interval under 35 months has no influence on the 5 year survival time.

The best 5 year survival time had the group with solitary metastasis and a disease free interval more than 35 months.

Conclusions. Only the R0 Situation after surgery for pulmonary metastases from colorectal carcinoma has the best long term survival.

091 The value of bronchoscopy in defining the margin of bronchial resection for sleeve lobectomy

S. B. Watzka[1], A. Kreuzer[2], N. S. Pridun[1], P. H. Hollaus[1]

[1]Department of Thoracic Surgery, Otto Wagner Hospital, Vienna, Austria; [2]First Department of Pneumology, Otto Wagner Hospital, Vienna, Austria

Background. The prognostic value of pre-operative bronchoscopy in determining the type and extent of bronchial resection was evaluated in a retrospective study.

Material and methods. The charts of 108 consecutive patients, who underwent sleeve lobectomy, were reviewed with regard to pre-operative bronchoscopy findings. For univariate statistical analysis, cross-tabulation and χ^2 test were used. Results were considered to be significant at a p value less than 0.05.

Results. Only 8 of 108 patients had a completely normal bronchoscopy. In 29 patients, only indirect tumor signs could be found. In 48 patients, only direct tumor signs could be found. A combination of direct and indirect tumor signs could be diagnosed in 23 patients. After exclusion of normal bronchoscopy findings, the following statistically significant pattern of findings resulted (p = 0.000). Group 1: segmental and lobar ostia normal; Group 2: segmental and lobar ostia infiltrated; Group 3: segmental and lobar ostia occluded; Group 4: isolated occlusion of segmental bronchus; Group 5: narrowing of the segmental bronchus. Bronchoscopy findings were not able to predict the T and N stage or the R status (R1, R2). From seven patients with a sleeve-resection because of an enlarged lymph node, five patients had a normal carina in bronchoscopy.

Conclusions. The last decision to perform a bronchoplastic procedure depends on intra-operative findings. Even in case of a normal bronchoscopy, which represents 7% of our patients, bronchoplastic procedures may be performed. However, pre-operative bronchoscopy allows a high grade of suspicion whether bronchial sleeve resection is to be expected.

092 Intraoperative 99mc Tc marked sentinel lymph node evaluation in non-small cell lung cancer

F. Tomaselli[1], J. Ziegerhofer[2], J. Berenberg[1], R. Függer[1]

[1]Department of Surgery, Linz, Austria; [2]Department of Nuclear Medicine, Linz, Austria

Objectives. The aim of this study was to determine the technical-logistic approach and the role of the sentinel lymph node technique in patients with non-small cell lung cancer (NSCLC).

Methods. The study was carried out on 30 consecutive patients (M/F=20:10, mean age 62.4 ± 6.5 years) with resectable NSCLC. Intraoperative application injection of 1 ml 99mTc-tracer was performed in four aliquots injected in the periphery (max. 0.5 cm distance) of the tumour. Intraoperative radioactivity detection started at a mean of 45 minutes (range 35–60 min) after the injection of the tracer, using a handheld gamma probe counter. The sentinel lymph node (SLN) was defined as the node with the highest count rate. Standardisized resection with lymphnode node dissection was performed and findings were correlated with histologic and immunohistochemistry examination.

Results. One patient, suffering from SCLC was excluded. The SLN was identified in 29/30 (96.6%) patients (a total of 32 SLNs); 1/32 of the SLNs were positive for metastatic involvement after histologic and IHC examination.

Conclusions. These preliminary results demonstrate the feasibility of this procedure in identifying the first site of potential nodal metastases of NSCLC. The actual clinical impact of this procedure remains to be elucidated by further investigation in larger groups of patients.

AEC: Diagnostische und therapeutische Endoskopie des Verdauungstraktes

093 Incidence of Columnar Lined Esophagus (CLE) at videoendoscopically normal Esophago-Gastric Junction (EGJ)

J. Lenglinger[1], C. Ringhofer[1], M. Eisler[1], A. Baldinger[1], R. Sedivy[2], F. Wrba[2], E. Cosentini[1], G. Prager[1], J. Zacherl[1], M. Riegler[1]

[1]Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria; [2]Institut für Klinische Pathologie, Medizinische Universität Wien, Vienna, Austria

Background. Columnar lined esophagus (CLE) is found in 10–33% of individuals with gastro-esophageal reflux disease (GERD). Via intestinal metaplasia (IM; Barrett esophagus), low- (LGD) and high-grade Dysplasia (HGD) CLE may progress towards adenocarcinoma of the esophagus. We investigated the incidence of IM at videoendoscopically normal esophago-gastric junction (EGJ).

Methods. From 11/04–12/05, in 114 symptomatic GERD patients (w: 56, m: 58; Alter: 55 [17–84] Jahre) esophago-gastro-duodenoscopy (EGD) including 4 quadrant biopsies from EGJ was digitally recorded. Endoscopic normal EGJ (=absence of endoscopic CLE) was defined by absence of gastric type mucosa proximal to the start of gastric rugal folds. Histologic CLE includes oxyntocardiac mucosa (OCM: mucus, parietal cells) and cardiac mucosa (CM: mucus cells).

Results. Analysis of videoendoscopy revealed normal junction in 29 out of 114 (25%), CLE <0.5 cm in 74 (65%) and CLE >0.5 cm in 11 (10%). Irrespective of endoscopic finding all patients were found to have CLE. IM was detected in 21% of those with normal EGJ and in 30% of those with CLE <0.5 cm (Table). In 11 patients with CLE ranging from 1.0–7.0 cm CM+OCM was detected in 8 and IM in 3. IM was exclusively present within CM.

Mucosal Type	Normal Junction (n = 29)	CLE ≤ 0.5 cm (n = 74)
CM+OCM	23 (79%)	52 (70%)
IM	6 (21%) (LGD n = 1)	22 (30%) (LGD n = 4)

Conclusions. Barrett esophagus is detected in a significant portion of patients with an endoscopically normal appearing EGJ. Our data indicate that normal EGJ should be biopsy sampeld for exclusion of Barrett esophagus.

094 Combined impedance- and pH-monitoring of the esophagus: first experience

J. Lenglinger[1], A. Baldinger[1], M. Eisler[1], C. Ringhofer[1], G. Prager[2], E. Cosentini[2], J. Zacherl[2], M. Riegler[1]

[1]Chirurgische Funktionsdiagnostik, Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria; [2]Abteilung für Allgemeinchirurgie, Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria

Background. Combined impedance-and pH-monitoring is a recently introduced diagnostic tool to assess gastro-esophageal reflux activity. With this technology impedance is continuously monitored at several levels of esophageal length. Liquid, gas and mixed liquid-gas refluxes are detected as retrogradely occuring changes of endoluminal impedance. In addition, pH-monitoring of the distal esophagus is performed. This allows classification of refluxes as acid (pH<4) or weakly acidic/non-acid (pH≥4). We report our first experience with this new diagnostic method.

Methods. Between May 2005 and January 2006 combined impedance-and pH-monitoring (Sleuth, Sandhill, USA) was performed in 82 patients (51 female, age 52.4 [18–83] years) with clinical signs of gastro-esophageal reflux disease (GERD) and without prior esophageal or gastric surgery. Antisecretory medication was discontinued 10 days before the test. Impedance was monitored 3, 5, 7, 9, 15 and 17 cm, and pH 5 cm proximal of the manometrically determined lower esophageal sphincter. Recording time was 22.9 ± 1.1 hours.

Results. 21 (26%) patients had pathologic esophageal acid exposure (pH<4 during >6.3% of total recording time, or >9.7% in upright, or > 2.1% in recumbent position). Impedance monitoring identified 7 (9%) additional patients with normal percentages of time with pH<4, but with an abnormal number of liquid and mixed liquid-gas refluxes (> 73). In total 28 (34%) patients were diagnosed with pathologic gastro-esophageal reflux activity by combined impedance- and pH-monitoring.

Conclusions. Our first experience with combined impedance- and pH-monitoring of the esophagus shows that, irrespective of symptoms, GERD is revealed in 33% more patients than with conventional pH-monitoring.

095 Endoscopic antireflux procedures vs. laparoscopic fundoplication in a porcine reflux model

F. W. Spelsberg, R. A. Lang, T. P. Hüttl, H. Winter, R. Weidenhagen, K. Jauch

Chirurgische Klinik und Poliklinik, München, Germany

Background. Several endoscopic antireflux therapies were recently described that aim at creating an antireflux barrier and reducing or eliminating the need for long-term medication or fundoplication. These techniques use 3 approaches to improve gastro-oesophageal barrier function: tightening of the gastro-oesophageal junction by creation of plications, by delivery of radiofrequency energy, or by injecting inert material. The aim of the current study in a porcine reflux model was to assess the efficacy of these techniques by investigating 3 endoscopic procedures (EndoCinch®, Stretta®, Gatekeeper®) and compare them with laparoscopic Nissen fundoplication.

Methods. 35 pigs underwent esophageal manometry and endoscopic injection of 50U botulinum toxin (Btx) into the lower esophageal sphincter (LES). After 1 week animals were randomized to EndoCinch®, Stretta®, Gatekeeper®, laparoscopic Nissen fundoplication or control. Esophageal manometry was performed before and after these procedures. At 8 weeks animals were sacrificed after manometry.

Results. Mean LES pressure declined from 5.5 ± 2.7 mmHg before to 2.8 ± 1.9 mmHg after Btx injection ($p < 0.001$). After 1 week and after 8 weeks LES pressure was 9.1 ± 4.2 mmHg ($p < 0.05$ vs. Btx) and 2.6 ± 1.2 mmHg (n.s.) respectively in the EndoCinch® group, 5.0 ± 1.7 mmHg ($p < 0.05$ vs. Btx) and 3.0 ± 1.6 mmHg (n.s.) in the Stretta® group, 9.1 ± 5.0 mmHg ($p < 0.05$ vs. Btx) and 4.2 ± 2.2 mmHg (n.s.) in the Gatekeeper® group, and 14.4 ± 11 mmHg ($p < 0.05$ vs. Btx) and 12.3 ± 4.3 mmHg ($p < 0.05$ vs. Btx) in the fundoplication group.

Conclusions. Immediately after application all endoscopic and laparoscopic procedures reversed the LES pressure reduction achieved with Btx injection. Yet after 8 weeks none of the endoscopic procedures raised LES pressure significantly any longer, only laparoscopic fundoplication had a permanent effect.

096 Implantation von Selbst Expandierbaren Metallstents (SEMS) zur palliativen Therapie von malignen Stenosen im oberen GI-Trakt distal des Ösophagus: ein Erfahrungsbericht nach 42 Patienten

A. El-Shabrawi, H. Cerwenka, H. Bacher, P. Kornpratt, H. Mischinger

Klin. Abteilung für Allgemeinchirurgie, Medizinische Universität Graz, Graz, Österreich

Grundlagen. Die Anlage einer Gastroenterostomie ist nach wie vor die Standardtherapie zur Palliation von malignen Stenosen im oberen GI-Trakt. Mit der Verfügbarkeit von SEMS mit einem großen Durchmesser ist es nun möglich geworden, diese Stenosen auch endoskopisch zu versorgen. Wir möchten über unsere Erfahrungen mit dieser neuen Methode berichten.

Material und Methodik. Alle Daten sind mit mit Hilfe einer Datenbank prospektiv erhoben worden. Zwischen dem Oktober 2001 und dem Jänner 2006 haben wir bei 42 Patienten (39–93 Jahre, median 71 Jahre) SEMS zur Palliation endoskopisch implantiert.

Stenosegrad	Flüssige Nahrung	32 Patienten (76%)
	Breiige Nahrung	8 Patienten (19%)
	Feste Nahrung	2 Patienten (5%)
Lokalisation der Stenose	Magenausgang Duodenum	30 Patienten (71%)
	Abführende Schlinge st. p. BII	5 Patienten (12%)
	Jejunum st. p. Gastrektomie	7 Patienten (17%)

Ergebnisse. Bei 37 Patienten (88%) konnte die Stenose durch die endoskopische Stentimplantation beseitigt werden, sodass diese Patienten zumindest breiige Nahrung zu sich nehmen konnten, 2 Patienten (5%) konnten danach flüssige Nahrung zu sich nehmen und bei 3 Patienten (7%) kam es zu keiner Verbesserung der Stenosesymptomatik.

Bei 3 Patienten kam es nach erfolgreicher Stentimplantation zu einer Restenose, die durch eine neuerliche Stentimplantation beseitigt werden konnte. Die durchschnittliche ÜLZ liegt bei 114 Tagen, die Mortalitätsrate dieser Methode liegt bei 0% und die Komplikationsrate bei 2,5%.

Schlussfolgerungen. Die endoskopische Stentimplantation zur Palliation von malignen Stenosen im oberen GI-Trakt distal des Ösophagus ist eine effiziente, sichere und schonende Methode zur Beseitigung der Stenosesymptomatik und sollte das Verfahren der Wahl sein.

097 Endoscopic treatment of esophageal anastomotic leaks, perforations and fistula with self expanding plastic stents

M. Hünerbein, B. Rau, S. Beller, P. M. Schlag

Klinik für Chirurgie und Chirurgische Onkologie, Charite Campus Buch, Berlin, Germany

Background. Esophageal leaks are a major cause of morbidity and mortality following esophageal resection or endoscopic interventions. Treatment options range from aggressive surgery to conservative management, but there remains much controversy on the best treatment. The aim of this study was to evaluate the efficacy of a self-expanding plastic stent in the treatment of esophageal anastomotic leaks, perforations and fistula.

Methods. In a 6 year period esophageal leaks were observed in 21 patients. There were 15 anastomotic leaks, 3 perforations and 3 fistula. All leaks were treated by insertion of self-expanding plastic and/or interventional drainage. The short-term efficacy and long-term outcome after stent treatment were analyzed and compared to conventional surgical treatment.

Results. Self-expanding plastic stents were successfully placed in all patients without procedure related morbidity. Immediate leak occlusion was obtained in 20 of 21 patients. The mean healing time (time to stent removal) was 33 days. Compared to the conventional treatment group, patients who were treated with stents had earlier oral intake (10d vs. 24d), a less extensive intensive care course (23d vs. 47d) and shorter hospital stay (39d vs. 57d). In-hospital mortality was 0% in the stent group and 20% in the other group. After a mean follow-up of 12 months none of the patients developed a stricture after stenting, but one patient after conservative treatment

Conclusions. Self-expanding plastic stents can reduce leak-related morbidity and mortality after esophagectomy and may be considered as a cost-effective treatment alternative.

098 Management of postoperative esophageal leaks using the polyflex self-expanding covered plastic stent

F. B. Langer, C. Neumayer, P. Panhofer, E. Devyatko, G. Prager, E. Wenzl, J. Zacherl

Department of Surgery, Medical University Vienna, Vienna, Austria

Background. Oesophageal anastomotic leaks can lead to prolonged hospitalization. We present our experience with the placement of the Polyflex self-expanding plastic stent in this indication.

Methods. Between April 2000 and April 2005, 29 patients underwent Polyflex stent placement for postoperative oesophageal anastomotic leaks. The primary operation was oesophagectomy in 16 patients, gastrectomy in 8, cardia resection in 2, and other procedures in 3 patients. The median interval between operation and stent placement was 18 days (range, 4 to 65). Leak occlusion was assessed by water-soluble contrast swallow and the clinical course.

Results. In 2 patients stent misplacement produced an enlarged anastomotic dehiscence that necessitated re-operation. Radiologic evaluation was impossible in 6 patients because of their generally restricted condition. Among 21 evaluable patients, leak occlusion was successful with a single stent in 19 patients (90%) based on radiologic evaluation. Immediate oral feeding was well tolerated by these patients. In the long term follow-up 12 cases of late stent dislocations were observed. Stent removal in patients after oesophagectomy with gastric pull-up led to dysphagia from anastomotic strictures in 3 patients. Symptomatic strictures did not develop in 5 evaluable postgastrectomy patients after stent removal. 1 patient had a lethal bleeding from an aorto-oesophageal fistula 5 days after stent placement.

Conclusions. The placement of self-expanding plastic stents is a highly effective treatment for oesophageal anastomotic leaks. Expecting anastomotic strictures we do not recommend stent removal after oesophagectomy with gastric pull-up reconstruction.

099 Management of repiratory tract fistula due to esophageal carcinoma: A therapeutic challenge

C. Porubsky, J. Lindenmann, V. Matzi, A. Maier, F. M. Smolle-Jüttner

Division of Thoracic and Hyperbaric Medicine, Medical University of Graz, Graz, Austria

Background. One of the most therapeutic challenges in the palliative management of esophageal carcinoma is the treatments of respiratory tract fistula.

In a prospective study, we investigated the efficiency and complications of self-expandable „covered" stents for sealing of tracheal-broncheal fistula.

Methods. From 01/98–12/04 we treated 21 patients (15 male, 6 female, age 43–81 years), suffering from esophagotracheal or bronchial fistula due to esophageal carcinoma. Endoskopic evaluation by esophagogastroscopy and bronchoscopy revealed in 12 patients a spontaneous fistula, in 9

patients a fistula in the respiratory tract due to penetration by an esophageal stent.

Fistula was sealed in 14 patients only with an esophageal stent. 7 patients also needed a tracheal stent or mainbroncheal stent too.

Results. Successful sealing of fistula with self expandable covered stents was possible in all patients. In 15 patients oral nutrition was possible immediately after stent implantation.

In patients with sandwich stenting repetitive bronchoscopic clearance was necessary due to mucous obstruction. Pneumonia occurred in 10 patients. Due to chronic aspiration a tracheostomy was performed in 6 patients. 18 patients needed morphin due to chronic pain.

The middle survival time was 84 days (32–146 days).

Conclusions. Sealing of respiratory tract fistula by covered self expandable stents due to esophageal carcinoma, has showen to be a sufficient therapeutic option.

100 Long term morbidity of oesophageal stents: leave it or remove it?

F. B. Langer, C. Neumayer, P. Panhofer, E. Devyatko, G. Prager, E. Wenzl, J. Zacherl

Department of Surgery, Medical University Vienna, Vienna, Austria

Background. Remarkable technical refinements have expanded the field of application for oesophageal stents. Stents may be applied in benign oesophageal strictures or postoperative leaks as well as in non-resectable malignant stenosis. As a consequence of the assumed risk of esophageal lesions as vascular and airway fistulas, bleeding, perforation or mucosal hyperproliferation it is not recommended in literature to leave an esophageal stent longer than 6 months, unless no data is published on this issue.

Patients and methods. Between 1/02 and 1/06 a total of 157 oesophageal stents of different types were implanted in 108 patients for malignant strictures (n = 58), benign strictures (n = 19), perforation (n = 5) or anastomotic leakage (n = 26). 44 patients (41%) with stents left in place for longer than 6 months were included in the study.

Results. In 33/44 patients (75%) follow up for survival was complete at abstract submission. In 21/44 patients (47%) stent placement was performed for benign indications. At follow-up (median: 14 months) 33 patients had no late intervention for stent complications beyond 180 days after stenting. Late stent dislocations were observed in 4/44 patients (9%). 2/44 patients (5%) underwent overstenting due to late tumor overgrowth. No perforation, airway fistula or mucosal hyperproliferation was observed more than 180 days following stent placement.

Conclusions. Stent associated complications generally occur early after placement. Long term stent placement is not associated with an increased risk for oesophageal lesions and can therefore safely be applied also in benign indications.

101 The use of self-expanding metal stent for the treatment of acute esophageal variceal bleeding

A. Shamiyeh[1], J. Danis[1], J. Zehetner[1], R. Hubmann[2], W. Wayand[1]

[1]Ludwig Boltzmann Institute for operative laparoscopy, Linz, Austria; [2]2. Interne Abteilung, AKH, Linz, Austria

Background. Esophageal varices are the most common clinical manifestation of portal hypertension with a mortality of 30–50% in acute bleeding. Different treatment options for stopping the acute bleeding exist but still 20% of the patients need to be treated by placement of a balloon sonde. We are presenting a new easy and safe technique to stop acute bleeding.

Methods. Between January 2003 and May 2005 20 patients with acute bleeding from esophageal varices and Child-Pugh classification C were treated with a self-expanding metal stent. In these patients standard therapy to stop bleeding failed. The first 5 stents were placed under X-ray guidance to control the correct position of the stent. In the remaining patients we implanted the custom-made self-developed Stent (SX-ELLA stent Danis). The stent was implanted with new delivery system and the position was controlled by endoscopy and CT scan.

Results. Stent placement was successful and uncomplicated in all patients and bleeding could be stopped immediately. There was no recidive bleeding during the stent implantation (median time 6 days, range 2–14) in 19 patients, one patient had bleeding from a second site (gastric bleeding) needing further treatment. After stabilisation of the patients, the stent could be extracted endoscopically without any complication.

Conclusions. Stenting of acute esophageal variceal bleeding is an innovative new method. The procedure is easy and safe and provides major advantages compared to the balloon sonde; it led to immediate stoppage of bleeding. Further trials should be done to confirm this results.

102 Colorectal anastomotic stricture: treatment by balloon dilatation

A. J. Dinnewitzer, J. Holzinger, B. H. von Rahden, C. Rabl, T. Fitzka, H. J. Stein, P. M. Heinerman

Department of Surgery, Paracelsus Private Medical University, Salzburg, Austria

Background. Postoperative development of colorectal stricture occurs in up to 20% of colorectal anastomoses. The aim of this study was to evaluate the therapeutic effectiveness and complications of balloon dilatation.

Patients and methods. A consecutive series of 42 patients having undergone endoscopic balloon dilation for colorectal stenoses between 1999–2005 was analyzed. Two patients were treated for strictures resulting from inflammatory bowel disease, in one patient the reason was a local recurrence, so 39 patients were left for the analysis.

Results. The origin of the stenosis was stricture of a colorectal anastomosis in 39 patients, 21 out of these 39 patients (54%) were resected for malignant disease. 72% had difficult or frequent defecation caused by partial obstruction or abdom-

inal pain. Dilatation was successful in 16 out of 21 patients (76%) resected for cancer, and in 15 out of 18 patients (83%) in patients resected for benign disease. In all of these patients the symptoms resolved. A median number of 4 sessions (range 1 to 18) was required. Complications (re-stenosis, perforation, abscess, severe hemorrhage) that required surgical intervention developed in 12.8%.

Conclusions. Balloon dilatation is a feasible technique for treating colorectal stenoses in benign as well as malignant disease. Low complication rates make it a treatment of choice and helps to avoid unnecessary reoperations. However, in malignant disease, prior exclusion of recurrence is mandatory.

103 Bile duct cooling prevents leakage during radiofrequency therapy in the liver: a case report

H. Weiss[1], A. Klaus[1], W. Mark[1], G. Brandacher[1], P. Kovacs[2], R. Margreiter[1], R. Bale[2]

[1]Department of General, Thoracic and Transplant Surgery, Innsbruck, Austria; [2]Department of Radiology, Medical University Innsbruck, Innsbruck, Austria

Background. Complications that may arise during liver RF ablation include biliary stenosis and abscesses. Cooling of the bile ducts sufficiently prevents complications when radiofrequency (RF) is performed in an animal model. Herein we present the first data on bile duct cooling in a patient.

Material and methods. Bile duct cooling was performed in a patient suffering from multiple bilobar liver metastasis originating from recal cancer. A endoscopic retrograde cholangiography was carried out to place a 4 Ch nasobiliary tube. Radiofrequency ablation was indicated in a palliative setting on all visible hepatic tumors one of which was placed adjacent to the right hepatic bile duct.

Results. All visible tumors (n = 6) of the liver could be reached by radiofrequency ablation. During a heating time of 45 min at the particular tumor close to the bile duct a total of 950 ml cold preservation solution was administered. Both, the postinterventional CT-scan as well as the cholangiogram which was carried out one day thereafter showed no signs of bilary lesion. The patient was discharged on post-interventional day 3. A follow-up CT-scan after three months described sufficient focal tumor necrosis without signs of biliary stenosis.

Conclusions. Cooling of the bile ducts with a cold solution significantly protects the intrahepatic bile ducts from damages caused by the heat generated by RF when performed close to the bile ducts.

Evidenz und Behandlungskonzepte in der plastischen Chirurgie

104 Vaskuläre Anomalien – Eine biologische Klassifikation als Voraussetzung Evidenzbasierter Therapiekonzepte

J. Roka, H. Kubiena, M. Frey

Abteilung für Wiederherstellungs- und Plastische Chirurgie, Medizinische Universität Wien, Wien, Österreich

Grundlagen. Seit 1982 werden einander Hämangiome und vaskuläre Malformationen in einer biologischen Klassifikation vaskulärer Anomalien gegenübergestellt. Die Bedeutung dieser Einteilung für Therapiekonzept und Outcome konnte in der Literatur belegt und durch die Analyse der eigenen Ergebnisse überprüft werden.

Patienten und Methodik. Diese Klassifikation wird in einer interdisziplinären Arbeitsgruppe an unserer Abteilung in diagnostischer und therapeutischer Hinsicht angewendet. Im Zeitraum von 2000 bis 2005 wurden 116 Patienten entsprechend klassifiziert und behandelt (Hämangiome n = 39, Malformationen n = 77). Die Initialtherapie bei Hämangiomen besteht in Frühlaserung, Observanz sowie gegebenenfalls medikamentöser Therapie und nur in seltenen Fällen in chirurgischer Intervention. Bei den vaskulären Malformationen hingegen in mehrheitlich interventionell-radiologischen oder operativen Maßnahmen (Sklerotherapie, Embolisierung und Resektion). 60 Patienten wurden nach Erstellung einer Diagnose einer Therapie zugeführt (Exzision/Resektion n = 47 Cortison n = 10, Embolisation n = 8, Sklerotherapie n = 7, Laser n = 4).

Ergebnisse. Das kosmetische und funktionelle Ergebnis sowie die Linderung der Symptome waren wesentliche Beurteilungskriterien. Von 60 behandelten Patienten waren in 51 Fällen alle Kriterien zufriedenstellend erfüllt. Von den 8 als nicht zufriedenstellend klassifizierten Fällen konnte in 6 Fällen keine funktionelle und in 4 Fällen keine kosmetische Besserung erzielt werden, in 3 Fällen trat keine Symptombesserung ein.

Schlussfolgerungen. Die Diagnose anhand anamnestischer, klinischer, radiologischer, histologischer und genetischer Merkmale kann Aussagen über Prognose und Behandlungsmöglichkeiten treffen und bedeutet damit einen Vorsprung für Arzt und Patienten. In unserer Analyse stimmten im Grossteil der Fälle prognostiziertes Therapieresultat und tatsächliches Ergebnis überein. Dies belegt die Effizienz einer standardisierten Klassifikation vaskulärer Anomalien.

105 Skin Sparing Mastektomie und Sofortrekonstruktion der Brust – Möglichkeiten und Grenzen

H. Benditte-Klepetko[1], D. Hoch[1], S. Mohr-Gutharc[2], F. Kömürcü[1], M. Deutinger[1]

[1]Abteilung für Wiederherstellungs- und Plastische Chirurgie, Medizinische Universität Wien, Wien, Österreich; [2]Gynäkologie, SMZ Süd, Wien, Österreich

Grundlagen. Derzeit ist bei nahezu 70 % aller primär diagnostizierten Mammakarzinomen eine brusterhaltende Therapie möglich. Um eine optimales kosmetisches Ergebnis zu erzielen, können zur brusterhaltenden Therapie onkoplastische Schnittführungen gewählt werden Wenn sich allerdings bei der intraoperativen Schnellschnittuntersuchung herausstellt, dass die Resektion nicht im Gesunden erfolgt ist, kann eine Skin-Sparing-Mastektomie mit Sofortrekonstruktion, auf der Basis der gleichen Schnittführung durchgeführt werden.

Patienten und Methodik. In den letzten 5 Jahren wurden insgesamt 18 primär brusterhaltende chirurgische Maßnahmen nach onkoplastischer Schnittführung bei Mammakarzinom durchgeführt. Zusätzlich wurde bei 13 Patientinnen, bei denen das Ergebnis des intraoperativen Schnellschnittes eine weitere Gewebeentfernung notwendig werden ließ, die Operation zur Skin-Sparing-Mastektomie erweitert und eine Sofortrekonstruktion mit Latissimus-dorsi-Lappen durchgeführt. Dabei wurde gleichzeitig die Rekonstruktion von Mamille und Areola vorgenommen. Die Selektion der Patientinnen erfolgte nach Tumorgröße, Abstand des Tumors vom Hautmantel, sowie Ausschluss einer Multizentrizität.

Ergebnisse. Komplikationen wie Nachblutungen, Wundheilungsstörungen, Fettgewebsnekrosen oder Lappenverlust wurden nicht verzeichnet. Im Rahmen unserer Nachuntersuchungen zeigte sich die Mehrheit der Patientinnen mit dem ästhetischen Ergebnis zufrieden und die psychische Belastung war deutlich geringer als bei vollständiger Brustentfernung.

Schlussfolgerungen. Mit einer individualisierten onkoplastischen Operationstechnik ist im Rahmen einer brusterhaltenden Therapie sowohl ein zufriedenstellendes kosmetisches Ergebnis als auch onkologische Sicherheit erreichbar. Durch die Möglichkeit der Sofortrekonstruktion bei notwendiger Ausweitung der Operation können trotz vollständiger Entfernung des Drüsenkörpers kosmetisch zufrieden stellende Ergebnisse erzielt werden.

106 Gluteal perforator flap as evidence based therapy in extensive and recurrent pilonidal sinuses

K. F. Schrögendorfer, H. Beck, M. Vierhapper, P. Giovanoli, M. Frey

Division of Plastic and Reconstructive Surgery, Medical University Vienna, Vienna, Austria

Background. Sacrococcygeal pilonidal disease is a common and well recognized entity.

Although it has been surgically treated for more than 100 years and a large variety of operative techniques for treatment of recurrent pilonidal sinuses are described in the literature but its management remains controversial. Local flaps as Limberg or Karydakis are dealing with limited size of the defect.

Treatment should avoid recurrence combined with low morbidity. The gluteal perforator flap, promises the opportunity to cover large defects.

Methods. 12 patients underwent radical debridement because of extensive recurrence pilonidal sinus. In all patients the defect was covered with a VY-advancement gluteal perforator flap. 2–4 perforating vessels were preserved for flap blood perfusion. Follow up period was 6–12 month. To verify morbidity patient assessment includes examination of limitation in daily life, mobility, stairclimbing, sensibility.

Results. In 9 cases postoperative wound healing was unproblematic. In 3 cases a dehiscence at the caudal flap edge after sutures removing occurred, healing was reached in all cases with conservative treatment.

All patients were fully recovered after 4 weeks without any limitation.

No recurrence was observed.

Conclusions. Preservation of muscle for functional purposes is a main consideration. Easy performance, large calibre perforators, tension free wound closure and unproblematic wound healing make these flaps reliable. The possibility of extent resection of chronic inflammatory tissue, the possibility of coverage by well perfused tissue without tension, low morbidity and low recurrence rate makes this concept to an important and successful additional option in extensive and recurrent pilonidal diseases.

107 Concepts for chirurgical treatment of Hidradenitis suppurativa

H. Beck, W. Haslik, K. Schrögendorfer, M. Frey

Klin. Abteilung für Plastische und Wiederherstellende Chirurgie, Univ. Klinik für Chirurgie, Vienna, Austria

Background. In patients with Hidradenitis suppurativa (HS), the chirurgical treatment is often the last step of a long patient's odyssey. Only few literature based on evidence-level 1 or 2 can be found, although the prevalence of HS is estimated to be about 1:300. There is a lack of multi-center studies and metaanalysis, and guidelines about antibiotics, extent of excision, technique of coverage and accompanying measures are missing.

Methods. Since 2002 47 patients with HS were treated at our department. 17 patients had axillary affection, 26 inguinal/perianal, 4 patients were affected in both regions. All patients received specific long-time antibiotics preoperatively. Depending on dimension and localisation different techniques of coverage were used, two-stage procedure for severe affection. In case of perianal affection a colostomy was performed preoperatively.

Results. For the axillary region local flaps (e.g. Limberg) were used. In 10 patients with massive affection of the inguinal/perianal region we used the VAC-therapy and Split Skin Grafting (SSG) secondary. SSG fixation was done by using the VAC-system. Local infection could not be found. 3 patients received moist dressings and subsequent SSG, partial infection and loss of the SSG was found in this group. No relapses were found up to now.

Conclusions. Radical excision following long-time antibiotics is the method of choice in cases of massive HS. SSG is the method of choice for regions, where local flaps or direct closure cannot be performed. By planning a two-stage proce-

dure and by using VAC-therapy we could obtain excellent healing rates of the SSG.

108 Treatment of complex neuropathic-ischemic foot ulcers with Buried Chip Skin Grafting and V.A.C. Therapy for salvation of the lower limb. Case presentation and review of literature

M. Gesslein[1], R. Horch[2]

[1]Klinik für Unfall- und Orthopädische Chirurgie, Klinikum Nürnberg-Süd, Nürnberg, Germany; [2]Abteilung für Plastische und Handchirurgie, Chirurgische Klinik mit Poliklinik der Friedrich-Alexander Universität Erlangen-Nürnberg, Erlangen, Germany

Background. Despite enhancements in treatment of diabetic foot ulcers reduction of major limb amputation as claimed in the St' Vincent Declaration 1989 could not be achieved. Combination of Buried Chip Skin Grafting and vacuum assisted closure (V.A.C.) lead to preservation of the lower limbs in the following patient.

Material and methods. We report the case of a 68 year old patient who was admitted to the hospital with deranged blood sugar levels in a septic condition. Due to complex chronic ulcerations of both feet she was actually scheduled for major amputation of both limbs. Clinical findings were a distinctive diabetic foot syndrome with stage D IV ulcerations according to the Wagner and Armstrong classification.

Results. Vascular diagnostic revealed arterial occlusive disease in the lower legs without feasibility of reconstruction. After radical débridement of all ulcers V.A.C. therapy was initiated, until all wounds showed good granulation tissue. Using the 'Buried Skin Chip' technique in combination with V.A.C. therapy epithelialisation was completed within four weeks. The Patient recovered well and was fully independent on discharge.

Conclusions. A goal-oriented interdisciplinary setting can achieve preservation of extremities even in septic patients. The remarkable graft resistance against mechanical stress and bacterial contamination was first described by Braun in 1921. Successful adhesion of Buried Chip Skin Grafts in septic foot ulcers using V.A.C. therapy has been reported recently. This combination seems to be a innovative and promising procedure to achieve accelerated wound closure in those patients.

109 Treatment of human painful neuroma by CO_2 laser welding and new method of subcutaneous denervation

W. Happak, L. Kriechbaum, S. Milani, J. Steiner

Surgical Clinic, Vienna, Austria

Background. Since nearly 200 years the treatment of painful neuromas is an unsolved problem. Up to 150 techniques are described with a recurrency rate of the pain between 20 and 50%. The intramuscular transposition, the implantation into a vein and the end-to-side coaptation of the nerve stump are the state of the art operations. After the third pain-operation no improvement can be expected.

Material and methods. 105 patients, with chronic neuroma or phantom pain were operated in the last 10 years. One third of the patients had 3 or more pain operations. More than 210 nerves in amputated extremities, the upper and lower limb, the neck or the head were dissected. The nerve stumps were treated by welding the cross sectional area with the CO_2 laser. The laser welding was performed continuously with power setting of 60 Milliwatt until the nerve stump showed a dry surface. 30% of the patients had a remaining sympathetic maintained pain syndrome (SMPS) after the first treatment. The sympathetic, deep burning pain was treated in a second operation by selective subcutaneous surgical denervation.

Results. All patients treated showed significant improvement of their hand function. The visual analogous scale (VAS) showed a significant improvement of the pain level. Also the medical pain therapy could be reduced significantly.

Conclusions. The presented data show that the superficial epicritical pain of neuromas can be treated successfully with CO_2 laser welding and the sympathetic, deep pain by subcutaneous denervation.

110 MRT-Volumetrie bei endokriner Orbitopathie

M. Deutinger[1], S. Gärner[1], M. Baumgartner[2], G. Dorner[3], W. Hauff[3], D. Hellekes[1]

[1]Abteilung Plastische und Wiederherstellende Chirurgie, Krankenhaus Hietzing, Wien, Österreich; [2]Zentralröntgen / Schnittbildzentrum, Krankenhaus Hietzing, Wien, Österreich; [3]Universitätsklinik für Augenheilkunde und Optometrie, Wien, Österreich

Grundlagen. Bei der endokrinen Orbitopathie kommt es im Rahmen der Basedow'schen Autoimmunerkrankung zu Entzündungsreaktionen. Hierbei führen Autoimmunprozesse zu Schäden an den Schilddrüsenzellen. Es kommt zu einer unkontrollierten Überproduktion von Schilddrüsenhormonen.

Dies führt zusammen mit den Autoimmunreaktionen zum typischen Exophthalmus, der sowohl durch eine Verdickung der Augenmuskeln und der Tränendrüse, wie auch durch eine Vermehrung des Fettgewebes bedingt sein kann.

Im Rahmen der endokrinologischen Behandlung stellt auch die operative Dekompression nach *Olivari* mit Entfernung der vermehrten Fettgewebes einen Grundpfeiler der Behandlung dar.

Die Indikation zur Operation ist abhängig von der zu erwartenden Menge des zu resizierenden Fettgewebes.

Ziel der Studie. Mittels MRT-Untersuchung wurde das Fettgewebsvolumen präoperativ quantitativ bestimmt, um eine prädiktive Aussage zur Menge des zu entfernenden Fettgewebes und zum Op-Erfolg zu erhalten.

Patienten und Methodik. Bei 10 Patienten mit endokriner Orbitopathie wurden sowohl prä- wie postoperativ die Hertelwerte bestimmt. Zusätzlich erfolgte ebenfalls prä- und postoperativ nach 6 Monaten eine MRT-Untersuchung zur quantitativen Volumenbestimmung des orbitalen Fettgewebes. Die ermittelten Werte wurden mit der Menge des intraoperativ entfernten Fettgewebes korreliert.

Ergebnisse. 1.) Durch die operative Dekompression nach Olivari konnte bei den untersuchten Patienten eine signifikante Verbesserung der Hertelwerte erreicht werden.

2.) Die Differenz der durch MRT-Untersuchung ermittelten Fettvolumina korrelierte mit dem intraoperativ entfernten Fettgewebsvolumen

Schlussfolgerungen. Die MRT-Untersuchung verbessert die Indikationsstellung zur operativen Dekompression und gibt einen Anhalt für das operativ zu entfernende bzw. entfernbare Fettgewebsvolumen.

111 Evidence-based treatment of irreversible facial palsy by the use of three-dimensional video-analysis of facial movements

M. Michaelidou, P. Giovanoli, C. J. Tzou, M. Frey

Division of Plastic and Reconstructive Surgery, Department of Surgery, Medical University Vienna, Vienna, Austria

Background. Reconstruction of the paralysed face is one of the most challenging problems in plastic surgery. Not only treatment is controversial; the evaluation itself of the different surgical regimes has been inconsistent. The grading systems available prove often little reproducibility, are prawn to subjective estimations and are often unable to take into account the three-dimensional aspect of facial motion.

Material and methods. In our department the mimic function is assessed quantitatively and qualitatively with a specifically developed equipment for three-dimensional video-analysis of facial movements. The patients are enrolled into an international multicenter registry and the functional evaluation is performed in a standardized way using standardized static and dynamic points in the face, which are traced in the course of nine different standardized facial movements most representative of the mimic function. The movement analysis quantifies changes of the amplitude of movement in the reconstructed side and especially changes of the static and dynamic symmetry.

Results. By performing this kind of assessment we could accurately quantify the degree of functional improvement at each level of treatment and thus objectively monitor the functional recovery. Moreover, different concepts of reconstruction for instance muscle transplantation and muscle transposition could be compared.

Conclusions. Three-dimensional video-analysis of facial movements proved a valuable tool in the preoperative planning procedure as well as in the postoperative follow-up of patients treated for facial palsy. In our opinion, this system could be used as an international tool of evaluation to enable objective evaluation and consistent communication among the different departments involved.

112 „Von der Evidenz nach Beyond“ im Behandlungskonzept der Wiederherstellung der oberen Atem- und Schluckwege am Beispiel einer komplexen Rekonstruktion

T. Rath[1], H. Kornfehl[2], P. Götzinger[3]

[1]Klin. Abteilung für Wiederherstellende und Plastische Chirurgie, Wien, Österreich; [2]Klin. Abteilung für Allgemeine HNO, Wien, Österreich; [3]Klin. Abteilung für Allgemeinchirurgie, Medizinische Universität Wien, Wien, Österreich

Nach Resektion eines proximalen Ösophaguskarzinoms bei einem 41-jährigen Patienten Schlug der Versuch der Wiederherstellung des Schluckwegs mit Magenhochzug, danach mikrovaskulärem Dünndarminterponat und danach gestieltem Musculus Pectoralislappen dreimal fehl. Als zusätzliche Komplikation entwickelte der Patient eine langstreckige Nekrose im mittleren Tracheadrittel.

Nach halbjährigem Intervall konnten der Schluckweg mit einem neuerlichen mikrovaskulären Jejunuminterponat und der 5 cm lange Tracheadefekt mit einem mikrovaskulären radialen Vorderarmlappen in einer Operation wiederhergestellt werden. Als innere Stütze wurde der Radialislappen mit einem Stent versorgt.

Konzepte der Wiederherstellung im Kopf-/Halsbereich umfassen die interdisziplinäre Beurteilung folgender Punkte: Tumorstadium, Allgemeinzustand und Alter des Patienten, Zeitpunkt der Rekonstruktion (einzeitig, mehrzeitig), Wiederherstellung der Form und/oder der Funktion, Qualität des Empfängerbetts, Empfängergefäße, mögliche Lappenplastiken und Alternativen, Erfolgschance und Hebedefektmorbidität.

Mikrovaskuläre Radialislappen eignen sich wegen ihres langen Gefäßstiels, der guten Durchblutung, Formbarkeit und Belastbarkeit besonders zur Rekonstruktion im Kopf-/Halsbereich.

Die Möglichkeit der Lappenprälamination, das heißt Vorbereitung mit anderen Gewebeanteilen (wie Schleimhaut oder Nerven) oder Kunststoffen vor der eigentlichen Rekonstruktion eröffnet neue Perspektiven. Das Einbringen von Knorpelspangen könnte eine stabile Wiederherstellung der Trachea ermöglichen.

113 Is there a light at the end of the (Carpal) tunnel? A meta-analysis of endoscopic versus open carpal tunnel release

H. B. Kitzinger, B. Karle, M. Frey

Department of Plastic and Reconstructive Surgery, Medical University of Vienna, Vienna, Austria

Background. Carpal tunnel syndrome (CTS) is a common disorder responsible for an estimated 16.000 operative procedures per year in Austria. However, there is no consensus on the most effective method of surgical treatment. The objective of this meta-analysis was to compare the effectiveness of endoscopic carpal tunnel release to open tunnel release especially in terms of time until return to work.

Material and methods. Search of Medline for randomized controlled clinical trials published between 1995 and 2005 were conducted. Data were extracted on patient characteristics, surgical technique, outcome measures, follow-up and results. The Jadad et al. scale and the Gerritsen et al. scale were used to determine the methodological qualities of the studies and to judge the strength of the available evidence for the efficacy of the treatment.

Results. Twelve studies were included in this review. There was no difference in relief of symptoms between standard open and endoscopic carpal tunnel release. Irreversible nerve damage was uncommon in either technique though transient nerve problems (e.g. neurapraxia) occured more likely with endoscopic carpal tunnel release. With regard to return to work the data were inconclusive.

Conclusions. In the absence of a clear benefit and considering the special equipment and training required to perform endoscopic release, open carpal tunnel release is still the surgical treatment of choice for CTS.

114 Solitary Flexor Pollicis Longus (FPL) palsy – An anatomical and clinical study

E. Prandl[1], E. Scharnagl[1], W. Morrison[2], C. Briggs[3], J. Dolderer[2]

[1]Division of Plastic Surgery, Medical University of Graz, Graz, Austria; [2]Department of Plastic and Reconstructive Surgery, St. Vincent's Hospital Melbourne, Melbourne, Australia; [3]Department of Anatomy and Cell Biology, University of Melbourne, Melbourne, Australia

Background. The variability of the origin of the flexor-pollicis-longus (FPL) has been described in the literature. Several variations of the FPL-muscle have been implicated as a cause of anterior-interosseous-nerve-compression in the forearm. These variations and their relation to the median-nerve and anterior-interosseous-nerve are important when decompressing these nerves. The anterior-interosseous-nerve is a pure motor-nerve supplying the FPL, flexor digitorum profundus to the index and middle fingers, and the pronator quadratus. A relatively uncommon solitary neuropathy of the branch of the anterior-interosseous-nerve to the FPL-muscle occurs from unusual etiologies.

Material and methods. We have been four patients who presented with an isolated palsy of the FPL after attempted venepuncture of the median cubital vein. We undertook a cadaver-dissection to see if there might be any anatomical explanation which would predispose to such an injury.

Results. We demonstrated on unbalmed cadaver-dissections the anatomy and the relation of the cubital veins to the median and anterior-interosseous-nerves. The nerve-branch to the FPL was noteable in the fact that although it joined the anterior-interosseous-nerve proper at the level of the proximal one-third of the forearm, it continued proximally and is an easily separable fascicular-group without intraneural cross-connections well up to the median nerve trunk at the cubital fossa.

Conclusions. In the current study a direct relation of the superficial cubital vein to the solitary nerve branch to the FPL could be shown. Injury to this branch would therefore be potentially significant because of the absence of any interfascicular cross-over from other territories within the anterior-interosseous-nerve.

Adipositaschirurgie – Evidence based, Wunsch und Wirklichkeit

115 Intragastric balloon for treatment of morbid obesity

K. U. Grützner, F. W. Spelsberg, C. Otahal, K. W. Jauch, T. P. Hüttl

Chirurgische Klinik und Poliklinik-Großhadern, München, Germany

Background. Treatment of morbid obesity (MO) using intragastric balloons is a therapeutic option if no surgical procedure is indicated or wanted or in preparation for bariatric surgery in super obese patients.

Material and methods. Patients with MO were evaluated by an interdisciplinary group consisting of surgeons, gastroenterologists, psychiatrists and diet counsellors as well as an independent self-help group. Patients refusing a surgical procedure or super obese patients in preparation for bariatric surgery were included. Patients were evaluated every two months. Balloons were placed and removed as an outpatient procedure under midazolam or propofol sedation.

Results. 35 intragastric balloons, 26 BIB-Balloons (Bioenterics), 9 Heliobag (Heliosphere) were placed in 14 men and 21 women. BMI prior to placement was 42 (SE ± 9.1; range 31–62).

31/35 (89%) patients showed MO-associated comorbidity. There were no complications during placement. Treatment was aborted in 6/35 (17%) patients. Reasons were loss of filling (n = 2), therapy-resistant vomiting (n = 2), haematin vomiting (n = 1) and acute psychiatric disorder (n = 1). One patient was admitted due to electrolyte dysbalance but kept the balloon.

Weight loss was 10.1 kg (SE ± 10.6, range 0–35). BMI after removal was 39.1 (SE ± 7.8 range 29–57). 5 non-responders are included, they were treated during the introduction period.

We found a significant increase in weight loss associated with increasing experience and optimized patient selection.

Conclusions. The placement of intragastric balloons can be an effective treatment strategy in MO. Interdisciplinary teamwork and patients able to change their food pattern are mandatory to prevent treatment failure.

116 Laparoskopisch adjustierbares Magenband (SAGB®): Bandbedingte Komplikationen und Bandfüllung eine 5,5 Jahres Nachuntersuchung

K. S. Maksymowicz, D. Wohlgenannt

KH Hohenems, Hohenems, Österreich

Grundlagen. Da bandbedingte Komplikationen ein Hauptproblem des laparoskopisch adjustierbaren Magenbandes darstellen, haben wir versucht eine Korrelation zwischen dem Füllungszustand des Bandes und den erstgenannten Komplikationen herzustellen. Dazu haben wir die mittlere kumulative Bandfüllung der letzten 5,5 Jahre ermittelt. Weiters haben wir den Gewichtsverlust %EWL und BMI im Verlauf ermittelt.

Methodik. 141 Patienten die zwischen Juni 2000 und Dezember 2003 operiert worden sind wurden bis zu 5,5 Jahren nachuntersucht. Gewichtsverlust %EWL und vor allem die kumulative Bandfüllung (– die monatlichen Bandvolumina eines jeden Patienten wurden bis zu 5,5 Jahren addiert und durch die Anzahl der Komplikations- und nicht Komplikationsgruppe dividiert) retrospektiv analysiert.

Ergebnisse. Nach 5,5 Jahren haben wir eine mittlere BMI Reduktion von 41 auf 29,8 kg/m². 18 Patienten (12,8%) hatten bandassoziierte Komplikationen (6 Migrationen, 2 Perforationen, 2 reflux-assoziierte Bronchitiden/Ösophagitiden ohne Slippage oder Pouchdilatation, 8 Pouchdilitationen/Slippages). Die mittlere kumulative Bandfüllung (ml × Monat) der Komplikationsgruppe betrug 98.5, die der komplikationsfreien Gruppe 136,5 ml × Monat.

Schlussfolgerungen. Laparoskopisches gastric banding ist eine effektive chirurgische Intervention zur Gewichtsreduktion. Wir konnten keine Beziehung zwischen dem Füllungszu-

stand des Systems und den bandbedingten Komplikationen feststellen.

117 Weight loss after Roux-Y- gastric bypass, bilio-pancreatic diversion, sleeve gastrectomy and band implantations

S. Kriwanek, N. Ott, P. Fous, S. Ali-Abdullah, M. Schermann, R. Roka

1. Chirurgische Abteilung Rudolfstiftung, Vienna, Austria

Background. In the last years a number of standardized surgical procedures have developed in bariatric surgery. In order to investigate the question whether weight reductions differ after these operations we undertook an analysis of post-operative excess weight loss (EWL) in our patients.

Patients and methods. 405 weight loss procedures were performed from 2001 to 2005. We undertook 211 band implantations (LAGB), 156 Roux-Y-gastric bypass operations (RYGB) (79 open and 77 laparoscopic), 26 laparoscopic sleeve gastrectomies (SG) and 12 bilio-pancreatic diversions (BPD).

All patients were followed-up by a computer-assisted programme; late results of 85% of patients could be obtained.

Results. EWL differed significantly between procedures. EWL after BPD and RYGB was faster and greater compared to LAGB. After RYGB and BPD no patients had to be reoperated because of inadequate weight loss. SG demonstrated better results compared to LAGB. However, these results are preliminary as mean follow-up at the present time is less than 5 years.

Conclusions. EWL 2 years after RYGB and BPD is significantly greater and reoperations are less often necessary than after LAGB. Whether these effects will continue to occur may not be said at the present time.

118 Secondary esophageal peristalsis in gastric banding patients

R. Ciovica, W. Lechner, M. Gadenstätter, O. Riedl, G. Schwab

LSKH Krems, Krems, Austria

Background. Laparoscopic gastric banding has become a routine procedure in the treatment of morbid obesity. Gastric banding causes an outflow obstruction regulated by band adjustment. In this study the dependence of secondary peristaltic waves on outflow obstruction was investigated with a new method of in vivo intraband manometry.

Patients and methods. 30 patients were included in the study. In all patients a Swedish adjustable gastric band (SAGB) was implanted in a standardized way. First band filling was performed six weeks postoperatively by 0.5 ml steps. Using a transducer manometric waves at the site of the band can be visualized and recorded. The manometric profile is dependent on the outflow obstruction caused by intraband filling. The number of secondary waves and the pressure rises inside the band at each adjustment were investigated. Obstruction of the band was defined when secondary waves after a wet swallow occured for more than two minutes.

Results. Depending on the fill volume of the band, different increases of pressure and the appearance of secondary peristaltic waves triggered by wet swallows were recorded. Obstruction of the band occured at a mean volume of 7.3 ml. The SAGB has a range of 1.5 ml between no secondary peristalsis and total occlusion of the band.

Conclusions. Secondary esophageal peristalsis has a dependence on the amount of outflow obstruction. Intraband pressure measurement is an encouraging new access to gastric banding. It appears to be a feasible method to control band adjustment without need for x-ray studies.

119 Chronic immune activation makes obese patients feel hungry

G. Brandacher[1], C. Winkler[2], F. Aigner[1], H. Schwelberger[1], A. Klaus[1], R. Margreiter[1], D. Fuchs[2], H. Weiss[1]

[1]Department of General and Transplant Surgery, Medical University Innsbruck, Innsbruck, Austria;
[2]Division of Biological Chemistry, Biocenter, Medical University Innsbruck, Innsbruck, Austria

Background. Increased activity of the immunomodulatory enzyme indoleamine-2,3-dioxygenase (IDO), during chronic immune activation, results in tryptophan depletion via the kynurenine pathway. Tryptophan metabolic changes reduce serotonin production and cause mood disturbances and impaired satiety ultimately leading to increased food intake and obesity. Here we determined IDO activity as a possible cause for reduced tryptophan levels in morbidly obese patients compared to lean individuals.

Methods. Serum concentrations of kynurenine and tryptophan, calculated kynurenine to tryptophan ratios (kyn/trp^{-1}) as an indirect estimate of IDO activity and neopterin levels reflecting IFN-γ mediated immune activation were assessed pre and post bariatric surgery by means of HPLC and ELISA. Study population included 22 morbidly obese individuals and 20 normal-weight volunteers.

Results. Median weight loss after 24.4 ± 5.1 months was 40.6 kg resulting in a reduction of BMI from 44.1 kg/m^2 to 29.9 kg/m^2($p < 0.001$). Preoperative kyn/trp^{-1} in morbidly obese patients was significantly increased compared to the control group (41.6 ± 20.1 mmol/mol vs. 26.5 ± 5.1 mmol/mol; $p < 0.001$). Postoperative weight reduction did not normalize kyn/trp^{-1} (37.9 ± 14.0 mmol/mol). As a consequence tryptophan levels were significantly lower in morbidly obese patients (pre-: 51.5 ± 9.2 $\mu molL^{-1}$ and postoperatively: 46.9 ± 7.6 $\mu molL^{-1}$) when compared with those of normal weight controls (64.8 ± 9.5 $\mu molL^{-1}$; $p < 0.001$). In addition neopterin levels were elevated in the study population pre- and postoperatively compared to normal-weight volunteers (both $p < 0.001$).

Conclusions. Tryptophan depletion in morbidly obese patients is due to chronic immune activation, which is persistent in spite of significant weight reduction following bariatric surgery. These lowered tryptophan concentrations might thereby be responsible for diminished serotonin functions leading to satiety dysregulation and increased food intake.

120 Thromboembolieprophylaxe in der Adipositaschirurgie

K. Miller, A. Pump, P. Herbst

Chirurgie, KH Hallein, Österreich

Grundlagen. Adipositaschirurgische PatientInnen mit komplexen Eingriffen, wie Magenbypass, haben ein hohes Risiko für Lungenembolie oder Venenthrombose. Die Gabe von niedermolekularem Heparin gilt in Europa als Standard. Die Effektivität von perioperativer intermittierender pneumatischer Venenkompression (PCS) ist vielerorts kein Standard, obwohl die European Association for Endoscopic Surgeons bei längeren laparoskopischen Eingriffen dies empfiehlt.

Methodik. In einem Zeitraum von Dezember 2004 bis Dezember 2005 wurde prospektiv bei Patienten mit adipositaschirurgischen Eingriffen zu der standardisierten niedermolekularen Heparingabe die PCS bis zur Mobilisation angewendet, evaluiert und mit einer retrospektiven Kontrollgruppe (Jänner 2003 bis November 2004 matched control) verglichen. Bei Hochrisikopatienten und Thrombose sowie Embolieanamnese wurde routinemäßig eine Duplexsonographie prä- und postoperativ durchgeführt. Eine klinische Untersuchung erfolgte bei allen PatientInnen. Die Fragestellung war die Wirksamkeit und Kosten-Nutzenrelation festzustellen.

Ergebnisse. In diesem Zeitraum (2004–2005) wurden in der Studiengruppe A 178 Eingriffe, 52 laparoskopische Roux-Y Magenbypässe (GBP) und 126 laparoskopisch implantierte Magenbänder (SAGB) durchgeführt. Die Vergleichsgruppe B bestand aus 253 Patienten, 73 GBP und 180 SAGB. Beide Gruppen waren hinsichtlich Alter (34,1 ± 11,5 vs. 35,8 ± 10,8; 20–60), BMI (46,6 ± 5,2; 36–85 vs. 47,0 ± 3,7; 34–101) der Operationszeit von GBP (115 ± 48; 85–210 vs. 167 ± 65; 120–240) und SAGB (42,8 ± 12,1; 22–55 vs. 41 ± 11,7; 21–63) sowie Risikofaktoren vergleichbar.

Bei den insgesamt 306 SAGB PatientInnen wurde lediglich eine Tiefe Beinvenenthrombose (Vergleichsgruppe B) festgestellt. Bei den MagenbypasspatientInnen wurde in der Studiengruppe A eine tiefe Beinvenenthrombose, in der Vergleichsgruppe 3 tiefe Beinventhrombosen und 2 Lungenembolien diagnostiziert (2 % vs. 7%, p = 0,4, 95 CI 0,0226–0,152 OR 3,750).

Die klinisch manifeste Thromboserate bei alleiniger niedermolekularer Heparingabe betrug 2,6 % bzw. 0,6 % bei Kombination mit PCS.

Schlussfolgerungen. Der adipöse Patient hat ein mittleres Thromboserisiko, weshalb die niedermolekulare Heparingabe als obligat gilt. Die Anwendung von PCS empfehlen wir bei komplexen oder längerdauernden Eingriffen wie beim GBP. PatientInnen mit hohem Thromboserisiko (z. B. Superadipositas BMI > 50, Varizen, positiver Anamnese, Gerinnungsstörungen, Tumoranamnese) empfehlen wir bei allen Eingriffen zusätzlich intermittierende pneumatische Kompressionsstrümpfe.

Freie Vorträge: Peritonitis / Pankreatitis, Leberchirurgie

121 Incidence of positive blood cultures in surgical patients

U. Fröschl[1], A. Kraus[1], M. Sengstbratl[1], R. Függer[1], R. Watschinger[2], G. Fluch[2], H. Mittermayer[2]

[1]Chirurgie/Hospital of the Elisabethines, Linz, Austria;
[2]Mikrobiologie/Hospital of the Elisabethines, Linz, Austria

Background. Bacteremia characterizes a generalized infection and is reported to cause a significant increase of mortality. Aim of our study was to evaluate the incidence and mortality of bacteremia in unselected surgical patients and identify risk factors and clinical consequences.

Methods. Retrospective analysis of all patients operated in a surgical from January 2004 to October 2005. Incidence and mortality of bacteremia, risk factors for mortality, species of bacteria, the time point of bacteremia in the clinical course and the impact of bacteremia on overall mortality were analysed.

Results. 5998 patients were operated in the study period. 53 (0.88 %) developed bacteremia. Bacteremia was found preoperatively in 8 (15.1%), postoperatively in 45 (84.9%) patients. Mortality of all bacteremic patients was 9.4% (5/53). Bacteremic patients had a history of malignant disease in 32%, immunosuppression in 8% and implantation of prosthetic material in 14.7%. A total of 28 bacterial species were isolated, most frequently isolated bacteria were Enterococcus faecalis, E. coli and Staphylococcus aureus. In 42.7% patients germs isolated in blood cultures were also found in bacterial cultures from different sites (urinary tract, pulmonary tract, site of operation, drains).

Overall mortality in patients treated in the study period was 1.7% (104/5998). Bacteremia was found in the clinical course of 4.8% (5/104) of non-survivors.

Conclusions. Bacteremia is relatively rare in non selected surgical patients but associated with an increased mortality. The spectrum of the isolated bacteria is consistent with earlier reports, indicating no significant change of the occurrence and clinical importance of these pathogens.

122 Septische Lungenfunktionsstörungen können durch eine enterale Immunonutrition mit langkettigen Fettsäuren positiv beeinflusst werden

J. Glatzle, M. Kasparek, T. Meile, J. Hahn, A. Königsrainer, W. Steurer

Klinik für Allgemeine-, Viszeral- und Transplantationschirurgie, Tübingen, Deutschland

Grundlagen. Das septische Multiorganversagen geht häufig mit einer Lungendysfunktion einher. Vom Gastrointestinaltrakt freigesetzte Mediatoren werden über die viszerale Lymphe via Ductus thoracicus in die systemische Blutzirkulation drainiert.

Ziel. Verbesserung der Lungendysfunktion bei Peritonitis oder Sepsis durch eine enterale Immunonutrition.

Methodik. Viszerale Lymphe wurde bei *Spenderratten* unter Kontrollbedingungen (Kontrolllymphe), während einer Sepsis (Sepsislymphe) oder während einer Sepsis mit enteraler Immunonutrition (SMOF-Lipid, Fresenius-Kabi, Soja/ Fischöl, Sepsis-SMOF-Lymphe) gesammelt. Kontrolllymphe, Sepsislymphe oder Sepsis-SMOF-Lymphe wurden über die V. jugularis *separaten Empfängertieren* für 2 h reinfundiert. Anschliessend wurde die Lunge entnommen und histologisch aufgearbeitet. Untersucht wurde die Alveolarseptendicke (Sauerstoffdiffusionsstrecke), die Anzahl der Myeloperoxidase (MPO) positiven Zellen (Entzündungsreaktion) und die Zellapoptose (Organschädigung).

Ergebnisse. Bei einer Sepsis werden inflammatorischen Mediatoren wie TNFα aus dem Gastrointestinaltrakt in die viszerale Lymphe ausgeschüttet. Eine enterale Immunonutrition reduziert diese TNFα-Ausschüttung signifikant. (TNFα pg/ml, 0–2 h: Kontrolllymphe 120 ± 21*, Sepsislymphe 11877 ± 1130, Sepsis-SMOF-Lymphe 2605 ± 1802*; 2–4 h: Kontrolllymphe 158 ± 36*, Sepsislymphe 3501 ± 2089, Sepsis-SMOF-Lymphe 981 ± 412*; *p < 0,01 vs. Sepsislymphe). Sepsislymphe verursacht eine signifikante Verdickung der Alveolarsepten; dieser Effekt wird durch eine enterale Immunonutrition markant reduziert ([µm] NaCl 9 ± 0,2*, Sepsislymphe 15 ± 0,4, Sepsis-SMOF-Lymphe 9 ± 0,3*; *p < 0,001 vs. Sepsislymphe). Die Entzündungsreaktion und die Apoptoserate war nach Sepsislymph-Infusion signifikant erhöht. Sepsis-SMOF-Lymphe hingegen führte nur zu einer moderaten Entzündungsreaktion und verursachte keine Zellapoptose. (Zellen/Gesichtsfeld MPO: NaCl 6 ± 1*; Sepsislymphe 53 ± 2, Sepsis-SMOF-Lymphe 19 ± 1*; TUNEL: NaCl 4 ± 1*; Sepsislymphe 13 ± 2; Sepsis-SMOF-Lymphe 1 ± 0,05*; *p < 0,01 vs. Sepsislymphe).

Schlussfolgerungen. Mediatoren, die vom Gastrointestinaltrakt während einer Sepsis freigesetzt und über die viszerale Lymphe drainiert werden, verursachen septische Lungenfunktionsstörung. Diese Lungenfunktionsstörungen können möglicherweise durch eine enterale Immunonutrition mit langkettigen Fettsäuren positiv beeinflusst werden. Unterstützt durch die DFG GL 311,3/1.

123 Conservative approach in severe acute pancreatitis dramatically improves outcome

P. Götzinger, R. Exner, D. Tamandl, P. Panhofer, R. Függer, R. Jakesz, T. Sautner

Department of Surgery, Medical University Vienna, Vienna, Austria

Background. Treatment for pancreatic necrosis is associated with high morbidity and mortality. The impact of a prospective change of the treatment protocol on the outcome in two different periods was evaluated.

Methods. The total series was evaluated for treatment period A (January 1995 until December 1999) and treatment period B (January 2000 until December 2004). Among 612 patients admitted with acute pancreatitis, 72 (11,8%) developed severe acute pancreatitis (SAP). During period A patients underwent surgical treatment when the clinical course deteriorated. Therapy concept was changed in 2000 so that surgical treatment was delayed as long as possible. Infection of pancreatic necrosis was always an indication for operation.

Results. 38 patients suffering from SAP were treated during period A and 34 patients during period B. There was no difference between APACHE II score (15 vs 16 pts, respectively) and incidence of organ failure (79% vs. 80%, respectively). In group A 33 patients (87%) underwent operative treatment, 3 patients (8%) interventional drainage and 2 patients (5%) were treated without intervention during course of disease. In group B 22 patients (65%) underwent necrosectomy, 8 patients (23%) interventional drainage and 4 patients (12%) conservative treatment. Operative intervention took place in mean on day 15 in group A and on day 42 in group B ($p < 0.008$). Mortality was significantly higher in group A than in group B (28.9% vs 8.8 %, respectively, $p < 0.007$).

Conclusions. Delaying surgical treatment as long as possible improves survival despite high incidence of organ failure.

124 Evidenzbasierte chirurgische Therapie der abdominellen Sepsis: Offen oder geschlossen? – „There is no evidence but my evidence“

U. Plaul, M. Rothmund

Klinik für Visceral- Thorax- und Gefäßchirurgie, Philipps-Universität Marburg, Marburg, Deutschland

Grundlagen. Für die Therapie der abdominellen Sepsis fehlt es nicht an persönlichen Paradigmen. Es gibt verschiedene Verfahrenswahlen zur chirurgischen Herdsanierung, z. B. perkutane Abszessdrainage, Exzision/ Übernähung des Defektes, Drainageableitung oder Resektion (mit/ohne Anastomose). Zusätzlich kommen lokale Maßnahmen zur Anwendung: geschlossene Spülung, programmierte Relaparotomie (Etappenlavage oder second look), offene Spülung (Laparostoma).

Methodik. Die relevanten Entscheidungsalternativen wurden ausformuliert und als Suchbegriffe formuliert. Es fand eine Literatursuche in Pubmed und in der Chochrane Datenbank statt. Die Suche wurde ergänzt durch ein „hand search“ in den gefundenen Literaturlisten. Abschließend wurden die gefundenen Beiträge nach den Regeln der U.S. Preventive Task Force Rating of Quality of Evidence bewertet.

Ergebnisse. Es wurden fünf Entscheidungsgruppen identifiziert (chirurgische Herdsanierung, Therapie der Peritonitis, zusätzliche Maßnahmen zur lokalen Therapie der abdominellen Sepsis, Therapie der systemischen Sepsis, Vermeidung von Nebenwirkungen). Endgültig wurden 16 Beiträge mit dem jeweils höchsten Evidenzgrad in die Bewertung der Entscheidungsalternativen einbezogen: 0 Level I, 2 Level II-1, 3 Level II-2, 3 Level II-3, 8 Level III.

Schlussfolgerungen. Die paradigmatischen Behandlungsoptionen der abdominellen Sepsis sind fest gefügt. Trotzdem halten sie einer systematischen Hinterfragung auf hohem Evidenzniveau kaum Stand. Dennoch ist es wichtig, für die hier untersuchten Fragen den Evidenzgrad auch als Maß für die relative Unsicherheit, mit der dann die Therapieentscheidungen getroffen werden, zu kennen. Dadurch werden die Behandlungsoptionen begründbar, ohne im Einzelfall alternative Therapiestrategien unmöglich zu machen. Eine Lehre aus der evidenzbasierten, chirurgischen Praxis ist, dass nicht jede klinische Frage mit einer Level I Studie zu beantworten ist.

125 Vacuum assisted closure therapy in the open abdomen – evidence or experience?

M. Lemmerer[1], V. Matzi[2], H. J. Mischinger[1]

[1]Department of General Surgery, Medical University Graz, Graz, Austria; [2]Department of Thoracic Surgery, Medical University Graz, Graz, Austria

Background. Secondary peritonitis caused on perforation of the intestine with bacterial colonisation of the abdominal cavity shows high morbidity and mortality. The treatment of the open abdomen is a challenge for surgery and needs interdisciplinary cooperation. The aim of this study was to compare the abdominal V.A.C.® application with the conventional surgical procedure.

Methods. We retrospectively reviewed patient records between August 2003 and December 2005. 31 patients with open abdomen following surgery for peritonitis were studied comprising 16 patients with abdominal vacuum assisted closure therapy (AV) and 15 patients with open abdomen procedure (OAP). Investigated parameters were duration of open abdomen, duration of stay, change of dressing, surgical revision, fascial closure rates and mortality.

Results. The abdominal VAC (AV) group showed a reduced length of stay both on the intensive care unit and on the ward (AV 31 ICU/total 45) vs. (OAP 52 ICU/total71), reduced nursing treatment and change of dressing rate (AV 0.5 vs. OAP 3 per day). 4 patients in the AV group with primary enterocutaneous fistula were successfully treated with a secondary surgical closure. Fascial closure was achieved in 11 (AC) vs.7 (OAP). Peritonitis related death was 1 (AV) vs. 4 (OAP)

Conclusions. According to literature dealing with VAC-therapy, the abdominal VAC-therapy is a new and effective treatment option for patients suffering from open abdomen. Less duration of stay, lower mortality, better wound requirement and higher closure rate are pointed out clearly in our experience.

126 Predictors of outcome in patients with tertiary peritonitis

P. T. Panhofer, M. Riedl, R. Jakesz, V. Ferenc, B. Izay, T. Sautner, P. Goetzinger

Medical University of Vienna, Vienna, Austria

Background. Aim of the study was to evaluate co-morbidities and risk factors influencing the outcome in patients suffering from tertiary peritonitis.

Methods. Between January 2002 and July 2005 107 patients with secondary peritonitis underwent operative treatment at the Department of Surgery, University of Vienna. Among these, 63 patients (58.9%) developed tertiary peritonitis despite successful surgical source control. The Mannheim peritonitis index and the Apache II score were recorded at the day of diagnosis of peritonitis.

Results. The mean age of 35 men (55.6%) and 28 women (44.4%) suffering from tertiary peritonitis was 58.8 ± 2.0 years. The cause of peritonitis in these patients was gastrointestinal perforation in 37 patients (58.7%), anastomotic leakage in 16 patients (25.4%) and infections, necroses and abscesses of different origins in 10 patients (15.9%).

Additionally to tertiary peritonitis 28.6% of the patients suffered from circulatory failure, 17.5% from renal failure, 25.4% from pulmonary failure, 31.8% from hepatic failure, 30.5% from malignant disease and 14.3% from diabetes. 27% underwent 2.7 ± 1.5 operative revisions until successful surgical source control.

Mean ICU stay was 15.9 ± 2.3 days and mean hospital stay 31.6 ± 3.5 days. Mortality rate in patients suffering from tertiary peritonitis was 15.9%.

Significant risk factors for developing tertiary peritonitis despite successful surgical source control are the age of the patient (58.8 ± 2.2 vs. 52.8 ± 2.2; $p < 0.05$) and pulmonary failure ($p < 0.03$).

Conclusions. Patients with higher age and pulmonary failure are besides the MPI ($p < 0.02$) and APACHE II score ($p < 0.05$) predictors of mortality.

127 Fast-Track Rehabilitation in Acute Peritonitis – First Results

J. A. Winter[1], C. Leszinski[1], K. Wresch[2]

[1]Department for General and Visceral Surgery St.-Vincentius-Krankenhaus Speyer, Speyer am Rhein, Germany; [2]Department for Anaesthesia and Intensive Care St.-Vincentius-Krankenhaus Speyer, Speyer am Rhein, Germany

Background. The fast-track postoperative care concept has already been well established in elective colonic surgery. So far fast-track-rehabilitation in emergency surgery has only been analysed in few studies. This study evaluates our first experiences with the fast-track-concept in patients with acute peritonitis.

Material and methods. Between October 2004 and December 2005 232 consecutive patients received resections of colon and rectum for benign and malignant diseases. 74 patients (31.9%) underwent emergency surgery shortly after admission, in 49 of them (66.2%) peritonitis was present and even histologically evident. All patients were prospectively studied in the fast-track concept (continuous thoracic epidural analgesia, early enteral nutrition).

Results. The important modules of the fast-track concept can be applied successfully in cases of acute peritonitis.

The table below shows the low complication rates of the emergency group:

	total	emergency	non emergency
patients	n = 232	n = 74	n = 158
age (median)	68 (24–96)	55 (24–96)	68 (29–92)
anastomosis	n = 202	n = 57	n = 145
insufficieny and re-operation	n = 5 (2.4%)	n = 1 (1.7%)	n = 4 (2.8%)
wound infection	n = 16 (7.3%)	n = 9 (12.3%)	n = 7 (4.4%)
mortality	n = 14 (6.0%)	n = 1 (1.3%)	n = 13 (8.2%)

Conclusions. The fast-track concept for elective colonic surgery is also suitable for colorectal emergency surgery, although some preoperative components of pre-clinical and clinical precautions cannot be applied.

Based on good acceptance and low rates of major complications the fast-track program can therefore be recommended for colorectal emergency surgery in acute peritonitis.

128 Intraoperative imaging for colorectal liver cancer after neo-, adjuvant systemic chemotherapy

E. Schwanzer[1], T. Grünberger[1], J. Ott[2], F. Längle[1], R. Jakesz[1]

[1]Department of Surgery, Division of General Surgery, Medical University of Vienna, Vienna, Austria; [2]Department of Surgery, Medical University of Vienna, Vienna, Austria

Background. An accurate diagnosis forms the basis for appropriate and successful treatment of patients with liver tumors. Morphologic changes like severe hepatic sinusoidal obstruction, associated with modern adjuvant and neoadjuvant chemotherapy schedules based on systemic drug administration, have raised questions about accuracy of intraoperative ultrasound (IOUS) for detection of colorectal cancer liver lesions.

Patients and methods. Out of 153 patients (112 men, 41 women; mean age 63.4 years, range 36–81) evaluated for curative liver surgery a total of 85 patients with resectable metastatic colorectal cancer received 5-Flourouracil 11.8%, Oxaliplatin 0.9%, Irinotecan 1.8%, 5-Flourouracil and Oxaliplatin 61.2%, 5-Flourouracil and Irinotecan 15.3%, Oxaliplatin and Irinotecan 1.8% and 5-Flourouracil, Oxaliplatin and Irinotecan 7.1%. Generally the period between neoadjuvant chemotherapy and surgery was less than 4 weeks. Intraoperative ultrasound imaging was performed to demonstrate lesion quantification, characterisation and localisation particularly in relationship to the intrahepatic vasculature.

Results. With histopathological findings used as criterion standard the sensitivities of IOUS in patients with or without previous systemic chemotherapy were 91.5% and 90.6% in a segment-by-segment analysis. The specifities of IOUS were 94.8% and 96.4%, respectively. Positive and negative predictive values were 86.2%, 88.4%, 97% and 97.1%.

Conclusions. The current findings suggest that IOUS provides equivalent useful additional information for detection of hepatic lesions in colorectal cancer after systemic chemotherapy.

129 Resection of colorectal liver metastases under the aspect of modern dissection techniques

D. Tamandl[1], B. Grünberger[2], B. Herberger[1], S. Schoppmann[1], M. Bodingbauer[1], R. Jakesz[1], F. Laengle[1], T. Grünberger[1]

[1]Univ.-Klinik für Chirurgie, Vienna, Austria; [2]Univ.-Klinik für Innere Medizin I, Vienna, Austria

Background. Surgery for colorectal cancer liver metastases (CRCLM) is the treatment of choice which prolongs survival like no other therapy. Still, in recent series, morbidity and mortality range from 19 to 33 and 0.5–9 %, respectively. We present here a prospectively analyzed series of 200 liver resections performed from 2001–2004 in a single instiution.

Methods. 200 Patients were identified from our database who underwent surgery for colorectal liver metastases at our instiution from 2001–2004. Data on demographics; pathology of CRC; chemotherapy; pathology of liver metastases; surgical details; perioperative period including morbidity and mortality and follow have been analyzed towards impact on overall survival (OS) and recurrence (RFS).

Results. There was no in-hospital mortality, the morbidity rate was 10% (20/200), respectively. Factors strongly associated with decreased survival were T ($p = 0.0073$), N ($p = 0.0001$) and G-stage ($p = 0.0001$) of the primary, as well as UICC classification ($p = 0.0025$), as expected. Large lesions >5 cm ($p = 0.0089$) as well as high tumour burden represented by elevated tumour markers (CEA: $p = 0.013$, CA 19–9: $p = 0.0000$) were also predictive for early death.

Most of these parameters also predicted early recurrence. A short interval between surgery for CRC and diagnosis of liver metastases foretold early recurrence ($p = 0.0005$). Little or no response to neoadjuvant chemotherapy (SD or PD) also predicted short RFS ($p = 0.0056$).

Conclusions. We present a collective of 200 liver resections for CRCLM over 4 years which is very well comparable to internationally published series. There was no in-hospital mortality in the analyzed cohort, 10.0% of patients had a surgery related morbidity.

130 Effect of surgical margin status on survival after hepatic resection for colorectal metastases

M. Bodingbauer

Department of Surgery, Medical University of Vienna, Vienna, Austria

Background. To evaluate the influence of surgical margin status on survival and site of recurrence in patients treated under the criterion of modern hepatic dissection techniques (cusaresection) for colorectal metastases.

Methods. From 2000 to 2003, 176 patients underwent hepatic resection for colorectal metastases. Demographics, operative data, pathologic margin status, site of recurrence (margin, other intrahepatic site, extrahepatic), and longterm survival data were collected and analyzed.

Results. On final pathologic analysis, margin status was positive in 43 patients, and negative by 1–9 mm in 110, and > 9 mm in 23 patients. At a median follow-up of 33 months, the 1- and 3-year survival rates were 82% and 60%. The median survival was not yet reached at the time of last control. Significant predictors of the low survival rate were in our univariate statistical analysis a positive lymph node status in the primary tumor the tumor grading of the origin disease, a abnormal CEA level (> 5 µg/ml), tumor number greater than 3 and a tumor size more than 5 cm diameter.

129 of 176 patients (73%) developed a recurrence. The median time to recurrence was 12,6 months. 24 (14%) patients developed both intra- and extrahepatic metastases, 51 patients developed only extrahepatic recurrence. Only 5 (2.8%) patients developed a recurrence at the site of the surgical margin.

Conclusions. In our current study, surgical margin recurrence rate was very low (2.8%). A positive surgical margin was not associated with an increased risk of margin site, the width of the margin was not significant.

131 Veränderungen der Leberchirurgie in den letzten Jahren

S. Stättner[1], M. Spinka[1], J. Wendt[1], T. Ybinger[2], B. Horvath-Mechtler[2], T. Pratschner[1], F. Sellner[1], J. Karner[1]

[1]Chirurgische Abteilung des Kaiser Franz Josef-Spitals Wien, Wien, Österreich; [2]Zentralröntgeninstitut des Kaiser Franz Josef-Spitals Wien, Wien, Österreich

Grundlagen. Die Leberchirurgie bei primären und sekundären Lebertumoren ist neben der Rezidivrate an der Komplikationsrate und Letalität zu messen.

Durch eine ausgefeilte präoperative Diagnostik und eine klare intraoperative Strategie sollten auch beim alten Patienten (über 80 Jahre) große leberchirurgische Eingriffe ohne Letalität möglich sein.

Unser Konzept der Leberchirurgie der letzten zwei Jahre an der Chirurgischen Abteilung des Kaiser Franz Josef-Spitals soll das demonstrieren.

Methodik. An der Chirurgischen Abteilung des Kaiser Franz Josef Spitals als Onkologisches Zentrum gelangen jährlich 101 Patienten zur diagnostischen Evaluierung bezüglich einer operativen Sanierung. Folgende Kriterien kommen präoperativ zur Anwendung: neben einer obligaten Lungenfunktion und einem Herzecho wird anhand von obligatem CT, Ultraschalluntersuchung und MR, sowie Kontrastmittel-Ultraschall die lokale Operabilität geklärt.

Ergebnisse. Bei unklarer Leberfunktionsleistung hat sich der Pulsions-Limon-Test als hilfreicher Funktionstest bewährt. Durch diese Maßnahme konnte die unnötige Exploration unter 3% reduziert werden. Auch ein Leberausfallskoma wurde nicht mehr registiert. Intraoperativ: durch die Verwendung von neuen Resektionshilfen, wie Ultraschall-Dissektor (CUSA, Water-Jet, etc.) und sparsamer anatomiegerechter Resektion unter Erhaltung von möglichst viel Lebergewebe ist auch eine erweiterte Resektion ohne Pringle und ohne Blutkonserven möglich und anzustreben. Vor allem unter Erhaltung einer segmentorientierten Technik sind dabei auch dorsale Segmente ohne Galleleak und Minderdurchblutung erhaltbar. Diese Technik erlaubt auch beim alten Patienten sinnvolle große Resektionen ohne Letalität.

Schlussfolgerungen. Anhand der letzten 40 Patienten, die einer Leberresektion ohne Letalität zugeführt wurden, wurden wichtige Kriterien die eine komplikationsarme Resektion ohne Letalität und ohne Intensivaufenthalt erlauben, aufgezeigt.

AMIC II

132 Lost gallstones in laparoscopic cholecystectomy – the complications from A to Z

J. Zehetner, A. Shamiyeh, J. Danis, W. Wayand

Ludwig Boltzmann Institute for Operative Laparoscopy, II. Surgical Department, AKH Linz, Linz, Austria

Background. As laparoscopic cholecystectomy (LC) is the gold standard since already 15 years for symptomatic gallstones, several studies and case reports reporting harmless and serious complications of lost gallstones have been published. The aim of this review is to list all possible complications from A to Z and to evaluate the incidence and management of lost gallstones.

Methods. A Medline search from 1987 to 2005 was performed. All selected case reports and studies were analysed regarding possible complications. All studies with more than 500 LC that reported lost gallstones and perforated gallbladder were analysed for incidence and management of lost gallstones.

Results. Totally 111 case reports and studies were found and all reported complications were listed from A to Z. The most reported complications are abscess in the abdominal wall and intraabdominal abscess. 8 major studies with more than 500 LC were reviewed. Incidence of gallbladder perforation was 18%, incidence of spilled stones was 7% and incidence of lost gallstones was 2%.

Conclusions. Lost gallstones have a low incidence of causing complications but have a large variety of different postoperative problems. Every effort should be made to remove spilled gallstones to prevent further complications but conversion is not mandatory.

133 Laparoscopic cholecystectomy as solo surgery with the aid of a robotic camera holder

M. Kalteis[1], R. Pistrich[1], W. Schimetta[2], W. Pölz[2], F. Hietler[1]

[1]Chirurgie, KH Grieskirchen, Grieskirchen, Austria; [2]Institut für Angewandte Systemforschung und Statistik, Johannes Kepler Universität, Linz, Austria

Background. By using robotic camera holders, a laparoscopic cholecystectomy (LC) is possible as a solo-surgeon operation. The purpose of this paper is to examine the safeness and efficiency of solo surgeon LCs.

Methods. For this purpose a series of 72 solo-surgeon LCs carried out as routine operations in a standard hospital were retrospectively compared to a control cohort (matched pairs). After the comparability of the two cohorts was ensured through analysis of several parameters, the primary endpoint of incision-suture time as well as the total time in the operating room (OR), the rate of complications, the perioperative hemoglobin differences, the length of the post-operative hospital stay as well as the frequency of the conversion were compared. The cohort comparisons were carried out by means of equivalence tests. (scope = 10%).

Results. At a comparable starting situation, nearly identical incision-suture-times (means: 69.6 vs. 70.7 minutes) were established for the robot cohort and the control cohort. Also for the total time in the operating room (means: 117.4 vs. 117.2 minutes), an equivalence of the cohorts was found. In terms of the rate of complications, the perioperative difference in hemoglobin, and the frequency of the conversion to an open operation, the robot cohort proved to be at least equal to the control cohort. The post-operative hospital stay was shorter for the robot cohort [medians: 4 vs. 5 days].

Conclusions. Solo-surgeon LC with a robotic camera holder has been determined to be an efficient and safe method.

134 Symptomatic outcome after laparoscopic cholecystectomy

E. Schwanzer[1], J. Ott[2], M. Sieber[2], T. Grünberger[1], R. Jakesz[1]

[1]Division of Department of Surgery, Medical University of Vienna, General Surgery, Vienna, Austria; [2]University of Vienna, Vienna, Austria

Background. Patients with gallstones often present with multiple complaints. Our aim was to study the major complaints of patients undergoing laparoscopic cholecystectomy and symptomatic relieve afforded by the operation.

Methods. We studied 185 patients with symptomatic gallstone disease who underwent laparoscopic cholecystectomy in a single surgical center. Patients with proven common bile-duct stones, obstructive jaundice, cholangitis, present or past associated abdominal pathology or cholecystoenteric fistula were excluded from this prospective study. The mean follow up period was 122.6 months (range 110–133 months). VAS-Score and Pain-Disability-Index were used for validation. A detailed account of symptoms of gallstones, persistence of postoperative symptoms and development of fresh symptoms were assessed.

Results. The male to female ratio was 1:2. Presenting symptoms were abdominal pain (87.6%), flatulence or feeling of fullness of abdomen (81.6%), vomiting (49.2%), sour eructation (47%), belching (18.4%), thoracic pain (17.3%) and nausea (8.6%). Biliary pain was relieved in 75.4% of patients after laparoscopic cholecystectomy ($p < 0.01$). Non-pain symptoms were relieved significantly ($p < 0.01$): vomiting (94.4%), nausea (90.9%), sour eructation (88.4%), thoracic pain (77.8%), belching (75.9%) and flatulence (64.6%). One of the patients developed jaundice after cholecystectomy. Fresh symptoms that developed after laparoscopic cholecystectomy were flatulence (16.7%), sour eructation (3.8%), belching (2.5%) and vomiting (1.3%). Postcholecystectomy post-prandial diarrhoea occurred in 14.3% of the patients.

Conclusions. Laparoscopic cholecystectomy significantly relieved symptoms of gallstone disease. Postcholecystectomy post-prandial diarrhoea was a significant new symptom after cholecystectomy. All patients should be pre-operatively counselled about the risk of persistence of some non-pain symptoms after laparoscopic cholecystectomy.

135 Retroperitoneoscopic lumbar sympathectomy for the treatment of plantar hyperhidrosis

R. Rieger, S. Pedevilla

Chirurgische Abteilung, KH Gmunden, Gmunden, Austria

Background. Plantar hyperhidrosis is defined as unphysiological excessive sweating of the feet that often causes significant mental and physical disturbance. Conservative measures frequently fail to relieve symptoms.

Methods. In December 2004 we developed a minimal invasive operative technique to perform a lumbar sympathectomy. The technique includes a retroperitoneoscopic approach to the lumbar spine, intraoperative radiologic identification of the various lumbar vertebrae and resection of lumbar ganglia L3 and/or L4.

Results. Between 12/2004 and 12/2005 we performed 71 lumbar sympathectomies in 36 patients with severe plantar hyperhidrosis (m = 22, f = 14, mean age 33y, range 19/62). All procedures were performed in a retroperitoneoscopic fashion, a conversion to an open procedure was never necessary. There were no intra- or postoperative complications. In all cases the excessive sweating disappeared postoperatively, in 70 of 71 cases (99%) complete anhidrosis of the feet occurred. After a mean follow up of 6 months (1/12) there were no recurrences. Compensatory sweating occurred in 58% of patients but was mild in all cases. The incidence of transient postsympathectomy neuralgia was 40%, in one patient transient weakness of ejaculation occurred. 89% of patients were very satisfied and 11% of patients were satisfied with the result of the operation.

Conclusions. Lumbar sympathectomy is feasible and safe via a retroperitoneoscopic approach. Resection of the lower sympathetic chain results in anhidrosis of the feet and is a valuable option for the treatment of patients with severe plantar hyperhidrosis.

136 Disease-specific evaluation of patients' quality of life after endothoracic sympathetic block for upper limb hyperhidrosis

P. Panhofer[1], J. Zacherl[1], R. Jakesz[1], G. Bischof[2], C. Neumayer[1]

[1]Department of General Surgery, Medical University of Vienna, Vienna, Austria; [2]Department of Surgery, St. Josef's Hospital, Vienna, Austria

Background. Endoscopic thoracic sympathetic block at T4 (ESB4) has been described as effective treatment for upper limb hyperhidrosis (HH). Patients' improvement in quality of life (Qol) was the major point of interest analysed by two disease-specific questionnaires.

Methods. Between 2002 and 2005, 112 patients (mean age 30.4 ± 8.1 years) underwent 223 ESB4 procedures by clip application above and below the 4th sympathetic ganglion. Mean follow-up was 21.9 ± 10.1 months. Qol questionnaires developed by Keller (2001) and Milanez de Campos (2003) were used.

Results. Follow-up information was obtained from 106 patients (94.6%). 103 patients (92%) had palmar, 87 patients (77.7%) axillary and 75 (67%) combined HH. Postoperatively, all patients with palmar HH were completely or nearly dry. Side effects, such as compensatory and gustatory sweating were observed in 17% and 26.8% of patients, respectively. Qol improved by 78.7% (Keller) and 67.8% (Milanez de Campos). Median sum scores of Qol decreased from 95% to 17% (Keller) and from 84% to 22% (Milanez de Campos, $P < 0.001$ for both instruments) after ESB4. Compensatory sweating significantly diminished postoperative Qol in both questionnaires ($P = 0.011$ and $P = 0.032$).

Conclusions. Endoscopic sympathetic block at T4 improves the Qol of hyperhidrotic patients impressively and yields excellent success and satisfaction rates. Both Qol questionnaires fulfil validation criteria for disease-specific Qol instruments. Therefore, these questionnaires can be recommended for future studies dealing with upper limb HH.

137 Improved quality of life after endothoracic sympathetic block for facial hyperhidrosis and blushing

C. Neumayer[1], P. Panhofer[1], R. Jakesz[1], J. Zacherl[1], G. Bischof[2]

[1]Department of General Surgery, Medical University of Vienna, Vienna, Austria; [2]Department of Surgery, St. Josef' s Hospital, Vienna, Austria

Background. Endoscopic sympathetic block (ESB) has been recommended for facial hyperhidrosis (FH) and facial blushing (FB). Both disorders may cause dermatological diseases and psychological impairment resulting in severe reduction of patients' quality of life (Qol). The aim of the study was to assess Qol after ESB at T2 for FB and at T3 for FH.

Methods. 183 procedures were carried out between 6/2001 and 10/2005. 53 patients with FB and 39 with FH have been treated. Mean follow-up was 27.7 ± 12.7 months obtained from 93.5% of patients. Treatment success, side-effects, and patients' satisfaction were evaluated. Moreover, patient's Qol was assessed by a visual analogue scale ranging from 0 (no complaints) to 10 (worst complaints).

Results. Success rates were similar in both groups. FB and FH was relieved or markedly improved in 95% and 89.3%, respectively. Compensatory sweating was found in 22.6% and 23.1% of patients. Gustatory sweating was frequently found (about 50%) in both groups, but did not impair patients' Qol. 72% and 76.9% of patients were completely, and 20% and 18% partly satisfied after ESB at T2 and T3, respectively. Qol improved from 8.7 ± 1.8 preoperatively to 1.6 ± 1.2 at follow-up in patients with FB ($p < 0.001$). Likewise, the scores fell from 8.3 ± 2.3 to 2.9 ± 1.9 in patients with FH ($p < 0.001$).

Conclusions. Endoscopic sympathetic block yields impressive success rates in the treatment of FB and FH and improves patients' Qol sustainably.

Österreichische Gesellschaft für Thorax- und Herzchirurgie: Herzchirurgie I

138 Robotically assisted totally endoscopic atrial septal defect repair: Insights from operative times, learning curves and clinical outcome

N. Bonaros[1], T. Schachner[1], A. Oehlinger[1], E. Ruetzler[1], C. Kolbitsch[2], W. Dichtl[3], S. Mueller[4], G. Laufer[1], J. Bonatti[1]

[1]Department of Cardiac Surgery, Innsbruck Medical University, Innsbruck, Austria; [2]Department of Anesthesia and Intensive Care Medicine, Innsbruck Medical University, Innsbruck, Austria; [3]Department of Cardiology Innsbruck Medical University, Innsbruck, Austria; [4]Department of Cardiology, Innsbruck Medical University, Innsbruck, Austria

Remote-access perfusion and robotics have enabled totally endoscopic closure of atrial septal defect (ASD) and patent foramen ovale (PFO). The aim of this study was to address learning curve issues of totally endoscopic ASD-repair (TEASD-R) on the basis of a single center experience and to investigate whether long CBP- and aortic occlusion-times influence intraoperative and postoperative outcome.

Seventeen patients (median age, 35 years; range, 16–55 years) underwent TEASD-R using remote access perfusion and robotic technology (DaVinci telemanipulation system). Learning curves were assessed by means of regression analysis with logarithmic curve fit. The effect of operative parameters on clinical outcome was analyzed by linear regression using the Spearman's rho coefficient.

No operative mortality or serious surgical complications were observed. No residual shunt was detected at intraoperative or postoperative echocardiography. Significant learning curves were noted for total operative time $y(\text{min}) = 406 - 49*\ln(x)$ ($r^2 = 0.725$, $p = 0.002$), cardiopulmonary bypass (CPB) time $y(\text{min}) = 225–42*\ln(x)$ ($r2 = 0.699$, $p = 0.003$) and aortic occlusion time $y(\text{min}) = 117 – 25*\ln(x)$ ($r2 = 0.517$, $p = 0.04$), x = number of procedures. Median ventilation time, intensive care unit stay, and hospital length of stay were 7 hours (range, 2–19 hours), 26 hours (range, 15–120 hours) and 8 days (range, 5–14 days) respectively. No correlation was detected between cardiopulmonary bypass time and intubation time ($r^2 = 0.283$, $p = 0.326$), ICU-stay ($r^2 = –0.138$, $p = 0.639$), or total length of stay ($r^2 = 0.013$, $p = 0.962$).

TEASD-R can be performed safely and learning curves for operative times are steep. Longer CPB-times had no negative impact on intra- and postoperative outcome.

139 Robotic endoscopic left internal mammary artery harvesting – what have we learned after 100 cases?

A. Oehlinger[1], N. Bonaros[1], T. Schachner[1], E. Ruetzler[1], G. Friedrich[2], G. Laufer[1], J. Bonatti[1]

[1]Department of Cardiac Surgery, Medical University of Innsbruck, Innsbruck, Austria; [2]Department of Cardiology, Medical University of Innsbruck, Innsbruck, Austria

Background. The development of robotic devices has recently offered the possibility to perform cardiac surgery in a totally endoscopic way. An important step of this procedure is endoscopic harvesting of the left internal mammary artery (LIMA). It was the aim of our study to find factors influencing LIMA harvesting time and to describe the challenges associated with robotic endoscopic LIMA harvesting.

Patients and methods. From June 2001 to December 2005 a total of 100 patients underwent robotically assisted CABG. In all cases the LIMA was harvested with the aid of the robotic DaVinci-device. Coronary artery bypass grafting procedures were completed via sternotomy, minithoracotomy or in a totally endoscopic fashion.

Results. The median for LIMA harvesting time was 48 min (19-180). A significant learning curve was observed ($p < 0.001$). Takedown time decreased from 140 min during the first ten cases to 34 min in the last ten cases. There was no independent demographic factor which significantly influenced LIMA harvesting time. LIMA preparation time also showed no significant dependence on measurements of the thoracic size. LIMA damage occurred in 3 patients (6%) dur-

ing the first half of the experience and in 1 patient (2%) during the second half.

Conclusions. Robotic enhanced LIMA takedown is prerequisite for TECAB. After passing through a significant learning curve LIMA takedown can be done in a safe way and within an acceptable time frame. Demography and chest-size do not seem to influence IMA harvesting speed. The rate of LIMA injuries is within the limits of conventional thoracoscopic harvesting.

140 Do manual assisting maneuvers increase speed and technical performance in robotically sutured coronary bypass graft anastomoses?

E. A. Rützler, J. Alfadlhi, T. Schachner, N. Bonaros, G. Laufer, J. Bonatti

Innsbruck Medical University, Innsbruck, Austria

Background. Robotic endoscopic CABG procedures are mostly performed as solo surgery operations. The aim of this study was to investigate whether manual assistance can reduce suturing times and anastomotic suturing problems in robotic coronary artery surgery.

Material and methods. In isolated pig hearts the right coronary artery was excised from the epicardium as a pedicle. This pedicled vessel which resembles the internal mammary artery was sutured to the left anterior descending artery using the daVinci™ telemanipulation system (Intuitive Surgical). 7/0 Pronova was used to perform the anastomosis in a running fashion. In group I (n = 20) the suture was carried out by the console surgeon in a solo version, in group II (n = 20) the anastomosis was assisted by a team member with an endo forceps. The operations were performed by 5 surgeons of different training levels.

Results. Overall anastomotic time was 24 ± 15 min in group I and 22 ± 12 min in group II p = ns. The rate of anastomotic suturing problems (thread rupture, knot formation, sling formation, needle bending) was 8/20 (40%) and 8/20 (40%) respecitvely p = ns. Anastomotic times and anastomotic suturing errors were dependent on surgeon experience. All anastomoses in both groups showed correct suture alignment and were probe-patent.

Conclusions. In a wet lab model similar robotic coronary anastomotic time and suturing quality can be achieved if the suture is carried out in a solo fashion or in an assisted manner.

141 Non-invasive evaluation of bypass graft patency and stenosis with SOMATOM 64-detector-row CT and SYNGO Vessel View Software

K. Mészáros[1], P. Bergmann[1], S. Huber[1], P. Oberwalder[1], G. Schaffler[2], R. Rienmüller[2], B. Rigler[1]

[1]Klinische Abteilung für Herzchirurgie, Graz, Austria; [2]Universitätsklinik für Radiologie, Medizinische Universität Graz, Graz, Austria

Background. Several investigators have examined the diagnostic potential of MSCT to detect bypass graft occlusion and stenosis. Until now, graft stenosis has been analyzed by manually measuring the vessel diameter in axial layers. In this study, arterial and venous bypass grafts were evaluated with the help of newly released software.

Material and methods. MSCT examination was performed on 24 pts with previous CABG using symmetry aortic connector device™, evaluating a total of 44 venous and 10 arterial grafts. Graft patency has been analyzed on VRT and MIP images in cooperation of cardiac surgeons and radiologists. Open bypass grafts stenosis were further classified with SYNGO Vessel View Software in A < 50% and B > 50%. This application displays a three-dimensional reconstruction of the bypass graft in axial, coronal and sagittal layers. The stenosis graduation S (%) was calculated with the formula S = (D–d)/dx100 when D is the maximal cross sectional area and d the minimal.

Results. All grafts could be visualized, seventeen of 20 venous and all arterial conduits could be analyzed with SYNGO Vessel View, and three vein grafts could not be evaluated with software application because of poor CT image quality. 41% of patent grafts showed grade B stenosis, in arterial grafts, no stenosis could be found.

Conclusions. Cardiac MSCT provides reliable data for bypass graft assessment. Stenosis evaluation with SYNGO Vessel View offers a promising possibility to assess bypass graft stenosis, but its diagnostic accuracy has to be compared with gold standard coronary angiography or intravascular ultrasound.

142 Everolimus attentuates neointimal hyperplasia in cultivated human saphenous vein grafts

S. Semsroth, R. G. Stigler, O. Y. Bernecker, G. Laufer, J. O. Bonatti

Department of Cardiac Surgery, Medical University Innsbruck, Innsbruck, Austria

Background. Neointimal hyperplasia is the first step of a cascade leading to a reduced patency rate of saphenous vein grafts compared to arterial grafts after coronary bypass grafting. The macrolide immunosuppressant everolimus is a proliferation signal inhibitor, that blocks vascular smooth muscle cell proliferation. We hypothesized, that everolimus attenuates neointimal hyperplasia in cultured human saphenous vein grafts.

Methods. Saphenous vein grafts of 10 patients were processed as follows: One piece of vein served as baseline at day 0. One piece of the vein served as control, one piece received 1 µM of everolimus solution. Both were cultured for 14 days in RPMI medium. Then all vein-grafts were fixed in formaldehyde, embedded in paraffin-blocks, stained (Elastica van Giesson), and underwent a quantitative histological analysis.

Results. Neointima was significantly reduced in the everolimus treated vein-grafts (3.7 ± 1.2 µm) compared to controls (10.1 ± 2.5 µm), p < 0.01. There was no significant difference between neointima of baseline vein grafts (2.8 ± 1.7 µm) compared to the everolimus group, but statistically significant compared to control, p < 0.01. There was no statistical difference of the thickness of the lamina media between all groups. A significantly reduced intima/intima+media-ratio was determined in the everolimus group (0.10 ± 0.02) compared to control (0.24 ± 0.07), p < 0.01. No significant difference was noted between the baseline (0.08 ± 0.05) compared to the everolimus

group concerning the intima/intima+media-ratio, but there was a significant difference compared to control, $p < 0.01$.

Conclusions. Everolimus can inhibit neointimal proliferation in cultivated human vena saphena magna grafts. Therefore, Everolimus has the potential to improve the patency rate of vein-grafts in coronary bypass grafting.

143 Combined transplantation of skeletal myoblasts and AC-133 progenitor cells reverses post-infarct remodelling by means of neovascularization in chronic ischemic heart failure

N. Bonaros[1], R. Rauf[1], D. Wolf[2], E. Margreiter[3], A. Tzankov[4], B. Schlechta[5], A. Kocher[5], T. Schachner[1], H. Ott[1], S. Hering[6], J. Bonatti[1], G. Laufer[1]

[1]Department of Cardiac Surgery, Innsbruck Medical University, Innsbruck, Austria; [2]Department of Hematology, Innsbruck Medical University, Innsbruck, Austria; [3]Innovacell Biotechnology, Innsbruck, Austria; [4]Department of Pathology, Innsbruck Medical University, Innsbruck, Austria; [5]Department of Cardiothoracic Surgery, Vienna Medical University, Vienna, Austria; [6]Institute of Pharmacology and Toxicology, University of Vienna, Vienna, Austria

Background. Cellular cardiomyoplasty using skeletal myoblasts or angiopoietic progenitor cells offers a promising approach for the treatment of ischemic heart failure. Although several studies have shown encouraging results in acute and semi-chronic myocardial infarction, the efficacy of combined cell therapy using skeletal myoblasts and angiopoietic progenitor cells in chronic ischemic heart disease remains undetermined.

Methods and results. A model of chronic ischemia was created using LAD-ligation in nude rats. A. culture medium, B. homologous skeletal myoblasts, C. human AC-133+ cells and D. both homologous skeletal myoblasts and human AC-133+ cells were injected in the infarct and peri-infarct area four weeks after infarction. Assessment of myocardial function was performed using echocardiography four weeks after injections. Histological evaluation was based on quantification of infarct size, myocardial fibrosis and apoptosis, and capillary density. Left ventricular dilatation was attenuated and ejection fraction improved significantly after cell transplantation (myoblasts: $59.4 \pm 8.8\%$, AC-133 cells: $60.3 \pm 6.6\%$, combination: $68.2 \pm 5.6\%$ vs. control: $41.5 \pm 7.4\%$, $p = 0.0013$). Quantification of scar tissue showed a significant reduction of infarct area in cell-treated animals (myoblasts: $22.3 \pm 9.1\%$, AC-133 cells: $19.8 \pm 7.6\%$, combination: 13.2 ± 5.8 vs. controls: $36.5 \pm 8.2\%$, $p = 0.008$). Improvement of myocardial function was associated with reduced apoptotic index (myoblasts: $3.2 \pm 0.9\%$, AC-133: $3.1 \pm 0.6\%$, combination: $1.8 \pm 0.8\%$ vs. controls: $10.3 \pm 1.6\%$, $p = 0.0002$) and increased vasculary density (myoblasts: 5.2 ± 1.2, AC-133 cells: 8.3 ± 1.8, combination: 12.3 ± 2.3, all capillary vessels/high power field, $p = 0.007$) in animals after cellular cardiomyoplasty.

Conclusions. Transplantation of skleletal myoblasts or angiopoietic progenitor cells leads to improvement of left ventricular function, reduction of scar size and myocardial apoptosis and increased neoangiogenesis in chronic ischemia.

144 Expression and activity of Integrin-linked kinase in postnatal development of murine myocardium

S. B. Watzka[1,2], E. Szent-Ivany[2], M. Steiner[3], P. N. Wurnig[1], P. H. Hollaus[1], J. G. Coles[4], G. E. Hannigan[5], G. Weigel[2]

[1]Department of Thoracic Surgery, Otto Wagner Hospital, Vienna, Austria; [2]Clinical Department of Cardiothoracic Surgery, Medical University of Vienna, Vienna, Austria; [3]Institute for Histology, Medical University of Vienna, Vienna, Austria; [4]Division of Cardiovascular Surgery, The Hospital for Sick Children, Toronto, Ontario, Canada; [5]Department of Clinical Pathology, The Hospital for Sick Children, Toronto, Ontario, Canada

Background. Considering the role of integrins in myocardial development, we hypothesized that Integrin-linked Kinase (ILK) might be involved in the postnatal switching from myocardial hyperplasia to hypertrophy.

Material and methods. ILK expression and activity have been determined by Western blotting and ILK kinase assay of mouse hearts of different ages. ILK and β-catenin transcription have been evaluated by RT-PCR. The activity of the transcription factor AP-1 has been assessed by EMSA.

Results. At day 1 after birth, the expression of ILK diminished, while at days 2–3 after birth, ILK expression increased again. Six months after birth, the expression of ILK in mouse hearts was 1.5 times higher than at birth, while twelve-months-old mice had a level of ILK expression similar to newborns. Conversely, at days 1–2 after birth, the ILK kinase activity increased strongly, while it decreased again at day 3. Twelve months after birth, ILK kinase activity in mouse hearts was 1.5 times higher than six months after birth. AP-1 activity was highest at day 2 after birth. Expression of β-catenin showed a peak at day 2 after birth, and fell again back at day 3. Six months after birth, the concentration of β-catenin was 1.5 times higher than in neonatal hearts, while 12 months after birth it decreased slightly.

Conclusions. Our results deliver insights into the myocardial signaling during differentiation. As ILK is amenable to pharmacological modulation, stimulation of myocardial regeneration or prevention of myocardial hypertrophy are future targets of ILK manipulation.

145 Die lokale Applikation von Azathioprin reduziert die neointimale Hyperplasie experimenteller Venenbypässe

T. Schachner[1], S. Heiss[1,2], D. Zipponi[1], A. Tzankov[1], O. Bernecker[1], G. Laufer[1], J. Bonatti[1]

[1]Medizinische Universität Innsbruck, Innsbruck, Austria; [2]Bezirkskrankenhaus Hall, Hall, Austria

Background. Azathioprine is an immunosuppressive and anti-inflammatory drug and it has been shown to induce apoptosis in human T lymphocytes. We investigated whether local treatment with azathioprine can inhibit neointimal hyperplasia in experimental vein grafts.

Methods. C57BL6J mice underwent interposition of the inferior vena cava from isogenic donor mice into the common carotid artery using a cuff technique. In the treatment group

azathioprine was applied perivascularly. The control group did not receive local treatment. Vein grafts were harvested at 1 and 2 weeks postoperatively and underwent morphometric analysis as well as immunohistochemical analysis for apoptosis (TUNEL).

Results. In grafted veins without treatment (controls) neointimal thickness was 10 (6–29) µm, and 12 (8–40) µm at 1, and 2 weeks postoperatively. In azathioprine treated grafts the neointimal thickness was 2 (1–5) µm, and 4 (3–11) µm. This reduction of neointimal thickness was significant at 1 week ($p = 0.001$) and 2 weeks ($p = 0.016$) postoperatively.

Azathioprine treated vein grafts showed an increased rate of apoptosis in the vascular wall as compared with controls (593 (26–783) vs. 45 (0–106) apoptotic cells/mm² at 1 week, $p = 0.063$, and 656 (327–1270) vs. 19 (0–79) apoptotic cells/mm² at 2 weeks, $p = 0.016$).

Conclusions. We conclude that treatment of experimental vein grafts with azathioprine is associated with a reduction of neointimal hyperplasia and an increased apoptosis rate in the vascular wall.

These results suggest that azathioprine may be useful for the prevention of vein graft disease.

146 Preliminary results with a novel titanium sternal osteosynthesis system for complicated secondary sternal closure after cardiac surgery

R. Gottardi, D. Zimpfer, M. Czerny, T. Fleck, C. Eckl, R. Seitelberger, E. Wolner, M. Grimm

Department of Cardiothoracic Surgery, Medical University Vienna, Vienna, Austria

Background. Deep sternal wound infection is a rare but serious complication after cardiac surgery carrying a substantial rate of morbidity. Predisposing factors include diabetes, bilateral internal mammary artery harvesting and obesity. Current treatment options include V.A.C. therapy and subsequent secondary closure with pectoralis muscle flap advancement. We report on our experiences with a novel titanium sternal osteosynthesis system with an emergency release pin for fast re-entry in patients requiring secondary sternal closure after deep sternal wound infection.

Material and methods. Between November 2005 and January 2006 7 consecutive patients (mean age 63 yrs., diabetes 57%, BMI >30 43%, bilateral IMA harvesting 28%) with deep sternal wound infection underwent secondary sternal closure. Prior to secondary sternal closure, patients were treated with the VAC system and i.v. antibiotics. When sternal smear test revealed negative results, secondary sternal closure using the novel sternal closure system was performed.

Results. In all patients 3 titanium plates for secondary closure were used. Plates were fixated with 2 to 3 screws on either side of the sternum. Closure was successful in all patients in the first attempt and no signs of recurring wound infection and sternal dehiscence or sternal moblity could be observed.

Conclusions. Our preliminary results with this novel titanium sternal fixation system indicate good sternal fixation and healing in patients requiring secondary sternal closure after deep sternal wound infection.

147 Matrix metalloprotease (MMP)-1 serum concentrations correlate with the incidence of acute rejection following cardiac transplantation

K. Krenn, M. Grimm, A. Zuckermann, N. Sela, P. Paulus, G. Seebacher, G. Wieselthaler, E. Wolner, S. Aharinejad

Medical University of Vienna, Vienna, Austria

MMP-1 mediates extracellular matrix remodeling in the failing heart. This study sought to analyze the relationship between MMP-1 serum concentrations and acute rejection in heart transplant recipients undergoing different immunosuppressive regimens. Endomyocardial biopsies and serum samples at 1, 2, 3, 4, 6, 8, 12 and 24 weeks post-transplant were obtained from 68 consecutive recipients. Patients received cyclosporine A (CyA; $n = 45$) or tacrolimus (TAC; $n = 15$) combined with myophenolate mofetil (MMF) and steroids, or CyA with everolimus (EVL) and steroids ($n = 8$). The incidence of rejection and infection was assessed within one year post-transplant. Rejection was diagnosed histologically using the ISHLT-guidelines. MMP-1 serum concentrations in patients and 10 controls were measured using ELISA. Control MMP-1 serum concentrations were 17.7 ± 5.2 ng/mL. Rejection was diagnosed in 49 out of 390 biopsies (grade 1: $n = 37$; grade 2: $n = 1$; grade 3: $n = 11$). All rejection episodes were observed in patients ($n = 23$) with MMP-1 serum concentrations ≥ 5 ng/mL during the first two weeks post-transplant. Patients with initial MMP-1 serum concentrations = 4 ng/mL ($n = 8$) were free from rejection. In CyA-treated patients 36 out of 240 biopsies showed rejection, in TAC-treated patients 11 out of 103, and in the EVL group 2 out of 41. MMP-1 serum concentrations ≤ 4 ng/mL correlated with EVL therapy ($p < 0.001$), whereas concentrations ≥ 5 ng/mL correlated with CyA and TAC therapy ($p < 0.001$). Serum MMP-1 did not correlate with infection episodes. MMP-1 is a sensitive, independent measure of efficient immunosuppression. MMP-1 serum concentrations ≤ 4 ng/mL early after cardiac transplantation correlate with rejection-free outcome.

148 Increased HIF-1α expression after graft reperfusion correlates with cardiac complication rate following heart transplantation

R. Schäfer, S. Aharinejad, K. Krenn, G. Seebacher, A. Zuckermann, G. Wieselthaler, P. Paulus, D. Abraham, E. Wolner, M. Grimm

Medical University of Vienna, Vienna, Austria

Post-operative right ventricular failure is a severe complication in cardiac transplantation, accompanied by a high mortality rate. Hypoxia-inducible factor (HIF)-1 is a transcription factor that regulates various genes involved in oxygen homeostasis and inflammatory reactions. Increased expression of HIF-1α in the donor heart may indicate tissue damage associated with ischemia-reperfusion injury. Whether tissue HIF-1α expression levels correlate with post-operative outcome following cardiac transplantation, is unclear. In 100 consecutive heart transplant recipients intra-operative myocardial biopsies of the donor hearts were obtained before and after aortic cross-clamp in donors, and at 10, 30, and 60 min reperfusion in recipients. In these biopsies, the mRNA expression of HIF-1α

and HIF-1β was examined by real time reverse transcription PCR. Additionally, the post-operative course including the occurrence of cardiac complications was documented. HIF-1α expression in patients with cardiac complications was significantly higher at 10 min reperfusion than in patients without complications ($p = 0.009$). At a cut-off level of 200 arbitrary units, HIF-1α had a sensitivity of 75% and a specificity of 85% to identify patients with cardiac complications ($p = 0.008$). No significant differences were found at all other time points and in the analysis of HIF-1β expression. These data indicate that HIF-1α is a sensitive and quick-response gene in predicting post-operative cardiac complications such as right ventricular failure.

Kinderchirurgie I

149 Preliminary findings in assessing anal atresias with fetal and postnatal magnetic resonance imaging

T. Ursula[1], P. C. Brugger[2], E. Horcher[1], M. Hörmann[3], D. Prayer[3]

[1]Division of Pediatric Surgery, Department of Surgery, Medical University of Vienna, Vienna, Austria; [2]Integrative Morphology Group, Center of Anatomy and Cell Biology, Vienna, Austria; [3]Department of Radiology, Medical University of Vienna, Vienna, Austria

Background. Since isolated anorectal malformations are only rarely diagnosed with prenatal ultrasound, thus experience with fetal magnetic resonance imaging (MRI) is limited to cases associated with complex malformations.

Material and methods. Four fetuses underwent fetal MRI studies on a 1.5 T magnet using a cardiac-coil and no sedation. Study protocols included T2- and T1-weighted sequences in three section planes. In two of them prenatal ultrasound suspected an abdominal mass and situs inversus with hydronephrosis, respectively. A set of minimally conjoined twins underwent 4 examinations following the 18th gestational week. Additionaly, three newborns with clinically diagnosed anal atresia were imaged postnataly using the same imaging protocols.

Results. With fetal MRI one fistula could be detected indirectly because of the backflow from urin into the blind ending colon. In the conjoined twins detailed description of the urinary system and large intestines was possible. All postnatal MRI studies demonstrated the blind ending rectum, allowing classifying high and low forms. An undetected fistula manifested itsself clinically after 24 hours.

Conclusions. Due to the characteristic signal properties of meconium on T1- and T2-weighted sequences fetal MRI can identify high forms of anal atresia, as well as cases with recto-vesical fistulas. Minor deviation of normal anatomy, makes low forms of anal atresia unlikely to be recognized by fetal MRI. However meconium fillings enables detailed depiction of anatomy with postnatal MRI, thus allowing decision making on the appropriate surgical procedure. Further studies may reveal the impact of perinatal MRI managing anal atresias.

150 Ergebnisse nach transanaler Dickdarmresektion bei Morbus Hirschsprung (MH)

L. Stroedter[1], G. Fasching[2], M. E. Höllwarth[1]

[1]Univ.-Klinik für Kinderchirurgie, Medizinische Universität Graz, Graz, Österreich; [2]Abteilung für Kinderchirurgie, LKH, Klagenfurt, Österreich

Grundlagen. 1998 wurde erstmals von de La Torre und Mondragon die transanale Resektion (modifizierte Methode nach Soave) für die Colonresektion bei Morbus Hirschsprung publiziert. Auf Grund des überzeugenden Konzeptes hat dieser Zugangsweg für die Operation des Morbus Hirschsprung bei der häufigsten Ausdehnung in das Rekto-sigmoid eine rasche Verbreitung gefunden. Wir berichten über die Ergebnise aus zwei Abteilungen.

Patienten. Von 1998–2005 wurden insgesamt 23 Patienten (17 m, 2 w) im Alter von 3 Wochen bis 89 Jahre operiert. 3 Kinder erhielten präoperativ eine Stoma (1× Ausdehnung bis ins Quercolon, 1× tox. Megacolon als NG, 1× präexistent). Bei allen Patienten wurde die Rektum/Sigmamobilisation – in der Art nach Soave – transanal durchgeführt. Die Resektionsebene wurde durch intraoperative Schnellschnittuntersuchungen (inklusive hypoganglionäre Zone) festgestellt. Das ganglionäre Colon wurde ca. 1/2 cm bis 1 cm über der Linea dentata anastomosiert. Zweimal wurde beim gleichen Eingriff die Stomie verschlossen.

Ergebnisse. Bei 1 Kind mit MH bis ins Quercolon erfolgte die Colonmobilisation laparoskopisch, 1 × wurde die Mobilisation des Colonsigmoideum mit Biopsieentnahme laparoskopisch durchgeführt, 2 × wurden Biopsien über eine Minilap am Nabel entnommen, einmal musste wegen massiver Verwachsungen das C. sigmoideum offen mobilisiert werden (Zust. nach tox. Megacolon). Die resezierte Darmlänge bei Ausdehnung ins C. sig. lag zwischen 14 cm und 70 cm. Ein Patient (9a) entwickelte ein Kompartmentsyndrom der UE (konservativ), ein Patient hatte ein postoperatives retrorektales Abszess (temp. Colostomie). Die volle orale Ernährung konnte bei allen ausschließlich transrektal operierten Kindern zwischen dem 1. und 3. postoperativen Tag erreicht werden. 2 Kinder wurden wegen einer mäßigen Anastomosenstenose temporär bougiert, in einem Fall waren 2 Sphinkterdehnungen wegen Obstipation erforderlich. 18 Kinder haben regelmäßige Stuhlentleerungen, bei 2 Kindern besteht weiter Obstipation und 3-mal anhaltende Inkontinenz und fehlende Stuhlempfindungen.

Schlussfolgerungen. Nach unserer bisherigen Erfahrung stellt die transanale Resektion bei MH nach De la Torre eine vorzügliche Methode mit geringen Komplikationen und überwiegend guten Langzeitergebnissen dar. Wesentlich ist die präoperative Kenntnis der Ausdehnung des MH. Bei langstreckigem MH können Biopsien zur Feststellung des Resektionsgrenzen laparoskopisch kombiniert werden.

151 Erfahrungen mit der transanalen Durchzugsoperation nach De la Torre-Mondragon bei M. Hirschsprung in Linz

S. Deluggi

Landes-, Frauen- und Kinderklinik, Linz, Österreich

Die im Jahre 1998 publizierte Durchzugsoperation nach De la Torre-Mondragon ist heute ein weit verbreitetes Standardverfahren bei der operativen Korrektur eines M. Hirschsprung mit einer bis ins Sigma reichenden Aganglionose.

In Linz wird dieses Verfahren seit 1999 durchgeführt und es wurden mittlerweile 15 Kinder im Alter zwischen Neugeborenenperiode und 15. Lebensjahr operiert. Alle Eingriffe wurden von einem Chirurgen durchgeführt.

Am Beginn wurden die Diagnostik und die Operation entsprechend der Originalarbeit durchgeführt.

Heute wird nach Diagnosesicherung mittels Histochemie und Irrigoskopie präoperativ die Resektionslinie über eine transumbilikale Colon-PE gesichert. Anschließend wird der Eingriff transanal weitergeführt.

Der Eingriff ist sicher durchzuführen und nur bei einem Kind musste bisher unerwartet konvertiert werden. Bei diesem Kind war das Colon nach einer schweren Enterocolitis narbig geschrumpft und konnte von anal nicht mobilisiert werden. Zwei Kinder hatten zum Zeitpunkt der Operation ein Stoma, eines wegen einer therapierefraktären Enterocolitis, das andere wegen eines progredienten Ileus. Viermal wurde am Beginn des transanalen Operationsaktes wegen einer längeren Aganglionose die linke Flexur mobilisiert (2× laparoskopisch).

Ein Kind hatte wegen einer Anastomoseninsuffizienz eine Sepsis, die jedoch konservativ behandelt werden konnte. Beim 15-jährigen war die Gabe einer Bluttransfusion notwendig. Zweimal musste bei einer Anastomosenstenose postoperativ über 2 Monate bougiert werden. Drei Kinder hatten perianale Ulzerationen, die jedoch problemlos abheilten. Bei keinem der operierten Kinder war bisher ein Folgeeingriff notwendig.

Zusammenfassend kann man sagen, dass die Durchzugsoperation nach De la Torre-Mondragon beim M. Hirschsprung mit kurzer bis mittellanger Aganglionose eine komplikationsarme und sichere Methode darstellt die einzeitig durchführbar ist.

152 Die totale Colonaganglionose – Ergebnisse der Operation nach Sauer

M. E. Höllwarth, G. Schimpl

Univ.-Klinik für Kinderchirurgie, Medizinische Universität Graz, Graz, Österreich

Grundlagen. Die totale Colonaganglionose Zuelzer-Wilson Syndrom) ist eine seltene Erkrankung mit einer Inzidenz von 1:50.000 Geburten. Zwischen 3 und 12% aller Kinder mit Morbus Hirschsprung haben eine totale Aganglionose. Wegen der besonderen Problematik der totalen Colektomie wurden in der Vergangenheit verschiedene operative Methoden entwickelt. Einige dieser Techniken befassen sich mit einer partiellen Erhaltung des Colon. Sauer hat 1993 erstmals eine neue chirurgische Methode vorgestellt, mit Erhaltung der Ileozökalklappe und des Colon ascendens.

Patienten. Insgesamt wurden seit 1993 sieben Patienten nach dieser Methode behandelt. 2005 erfolgte eine Nachuntersuchung oder ein Telefoninterview.

Ergebnisse. Alle Patienten haben zwischen 3 und 7 breiige und flüssige Stühle täglich, nur ein Patient leidet an nächtlicher Enkopresis, verschiedene Nahrungsmittel werden schlecht oder gar nicht vertragen. Bezüglich des Gewichtes liegen zwei Patienten im Normbereich, 4 Patienten an oder unter der 10. Percentile. Die Inzidenz der typischen Post-Hirschsprung Enterolcolitis war im Verlaufe dieser Patienten sehr gering und insbesondere die älteren Patienten haben einen normalen Lebensstil.

Schlussfolgerungen. Die Methode nach Sauer mit Erhaltung der aganglionären Ileozökalklappe und des Colon Ascendens für die totale Colonaganglionse zeigt gute Langzeitergebnisse.

153 Malakoplakie des Kolon bei einem 8-jährigen Knaben – Beitrag zu einem sehr seltenen Krankheitsbild

J. Hager[1], G. Menardi[1], I. Gassner[2], A. Kreczy[3]

[1]Univ.-Klinik für Chirurgie, Innsbruck, Österreich; [2]Univ.-Klinik für Kinder- und Jugendheilkunde, Innsbruck, Österreich; [3]Pathologisches Institut, Innsbruck, Österreich

Grundlagen. Unter Malakoplakie wird eine selten vorkommende, granulomatöse Affektion verstanden, deren Ätiologie unbekannt ist. Von Bedeutung sind aber drei in Zusammenhang mit diesem Krankheitsbild gemachte Beobachtungen: 1. Eine Malakoplakie tritt fast nur im Rahmen einer die körpereigene Abwehr beeinträchtigenden Erkrankung auf (Neoplasie, chronisch entzündlicher Prozeß, Immundefekt oder Immunsuppression nach Organtransplantation). 2. Wenn sie mit einer chronischen Infektion assoziiert ist, so wird diese sehr häufig durch gram-negative Bakterien, vor allem Escherichia coli, unterhalten. 3. Die Makrophagenfunktion des betroffenen Patienten ist inadäquat. Diese drei für eine Malakoplakie typischen Fakten hinterlassen im entzündungsbedingten Granulationsgewebe Veränderungen, die histologisch ausschließlich bei dieser Erkrankung zu finden sind und daher die Diagnose einer Malakoplakie ermöglichen. Es handelt sich um eine „gutartige“ Erkrankung, die sich allerdings in ihrer aktiven Phase aufgrund von progredienter Gewebsdestruktion gleichsam maligne verhalten kann. Typischerweise betrifft der granulomatös-inflammatorische Prozeß den Urogenitaltrakt, ein Kolon-Befall, insbesondere bei einem Kind, gilt als besondere Rarität.

Methodik. Es wird über einen 8-jährigen marantischen Buben (Körpergewicht 14,8 kg – weit unter der 3er Perzentile) aus Afghanistan berichtet, der zur Abklärung resp. Behandlung einer chronischen Sakrumosteomyelitis unklarer Genese an unserer Abteilung aufgenommen war. Biopsieentnahmen aus dem Sakrum brachten keine Klärung des Problems. Erst das Auftreten einer Stuhlfistel im Sakrumbereich, derentwegen eine Transversostomie angelegt wurde, führte dank der mitentfernten Appendix zur – doch überraschenden – Diagnose „Malakoplakie des Kolon“. Als mögliche Ursache wurden, da keine der oben angeführten Erkrankungen nachzuweisen war, die schlechten Ernährungsbedingungen bzw. der schlechte Ernährungszustand des Buben diskutiert.

Ergebnisse. Die – erfolgreiche – Behandlung unseres Patienten bestand, entsprechend den aktuellen Literaturangaben, in einer 6-monatigen Therapie mit Ciprofloxazin, einem Cholinergikum (zur Stimulation der Synthese von Tumornekrosefaktor, der seinerseits die Phagozytosebereitschaft der

Makrophagen steigern soll) und hochdosiertem Vit. C sowie in einer Resektion jenes – stenosierten – Abschnittes des Colon descendens, von dem vermutlich der Prozeß ausgegangen war. Über den weiteren Verlauf nach etwa 8-wöchiger rezidivfreier Beobachtungszeit wissen wir nichts, da das Kind wieder nach Afghanistan zurückkehren musste und unsere Versuche, seinen Verbleib zu eruieren, scheiterten.

Schlussfolgerungen. Eine Malakoplakie stellt eine sehr ungewöhnliche Affektion dar: 1. Ihre Ätiologie ist nach wie vor unklar. 2. Sie zeigt weder typische klinische noch standard-diagnostische Merkmale, d. h., die Diagnose „Malakoplakie" gelingt nur durch histologische Untersuchung von Granulationsgewebsmaterial. 3. Der granulomatös-inflammatorische Prozeß breitet sich oft destruierend aus, seine Behandlung kann nur symptomatisch durchgeführt werden, und letztlich kann er durchaus rezidivieren.

154 The duplication of the rectum: presentation and therapy

M. A. Ardelean, J. Bauer, J. Schnöll, C. Heil, R. Hammerl

SALK, Salzburg, Austria

Background. to delineate the symptomatic features and to emphasize the necessity of early diagnosis and complete surgical excision of rectal duplications.

Methods. We undertook a retrospective and contemporary review of all patients. Clinical recordings, preoperative evaluations, intraoperative and histological findings, and current patients' condition were studied.

Results. Age of the six patients ranged from new-born to 13 years. There was a broad spectrum of clinical presentation: two children were seen after previous therapy elsewhere with a mistaken diagnosis of perianal fistula, respectively undefined abdominal pain; two presented with exstrophied rectal duplication; one neonate was seen with an anal cleft and one infant with rectal bleeding and retrorectal palpable tumour. Paraclinic investigations formulated preoperative diagnosis in one patient, aided it in two others, and detected associated anomalies in two further patients. All duplications were "in toto" removed using laparotomy (1×), transanal (1×), or perineal sagittal approach (4×). All had contact with the rectum. Smooth muscle coat and intestinal epithelial layer were histological demonstrated in each case.

Conclusions. Rectal duplications are rare anomalies. Clinical manifestations include: abdominal pain; obstipation; rectal bleeding; urinary or bowel obstruction; rectal polyp; perianal fistula; perineal abscess; pelvic, abdominal, retroperitoneal or perineal mass.

Early diagnosis avoids prolonged symptomatic treatment and unnecessary operative procedure. Complete excision is curative.

155 Colorectal carcinoma in a 12-year-old boy

J. Burtscher, E. Horcher

Abteilung für Kinderchirurgie, Klinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria

Background. Colorectal tumors are a rare entity in childhood tumors. Their histopathological appearance and biological characteristics range from benign (juvenile polyps, adenomas) over neuroendocrine tumors to malign tumors (adenocarcinomas).

The incidence of sporadic colorectal cancer in childhood is 1 per 1,000.000 per year. Colorectal cancer of the childhood is usually associated with conditions such as familial adenomatous polyposis, Turcot's syndrome, Gardner's syndrome, Peutz-Jegher's syndrome and ulcerative colitis.

Material and methods. We report on a 12-year-old boy presenting with rectal bleeding. Rectal palpation showed a big polypous mass 7 cm ab ano. A colonoscopy was performed, and 2 tubulovillous polyps were removed from the left colon and a biopsy from a sessile tubulovillous polyp of the rectum showed high-grade dysplasia.

The family history of our patient revealed a malign brain tumor of his brother, (suggesting a family with Turcot's syndrome) but the genetic testing of the APC gene was negative.

Staging with rectal ultrasound, abdominopelvine computed tomography and thoracic x-ray showed no evidence of metastatic disease.

Transanal resection of the big tubulo-villous adenoma of the rectum was performed. The histological examination classified this tumor as carcinoma of the rectum T1M0G2.

Results. During a follow-up period of 12 months, and a 3-monthly performed colonoscopy, the patient stays disease free.

Conclusions. Malign colorectal tumors are rare in childhood. Rectal bleeding, abdominal pain, palpable mass and change in bowel habits are easily considered to be suggestive of more common pediatric disorders such as appendicitis, intussusception and gastroenteritis, thus, colorectal carcinoma could be easily overlooked.

Adipositaschirurgie II: Reeingriffe – Was ist Standard?

156 Resultate und Komplikationen nach laparoskopischem Gastric banding bei super-adipösen Patienten (BMI ≥ 50 kg/m²)

R. Mittermair, F. Aigner, H. Nehoda

Abteilung für Allgemein-, Thorax- und Transplantationschirurgie, Medizinische Universität Innsbruck, Innsbruck, Österreich

Grundlagen. Das laparoskopische Gastric banding stellt eine effektive Methode zur Behandlung der morbiden Adipositas dar. Diese Operationsmethode ist effektiv in der Gewichtsreduktion, minimal invasiv, total reversibel und kann dem Patienten entsprechend adjustiert werden. Ziel dieser Studie war es, die Effektivität und Sicherheit des Gastric bandings bei super-adipösen Patienten (BMI > 50 kg/m^2) zu evaluieren.

Patienten und Methodik. Zwischen Jänner 1996 und Dezember 2003 wurden 682 Schwedenbänder laparoskopisch implantiert. Von diesen Patienten hatten 60 (8,8%) einen BMI ≥ 50 kg/m^2. Es wurden 2 Gruppen von Patienten analysiert: Gruppe 50 (n = 30 Patienten) mit einem BMI 50–54 kg/m^2 und Gruppe 55 (n = 30 Patienten) mit einem BMI ≥ 55 kg/m^2. 13 verschiedene Chirurgen führten diese Operationen durch.

Ergebnisse. Der durchschnittliche EWL betrug nach 1 Jahr 39,2% und 60,4% nach 4 Jahren. Der BMI sank von 55,5 auf 34,7 nach 4 Jahren. In der Gruppe 50 betrug der durchschnittliche EWL nach 1 Jahr 42,1% und 59,9% nach 4 Jahren. Der BMI sank von 51,8 auf 33,2 nach 4 Jahren. Es traten 6 postoperative Komplikationen auf: 2 Pouchdilatationen, 2 Bandmigrationen und 2 Bandlecks. In der Gruppe 55 betrug der durchschnittliche EWL nach 1 Jahr 36,8% und 59,4% nach 4 Jahren. Der BMI sank von 59,1 auf 36,4 nach 4 Jahren. Hier traten 10 postoperative Komplikationen auf: 2 Pouchdilatationen, 3 Bandmigrationen und 5 Bandlecks.

Schlussfolgerungen. Das laparoskopische Gastric banding stellt eine effektive Methode zur Behandlung der Super-Adipositas dar. Aufgrund der hohen Komplikationsrate sollten diese super-adipösen Patienten jedoch nur von erfahrenen bariatrischen Chirurgen operiert werden.

157 Revisional bariatric surgery

N. Ott, S. Kriwanek, S. Ali Abdullah, R. Roka

KA Rudolfstiftung, Vienna, Austria

Background. Restrictive procedures as vertical banded gastroplasty (VBG) or adjustable gastric banding (AGB) do not always lead to adequate weight losses or have long term complications such as staple line rupture, band slippage or band migration.

Material and methods. From 1999 to 1/2006 revisional operations had to be performed in 57 patients, 49 women and 8 men, 23 after VBG, 33 after AGB and 1 after gastric bypass (GBP).

6 AGB's were explanted and 8 patients had a band-revision. In 4 patients a sleeve gastrectomy was performed after band explantation. Gastric bypass (standard: 22 or malabsorptive: 10) was performed in 32, bilio-pancreatic diversion BPD in 6 patients.

Results. Until now data of 32 patients have already been analysed. The average age was 44, and the mean preoperative BMI was 45.4. The postoperative morbidity rate was 34% (11/32). After an average of 18 months the mean EWL was 56%. Only 2 patients had lost less than 25% of EW. Quality of life assessed by BAROS demonstrated good results in 77% of patients.

Conclusions. Revisional operations represent safe and potentially effective options for patients with inadequate weight loss after restrictive surgery. However, as postoperative morbidity rates seem to be higher compared to primary operations, redo procedures should be performed in centres of experience of bariatric surgery only.

158 Is a pouch compulsory in Roux-Y gastric bypass after failed gastric banding in morbidly obese patients

A. Klaus, A. Perathoner, F. Aigner, H. Nehoda, G. Mühlmann, G. Brandacher, R. Margreiter, H. Weiss

Department of General, Thoracic and Transplant Surgery, Medical University of Innsbruck, Innsbruck, Austria

Background. Pouch formation after failed gastric banding bears a risk of anastomatic leakage, bleeding or ischemic damage due to an impaired vascular supply or demanding preparation in the scarry tissue. We evaluated the clinical outcome in patients with and without a gastric pouch following Roux-Y gastric bypass (RY-BP) after failed banding.

Material and methods. This study comprised 23 morbidly obese patients (Median BMI = 35 kg/m^2) undergoing RY-BP as their final bariatric procedure. Group 1 consisted of 12 patients after band migration (n = 10) or pouch dilatation (n = 2). An esophago-jejunal anastomosis was performed. Group 2 comprised 11 patients with esophageal motility disorders or pouch dilation after banding. A regular sized pouch was created. Clinical parameters, such as weight loss, complications and a satiety score were assessed. Serum values of ghrelin, secretin and gastrin were measured.

Results. All but one procedures could be performed by laparoscopy. Two patients in group 2 required revisional surgery (1 open for reanastomosis, 1 laparoscopic for oversewing/drainage). 3 patients in group 2 required intraoperative additional suturing at the staple line for leakage repair. All patients significantly reduced body weight ($p < 0.01$ compared to preoperative) during a median follow-up of 21 months.

Parameters of satiety assessment did not differ between the two groups as did serum values of secretin, gastrin and ghrelin.

Conclusions. RY-BP in patients experiencing failed gastric banding is demanding. Esophago-jejunostomy allows preparation in healthy tissue whereas routine pouch formation may increase the risk for intraoperative complications. Adapted procedural strategy is advocated and usually decided intraoperatively.

159 Gastric dilation in sleeve gastrectomy – a limiting factor?

F. B. Langer, A. Bohdjalian, F. X. Felberbauer, J. Zacherl, R. Jakesz, G. Prager

Department of Surgery, Medical University Vienna, Vienna, Austria

Background. Laparoscopic sleeve gastrectomy (LSG) as sole bariatric procedure has been reported for high-risk super-obese patients or as first-step followed by Roux-en-Y gastric bypass (RYGBP) or duodenal switch (DS) in super-super obese patients. The efficacy of LSG as sole bariatric operation might be limited by the dilatation of the gastric tube in the longer follow-up.

Methods. 23 patients (15 morbidly obese, 8 super-obese) were studied prospectively for weight loss following LSG. The incidence of sleeve dilatation was assessed by upper GI contrast studies in patients with a follow-up of > 12 months.

Results. Patients who underwent LSG achieved a mean excess weight loss (EWL) at 6 and 12 months postoperatively of 46% and 56%, respectively. No significant differences were observed in %EWL comparing obese and super-obese patients. At a mean follow-up of 20 months, dilatation of the gastric sleeve was found in only one patient so far. Weight regain after initial successful weight loss was found in three of the 23 patients.

Conclusions. LSG has been highly effective for weight reduction for morbid obesity even as the sole bariatric procedure. Gastric dilatation was found in only one patient in this short-term follow-up. Weight regain following LSG may

require conversion to RYGBP or DS. A longer follow-up will be necessary to evaluate the long-term results of LSG.

160 Management of surgical complications after Roux-Y-gastric bypass and sleeve gastrectomy

S. Kriwanek, N. Ott, S. Ali-Abdullah, M. Schermann, R. Roka

1. Chirurgische Abteilung Rudolfstiftung, Vienna, Austria

Background. Although Roux Y gastric bypass (RYGB) and sleeve gastrectomy (SG) represent secure operations potentially dangerous postoperative complications may occur in some patients.

Patients and methods. From 2000 to 2005 156 RYGB operations (79 open and 77 laparoscopic procedures) and 26 laparoscopic SGs were performed.

Results. Severe postoperative complications developed in 10 patients after RYGB (6%) and 1 patient after SG (5%). The following severe complications occurred after RYGB:

leakage of anastomoses (5), stenosis of jejuno-jejunostomy (1), bleeding from gastro-jejunostomy (1), intra-abdominal or mediastinal abscess formation (3).

After SG one leakage of the staple line failure occurred.

All complications (with the exception of one) were treated surgically. In 2 cases open abdominal treatment was necessary. Intensive care treatment longer than 5 days was applied in 4 patients.

One elderly and multi-morbid patient died due to progressive organ failure despite surgical repair of the complication (0.6%).

Most complications occurred during the learning curve (within the first 25 operations).

Conclusions. Surgical complications after RYGB and SG represent potentially dangerous situations and often require demanding reoperations and a multidisciplinary team approach (intensive care, gastroenterology, radiology) in order to achieve success. The majority of complications occur during the learning curve.

161 Columnar lined esophagus: diagnosis, therapy, and oncologic relevance

J. Lenglinger[1], C. Ringhofer[1], M. Eisler[1], A. Baldinger[1], R. Sedivy[2], F. Wrba[2], E. Cosentini[1], G. Prager[1], J. Zacherl[1], M. Riegler[1]

[1]Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria; [2]Institut für Klinische Pathologie, Medizinische Universität Wien, Vienna, Austria

Background. Columnar lined esophagus (CLE) is detected in 30% of patients with gastro-esophageal reflux disease (GERD), in 5–15% GERD patients are diagnosed to have intestinal metaplasia (IM, i.e. Barrett esophagus) having a 30–125 fold risk for development of esophageal adenocarcinoma (annual incidence 0.2–2.2.%). In 10–20% dysplasia is detected within IM. Impact of CLE for management of GERD is unclear.

Methods. Review on CLE.

Results. Endoscopic CLE defines gastric type mucosa proximal to the start of rugal folds. Histological CLE includes oxyntocardiac mucosa (OCM: mucus, parietal cells); cardiac mucosa (CM: mucus cells); multilayered epithelium (CM covering basal cells of squamous epithelium). IM only develops within CM, not within OCM. Barrett carcinoma may develop via the sequence of IM, low-(LGD) and high-grade dysplasia (HGD). "Indefinite for dysplasia" should be rebiopsied following treatment with proton pump inhibitors for exclusion of inflammation-induced dysplasia. Biopsy sampling should include 4-quadrant biopsies of endoscopic normal junction and at 0.5 cm steps within CLE. Based on prospective studies, period from CM towards IM is 6 years, from IM towards LGD 4 years, from LGD towards HGD 2 years. In 50% HGD is associated with carcinoma. Therefore, surveillance is recommended after 5, 3 and 1 year for CM, IM and LGD, respectively. HGD should be treated by resection. CLE is no indication for surgery. Novel endoscopic technologies are suggested to improve sensitivity and specificity for assessment of IM, dysplasia and carcinoma.

Conclusions. CLE subtyping enables identification of those at risk for development of Barrett carcinoma.

Freie Vorträge: Ösophagus

162 Re-defining the indication and time schedule of endoscopic-bioptic surveillance for barrett's esophagus?

B. H. von Rahden[1,2], A. Meining[3], A. Weber[3], M. Vieth[4], T. Rösch[3], M. Stolte[4], R. M. Schmid[3], M. Sarbia[5], H. J. Stein[1,2]

[1]Universitätsklinik für Chirurgie, Paracelsus Medizinische Universität Salzburg, Salzburg, Austria; [2]Chirurgische Klinik, Technische Universität München, Munich, Germany; [3]II. Medizinische Klinik, Technische Universität München, Munich, Germany; [4]Institut für Pathologie, Bayreuth, Germany; [5]Institut für Pathologie, Technische Universität München, Munich, Germany

Objectives. Endoscopic-bioptic surveillance is recommended for patients with Barrett's esophagus (BE), but beneficial role and ideal time schedule of this strategy are controversial.

Methods. Data of 1438 patients undergoing surveillance for BE were analyzed. Patients with at least one follow-up endoscopy/-biopsy and no evidence of neoplastic BE were included. Malignant progression towards neoplastic BE (high-grade intraepithelial neoplasia or invasive carcinoma) was considered as endpoint of the study.

Results. Of 1438 patients with non-neoplastic BE, 57 patients had low-grade intraepithelial neoplasia (LG-IN) on initial biopsy, whereas 1381 patients exhibited non-dysplastic BE. Malignant progression (development of neoplastic BE) was detected in 28 cases (1.9%) during a median follow-up period of 24 months (1–255), accounting for an incidence of 0.95% per year follow-up. The incidence of neoplastic BE was significantly higher ($p < 0.001$, chi-square-test) in the LG-IN group ($n = 11$, 19.3%) compared to the non-dysplastic BE group ($n = 17$, 1.2%). Furthermore, a statistically significant difference of the time schedule of malignant progression was detected ($p = 0.05$, Fisher's exact test): In the group of non-

dysplastic BE, progression towards neoplastic BE was detected predominantly during the first year of follow-up (12 of 17; 70.6%), in contrast to the LG-IN group, in which neoplastic BE was observed predomiantly after a time exceeding 12 months (8 of 11, 72.7%).

Conclusions. Endoscopic surveillance should be intensified during the first year of follow-up. After one year, endoscopic surveillance should be focused on patients with LG-IN. Abandoning the surveillance strategy after one year might be appropriate for entirely non-dysplastic BE.

163 Prognostic impact of protein expression patterns after primary surgical resection of Barrett's cancer

B. H. von Rahden[1,2], R. Langer[3], J. Nährig[3], C. W. von Weyhern[3], R. Reiter[3], M. Feith[2], J. R. Siewert[2], H. Höfler[3], M. Sarbia[3], M. Sarbia[3], H. J. Stein[1,2]

[1]Universitätsklinik für Chirurgie, Paracelsus Medizinische Universität Salzburg, Salzburg, Austria; [2]Chirurgische Klinik, Technische Universität München, München, Germany; [3]Institut für Pathologie, Technische Universität München, Munich, Germany

Background. The prognosis of Barrett's cancer is determined by the stage of disease. Scientific effort is undertaken to find further molecular prognostic markers. Especially characterization of oncoprotein expression might be useful in clinical practice.

Patients and methods. Expression of c-erbB-2, p53, $p16^{INK4A}$, $p27^{KIP1}$, Cyclin D1 and EGFR was studied in a series of 137 Barrett's cancers. Investigation was performed on protein level, using routine paraffin-embedded material (tissue microarray study). Results of immunohistochemical staining were correlated with clinicopathologic features, including survival.

Results. The c-erbB-2 oncoprotein was overexpressed in 22 of the 137 tumours (16.1%). Expression of EGFR was observed in 74 cases (54.5%). Accumulation of p53 was found in 68 cases (49.6 %) and of Cyclin D1 in 101 tumours (73.3%). Loss of $p16^{INK4A}$ was observed in 100 cases (73.0%). Diminished $p27^{KIP1}$ expression was observed in 91 cases (66.4%). Expression did not correlate with tumour stage, grading, Lauren's or WHO classification or lymph node status. On univariate survival analysis, advanced local tumour growth (pT3/4; $p = 0.002$), lymph-node involvement (pN1; $p = 0.003$), high tumour grade (G3/4; $p = 0.017$), and lack of EGFR-expression ($p = 0.034$) were associated with worse survival. However, on multivariate analysis, the negative prognostic impact of lack of EGFR-expression was not independent from the other strong predictors of survival (pT3/4; $p = 0.03$) and lymph node involvement (pN1; $p = 0.004$).

Conclusions. Expression of c-erbB-2 oncoprotein, CylinD1, $p16^{INK4A}$, $p27^{KIP1}$, p53 and EGFR in the majority of Barrett's cancer cases suggests their implication in pathogenesis. The prognostic role of EGFR should encourage further scientific investigation.

164 Induced angiogenesis in Barrett's cancer due to frequent c-myc-amplifications and their correlation with VEGF-A

B. H. von Rahden[1,2], F. Pühringer-Oppermann[3], M. Sarbia[3], H. J. Stein[1,2]

[1]Universitätsklinik für Chirurgie, Medizinische Universität Salzburg, Salzburg, Austria; [2]Chirurgische Klinik, Technische Universität München, Munich, Germany; [3]Institut für Pathologie, Technische Universität München, Munich, Germany

Background. Deregulation of *c-myc* plays a major role in carcinogenesis of human malignancies, as it is implicated in promotion of cell growth, proliferation, loss of differentiation, apoptosis as well as angiogenesis. We have investigated amplification of the *c-myc* gene in a surgical series of Barrett's cancers.

Patients and methods. Esophageal adenocarcinomas (n = 84) arising in association with Barrett's esophagus after primary surgical resection were investigated for *c-myc* amplification, using CISH (chromogene *in situ* hybridization) technique. Tumor samples were assembled in a tissue microarray. *C-myc* gene dosage was correlated with clinicopathologic parameters, including survival and gene expression of cyclooxygenases (COX-1 and 2) and proangiogenic growth factors (VEGF-A and C).

Results. The majority of cases (70 of 84; 83.3%) exhibited amplification of the *c-myc* gene. These were low level amplifications in 63 cases (75.0%) and high level amplifications in 7 cases (8.3%). No amplification was found in 14 cases (16.7%). Tumors without c-my amplification had lower VEGF-A, VEGF-C and COX-2 expression levels, compared to tumors with low and high-level c-myc amplification (statistically significant for VEGF-A; $p = 0.0348$). *C-myc* amplification was not correlated with clinicopathologic parameters or survival. Only diffuse and mixed-type tumors according to Lauren exhibited *c-myc* amplifications more frequently ($p = 0.0466$).

Conclusions. Amplifications of the *c-myc* gene are frequent in invasive Barrett's cancer, suggesting that it is an early event during carcinogenesis of this entity. In accordance with current understanding of the gene function, *c-myc* seems to be involved in regulation of angiogenesis, e.g. by influencing expression of the proangiogenic factor VEGF-A.

165 Final report of FDG-PET for response evaluation in patients with esophageal squamous cell carcinoma and neoadjuvant radiochemotherapy

B. L. Brücher[1], H. Wieder[2], F. Lordick[1], K. Becker[3], F. Zimmermann[4], W. Weiss[5], H. Stein[1], R. Busch[6], M. Schwaiger[2], J. Siewert[1]

[1]Klinikum rechts der Isar, Munich, Germany; [2]Nuclear Medicine, Tu München, Munich, Germany; [3]Pathologie, TU-München, Munich, Germany; [4]Strahlentherapie, TU München, Munich, Germany; [5]Radiologie, TU München, Munich, Germany; [6]Statistik, TU München, Munich, Germany

Purpose. To investigate positron-emission-tomography using the glucose-analog [18F]-fluorodeoxyglucose (FDG-

PET) for response assessment after neoadjuvant radiochemotherapy in patients with intrathoracic locally advanced esophageal squamous cell carcinoma (ESCC) and to correlate the reduction of FDG-uptake with histopathological tumor response and survival in a prospective study.

Patients and methods. Hundred-and-five patients with histologically proven ESCC (cT3, cN0/+, cM0) underwent preoperative radiochemotherapy in phase-II-trials followed by esophagectomy between 1996 and 2004. All patients underwent FDG-PET prior to and after completion of multimodal treatment providing a total number of 210 PET-scans. Tumor metabolic activity was quantitatively assessed by standardized-uptakes-values (SUVs). Follow-up is complete (100%) with a median follow-up of 3.2 years ± 2.4.

Results. Mean tumor FDG-uptake before therapy was 9.01 ± 3.1 SUV and decreased to 3.27 ± 1.5 preoperatively. (-59% ± 23.05; $p < 0.0001$). Tumor metabolic activity decreased by 64.1% ± 23.4 in histopathological responders (<10% viable tumor cells) and by 51.2% ± 20.9 in non-responders ($p = 0.005$). ROC-analysis proved the calculated cut-off of decrease in SUV of –52% (AUC=7110; $p < 0.0001$) and yielded a sensitivity of 86% and a specificity of 56% for detection of histopathological response ($p = 0.001$). Multivariate analysis proved the classification of viable tumor cells ($p < 0.0001$) and the calculated cut-off of decrease of the metabolic activity of –52% SUV ($p = 0.015$) being independent predictive for survival. PET-non-responder showed a dismal survival compared to PET-responder ($p = 0.002$).

Conclusions. FDG-PET is valuable and objective for detection of histopathological responders and independent predictive for prognosis. Metabolic responder to RTx/CTx demonstrated a significant longer survival compared to non-responder.

166 The value of a classification of histopathological response by residual tumor cells in patients with neoadjuvant treated esophageal squamous cell carcinomas

B. L. Brücher[1], K. Becker[2], F. Lordick[1], M. Sarbia[2], H. Stein[1], R. Busch[3], F. Zimmermann[4], H. Höfler[2], J. R. Siewert[1]

[1]Klinikum rechts der Isar, Munich, Germany; [2]Pathologie, TU-München, Munich, Germany; [3]Statistik, TU München, Munich, Germany; [4]Strahlentherapie, TU München, Munich, Germany

Purpose. To investigate histomorphological features as a response-classification after neoadjuvant radiochemotherapy (RTx/CTx) and to correlate the results with clinical parameters, e.g. postoperative morbidity and mortality, survival, prognosis and recurrence in patients with locally advanced esophageal squamous cell carcinomas (ESCC).

Patients and methods. Three-hundred-eleven patients with histologically proven intrathoracic locally advanced ESCC (cT3, cN0/+, cM0) underwent preoperative combined simultaneous RTx/CTx in phase-II-trials followed by esophagectomy. Response to RTx/CTx was classified by percentage of viable residual tumor cells. Histopathological responders were classified by less than 10% residual tumor cells within the specimen compared to histopathological non-responders, who showed more than 10% residual tumor cells.

Results. The distinction in responders with less than 10% residual tumor remaining and non-responders with >10% residual tumor remaining correlates significantly with R0-resection ($p < 0.0001$), lymphatic vessel invasion ($p < 0001$), ypT-category ($p < 0.0001$), lymph node involvement ($p < 0.0001$), distant metastasis ($p = 0.02$) and survival ($p < 0.0001$). Multivariate analysis revealed the classification of residual tumor cells as an independent prognostic factor ($p < 0.0001$). Non-responders show a higher postoperative pulmonary morbidity ($p = 0.01$) and a higher 30-day mortality rate ($p = 0.02$) and a dismal survival compared to histopathological responders ($p < 0.0001$).

Conclusions. The evaluated classification of histomorphological features by means of the percentage of residual tumor cells is valuable and objective to measure the histopathological response of neoadjuvant radiochemotherapy in patients with ESCC. Non-responders have a higher pulmonary morbidity and 30-day mortality and a dismal survival and prognosis compared to responders. Histopathological responders are the subpopulation of patients who benefit from its neoadjuvant therapy and consecutive surgery.

167 The predictive value of genes of the TGFβ1 pathway in multimodal treated patients with esophageal squamous cell carcinoma

B. L. Brücher[1], F. Pühringer-Oppermann[2], M. Sarbia[2]

[1]Klinikum rechts der Isar, Munich, Germany; [2]Pathologie, TU-München, Munich, Germany

Purpose. To determine the predictive value of gene expression analysis in patients with esophageal squamous cell carcinoma (ESCC) and neoadjuvant combined radiochemotherapy (RTx/CTx).

Patients and methods. RNA was prepared from pretherapeutic taken formalin-fixed and paraffin-embedded biopsies of 99 patients with histological proven intrathoracic locally advanced ESCC (cT3, cN0/+, cM0) located at or above the level of the tracheal bifurcation, who underwent preoperative combined simultaneous RTx/CTx with consecutive esophagectomy. All tumor biopsies underwent tumor-cell-microdissection, RNA-extraction and real-time TaqMan reverse transcriptase-polymerase chain reaction. RT-PCR-measurements were made by doublet measuring. Quantitative mRNA expression of TGFβ1 and its downstream effectors Smad4 and Smad7 was correlated with clinical response according to the WHO, postoperative histopathological response by the percentage of residual tumor cells and survival.

Results. Expression of TGFβ1 (mean: 7.8; range: 0.0–25.7 arbitrary units), Smad4 (0.1; 0.0–04) and Smad7 (1.6; 0.4–16.1) varied greatly between cases. Histopathological responder (<10% residual tumor cells) within the specimen showed significantly higher levels of Smad4 expression than nonresponder (>10%) ($p = 0.0320$). TGFβ1 and Smad7 did not show a correlation between histopathological and clinical response. Expression of the three genes under analysis showed no impact on overall survival. In contrast, overall survival was significantly correlated with histopathological response ($p < 0.0001$).

Conclusions. Higher levels of Smad4 expression is significantly correlated with histopathological response (<10% residual tumor cells). Analysis of TGFβ1 and Smad7 seems to

have only limited predictive value for ESCC treated with neoadjuvant RTx/CTx and consecutive esophagectomy.

168 Stent implantation: An ultimate solution in the endoscopic palliation of advanced stenosing esophageal carcinoma

J. Lindenmann, V. Matzi, C. Porubsky, A. Maier, F. M. Smolle-Juettner

Department of General Surgery, Division of Thoracic and Hyperbaric Surgery, Medical University Graz, Graz, Austria

Background. Any treatment of end-stage malignant stenosis of the esophagus must be weighed against associated morbidity and mortality. In a prospective study we evaluated benefits and risks of the use of one type of coated, self-expandable Ulraflex-stent concerning the improvement of quality of life and possible stent-related complications.

Methods. Between 01/98 and 12/04, 94 men (73%) and 34 women (27%), (mean age 67.3 years, ranged from 38 to 91 years) suffering from nonresectable malignant stenosis of the esophagus due to advanced tumor stage IV, were treated by using a covered, self-expandable Ultraflex-stent system.

All of them had undergone one or multiple extra – or endoluminal palliative treatment modalities like PDT, Brachytherapy, PCT and/or XRT before stenting.

Results. Stent implantation was performed without any complication. Dysphagia subsided immediately so that the patient's quality of life improved significantly. In 87 patients (70%), chest pain developed after stenting which could be treated by the use of morphines. Late complications like stent dislocation, penetration, obliteration, fistula or stent-induced bleeding occured in 106 patients (83%). In 89 (84%) of them, these maior complications could be treated succesfully by further endoscopic intervention like Argon-beam, re-PDT and re-stenting.

Conclusions. Implantation of the coated, self-expandable Ultraflex-stent represents a safe and efficient approach to palliate dysphagia, bleeding and fistula. The high rate of complications seems acceptable regarding the inherent problems of dysphagia, PEG, nasogastric tube and hospitalisation.

If stenting is performed in such patients, meticulous postoperative care is necessary and the surgeon should maintain a high suspicion of stent-related complications.

169 The influence of the photosensitizer to the therapeutic outcome of photodynamic therapy (PDT) of advanced esophageal carcinoma. A prospective randomized trial

V. Matzi[1], A. Maier[1], J. Lindenmann[1], C. Porubsky[1], J. Smolle[2], F. M. Smolle-Juettner[1]

[1]Department of Surgery, Division of Thoracic and Hyperbaric Surgery, Medical University Graz, Graz, Austria; [2]Department of Dermatology, Medical University Graz, Graz, Austria

Background. Hematoporphyrin-derivatives (HpD) as sensitizers for photodynamic therapy (PDT) in advanced esophageal carcinoma carry the problem of prolonged photosensitivity of the skin. New sensitizers like 5-aminolaevulinic acid (5-ALA) with low phototoxicity for the skin seem to be promising alternatives. The aim of this prospective randomised trial was to evaluate the efficacy of ALA compared to Photosan (HpD) for PDT in advanced esophageal carcinoma regarding the reduction of dysphagia, tumor-stenosis and tumor-length one month after PDT.

Methods. After diagnostic work-up and randomization photosensitization was done in 31 patients with 5-ALA (60 mg/kg body weight, oral 6-8 hours prior to PDT) and in 33 patients with HpD (2 mg/kg body weight, intravenously 48 hours before PDT). The light-dose was calculated with 100J/cm² using a balloon catheter application system. Laser-light with 630 nm was applied using a diode laser. The follow-up-studies after one month comprised endoscopies and evaluation of dysphagia.

Results. Improvement regarding dysphagia, stenosis diameter and tumor length could be obtained in both treatment arms with a significant difference in favour of the Photosan-group in comparison to the 5-ALA-group.

Conclusions. The photosensitization with HpD on patients with advanced esophageal carcinoma led definitely to a better result referring to dysphagia, tumor-stenosis and tumor-length and consequently to the improvement of the quality of life. The risk of the extended photosensitization of the skin didn't represent any problem for the patients with adequate skin-protection using Solgard sun-cream sun protection-factor 20.

ACP: Kolorektales Karzinom I

170 Long term results after intersphincteric rectal resection due to low rectal cancer

R. Schiessel[1,2], G. Novi[1,2], B. Holzer[1,2], H. R. Rosen[2], K. Renner[1], N. Hölbling[1], M. Hofmann[2], M. Urban[3]

[1]Department of Surgery, Danube Hospital / SMZ-Ost, Vienna, Austria; [2]Ludwig Boltzmann Research Institute for Surgical Oncology, Vienna, Austria; [3]Department of Radiology, Danube Hospital / SMZ-Ost, Vienna, Austria

Background. The intersphincteric resection (ISR) is a surgical technique expanding the rectal resection into the intersphincteric space based on the anatomical affiliation of the M. sphincter internus to the rectal wall. It is a combination of a total mesorectal excision with a complete resection of the M. sphincter internus.

Material and methods. From 1984 until 2000 a total of 121 patients were treated with ISR. All patients were prospectively evaluated according to a precise pre-and postinterventional protocol. Preoperative evaluation was performed by the use of endoscopic biopsies, endosonography or rectal MRI and sphincter manometry. Postoperative evaluation was performed every third month in the first 2 years, every sixth month until the fifth year and then once a year.

Results. 117 patients were suffering from carcinomas, 2 from dysplastic adenomas and 2 from carcinoids. Median surveillance was 94 months revealing a relapse in 5.3%. Continence function was good with 85% excellent and good results

(Williams Score I and II), 13.7% showed continence for solid stool only and one patient was incontinent. A temporary higher frequency of defecations was seen after closure of the protective stoma. This phenomenon normalised after 3 to 6 months. The sphincter manometry showed a reduction of the mean resting pressure from 68 to 40 mmHg. The squeeze pressure declined initially from 118 to 95 mmHg, but raised after 6 months to 115 mmHg.

Conclusions. The intersphincteric resection shows satisfying oncologic and functional results in long term follow-up.

171 Incidence of erectile dysfunction after low anterior resection for rectal cancer

K. U. Grützner[1], S. Dittmar[1], E. Hungerhuber[2], M. M. Heiss[3]

[1]Chirurgische Klinik und Poliklinik-Großhadern, Munich, Germany; [2]Urologische Klinik und Poliklinik-Großhadern, Munich, Germany; [3]Klinik für Viszeral-, Gefäß- und Transplantationschirurgie, Lehrstuhl Chirurgie I, Universität Witten-Herdecke, Köln, Germany

Background. Erectile dysfunction (ED) is a complication of low anterior resection for rectal cancer. Its frequency is often underestimated in rectal surgery in contrast to urological procedures.

Aim of the study was the evaluation of ED frequency and its distribution between laparoscopic and open surgery in a group of 70 patients.

Material and methods. A total of 70 patients undergoing low anterior resection with TME for rectal cancer (51 open surgery, 19 laparoscopic surgery) were retrospectively interviewed using a standardised questionnaire (IIEF) concerning their sexual function. 56 of 70 (80%) of the questionnaires were returned and could be analysed.

Results. Only 8 of 56 patients showed no signs of decrease in sexual function after surgery (IIEF-score unchanged). The mean decline of the IIEF-score was 13 points with no significant difference between both surgical procedures. 35 of 56 (62%) had a postoperative score of < 10 points corresponding to severe ED. 18 of 56 patients (32%) showed a minimum of 1 point. Less than 10 % of all patients were seeking professional medical help.

Conclusions. Erectile Dysfunction is a frequent complication and its incidence is underestimated. Even after laparoscopic surgery sexual function is often impaired. By changing the operative concepts towards a strictly nerve preserving technique results similar to prostatectomy for prostate cancer can be achieved without compromises in radical surgery.

Early diagnosis and treatment of ED can help to improve quality of life after cancer surgery.

Gefäßchirurgie I: Evidenz und Perspektiven in der Behandlung extracranieller Carotisstenosen

172 Carotid endarterectomy with and without preoperative angiography

F. Eder[1], A. Oldag[2], M. Goertler[2], F. Meyer[3], Z. Halloul[1]

[1]Division of Vascular Surgery, Magdeburg, Germany; [2]Department of Neurology, Magdeburg, Germany; [3]Department of Surgery, Magdeburg, Germany

Background. We aimed to investigate whether carotid endarterectomy based on preoperative standardized Doppler/duplex ultrasonography but without X-ray angiography is associated with an increased perioperative stroke rate.

Methods. During an 8-year period, 392 consecutive patients (mean age, 65.6 years; S_D, 9 years; men, 74%) underwent carotid endarterectomy at a single center. All patients had standardized preoperative and postoperative neurological examination including color-coded duplex ultrasonography. 126 patients (32%) underwent angiography prior to endarterectomy, whereas 266 (68%) were operated only on ultrasonography-based findings.

Results. 15 of 266 patients (5.6%) without angiography experienced a perioperative stroke compared to 5 of 126 patients (4.0%) who had this diagnostic preoperatively. Stroke risk was not increased in patients without preoperative angiogram (Odds ratio, 1.446; 95%-confidence interval, 0.514–4.072, $p = 0.648$). This was even more evident after adjustment for sex, age, occurrence of a preoperative (recurrent) stroke, degree of ipsilateral and contralateral stenosis as well as experience of the surgeon (adjusted Odds ratio, 0.943; 95%-confidence interval, 0.318–2.791, $p = 0.915$).

Conclusions. Preoperative assessment of carotid stenosis solely based on standardized ultrasonography is not associated with an increased risk for a perioperative stroke compared to patients with additional X-ray angiography of carotid arteries.

173 Should carotid endarterectomy be performed early after an ischemic event?

B. Rantner[1], H. Eckstein[2], K. Woelfle[3], C. Schmidauer[4], G. Fraedrich[1]

[1]Department of Vascular Surgery, Innsbruck Medical University, Innsbruck, Austria; [2]Department of Vascular Surgery, Klinikum rechts der Isar, Munich, Germany; [3]Department of Vascular Surgery, Klinikum Augsburg, Augsburg, Germany; [4]Department of Neurology, Innsbruck Medical University, Innsbruck, Austria

Background. Recent studies suggest that carotid endarterectomy (CEA) is more effective when performed early after an ischemic event, this may avoid recurrent ischemic events in the waiting period. Factors need to be identified to evaluate potential perioperative complications after early CEA.

Methods. We investigated the influence of clinical and morphological variables on the perioperative combined stroke and mortality rate.

Results. A total of 226 patients (167 male) underwent carotid endarterectomy following an ischemic stroke within 28 days (median 12 days). The majority (> 90%) showed severe stenosis of the internal carotid artery (≥ 70%), 149 patients (66%) were ranked Rankin ≤ 2, 91 (42%) ASA ≤ 2.

The perioperative stroke and mortality rate was 8.4%, 10 patients (4.4%) suffered a nondisabling stroke and 8 patients (3.5%) a disabling second ischemic event. One patient died due to a myocardial infarction. Only the preoperative ASA classification was a significant predictor (ASA > 2, p = 0.0245) for a deterioration of the postoperative neurological status. There was a trend concerning the Rankin scale at admission (Rankin > 2, p = 0.0658). We found out that patients with an ASA-classification > 2 and a preoperative Rankin > 2 who were treated within 12 days had the greatest risk for a perioperative neurological deterioration (OR: 4.4, 1.48–13.0; p = 0.01)

Conclusions. The ASA classification and the Rankin scale are predictive variables for the clinical perioperative outcome in patients treated early after an ischemic stroke. Patients ranked ASA ≤ 2 and/or Rankin ≤ 2 can safely undergo the CEA within a shorter waiting period.

174 Geringeres perioperatives Schlaganfallrisiko durch Regionalanästhesie bei der Karotis-Thrombendarteriektomie (TEA)

F. Eder[1], F. Meyer[2], T. Martin[3], M. Goertler[3], T. Hachenberg[4], Z. Halloul[1]

[1]Abteilung für Gefäßchirurgie, Magdeburg, Deutschland;
[2]Klinik für Chirurgie, Magdeburg, Deutschland;
[3]Klinik für Neurologie, Magdeburg, Deutschland;
[4]Klinik für Anästhesiologie, Magdeburg, Deutschland

Grundlagen. Das Ziel der Untersuchung war, den Effekt der Allgemein- und Regionalanästhesie auf das „Outcome" von Patienten mit Karotis-Thrombendarteriektomie (TEA) zu ermitteln.

Methodik. Während eines 10-Jahres-Zeitraums wurden 488 konsekutive Patienten (Durchschnittsalter: 66,5 Jahre; S_D: 9 Jahre; Anteil der Männer: 76%) einer Karotis-TEA an einem gefäßchirurgischen Zentrum unterzogen. Alle Patienten waren prä- und postoperativ standardisiert neurologisch untersucht worden. Hierzu gehörte auch eine farbkodierte Duplexsonographie. Die Nachuntersuchungen der Patienten erfolgten am 2. und 4. postoperativen Tag sowie nach 6 Wochen. Nach 325 Operationen in Allgemeinnarkose ging man zur Regionalanästhesie über. Diese kam bei den folgenden 163 Patienten zur Anwendung.

Ergebnisse. 1 von 162 Patienten (0,6%) mit Regionalanästhesie erlitt einen perioperativen Schlaganfall im Vergleich zu 20 von 325 Patienten (6,2%) mit Allgemeinanästhesie („Odd's ratio": 0,094; 95%-Konfidenzintervall: 0,013–0,708; p = 0,009). Dieser signifikante Unterschied verblieb auch nach Anpassung hinsichtlich Geschlecht, Alter, präoperativ aufgetretenem Schlaganfall, Grad der ipsi- und kontralateralen Stenose als auch der Erfahrung des Operatuers („Adjusted Odd's ratio": 0,127; 95%-Konfidenzintervall: 0,016–0,975; p = 0,047).

Schlussfolgerungen. Bei der Karotis-TEA scheint die Regionalanästhesie mit einem geringeren perioperativen Schlaganfallrisiko im Vergleich zur Allgemeinnarkose verbunden zu sein.

175 Revaskularisation der Arteria carotis externa (ACE) bei bestehendem gleichseitigem Verschluß der Arteria carotis interna (ACI) zur Therapie einer rezidivierenden Amaurosis fugax

T. Ott, P. Konstantiniuk, U. Gratzer, M. Hessinger, K. Tiesenhausen, T. Cohnert

Klinische Abteilung für Gefäßchirurgie, Medizinische Universität Graz, Graz, Österreich

Grundlagen. Bei Verschlüssen der ACI kann die ipsilaterale ACE über Kollateralen (A. facialis – A. angularis – A. supratrochlearis – A. ophthalmica) einen Teil der intrakraniellen Durchblutung, speziell die intraorbitale Versorgung, übernehmen. Bislang gibt es zur Frage der Revaskularisierung der ACE bei ipsilateraler Amaurosis fugax nur kleine Serien bzw. Fallberichte.

Fallbericht. Eine 60-jährige Patientin mit ACI-Verschluß links, 90%-iger ACE-Stenose links, 70%-iger ACI-Stenose rechts und ACE-Verschluß rechts mit rezidivierender Amaurosis fugax links wurde stationär aufgenommen. Primär erfolgte auf der rechten Seite eine komplikationslose Thrombendarterektomie (TEA) mit Patchplastik. In den darauffolgenden Monaten kam es zu einer Zunahme der Augensymptomatik links mit gleichzeitigem Visusverlust. Zehn Monate nach der Erstoperation erfolgte auf dringenden Wunsch der Patientin nach ausführlicher Aufklärung über die nur gering vorhandene Evidenz eine TEA der ACE links. Unmittelbar postoperativ gab die Patientin ein fast vollständiges Verschwinden der Sehunschärfe an, gleichzeitig war eine Visusverbesserung objektivierbar.

Schlussfolgerungen. In ausgewählten Fällen kann eine TEA der ACE eine Augensymptomatik beseitigen. Eine Sammlung all dieser Fälle in einer gemeinsamen Datenbank wäre sinnvoll, um mehr Evidenz zu erhalten.

Kinderchirurgie II

176 The anal sphincter complex – new morphological and clinical aspects

B. Ludwikowski

SALK, Salzburg, Austria

Background. To understand the lack of fecal continence (incontinence or constipation), the development and anatomy of the normal anal sphincter should be known. Recent clinical studies on the anal sphincter complex have criticised the lack of reliable morphological concepts. The purpose of this investigation was to determine the anatomy and histology of the anal sphincter complex with the help of undisturbed anatomic preparations.

Material and methods. The anal sphincter complex and its surrounding structures was studied in sections of plastinated human fetal, newborn and adult pelves of both sex. Additionally a computer assisted 3-D-Reconstruction of the muscle complex was performed. Immunohistochemistry of the neuromuscular components of the rectogenital fascia and m. longitudinalis were performed.

Results. The lower part of the anal canal consisted of the internal sphincter, the longitudinal muscle layer and a double folded external sphincter that is consisted with the internal sphincter as well as with the longitudinal muscle cells. The classical tripartite subdivision of the external sphincter could not be confirmed. The whole aspect of the external sphincter is not completely circular neither in the male nor in the female. Recently described sexual differences of the anterior part of the external sphincter were already found in fetuses. Large lamellated corpuscles were embedded within the interlacing smooth and striated muscles. Branches of the pudendal nerve innervated them. The recogenital septum is an important structure in the sanal sphincter complex.

Conclusions. Our anatomic and histologic findings highly correlate with the results of magnetic resonance imaging (MRI) and endosonography. They are of great clinical importance for the understanding of sphincter defects and anorectal operations.

177 Behandlung des Rektumprolaps im Kindesalter – Erfahrungen der letzten 12 Jahre

J. Hager

Univ.-Klinik für Chirurgie, Medizinische Universität Innsbruck, Innsbruck, Österreich

Grundlagen. Ein Anal-/Rektumprolaps kommt bei kleinen Kindern als Symptom unterschiedlicher Erkrankungen vor. Ein Analprolaps wird nur selten von einem Rektumprolaps abgegrenzt, vielmehr wird zwischen inkompletter und kompletter Prolapsform unterschieden. Der Vorfallsmechanismus ist multifaktoriell: entwicklungsbedingt unvollständig ausgebildete anatomische Strukturen, nicht ausgereifte Funktion des Kontinenzorgans und/oder erhöhter intraabdomineller Druck. Diagnostiziert wird ein Rektumprolaps mittels „Blickdiagnose“, eine Irrigographie [mit (Video-) Defäkographie] und eine Rektoskopie werden empfohlen.

Eigene Erfahrungen. Während der letzten 12 Jahre wurden 18 Kinder wegen eines inkompletten bzw. kompletten Rektumprolaps behandelt. 3 Kinder wurden wegen eines partiellen Rektumprolaps nach PSARP revidiert. 15 wurden wegen eines kompletten Rektumprolaps interventionell/chirurgisch versorgt. Bei 6 Kindern wurde eine Sklerotherapie durchgeführt; eine einmalige behandlung war jeweils ausreichend, ein Rezidiv trat nicht auf. Bei weiteren 8 Kindern (6 davon mit Innervationstörung der Beckenbodenmuskulatur) wurde eine Zerklagebehandlung vorgenommen. Die Ergebnisse waren, abgesehen von einer lokalen Infektion (ohne Beeinflussung des funktionellen Ergebnisses), sehr gut. Bei einem Kind war eine Rektopexie nach Ashcraft notwendig, ebenfalls mit komplikatinslosem Verlauf.

Schlussfolgerungen. Inkomplette Rektumprolapsformen sind chirurgisch durch Ligatur oder Resektion des betroffenen Abschnittes zu sanieren.

Ein echter – defäkationsbedingter – Rektumprolaps kann, wenn konservativ kein Erfolg erreichbar ist, mittels Sklerotherapie oder Zerklagebehandlung versorgt werden; Ziel ist, eine reaktive zirkuläre Narbenbildung im untersten Rektum zu induzieren.

Führt das nicht zum Erfolg, ist eine Fixation des Rektum am Os coccygis/sacrum indiziert: Rektopexie nach Ekehorn, nach Hecker oder nach Ashcraft, bei der zusätzlich eine Raffung der schlaffen Levatormuskulatur vorgenommen wird. Bei älteren Kindern mit lange bestehendem Rektumprolaps werden aufwendigere Techniken (z. B. die Rektopexie nach Rippstein-Wells) diskutiert.

178 Giant Meckel's diverticulum associated with esophageal atresia, tracheo-esophageal fistula and cleft lip and palate – a case report

S. Zaheri[1], M. Sinzig[2], R. Kraschl[3], G. Fasching[1]

[1]Univ.-Klinik für Chirurgie, Innsbruck, Austria; [2]Department of Radiology, Innsbruck, Austria; [3]Department of Pediatrics, Medical University Innsbruck, Innsbruck, Austria

A male newborn underwent surgery for esophageal atresia and tracheoesophageal fistula and cleft lip and palate. Due to swallowing difficulties with recurrent aspiration pneumonias a jejunostomy was placed.

Multiple radiographs of the abdomen and the chest showed a huge air-filled lesion in the right abdomen. Despite that fact, no clinical abdominal symptoms were evident.

An upper GI series revealed a delayed faint opacification of the air-filled viscus suggesting a duplication of the distal part of the intestines. A contrast enema showed a displacement of the transverse colon by the air-filled viscus.

At surgery at the age of 4 months a giant Meckel's diverticulum was found and resected.

A giant Meckel's diverticulum is a rare entity, the association with the tracheo-esophageal malformation complex has not been described so far.

179 Die urologische Behandlung der kloakalen Anomalien

M. A. Ardelean[1], T. Boemers[2], C. Schimke[1], B. Ludwikowski[1], J. Bauer[1]

[1]SALK, Salzburg, Österreich; [2]Kinderchirurgie und Kinderurologie, Köln, Deutschland

Grundlagen. Bewertung der Funktion des Harntraktes bei den Patientinnen mit kloakaler Anomalien.

Methodik. Es werden 32 Mädchen mit kloakaler Anomalie vorgestellt.

Gruppe A. Bei 12 Patientinnen (Pts) erfolgte die gemeinsame Korrektur der Harnröhre der Vagina und des Rektums bei der ersten Operation. Einige dieser Pts benötigten sekundäre Eingriffe: Korrektur des VUR n = 2, und Blasenaugmentation n = 1.

Gruppe B. Bei anderen bereits auswärts operierte Pts, n = 20, wurden folgende Befunde festgestellt: Sinus urogenitales (SUG) n = 14, Pathologie der Harnröhre n = 4, funktionelle rekonstruierte Harnröhre n = 2. Andere urologische Pathologien: VUR n = 13, neurogene Blase n = 7, Einzelniere n = 6, Megaureter n = 4, Blasendivertikel n = 1. Rekonstruk-

tion der Harnröhre n = 14, Blasenaugmentation/Neoblase n = 5, Vesico-cutaneostomie n = 5, Korrektur des VUR wurden durchgeführt.

Ergebnisse. Gruppe A: Es gibt keine Pt mit Niereninsuffizienz. Alle Pts sind „kontinent": spontan oder durch intermittierenden Einmalkatheterismus über Harnröhre.

Gruppe B: Bei 3 Pts führte die Refluxnephropathie zur Niereninsuffizienz. Andere 5 Pts wurden mit Refluxnephropathie diagnostiziert, bei einer wurde eine Nephrektomie notwendig. In dieser Gruppe 7 Pts sind kontinent, 10 sozial kontinent, und 2 inkontinent.

Schlussfolgerungen. Bei den Patientinnen mit kloakaler Anomalie lässt sich die gleichzeitige Rekonstruktion der Harnröhre, der Vagina, und des Rektums (bei der 1. Operation) eine gute Funktion des Harntraktes erwarten (Gruppe A). Zur Korrektur des Refluxes oder zur Besserung der Kontinenz benötigen einige dieser Pts zusätzliche chirurgische Eingriffe.

180 Results of the repair of distal hypospadia

M. Loebl, E. Frigo, A. Rokitansky

SMZ Ost-Donauspital Wien, Vienna, Austria

Retrospective analysis and comparison of the outcome, the current postoperative management from patients with distal hypospadias corrected by Snodgrass urethroplasty or YV glanuloplasty modified Mathieu technique was performed. We looked about the complication rate, the voiding function and cosmetic satisfaction in both patientgroups.

We found a comparable complication rate for both groups. The voiding function as well as the cosmetic satisfaction is excellent for both operative procedures.

In our opinion, we think that both methods seems to be adequate for the repair of distal hypospadias. Nonetheless the YV glanuloplasty modified Mathieu technique seems to be less stressing for the child regarding the postoperative management. Taking into account the learning curve, we think, that the complication rate will be lowered for the Mathieu technique.

181 Epididymitis in childhood

A. Springer, M. Hörmann, E. Horcher

Department of Pediatric Surgery, Medical University Vienna, Vienna, Austria

Background. The true incidence of the various causes of acute scrotum in children is unclear; epididymitis was thought to be uncommon. The aetiology of acute epididymitis in boys remains obscure. Acute scrotal pain in children presents a major diagnostic and therapeutic challenge. Epididymitis has been considered uncommon in childhood. The clinical spectrum and therapeutic policy of the acute scrotum in children is continually being reassessed.

Methods. We prospectively analyzed 27 consecutive boys with acute epididymitis who did not undergo surgical exploration for acute scrotum. We performed urine analysis and – if positive – urine culture. Blood samples were taken: red and white blood count, differential blood count, creatinine, BUN, amylase, liver enzymes (alanine aminotransferase (ALT), aspartate aminotransferase (AST), gamma-Glutamyl transferase (GGT), alkaline phosphatase), lactate dehydrogenase, CRP, antistreptolysin, proteins (albumin, alpha1, alpha2, beta, gamma), IgG, IgM, IgA, rheumatoid factor, rheumation titer, ANA, ANCA. Serology contained: Salmonella, Mycoplasma, Borrelia, Adenovirus, Enterovirus. All children underwent color Doppler sonography.

Results. From 1/2005 to 1/2006 we conservatively treated 27 boys from 2 to 16 years of age. Urinary tract infection was diagnosed in 2 patients. Classical infection parameters were infrequently elevated. Moreover, autoimmune parameters and rheumatoid factors were of no significance. Serological investigations (microbiology, virology) only showed infrequent signs of infection. Follow-up (1 week to 2 months) revealed no evidence of any underdiagnosed testicular torsion or atrophy.

Conclusions. Controversy persists with regard to the diagnosis and treatment of the acute scrotum in children. The differential diagnosis includes torsion of the testis, torsion of one of the appendices testis and epididymitis. Clinical differentiation is notoriously difficult. Our policy has been to explore the scrotum of all boys who present with signs of an acute scrotum. Since testicular torsion seems to be an uncommon event the high number of epididymitis in our series suggests a more conservative treatment of the acute scrotum. The hypothesis of the postinfectious aetiology of epididymitis is discussed. Based on the literature the evidence based therapeutical strategies of epididymitis and acute scrotum are discussed.

182 Initial experience with a new pectus bar generation

R. Hahn, R. Stanek, A. Rokitansky

Departement of Pediatric Surgery, Medical University of Vienna, Vienna, Austria

We report our initial experience with the minimally invasive method of surgical reconstruction of pectus excavatum using a recently developed pectus bar (PSI-Implantat/Hofer Company/Austria). The new pectus bar is equipped with an integrated, firmly connected stabilizer at one end. In contrast to conventional implants, an additional stabilizer need not be inserted and fixed. At our department 120 pectus excavatum patients have been operated on by the minimally invasive method of reconstruction (Nuss technique). From November 2005 to the present time, we have used the newly designed bar for reconstruction of a pectus excavatum in 10 patients.

The following advantages of the new method deserve mention:

1. The one-piece implant avoids dislocation of the stabilizer plates. The procedure is also superior to the increasingly popular conventional implant that employs only one stabilizer plate.

2. The three perforations in the stabilizer facilitate surgical handling and permit better fixation in the tissue.

3. If necessary the stabilizer can be adjusted to the desired chest wall curvature.

4. In contrast to the conventional implant, the ends of the bar can also be bent and adjusted to the curvature of the body.

5. When using two pectus excavatum implants, unpleasant contact with metal, which is a characteristic of conventional stabilizer plates, is avoided with the new stabilizer.

In summary, the development of the new one-piece pectus bar is a significant advancement in the treatment of pectus excavatum.

182a Möglichkeiten der Brusterhaltung beim zentralen Mammakarzinom

F. Fitzal[1], G. Nehrer[2], O. Riedl[1], R. Jakesz[1], M. Gnant[1]

[1]Univ.-Klinik für Chirurgie, Medizinische Universität Wien, Wien, Österreich; [2]Plastische und Wiederherstellungschirurgie, Top-Med, Wien, Österreich

10% aller Mammakarzinome liegen retromammillär. Studien deuten darauf hin, dass eine brusterhaltende Operation mit Resektion des Nippel Areola Komplexes onkologisch vertretbar ist. Wir vergleichen das onkologische Ergebnis zwischen Patientinnen mit zentralem (n = 98) und nicht zentralem (n = 1526) Mammakarzinom nach brusterhaltender Therapie und nachfolgender Radiatio (50 Gy). Die retrospektive Analyse unserer Daten ergibt ein Lokalrezidiv-freies Überleben von 98% für die zentralen Karzinome versus 95% für die nicht zentralen Karzinome. Das Gesamtüberleben liegt bei 97% (zentral) und 94% (nicht zentral). Die zentrale Lage mit der Notwendigkeit der Resektion des Nippel Areola Komplexes kann für den Chirurgen allerdings in Bezug auf das kosmetische Ergebnis eine Herausforderung sein. Der Einsatz von plastisch-rekonstruktiven Operationsmethoden in der onkologischen Chirurgie (onkoplastische Chirurgie) kann für diese Fälle hilfreich sein. Dieser Vortrag beschäftigt sich daher weiters mit vier verschiedenen Methoden, die Brustkosmetik trotz der kosmetisch ungünstigen Lage zu wahren.

Die Studien der ABCSG – Von der Chirurgie zum internationalen Player

183 VEGF-C expressing tumor associated macrophages in lymph node positive breast cancer: impact on lymphangiogenesis and survival

S. F. Schoppmann[1], A. Fenzl[1], K. Nagy[2], S. Unger[1], G. Bayer[2], S. Geleff[2], M. Gnant[1], R. Horvat[2], R. Jakesz[1], P. Birner[2]

[1]Universitätsklinik für Chirurgie, Vienna, Austria; [2]Klinisches Institut für Pathologie, Vienna, Austria

Background. The ability of malignant tumors to metastasize presents a severe challenge in cancer treatment. Lymphatic vessels provide one of the main routes for tumor-metastasis on the way to regional lymph nodes.

There is increasing evidence that inflammatory cells play an important role in tumor-associated angiogenesis and lymphangiogenesis. Recent data show that a specialized sub fraction of tumor associated macrophages (TAMs) expressing the lymphangiogenic growth factors vascular endothelial growth factor-C and D (VEGF-C/D) at the tumor site, is related to lymphangiogenesis, lymphovascular invasion, and lymph node metastasis. Aim of this study was to clear the role of VEGF-C/D expressing TAMs in invasive breast cancer.

Materials and methods. One-hundred-and-seven cases of lymph node positive invasive breast cancer were included into the study. Lymphatic microvessel density (LMVD), lymphovascular invasion (LVI), peritumoral inflammatory reaction (PI), and VEGF-C expression in tumors (VEGF-CT) and TAMs (VEGF-CC) were evaluated by immunohistochemistry and in situ hybridization.

Results. Significant associations were seen between LMVD and LVI, LMVD and VEGF-CT, and between VEGF-CT and VEGF-CC. Further significant correlations were evaluated between VEGF-CC/VEGF-CT and PI as well as between PI and LVI. LVI remained an independent prognostic factor for disease free survival and overall survival.

Conclusions. Our data provides evidence that the peritumoral inflammatory reaction and VEGF-C expressing tumor associated macrophages may play an important role in tumor lymphangiogenesis and lymphovascular invasion in invasive breast cancer, implying new potential anti-tumor targets.

ACP: Kolorektales Karzinom II

184 Onkologisches Outcome nach laparoskopischer *versus* offener Resektion von Rektumkarzinomen

H. Ptok[1], F. Meyer[1], F. Marusch[2], H. Lippert[1], F. Köckerling[3], I. Gastinger[2]

[1]Klinik für Allgemein-, Visceral- und Gefäßchirurgie, Otto-v.-Guericke Universität Magdeburg, Magdeburg, Deutschland; [2]Klinik für Chirurgie, Carl-Thiem-Klinikum Cottbus, Cottbus, Deutschland; [3]Klinik für Chirurgie, Klinikum Hannover Siloah, Hannover, Deutschland

Grundlagen. Daten aus Fallserien und vergleichenden Studien zeigen für laparoskopische Rektumkarzinom-Resektionen eine den offenen Verfahren vergleichbare perioperative Morbidität und onkologische Sicherheit. Nach Konversion zur offenen Resektion steigt die perioperative Morbidität jedoch erheblich und Daten hinsichtlich onkologischer Langzeit-Ergebnisse liegen für diese Patienten nicht vor.

Methodik. Im Rahmen einer multizentrischen Beobachtungsstudie wurden vom 1.1.2000 bis 31.12.2002 erfasste Patienten mit kurativ reseziertem UICC I-III-Rektumkarzinom hinsichtlich tumor-/behandlungsspezifischer Charakteristika, der postoperativen Morbidität/Letalität, des tumorfreien, lokalrezidivfreien und Gesamtüberlebens unter besonderer Berücksichtigung der Patientengruppen mit Eingriffskonversion verglichen.

Ergebnisse. Von 7189 Patienten wurden 237 (3,3%) laparoskopisch (ITT), 6952 (96,7%) primär offen reseziert. Bei sonst vergleichbaren demographischen Parametern hatten laparoskopisch (ITT) operierte Patienten häufiger T1/2-Tumore ($p < 0{,}001$) in früheren UICC-Stadien ($p < 0{,}001$). 35 (14,8%) der 237 laparoskopischen Eingriffe wurden konvertiert. In dieser Gruppe traten gegenüber den laparoskopisch sowie offen resezierten Patienten signifikant häufiger intra-

operative (22,9 vs. 3,0 vs. 8,1%, $p < 0,001$) und allgemeine postoperative Komplikationen (37,1 vs. 18,8 vs. 29,2%, $p = 0,003$) auf. Die Gesamtmorbidität war mit 54,3% höher als nach laparoskopischer (37,1%) und offener Resektion (44,7%; $p = 0,031$).

Nach einem medianen Follow-up von 30,1 Monaten zeigte die Konversionsgruppe die höchste 5-Jahreslokalrezidivrate (16,1%). In der Laparoskopie-Gruppe war diese mit 3,3% tendenziell geringer als nach offener Resektion, wo sie 14,3% betrug ($p = 0,062$). Das tumorfreie Langzeitüberleben unterschied sich zwischen den Patientengruppen nicht ($p = 0.431$).

Schlussfolgerungen. Die laparoskopische Rektumkarzinom-Resektion bietet den offenen Resektionen vergleichbare onkologische Ergebnisse. Nach Konversion ist jedoch das frühpostoperative und onkologische Langzeit-Outcome schlecht. Bei Konversionsraten um 15% ist eine strenge Indikationsstellung und Durchführung der laparoskopischen Resektion durch laparoskopisch erfahrene Kolorektal-Chirurgen zu fordern.

185 Onkologisches Outcome nach lokaler *versus* radikaler Resektion von pT1 low-risk Rektum-Karzinomen

H. Ptok[1], F. Meyer[1], F. Marusch[2], F. Köckerling[3], H. Lippert[1], I. Gastinger[2]

[1]Klinik für Allgemein-, Visceral- und Gefäßchirurgie, Magdeburg, Deutschland; [2]Klinik für Chirurgie, Carl-Thiem-Klinikum Cottbus, Cottbus, Deutschland; [3]Klinik für Chirurgie, Klinikum Hannover Siloah, Hannover, Deutschland

Grundlagen. pT_1-low-risk-Karzinome werden zunehmend durch limitierte Resektionen behandelt. Trotz Verzicht auf die Resektion des drainierenden Lymphgewebes sollen die limitierten Verfahren beim pT_1-low-risk-Karzinom bei gegenüber den radikal-resezierenden Eingriffen geringerer Morbidität und Letalität die gleiche onkologische Sicherheit bieten.

Methodik. Die vorliegende Untersuchung analysiert die im Zeitraum 1.1.2000 bis 31.12.2001 im Rahmen einer Beobachtungsstudie erfassten Patienten mit pT_1-low-risk-Rektumkarzinom hinsichtlich tumorspezifischer und behandlungsspezifischer Charakteristika sowie der onkologischen Früh- und Langzeitergebnisse nach kurativ intendierter Operation im Vergleich limitiert vs. radikal resezierender Verfahren. Der Vergleich der Patientengruppen erfolgt hinsichtlich der periinterventionellen Morbidität und Letalität, des tumorfreien, lokalrezidivfreien und des Gesamtüberlebens.

Ergebnisse. Von 479 Patienten mit einem pT_1-low-risk-Rektumkarzinom wurden 85 konventionell transanal exzidiert (17,7%), 35 transanal endoskopisch microchirurgisch (7,3%) und 359 Karzinome radikal operiert (75,0%). Nach limitierter Tumorresektion traten signifikant weniger allgemeine (7,5% vs. 25,1%; $p < 0,001$) und spezielle (9,2% vs. 22,8%; $p < 0,001$) postoperative Komplikationen auf.

Ein Follow-up war für jeweils 69 (81,2%), 25 (71,4%) und 274 (76,3%) der Patienten möglich. Bei einem mittleren Follow-up von 44 Monaten traten nach limitierter Resektion signifikant häufiger Lokalrezidive auf als nach radikaler Resektion (6,0% vs. 1,5%; $p = 0,045$). Die kalkulierte Lokalrezidiv-freie Überlebenszeit betrug 60,8 vs. 63,9 Monate (log-rank: 0,042). Tumorfreies und Gesamtüberleben unterschieden sich zwischen den Patientengruppen hingegen nicht.

Schlussfolgerungen. Die limitierte Resektion mittels konventioneller transanaler oder endoskopisch mikrochirurgischer Tumorexzision beim pT_1-low-risk-Rektumkarzinom kann bei einer Lokalrezidivrate von 6% als onkologisch vertretbar angesehen werden. Dieses Vorgehen stellt jedoch im Vergleich zu den radikal-resezierenden Verfahren, die eine Lokalrezidivrate von 1,5% haben, im kurativen Therapieansatz aufgrund der unterlassenen mesorektalen Exzion einen onkologischen Kompromiss dar.

Gefäßchirurgie II: Evidenz und Perspektiven in der Behandlung des Aortenaneurysmas

186 Endovascular versus open repair for abdominal aortic aneurysm

R. Seiler[1], I. Steingruber[2], W. Jaschke[2], G. Fraedrich[1]

[1]Abteilung für Gefaesschirurgie, Medizinische Universität Innsbruck, Innsbruck, Austria; [2]Univ.-Klinik für Radiodiagnostik I, Medizinische Universität Innsbruck, Innsbruck, Austria

Background. Endovascular aneurysm repair (EVAR) represents a less invasive alternative to open surgical repair in abdominal aortic aneuryms (AAA). Especially for patients at high surgical risk the short term mortality is significantly lower. However long term results are disappointing because of more postoperative complications and requirement of a close-meshed and expensive follow up protocol.

Material and methods. We treated 73 patients (mean age 73 years, 6 w and 67 m) with AAA by EVAR. All patients selected for endovascular repair had significant comorbidity and were not suitable for open operation. Routine CT-scan was repeated at 3, 6 and 12 months and than yearly. The mean follow up period is 24.3 months (range 0.1–86.1 months).

Results. The perioperative mortality of EVAR was 4.28% vs 7 % for a matched open repair group. Primary technical endovascular success was achieved in 94.3%. In the entire observation period there were three type I endoleaks, 25 type II endoleaks, three type III endoleaks, one type IV endoleak, eight limb occlusions, five conversions to open surgery, 10 aneurysm sac expansions and 14 device migrations.

Conclusions. Although the perioperative mortality is lower in EVAR, a significant complication rate in the postoperative period has to be noted. So, open repair still represents the therapy of choice. EVAR should only be considered for high-risk patients, however recent studies (EVAR 2) do not reveal any survival profit for this group of patients. Our results will be discussed with regard to the latter literature.

187 Diagnostic accuracy of sigmoidoscopy compared to histology for colon ischaemia after aortic aneurysm repair

A. Assadian, C. Senekowitsch, G. W. Hagmüller

Wilhelminenspital, Vienna, Austria

Background. Clinically relevant rates of ischaemic colitis (IC) causing diarrhoea, systemic involvement, colon necrosis and ultimately death by multiple organ failure only affect a small proportion of patients after aortic reconstructions with reported incidences of 2.7 % to 3.3%.

The aim of this retrospective analysis of prospectively collected data was to compare the diagnostic accuracy of colonoscopy for detecting postoperative ischaemic colitis compared to histology and to evaluate the inter-observer difference of two surgeons.

Patients and methods. One hundred patients with infrarenal aortic aneurysms, operated electively from March 2001 to December 2003, who had on postoperative days 3 to 6 a sigmoidoscopy by two independent surgeons and histological sample of the sigmoid mucosa. approved by the

Results. Histological examination of the sigmoid mucosa revealed IC in 13 patients. The combined sensitivity of both investigators for detecting IC by sigmoidoscopy compared to histology was 84%, the specificity 92.0%, the positive predictive value 61.1%, the negative predictive value 97.6% and the diagnostic accuracy 91.0%. There was no statistically significant difference between investigator 1 and 2 ($p = 1.0$) and between both investigators and histology ($p = 0.380$).

Conclusions. Histology remains the gold standard for detecting IC after aortic surgery. Sigmoidoscopy, however, is a valid diagnostic tool with a negative predictive value of more than 94% and a diagnostic accuracy of 92%. The positive predictive value for IC, mainly due to underrating the mild grade I IC, remains at less than 75% low and does, thus, under-diagnose – mainly clinically unapparent – IC.

188 Replanting the Inferior Mesentery Artery during Infrarenal Aortic Aneurysm Repair – Influence on Postoperative Colon Ischemia

C. Senekowitsch, A. Assadian, G. W. Hagmüller

Wilhelminenspital, Vienna, Austria

Background. Replanting the inferior mesentery artery in order to prevent ischemic colitis has been discussed for many years; yet, no prospective studies have been conducted to compare the incidence of histologically proven IC in patients with and without IMA revascularization. The aim of this prospective study with histological evaluation of the sigmoid colon mucosa was to asses the influence of replanting the IMA on IC and mortality.

Patients and methods. 160 consecutive patients with symptomatic and asymptomatic infrarenal aortic aneurysm operated from January 1999 to December 2003, were prospectively assessed and randomly assigned either to replanting or ligating the IMA. Sigmoidoscopy with biopsy was performed on day 4 or 5 after surgery; patients not surviving day 5 after surgery were autopsied.

Results. Of the 160 randomized patients, 128 had a confirmed patent IMA and formed the basis of this study. Their age was 70 ± 8 years. 67 patients had the IMA replanted (52%) and 61 ligated (48%) intraoperatively. Six patients with a replanted IMA and 10 with a ligated IMA developed IC. Blood loss in the two cohorts did not differ significantly ($P = 0.788$), however patients with IC had a significantly higher blood loss compared to the cohort without IC ($P = 0.012$) and were older ($p = 0.017$).

Conclusions. Even though in this study replanting the IMA did not confer statistically significant reduction of perioperative morbidity or mortality, it appears that older patients and patients with increased intraoperative blood loss might benefit from IMA replantation

189 Short and midterm results of endovascular therapy of traumatic rupture of the thoracic aorta

J. Demmer[1], M. Alavian[1], H. Müller[1], C. Groß[1], P. Pichler[2], G. Haudum[2], F. Fellner[2]

[1]Chirurgie 1, AKH Linz, Linz, Austria; [2]Radiologie, AKH Linz, Linz, Austria

Background. We retrospectively evaluate early stentgraft repair of acute traumatic descending thoracic aortic rupture.

Methods. Between VI/2001 and XI/2005 13 patients (16–65 years old; mean age 41,5 years; 7 male, 6 female) with acute traumatic descending thoracic aortic rupture were treated by implantation of self expanding stent-grafts.

In 10 patients the stentgraft implantation was performed via the common femoral artery, in 2 patients via the common iliac artery and in 1 patient via the abdominal aorta.

Results. In all 13 patients stent graft application was feasable without procedure related morbidity or mortality (100%). A typ I endoleak in 1 patient had disappeared in 3 month p.o. control CT-scanning. 3 patients (23.1%) died within 0–18 days postoperatively because of cerebral swelling, cardiac contusion and MOV due to the severe polytrauma. During a mean follow-up of 25.6 (9–55) months, none of the 10 survivors experienced any stent related complication.

Conclusions. Early stentgraft repair of traumatic descending thoracic aortic rupture is feasable without procedure related morbidity and mortality. Early and midterm follow-up do not show any stent related complications.

190 Endovascular vs conservative treatment in thoracic aortic type B dissection

B. Neuhauser[1], B. V. Czermak[2], R. Seiler[1], P. Waldenberger[2], W. Jaschke[2], G. Fraedrich[1]

[1]Department of Vascular Surgery, Medical University of Innsbruck, Innsbruck, Austria; [2]Department of Radiology I, Medical University of Innsbruck, Innsbruck, Austria

Background. We describe our experience and results regarding thoracic aortic endovascular stent-graft repair vs medical treatment in thoracic aortic type B dissection.

Methods. From January 1996 to December 2005, 24 patients (18 acute, 7 elective) underwent a thoracic endovascular stent-graft procedure due to symptomatic / progredient type B dissection. (G I) During the same time period, 40 patients (18 acute, 22 chronic) were treated medically. (G II) Mean follow-up was 40.2 (5.7–81.4) months for G I vs 34.9 (1–131) months for G II.

Results. G I: The 30-day-mortality rate was 16% (4/25), the total mortality rate was 32% (8/25) and was aortic disease related in 16% (4/25). A total of 5 patients (20%) experienced complications. One type III endoleak occurred after 7 months; conversion to an open procedure was performed in 3 patients, 1 due to type I endoleak 51 months after the initial procedure, and 2 retrogarde type A dissection after 3 vs 26 days after the initial procedure.

G II: The 30-day-mortality rate was 5% (2/40), the total mortality rate was 17% (7/40) and was aortic disease related in 7% (3/40). A total of 7 patients (17,5%) experienced aortic enlargement during FU. Four patients declined any kind of therapy, in two patients therapy was impossible due to comorbidities, one patient expierenced a thoracic aortic rupture leading to death.

Conclusions. Symptomatic or progredient thoracic aortic type B dissection is an indication for endovascular stent-graft repair in anatomical suitable patients. Treatment in uncomplicated thoracic aortic type B dissection is conservative.

Österreichische Gesellschaft für Thorax- und Herzchirurgie: Herzchirurgie II

191 Ross-Konno procedure in the newborn

E. Sames-Dolzer[1], R. Mair[1], D. Vondrys[1], C. Gross[1], E. Lechner[2], G. Tulzer[3]

[1]I. Chirurgische Abteilung, Linz, Austria; [2]Department für Kinderkardiologie, LFKK, Linz, Austria; [3]Department für Kinderkardiologie, LFKK, Linz, Austria

Background. Critical aortic stenosis in the newborn is often primarily treated by a catheter intervention. If the dilatation of the valve fails, or in case that there is a significant subvalvar stenosis the Ross-Konno procedure is in most cases the best option to save the left ventricle for a biventricular repair.

Methods. From 2000 until 2006 8 newborns (mean weight: 3.5 ± 0.62; mean age: 14.75 ± 11.48 d) with critical aortic and subaortic stenosis underwent a Ross-Konno procedure in our institution. Two patients additionally had a VSD and an interrupted aortic arch, 1 patient a significant mitral valve stenosis. 4 patients had undergone one or more balloon dilatations, two of them in the fetal period.

Enlargement of the LVOT was done with a pericardial patch. The Ross procedure was done as usual. The pulmonary valve was replaced by a homograft. Two patients underwent an aortic arch repair with an ascending-descending anastomosis and a VSD patch closure in the same procedure.

Results. All patients survived the procedure and are well after a follow up of 0.03–5.3 yrs (2.66 ± 2.06). Flow across the LVOT is still unobstructed. By now no replacement of the pulmonary homograft was necessary. The patient with the mitral valve stenosis needed three reoperations for the mitral valve, ending in a prosthetic mitral valve replacement at the age of 8 months.

Conclusions. The Ross-Konno procedure offers an excellent option for aortic valve replacement and LVOT enlargement for patients with critical LVOT obstruction. Early decision making is important to avoid pesisting left ventricular dysfunction.

192 Surgical repair after fetal aortic balloon valvuloplasty

R. Mair[1], G. Tulzer[2], W. Arzt[3], E. Sames-Dolzer[1], D. Vondrys[1], E. Lechner[2], C. Gross[1]

[1]I. Chirurgische Abteilung, Linz, Austria; [2]Department für Kinderkardiologie, LFKK, Linz, Austria; [3]Department für Praenatalmedizin, LFKK, Linz, Austria

Background. Fetal balloon valvuloplasty of the aortic valve can restore antegrade blood flow through the left ventricle. So growth of its structures is possible. Though balloon valvuloplasty can open up a dysplastic aortic valve it is not able to restore its correct structure and surgical repair will be necessary.

Patients and methods. In 2005 2 newborns were referred after fetal aortic balloon valvuloplasty.

Both patients underwent balloon valvuloplasty of the aortic valve again during their first week of life. The gradient could not be effectively relieved and both patients needed a Ross-Konno procedure on day 14 and on day 8 after birth respectively.

Results. In patient 1 a normal mitral valve was found and the patient could be discharged after 23 days.

In patient 2 mobilisation of a dysplastic asymmetric parachute like mitral valve was performed during the Ross-Konno procedure. This had to be redone after 2 weeks. The patient was discharged and readmitted several times during the next months due to recurrent mitral stenosis

At the age of 8 months another extensive attempt to open the mitral valve was made, however this proved to be ineffective and we had to replace this valve by a mechanical prosthesis.

After an uneventful postoperative course the patient could be discharged.

Conclusions. Fetal balloon valvuloplasty of the aortic valve increases the chance for biventricular repair in patients with critical aortic stenosis. Though left ventricular structures grow in diameter, they are dysplastic to a various degree and create a new challenge for surgery.

193 Transvenous pacemaker lead removal is safe and effective even in large vegetations: an analysis of 53 cases of pacemaker lead endocarditis

E. Ruttmann[1], H. B. Hangler[1], D. Höfer[1], J. Kilo[1], L. C. Müller[1], F. Hintringer[2], S. Müller[2], G. Laufer[1], H. Antretter[1]

[1]Department of Cardiac Surgery, Medical University of Innsbruck, Innsbruck, Austria; [2]Department of Cardiology, Medical University of Innsbruck, Innsbruck, Austria

Background. Aim of this study was to investigate whether transvenous lead removal is safe and effective in patients with lead vegetations greater than 1 cm in size.

Material and methods. From 1991 to 2005, a total of 53 patients underwent pacemaker or ICD lead removal for vegetations.

Transvenous lead removal was performed in 30 patients (56.6%) and was effective in 29 of those. In one patient, due to rupture of the lead, open heart removal of the ventricular lead remnant and tricuspid valve repair had to be performed due to persistent infection. In 23 of these patients, TEE verified vegetations greater than 1 cm in size. The remaining patients underwent primary lead removal using sternotomy and extracorporeal circulation (ECC). Pacemaker pocket infection was found in 16 patients (55.2%) of the transvenous study group and in 11 patients (45.8%) of the ECC group ($p = 0.72$).

Perioperative mortality was 5.7% (3 patients); all of them underwent primary ECC removal and had severe endocarditis of the tricuspid valve.

None of the patients who underwent transvenous lead removal died and there were no further complications such as pericardial tamponade or major pulmonary embolism requiring further interventions, even in patients demonstrating large vegetations.

Conclusions. This study demonstrates that transvenous lead removal is a safe and highly effective procedure to remove infected pacemaker and ICD leads, even in patients with large vegetations. Embolism to the lung proceeds mainly without further complications, however, patients with vegetations that might obstruct a main stem of the pulmonary artery should undergo ECC removal.

194 Transposition of the supraaortic branches for extended endovascular arch repair

M. Czerny, D. Zimpfer, R. Gottardi, M. Schoder, J. Lammer, E. Wolner, M. Grimm

Department of Cardiothoracic Surgery, Medical University of Vienna, Vienna, Austria

Background. Supraaortic branches limit extended application of endovascular aortic repair. For this purpose, we applied extensive reconstructions.

Methods. From 10/2002 through 3/2005, 11 patients (mean age 72.3 yrs) presented with acute or chronic aortic diseases originating from the aortic arch (arch aneurysms n = 8, type B dissections n = 3). Treatment was by autologous sequential transposition of the left carotid artery into the brachiocephalic trunk and of the left subclavian artery into the already transposed left common carotid artery in 9 patients and by additional reconstruction of the brachiocephalic trunk in 2 patients. Endovascular stent-graft placement was successfully performed thereafter.

Results. Procedure related mortality was 0%. At completion angiography, all reconstructions were fully patent. One patient had a small type Ia endoleak that resolved spontaneously within one week. Mean follow-up was 18 months (1–29 months). One patient underwent redo stent-graft placement after 25 months due to a type III endoleak. The remaining patients had normal follow-up CT scans with regular perfusion of the supraaortic branches without any signs of endoleaks.

Conclusions. Extended application of this technique will enable safe and effective treatment of a highly selected group of patients by avoiding conventional repair.

195 Endovascular stent-graft placement in atherosclerotic aneurysms involving the descending aorta – long-term results

M. Czerny[1], D. Zimpfer[1], R. Gottardi[1], D. Hutschala[1], M. Schoder[2], J. Lammer[2], E. Wolner[1], M. Grimm[1]

[1]Department of Cardiothoracic Surgery, Medical University of Vienna, Vienna, Austria; [2]Department of Interventional Radiology, Medical University of Vienna, Vienna, Austria

Background. To determine long-term durability and need for reinterventions after endovascular stent-graft placement in atherosclerotic aneurysms involving the descending aorta.

Patients and methods. We performed a prospective follow-up analysis of a consecutive series of patients (n = 70) undergoing endovascular stent-graft placement due to atherosclerotic aneurysms involving the descending aorta between 1996 and 2005. Mean follow-up was 34 months (range, 1–92 months).

Results. In-hospital mortality was 5.7% (n = 4), two of these patients underwent emergent treatment. Primary technical success rate, defined as successful deployment of the stent-graft at the desired location was 97.2%. Early type I and III endoleaks were observed in 28% of patients. Of these, early reinterventions were performed in 7 patients, in 4 patients the endoleak closed spontaneously. Early type I or III endoleaks following intervention at the aortic arch the number of was higher as compared to isolated intervention of the descending aorta (41% vs. 16%; $p = 0.040$). Late type I or III endoleaks occurred in 7.4% (n = 5). Finally, endotension occurred in 2.8% (n = 2), being treated successfully by redo stent-graft placement. Overall actuarial survival was 88.6%, 75.6% and 65.7% at 1, 3 and 5 years, respectively.

Conclusions. Long-term durability of endovascular stent-graft placement in atherosclerotic aneurysms involving the descending aorta is satisfying. Despite a substantial number of endoleaks being observed, the rate of early or late endoleaks with consecutive need for reintervention is acceptably low. Further clinical investigations are warranted to evaluate long-term durability of this attracitve treatment modality.

196 First clinical results of the new Perimount Magna mitral prosthesis

R. Moidl, N. Medjedovic, M. Gorlitzer, M. Thalmann, M. Grabenwöger

HZH Herzzentrum Hietzing, General Hospital Hietzing, Vienna, Austria

Background. Long term results of pericardial bioprostheses in the aortic position has shown excellent durability and hemodynamics. The new Magna mitral prosthesis with it's sattle shaped sewing ring and a marker for optimal rotation was implanted in our institution in ten patients (mean age 66.5 ± 10.2 years).

Methods. We report the clinical and echocardiographic results of discharge and 3 month follow-up in patients after mitral valve replacement with the Magna pericardial valve. Echocardiographic measurements include the evaluation of the prosthesis haemodynamics and more important of the left ventricular outflow tract (LVOT). Three-dimensional echocardiography was performed for LVOT reconstruction.

Results. Discharge examinations are complete in 9 patients (1 pt. died from low output), 7 patients had 3 month follow-up. No patient had mitral incompetence. The mean orifice area of the prosthesis is 2.4 ± 0.1 cm². LVOT velocities and gradients are physiological (mean Vmax 0.94+/ +0.03 m/sec, Vmean 0.63 ± 0.02 m/sec, Gmax 3.51+/ –0.03 mmHg, Gmean 1.85 ± 0.03 mmHg). Three-dimensional reconstruction of the LVOT underlines the optimal rotation of the stents, leading to more laminar outflow within the LVOT and the aortic valve.

Conclusions. Our first clinical results of the new Magna mitral pericardial valve shows optimal haemodynamic performances of the prosthesis and physiological flow in the LVOT. One year follow-up will be performed to look if the physiological outflow tract haemodynamics will further improve the reduction of left ventricular mass.

197 First clinical results of the Sorin Freedom Solo stentless aortic prosthesis

M. Thalmann, R. Moidl, M. Gorlitzer, M. Grabenwöger

HZH Herzzentrum Hietzing, General Hospital Hietzing, Vienna, Austria

Background. Sorin Freedom Solo is a stentless pericardial aortic valve which is supra-annular seated for best hemodynamic performance.

Methods. We report the clinical and echocardiographic results of discharge and 3 month follow-up in patients after aortic valve replacement with the Sorin Feedom Solo pericardial valve. Echocardiographic measurements include the evaluation of the prosthesis hemodynamics.

Results. Valve sizes from 21 mm to 25 mm were implanted. There was no mortality. Discharge examinations are complete in 12 patients (1 patient had to be reoperated due to a ruptured suture-line). 3 month follow-up is incomplete up to now. The mean effective orifice area was 1.1 ± 0.2 cm²/m². LVOT velocities and gradients are as follows:

mean Vmax 1.81 ± 0.07 m/sec, Vmean 1.18 ± 0.02 m/sec, AV maxPG 13.2 ± 1.06 mmHg, AV meanPG 6.6 ± 0.15 mmHg. No patient had aortic incompetence.

Conclusions. The hemodynamic performance of the Sorin Freedom Solo aortic valve is excellent. As in all new valve types late performance and durability of the valve have to be assessed.

198 Mitral valve repair in dilative cardiomyopathy

L. Salaymeh, I. Ovcina, S. Huber, S. Schweiger, P. Oberwalder, M. Anelli-Monti, H. Mächler, D. Dacar, B. Rigler

Klin. Abteilung für Herzchirurgie, Medizinische Universität Graz, Graz, Austria

Background. Mitral regurgitation (MR) is a frequent complication of end-stage-heart failure. These patients were either managed medically or with mitral valve replacement, both associated with poor outcome. Mitral valve repair with an undersized annuloplasty may improve survival and reduce the need for allografts.

Methods. Fifty two patients with an ejection fraction (EF) < 35%, end-stage heart failure and mitral regurgitation > 2 underwent mitral valve annuloplasty using the Carpentier Physio ring.

Results. Thirty day mortality was 9.6 % (n = 5). Twelve late mortalities were observed. The use of IABP was necessary in ten patients. The 1, 2 and 5 year actuarial survival was 78%, 76% and 54% respectively.

Conclusions. Mitral valve repair is a safe and effective operative intervention that corrects MR and offers a new strategy for patients with MR and end-stage cardiomyopathy.

199 Solo freedom stentless pericardial aortic valve: a new promesing heart valve for the older patients

A. E. Yates, S. Huber, S. Schweiger, H. Maechler, D. Dacar, B. Rigler

Department of Surgery, Medical University of Graz, Graz, Austria

Background. Due to the aging population demographics and the need to avoid anticoagulation, a wide range of biological heart valves is available on the market. Stentless valves have gained in popularity because of advantages in hemodynamics and durability. This study was conducted to evaluate the benefits of the Solo Freedom aortic heart valve with the postoperative hemodynamics and clinical outcome.

Methods. Between October 2004 and January 2006, 28 patients (mean age 76.1 years) underwent first time aortic valve replacement with the above mentioned valve. The indication for surgery was severe aortic stenosis. Twelve patients had concomitant myocardial revascularisation. Postoperative echocardiographic examinations were performed before discharge from the hospital and again three months later.

Results. There was no surgical implantation problem, mean X-clamping time was 52.1 minutes for the valve-replacement only and one reoperation due to prolonged bleeding was necessary. All patients survived the early postoperative period; however two patients developed a transient ischemic stroke. Echocardiographic evaluation before discharge demonstrated favourable hemodynamics with mean transvalvular gradients of 16.7 ± 8.8 mmHg. Gradients were even lower after three months follow-up. No regurgitation across the valve was seen in any of the cases. There was one paravalvular leak with no hemodynamic relevance and no need for reoperation.

Conclusions. Early experience with the Solo Freedom aortic heart valve is encouraging. It offers excellent hemodynamic results and low transvalvular gradients. It is a suitable device for older patients in whom anticoagulation should be avoided, and offers a very surgeon-friendly implantation with short X-clamping time.

200 Tissue Engineering von Herzklappen: Expression von Adhäsionsmolekülen nach Wiederbesiedeln der dezellularisierten porcinen Matrix mit Endothelzellen

M. Kasimir[1], G. Kolroser[1], F. Bastian[1], E. Rieder[2], G. Seebacher[1], E. Wolner[1], G. Weigel[1], P. Simon[1]

[1]Abteilung für Herz-Thoraxchirurgie, Medizinische Universität Wien, Wien, Österreich; [2]Abteilung für Allgemeinchirurgie, Medizinische Universität Wien, Wien, Österreich

Grundlagen. Tissue-Engineering von Herzklappen ist ein viel versprechendes Konzept, um die Nachteile des herkömmlichen Klappenersatzes zu überwinden. Wir verwenden die dezellularisierte porcine Herzklappe als Matrix. Wiederbesiedeln der Matrix mit Endothelzellen verhindert Plättchenadhäsion und deren Aktivierung. Das Endothel selbst allerdings könnte sowohl thrombogene als auch proinflammatorische Effekte haben. Das Ziel dieser Studie war die mit Endothelzellen besiedelte dezellularisierte porcine Matrix auf deren Aktivität mittels Nachweis der Expression von Adhäsionsmolekülen zu testen.

Methodik. Porcine pulmonale Herzklappen-Conduits wurden mit Triton-X 100, Natrium-Desoxycholat, Igepal 630® und Ribonukleasen dezellularisiert. Dezellularisierte Proben und Coverslips wurden mit humanen Endothelzellen besiedelt. Danach wurde die Expression von E-Selectin und ICAM-1 getestet. Als Kontrolle wurden die EC mit Interleukin-1β stimuliert. Um die Implantationssituation zu simulieren wurden die wiederbesiedelte Proben zunächst für 60 Minuten in einer Inkubatorkammer mit N_2 der Hypoxie ausgesetzt und danach für 240 Minuten reoxygenisiert und wiederum die Expression von E-Selectin und ICAM-1 getestet. Die Proben wurden mittels Immun-Raster-Elektronenmikroskopie ausgewertet.

Ergebnisse. Ohne Stimulation zeigten die besiedelte Matrix und die besiedelten Coverslips keine Expression von E-Selectin und eine nur minimale Expression von ICAM-1. Nach Stimulation mit IL-1β kam es zu einer signifikanten Expression beider Adhäsionsmoleküle. Hypoxie und Reoxygenierung bewirkte keine Stimulation des besiedelten Endothels.

Schlussfolgerungen. Wiederbesiedelte EC auf der dezellularisierten porcinen pulmonalen Matrix zeigen keine Aktivität. Das Endothel ist mit IL-1β stimulierbar, durch Hypoxie und Reoxygenisierung aber nicht. Daher scheint das Wiederbesiedeln der dezellularisierten porcinen Matrix einen effektiven Schutz vor Thrombogenität und inflammatorischer Reaktion zu bieten.

201 Neurologic outcome of septic cardio-embolic stroke following infective endocarditis

E. Ruttmann[1], J. Willeit[2], H. Ulmer[3], W. Poewe[2], G. Laufer[1], L. C. Müller[1]

[1]Department of Cardiac Surgery, Innsbruck, Austria; [2]Department of Neurology, Innsbruck, Austria; [3]Department of Medical Statistics, Informatics and Health Economy, Medical University of Innsbruck, Innsbruck, Austria

Background. Aim of this study was to evaluate mortality and neurological outcome of cardio-embolic cerebral stroke in infective endocarditis (IE) patients requiring cardiac surgery.

Material and methods. A consecutive series of 214 IE patients undergoing cardiac surgery for IE was followed up to 20 years. In 65 patients (mean age 52 years), IE was complicated by CT or MR verified stroke (n = 61) or transient ischemic attack (n = 4). Perioperative (30 day) and long-term mortality were assessed by Cox proportional hazard models. Complete neurological recovery of IE survivors was defined by the modified Rankin score of ≤ 1 and a Barthel index of 20 points.

Results. Fifty IE stroke patients (81.9%) survived surgery. In comparison to non-stroke patients, age adjusted perioperative mortality risk was 1.70 fold (95% Confidence Interval (CI): 0.73–3.96, p = 0.22), long-term mortality risk 1.23 fold (95% CI: 0.72–2.11, p = 0.45) higher in stroke patients. Patients with complicated stroke (meningitis, hemorrhage or brain abscess) showed higher perioperative mortality than patients with uncomplicated ischemic stroke (38.9% vs. 8.5%, p = 0.007).

Complete neurological recovery was achieved in 35 IE survivors (70%, 95% CI: 55%–82%). However, in the case of middle cerebral artery stroke (MCAS), recovery was only 50% and was significantly lower compared to non-MCAS (p = 0.012).

Conclusions. Uncomplicated IE-related stroke showed a favourable prognosis in regard to both survival and neurological recovery. The formidable risk of secondary cerebral hemorrhage due to cardiac surgery seems to be much lower than previously thought.

Österreichische Gesellschaft für Handchirurgie: Die Versorgung von Amputationsverletzungen an der oberen Extremität (derzeitiger Stand in Österreich)

202 Organizing the first "around the clock" replantation service in Europe in 1974

H. Millesi

Wiener Privatklinik Betriebs-Ges.m.b.H. & Co. KG, Vienna, Austria

1960 surgical techniques for successful anastomosis of microvessels were developed. 1963, Kleinert was the 1st to successfully revascularize a finger, and 1965 Komatsu and Tamai reported the replantation of a thumb. In 1972 we learnt that in the People's Rep. of China a large series of finger replantation had been carried out with success. At the "Depart. of Plastic and Reconstr. Surgery" of the 1st and 2nd Surgical Univ. Clinics in Vienna, much emphasis was on microvasc. surgery. In 1972, Baudet was the 1st in Europe to report on a successful replantation of a thumb. A regular replantation service was not established. 972, G. Meissl at the "Dept. of Plastic and Reconstr. Surgery" of the 1st Univ. Clinic Vienna, successfully replanted a thumb as well as a finger for the same

patient. Almost at the same time a finger was successfully replanted at the "Dept. of Plastic and Reconstr. Surgery" of the 2nd Univ. Clinic Vienna. This shows the prerequisite surgical techniques and expertise for replantation of fingers were available in Vienna. 1973, no case became known to us in which replantation surgery could be carried out. We almost came to believe that traumatic amputations of fingers rarely ever occurred in Austria.

But I then learnt there had been 1 patient with 2 amputated fingers – these had been brought along – but replantation surgery for the fingers could not be attempted because of failing preprequisite conditions.

Conclusions. There are 4 prerequisite conditions to enable successful replantation: 1. The first aid helper must know that replantation is possible. 2. He/she must know how to transport amputated parts (keep cool, etc.) 3. He/she must know to which clinic the patient should be taken. 4. At the clinic a microsurgeon must be available on duty.

These 4 prerequisite conditions rarely ever will pervail simultaneously just by coincidence. Therefore, we need to set up an organized replantation service.

1974 organizational steps were taken in cooperation between:

– the "Dept. of Plastic and Reconstructive Surgery" of the 1st Surgical University Clinic Vienna (Millesi) and
– the "Dept. of Plastic and Reconstr. Surgery" of the 2nd Surgical Univ. Clinic Vienna (Freilinger) June 1974, the replantation service in Vienna became fully operational around the clock – which was the first 24 hrs replantation service established in Europe. First results achieved were reported upon at the 1975 Annual Meeting of the Austrian Soc. of Surgeons.

203 Die Versorgung von Amputationsverletzungen an der oberen Extremität am Replantationszentrum Wien

B. Karle, H. B. Kitzinger, V. Moser, M. Frey

Klin. Abteilung für Wiederherstellende und Plastische Chirurgie, Medizinische Universität Wien, Wien, Österreich

Präsentation der Empfehlungen für die Erstversorgung von Amputationsverletzungen, der Indikationsstellung zur Replantation unter Berücksichtigung von Patientenalter und Amputationshöhe sowie der Bilanz der erreichbaren funktionellen Ergebnisse nach 942 Replantationen in den vergangenen 30 Jahren.

204 Replantation of hand and fingers following complete amputation

G. Pajenda, V. Vécsei

University Clinic for Traumatology Vienna, Vienna, Austria

Background. Experience in replantation surgery has increased during the past 30 years. Refinements of microsurgical operations and improvements in the rehabilitation technique have led to better functional results. Replantation has become the state of the art reconstruction for an amputated thumb, hand and fingers.

Material and methods. The aim of our study was to review our series of replantations in the upper extremity. The clinical case of a complete hand amputation in a 22 year old man is presented. The transcarpal section was clean and the general condition of the patient was satisfying. The procedure was carried out during 10 hours and revascularization took place 6 hours after the injury. There were no complications during the postoperative period. After a 18 months follow-up, peripheral pulses were palpable, and the hand was warm and well coloured. The neurological condition showed increased sensibility. Regarding the functional aspect, the patient was able to pick up large and fine daily utensils and regained complex hand functions and had a remarkably good tactile activity.

Conclusions. As time is one of the most critical components of successful replantation, improvements in extra- and intrahospital organization of replantation surgery are necessary. The thumb replantation is associated with very high survival rate, regardless of the mechanism of injury or level of amputation, and should be attempted in all cases. Indications of hand replantation need to take into account the patient's overall constitution and to assess the severity of the injury.

205 Indications on replantation of periphereal parts of the body

L. Schwaiger

UKH Salzburg, Salzburg, Austria

Abstract nicht vorliegend.

206 Treatment Guidlines for Upper Extremity Amputation of the Univ. Klinik für Plastische und Wiederherstellungschirurgie

T. Bauer, T. Schütz, T. Engelhardt, T. Schoeller, G. Wechselberger, A. Schwabegger, H. Hussl, H. Piza

Univ.-Klinik für Plastische und Wiederherstellungschirurgie, Medizinische Universität Innsbruck, Innsbruck, Austria

Background. Amputations are still challenging for the reconstructive microsurgeon, on one hand because of the indication and on the other hand because of the kind of therapy. The indication for replantation of one finger is still controversly discussed. After analysis of the amputations of the last 9 years we have developed guidelines for replantation.

Material and methods. Between 1997 and 2005 we have treated 249 patients with upper extremity amputation. Amputationlevel was at or above wrist in 11 cases, at midhandlevel in 19 cases and at fingerlevel in 218 cases. 151 patients had sustained complete amputation, 98 partial amputation, but all without circulation. 30% were multiple finger amputations and 8.8% had degloving injuries. Mean age was 35. All patients got a plexus anesthesia and anti clotting agents. Ergotherapy included mobilisation and sensory reeducation.

Results. In 186 patients replantation was successful. 6 cases were treated with heterotopic replantation. 47 patients got a stump primarily. In 31 cases microsurgical revision was necessary. Only one patient demanded reamputation because of pain and one patient denied replantation for getting back to work earlier.

Conclusions. Because of our data we recommend the indication for replantation more often than this was done until now.

To get these results it is necessary to have guidelines including proper microsurgical skills, plexus anesthesia, anti clotting agents and ergotherapy for a longer period.

207 Die Relevanz der frühzeitigen ergotherapeutischen Nachbehandlung nach Replantationen der Finger – Ein Therapiekonzept

D. Estermann, I. Kerschbaumer, T. Schütz, G. Wechselberger, T. Schoeller, H. Hussl, A. Schwabegger, H. Piza-Katzer

Universitätsklinik für Plastische und Wiederherstellungschirurgie, Medizinische Universität Innsbruck, Innsbruck, Österreich

Grundlagen. Zum Thema Replantationen der Finger gibt es kein einheitliches Behandlungskonzept, wonach sich die Ergotherapeutinnen richten können. Die Makroreplantationen werden je nach Amputationshöhe Muskel- oder Sehnendurchtrennung und vor allem Art der Knochenverletzung und Stabilisierung sehr individuell nachbehandelt.

Material und Methodik. Im Zeitraum von 1999 bis 31.12.2005 wurden an der Univ.-Klinik für Plastische- und Wiederherstellungschirurgie über 200 Patienten mit Amputationen an den oberen Extremitäten behandelt worden. Der Schwerpunkt der Nachbehandlung liegt in der frühfunktionellen Mobilisierung, sensorischen Reintegration und der Wiedererlangung der Selbständigkeit im Alltags- und Berufsleben.

Ca. eine Woche nach der Replantation wird mit vorsichtiger Mobilisation der gesamten Extremität begonnen. Die passive Gelenksmobilisation setzt ab dem 10. postoperativen Tag ein, da man annehmen kann, dass die rekonstruierten Nerven bis dahin die Belastung der Mobilisierung tolerieren. Ab der 3. bis 4. Woche wird die aktive Mobilisierung der Gelenke begonnen.

Ergebnisse. Es werden folgende ergotherapeutische Maßnahmen sowohl bei den Patienten bei Makro- wie Mikroreplantationen angewandt: Handbäder, Softlaser, Ödembehandlung, Schienenbehandlung.

Die Nervenregeneration wird geprüft durch Verfolgung des Tinel-Hoffmann'schen Zeichens und Sonographiekontrolle. Ist das Tinel-Hoffmann'sche Zeichen über der Nervenkoaptationsstelle wird laufend die Regeneration durch ein Sensimapping dokumentiert.

Schlussfolgerungen. Die interdisziplinäre Zusammenarbeit zwischen Ergotherapeuten, primär behandelnden und die Ambulanz leitenden plastischen Chirurgen ist von eminenter Bedeutung, sodass einerseits bei z. B. abgerissenen Sehnen oder nicht regenerierenden Nerven sofort Reoperationen stattfinden können.

208 Der Einsatz der Kollagen-Elastin Matrix Matriderm® für die dermale Reparation: Erste Erfahrungen in der Therapie schwerer Handverbrennungen

W. Haslik[1], G. Nathschläger[1], L. Kamolz[1], H. Andel[2], G. Meissl[1], M. Frey[1]

[1]Division of Plastic and Reconstructive Surgery, Vienna, Austria; [2]Department of Anaestiology, Medical University Vienna, Vienna, Austria

Background. A major part of regaining life quality in burn injuries is restoring full hand function and a satisfying aesthetic appearance of the hand. Thereby one of the main objects is to achieve an earliest possible, but durable and mechanical stable coverage.

Methods. Matriderm is an absorbable collagen-elastin matrix used for dermal reparation. The collagen is of bovine origine. Until now 10 patients with deep dermal and full thickness dorsal hand burns were treated with matriderm. After debridement of the burned hand and haemostasis the matriderm was applied to the wound bed and immediately grafted. All patients were evaluated within the first two weeks and after 3 months.

Results. All grafts were adherent to the wound bed during the observation period. After removal of the dressings, an excellent take rate of the matrix and the split skin graft could be observed. No haematoma occurred under the matridermmatrix and there was no need for further grafting. No signs of topical or systemic allergic reactions were observed. The pliability of the matriderm-skingraft complex was judged by raising a skin fold of the dorsum of the hand, which was easily possible in each treated hand. There was no need for secondary procedures, the range of motion of the hand was unlimited in each case. No unstable scar formations or blisters could be observed.

Conclusions. Matriderm can be used successfully for dermal reparation in hand burn injuries. Our first experiences show promising results. Further studies are necessary to confirm these results.

Mund-, Kiefer- und Gesichtschirurgie

209 Das Ameloblastom – Nachuntersuchung von 10 Fällen

W. Zemann, M. Feichtinger, H. Kärcher

Mund-Kiefer-Gesichtschirurgie, Medizinische Universität Graz, Graz, Österreich

Grundlagen. Das Ameloblastom ist ein histomorphologisch gutartiger, lokal invasiv wachsender Tumor hoher Rezidivrate. Bei 10% aller odontogenen Tumore, sowie 1% aller oralen Tumore handelt es sich um ein Ameloblastom. Die häufigste Lokalisation ist das Unterkiefer im Molarenbereich. Klinisch zeigen sich indolente Schwellungen, Zahnlockerungen, Veränderung der Okklusion. Eine sichere Diagnose kann nur

durch eine Biopsie getroffen werden. Histologisch werden vier Typen unterschieden: follikuläres, plexiformes, akanthotisches Ameloblastom und der Basalzelltyp.

Material und Methodik. 10 Patienten mit Ameloblastom wurden nach einem radikalem Therapieschema behandelt. 3 Ameloblastome befanden sich im Oberkiefer, 7 im Unterkiefer. Die nach radikaler Resektion entstandenen Defekte wurden durch mikrovaskulär gestielte Transplantate (3 mal Skapulatransplantat, 7 mal Beckenkammtransplantat) rekonstruiert. Zur prothetischen Rehabilitation wurden enossale Implantate gesetzt und in weiterer Folge prothetisch versorgt. Untersucht wurden die Endergebnisse betreffend Ästhetik, Funktion und Rezidivhäufigkeit.

Ergebnisse. Keiner der 10 Patienten zeigte bisher ein Rezidiv (Nachsorge zwischen 1 Jahr und 25 Jahren).

Die prothetische Rehabilitation sowie die Funktion konnte in sehr zufriedenstellendem Ausmaß wiederhergestellt werden. Die Ästhetik ist sowohl für die Patienten als auch objektiv als zufriedenstellend zu werten.

Diskussion. Ameloblastome werden sowohl nach radikalen als auch nach konservativen Therapiestrategien behandelt. Konservative Methoden wie Enukleation mit anschließendem Anfrischen des Knochens oder anschließender Kryotherapie zeigen Rezidivraten bis 70%. Radikales Vorgehen minimiert das Rezidivrisiko erheblich. Zumal nach radikalem Vorgehen sowohl funktionell-prothetisch als auch ästhetisch zufrieden stellende Ergebnisse erzielt werden ist der Radikaltherapie der Vorzug zu geben.

Schlussfolgerungen. Radikale Therapie bei Ameloblastomen erlaubt funktionell, prothetisch sowie ästhetisch zufriedenstellende Ergebnisse bei niedriger Rezidivrate.

210 Extraosseous schwannoma of the mental nerve: A case report and differential diagnosis

E. Kowatsch, M. Feichtinger, W. Zemann, H. Kärcher

Clinical Department of Oral and Maxillofacial Surgery, Medical University of Graz, Graz, Austria

Background. The neurilemmoma is a benign tumour derived from the Schwann cell sheath. The most common sites of origin are the retroperitoneum and the posterior mediastinum whereas intraoral neurilemmomas, especially extraosseus lesions are rare.

Material and methods. We report a case of a 16 year old female patient admitted to our hospital with an unidentified fast growing tumour in the right premolar region of the mandible. She presented a three week history of a painless swelling and no neurosensory loss.

Panoramic radiography and CT-scans of the mandible revealed a large space-occupying mass with defined borders.

Because of the fast growing aspect a biopsy was obtained to rule out malignancy. A diagnosis of cellular schwannoma was made displaying Antoni A and Antoni B areas.

Results. Because the tumour presented itself like a twined ball of wool, preservation was impossible. Postoperative radiographic follow-up gave no signs of recurrence so far. However, the paresthesia of the lower lip has remained

Conclusions. Normally, neurilemmoma is a slow-growing tumour. Radiologically the tumour is commonly unilocular and often associated with bone resorption. It may resemble many types of benign and malignant conditions such as odontogenetic or periodontal cysts, ameloblastoma, angioma or in cases of extensive bone resorption it may resemble a malignant lesion. In younger patients neurilemmomas should be distinguished from neurofibromatosis type 2 associated schwannomas.

Surgical excision and histological examination is the treatment of choice. Complete excision however has a good prognosis due to the low recurrence rate and the rarity of malignant transformation.

211 Minimal invasive Biopsie-Entnahme bei Patienten mit Kopf-Hals-Tumoren durch PET/CT-Überlagerung auf einem 3D-Navigationsgerät: Eine neue Methode

M. Feichtinger[1], R. Aigner[2], H. Kärcher[1]

[1]Abteilung für Mund-Kiefer-Gesichtschirurgie, Medizinische Universität Graz, Graz, Österreich; [2]Abeilung für Nuklearmedizin, Medizinische Universität Graz, Graz, Österreich

Grundlagen. Die Positronen-Emissions-Tomographie (FDG PET) hat sich in den letzten Jahren zu einem etablierten Verfahren in der prä- und postoperativen Diagnostik von Kopf-Hals-Tumoren entwickelt.

Problemstellung. Die PET Untersuchung ist eine funktionelle Darstellung mit begrenzter morphologischer Auflösung. Insbesondere beim postoperativ bestrahlten Patienten ist eine Differenzierung hinsichtlich benigner oder maligner Raumforderung schwierig. Zusätzlich ist eine genaue Lokalisation von Mehranreicherungen aufgrund der durch die Operation veränderten Anatomie schwierig. „Offene" Biopsien beinhalten gewisse Risiken, wie z. B. die Entwicklung einer Osteoradionekrose oder Wundheilungsstörungen.

Material und Methodik. Es wird eine neue Methode präsentiert, die über einen minimal invasiven Zugang Biopsien aus anatomisch schwer zugänglichen Regionen gestattet. Auf einem CT-gesteuerten Navigationsgerät werden CT und PET Schichtbilder fusioniert. Nach Anbringen von Referenzsternen an konventionelle Weichteil-Biopsienadeln werden diese intraoperativ kalibriert. Unter CT-gestützter Navigation können mit Hilfe der kalibrierten Nadeln gezielt Biopsien aus Bezirken mit erhöhter Traceranreicherung entnommen werden. Es werden drei Fälle präsentiert, bei denen sich im Rahmen des postoperativen Screenings der Verdacht eines Lokalrezidives ergeben hatte.

Ergebnisse. In allen drei Fällen konnte durch die vorgestellte minimal-invasive Methode ein Rezidiv histologisch sicher bestätigt werden. In zwei Fällen handelt es sich dabei um ein Rezidiv im Bereich der Schädelbasis. Im dritten Fall um ein Unterkieferrezidiv, welches durch die veränderte Anatomie und ein Lappentransplantat nur schwer zugänglich war.

Schlussfolgerungen. Insgesamt ist der Einsatz eines Navigationsgerätes in Kombination mit PET-CT ein wertvolles Hilfsmittel in der Diagnostik von Rezidiven. Ein weiteres wichtiges Indikationsfeld der vorgestellten Methode stellt die Primärdiagnostik von unklaren Kopf-Hals-Tumoren dar.

212 Traumatic intracranial hemorrhage in neurologically asymptomatic polytrauma patients with maxillofacial fractures

R. Gassner, M. Rasse, T. Tuli, O. Hächl, F. Kloss, H. Ulmer, M. Hohlrieder, E. Schmutzhard

Department for Cranio-Maxillofacial and Oval Surgery, Medical University of Innsbruck, Innsbruck, Austria

Background. Polytrauma-patients sustaining maxillofacial fractures without neurological symptoms at admission are often thought to be free from intracranial pathology, so simple clinical predictors for identification of patients at risk for intracranial hemorrhage may be helpful.

Methods. 6649 patients with cranio- and maxillofacial injury underwent CT-scanning and routine neurological examination at admission. Among neurologically asymptomatic patients (GCS 15) with evidence of maxillofacial fractures those with intracranial hemorrhage were included in the study group, while those without intracranial hemorrhage served as control group. Uni- and multivariate analysis was used for determination of predictors of intracranial hemorrhage.

Results. Among 1959 neurological normal patients, CT-scanning revealed a combination of maxillofacial fractures and intracranial hemorrhage in 54 patients (study group). Multivariate analysis of the study group uncovered that the risk of intracranial hemorrhage increased nearly 25-fold if an episode of vomiting/nausea occurred, whereas seizures raised the risk of bleeding more than 15-fold. Univariate analysis identified accompanying thorax injuries and cervical spine injuries, cranial vault and basal skull fractures, open brain injuries and closed head injuries, vomiting/nausea and seizures to be significantly associated with intracranial bleeding.

Conclusions. Intracranial hemorrhage can not be excluded in patients with maxillofacial fractures despite a GCS score of 15 and normal findings following neurological examination. Vomiting/nausea and seizures are the strongest predictors of intracranial hemorrhage in such patients and should always initiate further evaluation and analysis.

213 Immobilization of BMP-2 via physisorption on nano-crystalline diamond retains bioactivity

F. R. Kloss[1], D. Steinmüller-Nethl[2], M. Najam-Ul-Haq[3], M. Rainer[3], K. Larsson[4], C. Linsmeier[5], G. Köhler[6], C. Fehrer[7], C. W. Huck[3], G. Bonn[3], G. Lepperdinger[7], M. Rasse[1], R. Gassner[1]

[1]Department for Cranio-Maxillofacial and Oral Surgery, Innsbruck, Austria; [2]Rho-BeSt Coating GmbH, Steinach, Austria; [3]Institute for analytical chemistry and radiochemistry, University of Innsbruck, Innsbruck, Austria; [4]Department of Materials, Uppsala University, Uppsala, Sweden; [5]Max-Planck-Institute for plasmaphysics, EURATOM association, Munich, Germany; [6]Max F. Perutz laboratories, University of Vienna, Vienna, Austria; [7]Institute for Biomedical Aging Research, austrian academy of sciences, Innsbruck, Austria

Background. Beyond evidence based surgery, tissue engenieering is dealing with the promotion of the osseointegration of medical implants. Thus it was the aim to immobilize Bone Morphogenetic Protein-2 (BMP-2) onto a nanocrystalline surface and retain the biological activity.

Material and methods. Nano-crystalline diamond (NCD) coated titanium substrates were terminated either by oxygen or hydrogen. Physisorption of BMP-2 was performed and spectroscopic methods such as MALDI/TOF-MS and XPS were applied to detect BMP-2 binding on the surface.

Binding strength and bonding interactions were investigated by theoretical calculations and confirmed by XPS and FCS. Biological activity was demonstrated in cell culture experiments, monitoring the expression level of alcaline phosphatase (AP).

Results. XPS showed interactions between nitrogen and oxygen of the protein with the NCD. These findings were confirmed with theoretical calculations. Van-der-Waals forces and H-bonds contribute to the tight binding of BMP-2 to the O-terminated surface, resulting in a binding energy of 35-525 kJ/mol. Forcefield calculations show that the total bond strength of BMP-2 is about 50 times stronger on the O-terminated surface.

Cells cultivated on NCD-coated surfaces with physisorbed BMP-2 showed a significant increase of AP expression level. No increase was observed in the control groups.

Conclusions. Physisorption of BMP-2 on NCD leads to bonding with a strength similar to covalent binding. This phenomenon is closely related to the properties of randomly oriented nanocrystalline diamond. Hydrophilic surface results in higher binding energies and is favoured by cells in cell culture. Physisorption enables strong binding and thus might avoid systemic effects.

Freie Vorträge: Coloproktologie

214 A retrospective analysis of patients who underwent preoperative short-term radiotherapy for resectable rectal cancer

F. Berger[1], B. Scholz[2], H. Ludwig[3], K. Glaser[1]

[1]2. Chirurgische Abteilung, Wilheminenspital, Vienna, Austria; [2]Institut für Radioonkologie Wilheminenspital, Vienna, Austria; [3]1. Medizinische Abteilung – Zentrum für Onkologie und Haematologie, Wilheminenspital, Vienna, Austria

Background. Several studies and metaanalysis showed a significant decrease in the incidence of local recurrence for resectable rectal cancer after preoperative short-term radiotherapy. The goal of this analysis was to review our results taking special interest in local recurrence and problems at the anastomotic region.

Material and methods. From August 1998 to August 2004 78 patients who underwent a preoperative short-term radiotherapy (T2/3 N0/1 = UICC I, II + III) were operated at our department.

The median age was 67 years, male 64 %, female 36 %, OP-techniques TME 54 (69 %), APRE 18 (23 %), Coloanal Anastomosis 3 (4 %) und lap. ass. resections 3 (4 %).

Results. The follow-up (median 2.8 years) showed 2 local recurrences (3%) after 1 and 1.5 years.

4 patients (5%) died within 30 days after the operation (mortality).

Anastomotic dehiscence: 8 patients (10.2 %)

Synchronous metastases: 3 (4%) liver

Metachronous metastases: 18 % (14 patients), 6% liver, 5% liver and lung, 4% lung, 3% other (peritoneal, brain, bone).

12 out of 78 patients were operated in the last half year of the follow-up.

One year after surgery 56 patients (85%) were still alive, after two years 42 patients (75%) and 32 (67%) resp. 22 (54%) patients lived three resp. four years after surgery.

11 patients live five years without a recurrence.

Conclusions. Considering the follow-up time and the limited number of patients our rate of local recurrence corresponds with the incidence described in the literature.

215 Results of surgical and adjuvant treatment of colorectal cancer in a peripheral community hospital

J. Lausecker, H. Mittendorfer, P. Holzberger, M. Leitmüller, S. Pedevilla, H. Hesse, R. Rieger

Chirurgische Abteilung, KH Gmunden, Austria

Background. Controversies exist concerning the association between case load and quality of treatment in patients with colorectal cancer and if treatment of these patients should be performed outside of specialised oncological centers.

Methods. In a retrospective study we analysed the outcome of patients with colorectal cancer treated in our department. Surgery was performed by 7 surgeons, adjuvant chemotherapy was performed at the surgical department,in selective cases specialised oncologists and radiotherapists were involved in treatment. Mean follow up time was 36 months.

Results. From 2000 until 2005 177 patients with colon (118) and rectal (59) cancer were treated. All patients with colon cancer (UICCI=19, II=41, III=37, IV=21) underwent resection. Perioperative morbidity was 6.7%, 6 patients had a relaparotomy, mortality was 2.5%. Adjuvant chemotherapy was performed in 27 patients. Survival of patients stage UICC I, II, and III was 95%, 98% and 73% resp. In 7 of 97 patients (7.2 %) local or distant tumor recurrence occured. 59 patients with rectal cancer (UICCI=14, II=16, III=20, IV=9) underwent anterior resection (n = 49), rectal extirpation (n = 9) and transanal excision (n = 1). Perioperative morbidity was 11.8%, in 4 patients relaparotomy was performed, mortality was 8.4 %. 14 patients had neoadjuvant or adjuvant radiochemotherapy.

Overall survival of patients stage UICC I, II and III was 92%, 81% and 80% resp. Local recurrence occured in 2 of 50 patients (4%), liver metastases in 2 (4%).

Conclusions. The results of surgical and adjuvant treatment of patients with colorectal cancer in a peripheral community hospital with relatively low case load can be comparable to the results reported from oncological centers.

216 First experience with fast-track-rehabilitation after laparoscopic colorectal surgery

A. Perathoner, E. Laimer, G. Mühlmann, A. Klaus, D. Öfner, R. Margreiter, R. Kafka-Ritsch

Universitätsklinik für Chirurgie, Medizinische Universität Innsbruck, Innsbruck, Austria

Background. Multimodal fast track rehabilitation is based on modified perioperative fluid management, avoidance of preoperative fasting, effective analgesic therapy using epidural anesthesia, early postoperative mobilisation and immediate oral nutrition in order to accelerate recovery, reduce general morbidity and decrease length of hospital stay. Since October 2004 we established a fast track concept for elective colorectal surgery at one ward and included all patients admitted for elective colonic surgery (n = 88). In this study we present our first experience and results after one year of fast track rehabilitation in elective laparoscopic colorectal surgery (n = 29).

Material and methods. Between October 2004 and October 2005 29 patients underwent elective laparoscopic surgery for colorectal cancer or sigmadiverticulitis. Demographic and operative data, postoperative follow up (e.g. first bowel movement, vomiting, intravenous infusion therapy, laboratory values), local and general complications were prospectively assessed and evaluated.

Results. Median postoperative hospital stay was 7 days and ranged from 3 to 41 days (no readmissions after discharge); median age of patients was 63 years (33–80 years). The incidence of local and general complications was 13.7 % and 3.4 %, respectively.

Conclusions. The introduction of the multimodal fast track rehabilitation program was convincing for the nursing staff and very well accepted by the patients. Fast track rehabilitation contributes decisively to improve patients comfort even after laparoscopic surgery and is feasable in almost all patients. These first results encourage to further adapt and improve our fast track concept.

217 Colonic surgery with accelerated rehabilitation or conventional care

C. D. Kienbacher, P. Razek, P. Patri, A. Tuchmann

SMZ Floridsdorf, Vienna, Austria

Background. For patients undergoing colonic surgery the postoperative hospital stay is usually 12 to 14 days and the morbidityrate is up to 30%. Fast track rehabilitation programs have reduced the hospital stay to 3 to 6 days.

We evaluated the postoperative outcome after colonic resections with conventional care compared with fast-track multimodal rehabilitation.

Methods. 160 consecutive patients receiving multimodal fast-track rehabilitation (02/2004–12/2005, group 1) were compared with 167 consecutive patients receiving conventional care (01/2002–12/2002, group 2). Outcomes were time of first defecation after surgery, postoperative hospital stay and morbidity during the first postoperative months.

Results. Median age was 65 years (group 1) and 67 years (group 2), American Society of Anasthesiologyists (ASA)

score was the same in both groups, defecation occurred on day 1 in group 1 and on day 3 in group 2. Median hospital stay was 6 (2–48) days in group 1 and 12 (1–97) days in group 2. The rate of major complications as anastomotic leakage and peritonitis was lower in group 1 (12 patients) than in group 2 (23 patients), especially the rate of minor complications as cardiopulmonary complications, urinary infection and wound complications was lower in group 1 (18 patients) than in group 2 (74 patients). Readmission was necessary in 10 patients of group 1.

Conclusions. Time to first defecation, hospital stay and morbidity may be reduced after colonic resection with fast-track multimodal rehabilitation.

218 Anastomotic leaks after ileostomy closure: frequency, diagnosis and treatment

A. J. Dinnewitzer, B. H. Rahden, C. Rabl, T. Fitzka, A. Heuberger, H. J. Stein

Department of Surgery, Paracelsus Private Medical University, Salzburg, Austria

Background. Leakage of the colorectal anastomosis is a severe complication after anterior resection for rectal carcinoma with primary anastomosis. Protective ileostomy is commonly used to avoid serious complications.

Patients and methods. We have analyzed our prospectively maintained colorectal cancer database (January 2003 to December 2005) with respect to anastomotic leakages of 1.) colorectal anastomoses (with and without protective ileostomy) and 2.) after ileostomy closure.

Results. During the study period, 111 patients underwent surgery for rectal cancer at our institution. 56 patients underwent low anterior resection with primary anastomosis. 44 of these 56 patients received a protective ileostomy, accounting for an ileostomy rate of 79%. Anastomotic leakage of the colorectal anastomosis occurred in 3 of the 44 patients (7%) with ileostomy. None of these patients required surgical treatment. 3 of 12 patients without ileostomy (25%) had an anastomotic leakage, 2 required surgery. Closure of the ileostomy was performed in 36 of the 44 patients (82%). A postoperative leakage of the ileo-ileal anastomosis occured in 3 patients, accounting for an overall leakage rate after ileostomy closure of 8%. Patients with leakage underwent re-laparotomy and re-anastomosis and had an uneventfull postoperative course.

Conclusions. Ileostomy is useful to avoid serious complications and surgical intervention after low anterior resection. However, ileostomy complications may not be neglected.

219 T1 rectal cancer: a comparison between local excision in combination with endoscopic posterior mesorectal resectation and low anterior resection

I. Tarantino, Z. Michael, B. P. Müller-Stich, J. Lange, A. Zerz

Klinik für Chirurgie, Kantonsspital St. Gallen, St. Gallen, Switzerland

Background. Transanal excision (TE) of T1 rectal cancer is still controversially discussed. For T1 high-risk rectal cancer until now a low anterior resection (LAR) is still the standard as the risk of metastases reaches 66%. As we showed in a previous publication the rectum-sparing endoscopic posterior mesorectal resection (EPMR) makes it possible to remove the relevant lymphatic field of the lower rectum. In the present study the morbidity and mortality rate of LAR and TE with EPMR in T1 rectal carncer are compared.

Material and methods. The prospective data of 13 patients treated with TE in combination with EPMR as a two stage procedure were compared to the data of 15 consecutive patients treated with LAR collected retrospectively.

Results. In the TE/EPMR group the postoperative morbidity consisted of two transient neurological complications and a pulmonary embolism. Histological analysis revealed a median of eight lymph nodes within the resected part of the mesorectum. Five carcinomas were classified as low risk and eight as high risk.

In the LAR group in five patients four minor and three major surgical complications occurred. Seven patients suffered from internal complications. A median of 11 lymph nodes were found.

In both groups there were two patients with lymph node metastases. There was no local recurrence or perioperative mortality. In the follow up one patient in each group developed liver metastasis.

Conclusions. The oncological outcome after TE in combination with EPMR seems to be comparable to LAR. The postoperative morbidity is significantly higher with LAR.

220 Comparison of J-Pouch versus end-to-end anastomosis after very low anterior resection in rectal cancer patients

T. Steffen, I. Tarantino, R. Warschkow, J. Lange, M. Zünd

Klinik für Chirurgie, St. Gallen, Switzerland

Background. Anastomotic leakage and the functional outcome affect the course after rectal resection with coloanal anastomosis. Different forms of reconstruction were described. The anastomotic leakage is a relevant complication after total mesorectal excision. The aim of this study was to compare the reconstruction with J-Pouch and with end-to-end anastomosis concerning the development of anastomotic leakage.

Material and methods. The patients were recruited from the quality register as a single center cohort study. Between 1 Jan 1991 and 31 Dec 2004 575 patients with rectal cancer were operated. For this study all patients with anastomotic level at 1 to 3 cm from anal verge were included. Patients with transanal endorectal pull-through anastomosis were excluded.

Results. In 72 Patients a coloanal anastomosis was performed and 62 patients were enrolled to the study. J-Pouch was performed in 36 patients and in 26 patients an end-to-end anastomosis was performed. Anastomosis by hand was performed in 8 patients. All other anastomosis were stapled. In 10 patients an anastomotic leakage was found and 9 of these patients had end-to-end anastomosis ($p = 0.035$). Other significant factors which influence this result could not be found statistically.

Conclusions. We found an advantage of reconstruction with J-Pouch concerning the development of anastomotic leakage. Better blood perfusion in J-Pouch has been discussed. Data from the literature show a similar functional outcome in the two forms of reconstruction. We conclude that reconstruc-

tion with J-Pouch is associated with less anastomotic leakage and should be performed in sphincter preserving procedures for very low rectal cancer.

221 Immunocytochemical detection of disseminated tumor cells in bone marrow of colorectal cancer patients

C. Ausch[1], V. Buxhofer-Ausch[2], M. Hofmann[1], A. Reiner-Concin[3], E. Ogris[2], W. Hinterberger[2], R. Schiessel[1]

[1]Chirurgische Abteilung und Ludwig-Boltzmann Institut für Chirurgische Onkologie, SMZ Ost, Vienna, Austria; [2]II. Medizinische Abteilung und Ludwig-Boltzmann Institut für Stammzelltransplantation, SMZ Ost, Vienna, Austria; [3]Institut für Pathologie, SMZ Ost, Vienna, Austria

Background. Detection of cytokeratin-positive cells in bone marrow (BM) may have prognostic significance in colorectal cancer.

Material and methods. Ongoing prospective study, 65 patients with colorectal carcinoma were analysed for prognostic relevance of disseminated tumor cells (DTC) in BM. Patients were operated between January 2002 and August 2005. BM aspirates were obtained from the anterior iliac crest bilaterally by needle aspiration. The monoclonal antibody A45-B/B3 was used with the immunocytochemical standard method for detecting DTC.

Results. Median age of pts. was 68 y (45–81). Staging was UICC 0:1,I: 18, II: 10, III: 19, IV: 12, 5 had local relapse. 22% (14/65) of pts. had DTC in BM at time of surgery (UICC 0: 0%, I: 22%, II: 20%, III: 21%, IV: 25%, Relapse: 20%). In 43 patients with early stage of disease (UICC 0-III) median survival is 17.48 month with DTC, 20.76 without DTC. Of all patients with DTC in BM, 29% developed distant metastases. In patients with early stages of disease (UICC 0-III) relapse and/or distant metastases were observed in 22% of patients with DTC and 12% without. 11% of patients with DTC and 3% of patients without DTC experienced distant metastases after 6 and 11 month respectively.

Conclusions. No significant impact on survival or relapse was detected by determination of DTC in BM of colorectal cancer patients. The relatively low detection rate in advanced stages may reflect the low sensitivity of the method. Follow up is too short to draw definitive conclusions.

222 DPC4 – a prognostic marker in stage II colorectal cancer?

B. Jech, B. Wolf, M. Bergmann, R. Jakesz, F. Herbst, B. Teleky, J. Karner-Hanusch

Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria

Background. Loss of heterozygosity (LOH) at loci on chromosome 18q occurs in the majority of colorectal cancers and has prognostic value in patients with stage II colorectal cancer. The DPC4 (Smad4) tumor suppressor gene, located at 18q21.1, may be one candidate tumor suppressor gene.

Material and methods. In order to evaluate the clinical relevance of DPC4 deletion, we investigated the frequency of LOH in 46 stage II colorectal tumour biopsies using three pairs of specific primers for DPC4 associated microsatellite repetitive sequences.

Results. Loss of heterozygosity at the DPC4 locus was detected in 16 (36%) of informative tumor DNAs. There was no correlation between age, sex, localisation, tumor grading and allelic status of DPC4.

The 5-year overall survival was 89% in stage II colorectal cancer patients with LOH of DPC4 versus 93% patients without allelic imbalance of in 18q21 after a median follow up of 77 months without reaching statistical significance.

The 5-year tumor-free survival was 88% in patients with LOH of DPC4 versus 92%, again without statistical significance.

Conclusions. We show a tendency that loss of heterozygosity of DPC4 is a favourable prognostic factor in stage II colorectal cancer. Analysis of larger patient cohorts is planed and will determine whether this difference is significant.

223 The incidence of colorectal and anal cancer after solid organ transplantation. A single center experience

F. Aigner, E. Boeckle, N. Berger, M. Cont, C. Bösmüller, R. Margreiter, C. Margreiter, H. Bonatti, W. Mark

Klin. Abteilung für Allgemein- und Transplantationschirurgie, Medizinische Universität Innsbruck, Innsbruck, Austria

Background. Posttransplant immunosuppression (IS) put patients at risk for developing malignancies. Colorectal cancer after organ transplantation is rare and the incidence does not differ from that of the normal population. We analysed our database with regard to the incidence and course of colorectal malignancies following treatment and introduction of mTOR inhibitor based IS.

Patients and methods. Medical records of solid organ transplants performed between 1986 and 2005 were analysed retrospectively. A total of 3568 solid organ transplantations were performed. Immunosuppressive therapy consisted of triple therapy comprising steroids, azathioprine/MMF and CyA/Tac. Some of them received induction therapy with antithymocyte globulin.

Results. A total of 206 patients (5.72 %) developed malignancies. Nine patients (median age at diagnosis 65 years) had colorectal malignancies (0.25 %) during a mean follow-up period of 7.3 years. Five patients (55%) died 7.2 years post transplant due to cardiovascular disease (n = 4) and recurrent tumor disease (n = 1). The 1-year-survival rate was 67% for T3 rectal and 50% for T3 colon cancers. Four anal neoplasms occured on average 7 years after transplantation (0.11%) with a 100% 1-year-survival rate. All patients were switched to mTOR inhibitor after completion of primary therapy.

Conclusions. The incidence of anal but not of colorectal cancers in the recipients differed from that of immunocompetent patients of corresponding age (0.11% vs. 0.002% and 0.25% vs. 0.3%). The 1-year-survival rate was significantly decreased in the transplant group with T3 tumors. Potential antineoplastic effects of rapamycin and overall less immunosuppression longterm may improve prognosis of colorectal malignancies following transplantation.

Freie Vorträge: Magen, Pankreas, GIST

224 Chirurgische Palliation beim Magenkarzinom

F. Meyer[1], H. Ptok[1], U. Schmidt[2], I. Gastinger[3], H. Lippert[1], L. Meyer[3]

[1]Department of Surgery, University Hospital, Magdeburg, Deutschland; [2]StatConsult, Magdeburg, Deutschland; [3]Department of Surgery, Carl Thiem Hospital, Cottbus, Deutschland

Grundlagen. Der Patientenanteil mit neu diagnostiziertem Magenkarzinom (Ca), der primär ein palliatives Therapiekonzept benötigt, liegt bei ca. 20%. Dieses umfasst neben herkömmlichen Operationen zunehmend auch die endoskopisch-interventionellen Verfahren.

Ziel. Anhand der Daten einer prospektiv-multizentrischen Beobachtungsstudie zur operativen Therapie des Magen-Ca die aktuelle Situation der chirurgischen Palliation dieser Tumorerkrankung zu analysieren.

Patienten und Methodik. Im Erfassungszeitraum 01.01.–31.12.2002 wurden in 80 ostdeutschen chirurgischen Kliniken 1.139 Patienten mit Magen-Ca erfasst und 1.031 davon operativ behandelt. Einflussfaktoren auf die palliativ-chirurgische Verfahrenswahl wurden durch uni- und multivariate Analysen detektiert. Speziell wurde die Indikation zur palliativen Resektion durch Analyse des frühpostoperativen „Outcomes“ und den Vergleich mit kurativer Resektion, Gastroenterostomie und explorativer Laparotomie kritisch hinterfragt.

Ergebnisse. Bei 70,4% (n = 726) der operierten Patienten wurde R0-Status erreicht. Palliative Resektionen des Primärtumors waren bei 16,0% (n = 165) der operierten Patienten möglich. Demgegenüber standen nichtresezierende operative Palliationen bei 13,6% (n = 140) der operierten Patienten. Die Rate der Explorativlaparotomien lag bei 6,3% (n = 65). Die univariate Analyse hinsichtlich der Indikationsstellung erbrachte signifikante Parameter, die im Zusammenhang mit dem fortgeschrittenen Tumorleiden stehen (z. B. Aszites/Magenstenose/Invasion von Nachbarorganen/Fernmetastasen). Bezüglich des frühpostoperativen „Outcomes“ ergaben sich für die Palliativeingriffe signifikant höhere intra- und postoperative Komplikationsraten gegenüber kurativen Eingriffen. Diese Unterschiede waren jedoch nicht mehr nachweisbar, wenn auf der Seite der Palliativeingriffe die Patienten mit dem Risikofaktor „Präoperative Dysphagie/Magenstenose“ ausgeschlossen wurden. Die Palliativeingriffe wiesen mit zunehmender Invasivität (Exploration/Gastroenterostomie/Palliativresektion) eine signifikant ansteigende postoperative Morbidität auf, Unterschiede in der Hospitalletalität waren allerdings nicht nachzuweisen.

Schlussfolgerungen. Die Indikation zur palliativen Resektion beim Magen-Ca ist streng zu stellen, wobei eine präoperativ bestehende Dysphagie/Magenstenose mit ihren Folgen für den Ernährungszustand des Patienten als besonderer Risikofaktor für eine erhöhte postoperative Morbidität anzusehen ist.

225 Ergebnisse nichkurativer Magenresektionen beim fortgeschrittenen Magenkarzinom

T. Birsan, C. Scheuba, F. Langer, C. Neumayer, P. Panhofer, E. Devyatko, G. Prager, E. Wenzl, J. Miholic, J. Zacherl

Universitätsklinik für Chirurgie, Medizinische Universität Wien, Wien, Österreich

Grundlagen. Die Wertigkeit resezierender Verfahren beim fortgeschrittenen Magenkarzinom sowie der Stellenwert der palliativen Magenresektion sind nicht unumstritten. Wir haben die Ergebnisse mit diesen Verfahren an unserer Institution retrospektiv analysiert.

Methodik. Zwischen 1978 und 2005 wurden insgesamt 1110 Patienten wegen eines Magenkarzinomes operiert und dokumentiert. Bei 147 (13%) Patienten wurden nichtkurative Magenresektionen durchgeführt (62% total, 34% subtotal, 4% andere). Eine erweiterte Lymphadenektomie (D2) erfolgte bei 31 Patienten (21%). Bei 98 Patienten (67%) war makroskopisch erkennbares Tumorgewebe im Körper verblieben, während bei 74 Patienten (50%) ein Resektionsrand mikroskopisch tumorbefallen war. Im gleichen Zeitraum wurden bei 103 (9%) Patienten palliative Eingriffe/Interventionen ohne Resektion vorgenommen.

Ergebnisse. Die Krankenhausletalität beträgt bei den resezierten Patienten 6,8% und war vom Auftreten von chirurgischen Komplikationen (19%) beeinflusst. Das mediane Überleben der resezierten Patienten war 6 Monate und war nicht vom Lymphadenektomieverfahren, Metastasenstatus oder Resektionsrandbefund abhängig. Patienten unter 65 Jahre hatten tendentiell ein besseres 12-Monats-Überleben (26% vs. 13%), bei 3 Jahren war jedoch für beide Altersgruppen das Überleben unter 10%. Das mediane Überleben der pallierten Patienten war 2,4 Monate, unabhängig vom Alter, signifikant geringer als jenes der resezierten Patienten. Nach 3 Jahren war keiner dieser Patienten mehr am Leben.

Schlussfolgerungen. Prinzipiell ist bei nichtkurativen Magenresektionen zu unterscheiden zwischen Operationen mit bewußt palliativem Charakter und solchen mit primär kurativer Intention. Nichtkurative Resektionen können nur einen geringen Überlebensvorteil im Vergleich zu palliativen Maßnahmen bringen. In Abhängigkeit vom Allgemeinzustand und Erkrankungsausmaß kann eine limitierte Resektion mit niedriger Komplikationsträchtigkeit auch eine sehr effektive Palliation bieten.

226 Peritoneal carcinomatosis treated by intraperitoneal hyperthermic chemoperfusion

A. Heiss, F. Kober, M. Karik

Kaiserin Elisabeth Spital, Vienna, Austria

Background. Diffuse advanced peritoneal carcinomatosis with malignant ascites leads to a rapid deterioration of patients general conditions. The median survival for patients with peritoneal carcinomatosis, especially in combination with malignat ascites, is 2.9 months. Gross, diffuse peritoneal carcinomatosis is not influenced by systemic chemotherapy also, repeated regional intraperitoneal chemotherapy is limited by the formation of intraperitoneal compartments and the low penetration depth of cytostatic-drugs into the tumor tissue.

Material and methods. After laparotomy and exploration of the whole abdominal cavity with multiple biopsies, an adhesiolysis, the pimary or recurrent tumor, the greater omentum, as well as large carcinomatous peritoneal nodules, were resected if possible. In the case of ovarian-cancer, apelvic-peritonectomy was performed if possible. Before closure of the abdominal wall, five catheters was placed in the abdomen. After completing closure of the abdominal wall,the peritoneal as filled with saline solution. This volume was circulated by a roller-pump and heated up to 46C by a heater and heat-exchanger. When the intraperitoneal temperatures exceeded 42C, the cytostatic-drugs, was added to the circulation fluid. From that point on IHCP was carried out for exactly 1-hour.

Results. We started with the IHCP at 1991. Most of the patients have a benefit. The number of the patients will present at the congress.

Conclusions. IHCP is a technique with different effects: IHCP is carried out in a compartment-free intraabdominal cavity, high local drug cocentration, hyperthermia increasis the penetration depth of cytostatica drugs into the tumor tissue, and hyperthermia-temperatures by itself acts as a cytotoxic agent.

227 Onkologierechte Strategie und funktionelle Ergebnisse – ein Widerspruch beim periampullären Karzinom?

J. Karner[1], S. Stättner[1], T. Pratschner[1], M. Klimpfinger[2], F. Sellner[1]

[1]Chirurgische Abteilung des Kaiser Franz Josef-Spitals Wien, Wien, Österreich; [2]Pathologisch-Bakteriologisches Institut des Kaiser Franz Josef-Spitals Wien, Wien, Österreich

Die Pankreaskopfresektion steht nach wie vor im Spannungsfeld von geringer Resektabilität, schlechten Langzeitergebnissen und hoher Morbidität bei akzeptabler Letalität. In den letzten 10 Jahren wurde an der Chirurgischen Abteilung des Kaiser Franz Josef-Spitals bei resezierenden Verfahren periampulärer Tumore folgende Kriterien besonders beachtet und mit einer früheren Periode verglichen:

- Lymphadenektomie unter Mitnahme des Mesoduodenums mit exakter tuschemarkierter Aufarbeitung des Präparates
- Radikalitätskriterien bezüglich eventueller pyloruserhaltender Operation
- Morbidität der Pankreasanastomose

Material und Methodik. In einer retrospektiven Analyse wird das Krankengut der letzten 10 Jahre dahingehend analysiert. Preliminäre Daten zeigen folgenden Trend:

1) Seit Einführung der erweiterten Lymphadenektomie, vor allem beim Pankreaskarzinom (Adenokarzinom) ergibt sich ein Trend zur besseren Langzeitergebnissen. Bei sorgfältiger Technik ergibt sich kein erhöhte Morbidität, Lymphorroe, etc. (Technik wird analytisch).

2) Die pyloruserhaltenden Operationen scheinen bei Patienten, die keinen Lymphknotenbefall erwarten lassen (Papillencarcinome, sekundäre Tumore), onkologisch sinnvoll, bei primärem Adenokarzinom des Pankreaskopfes ist eine ausgedehnte Lymphadenektomie jedoch nicht in vollem Umfang möglich und damit eine Einbuße an Radikalität (die Problemfälle ergeben sich erst in der definitiven Histologie) in einem nicht unwesentlichen Prozentsatz zu erwarten (Ergebnisse werden demonstriert).

3) Keiner unserer am Pankreas operierten Patienten ist an einer Komplikation der Pankreaticojejunostomie verstorben. Bei entsprechender Technik, gegebenenfalls mit zusätzlicher Ableitung des Gangsystems kann die Morbidität auf ein Minimum reduziert werden. Das Pankreas nicht zu anastomosieren ist in vielerlei Hinsicht ein Fehler und sollte in einem onkologischen Zentrum nicht vorkommen. Argumente werden dargestellt.

228 Distal pancreatectomy for left-sided pancreatic cancer – outcomes and prognostic factors

M. O. Biebl, B. Durnthaler, M. Lanthaler, D. Öfner, W. Mark, R. Margreiter, H. Nehoda

Department of General and Transplant Surgery, Medical University Innsbruck, Innsbruck, Austria

Background. Adenocarcinoma of the pancreas left of the mesenteric vein comprises approximately one third of all cases of exocrine pancreatic cancer. Surgical resection is only possible in 5–10% of cases due to metastasis or local spread, and survival rates have been reported to be inferior to patients with right-sided tumors.

Material and methods. Retrospective review of all consecutive distal pancreatectomies performed at our institution between 02/1999 and 12/2004. Data are reported as total numbers (%) or mean ± standard deviation.

Results. Seventeen patients (58.8% females) with a mean age of 63.2 ± 9.5 years underwent distal pancreatectomy (with multi-organ resection in 4 [23.5%] patients). Mean operation time was 299.7 ± 66.0 min with an overall postoperative complication rate of 29.4%. Two patients underwent reoperation for gastric leakage after simultaneous partial gastric resection (1) and metastasis in the abdominal wall (1), respectively. Mean tumor diameter was 5.1 ± 2.5 cm, with 41.2% of patients having positive lymph nodes, 23.5% having positive resection margins (5.9% R2) and 17.6% having poorly differentiated tumors. Postoperative chemotherapy was administered to 7 (41.2%) patients, and tumor recurrence occurred in 6 (35.3%) patients. Two patients died perioperatively, and after a follow-up of 21.5 ± 17.9 months, overall survival was 41.2%, being 70.6% at 1 year and 52.9% at 3 years. In this series, survival was independent from positive lypmph node (N0 vs other; $p = 0.291$) or resection (R0 vs R1) status ($p = 0.154$).

Conclusions. In this series, distal pancreatectomy shows results approximating postoperative survival reported for pancreaticoduodenectomy.

229 Surgery for gastrointestinal stromal tumors (GIST) of the stomach

G. Silberhumer[1], T. Winkler[2], M. Schindl[1], T. Birsan[1], E. Wenzel[3], G. Prager[1], F. Längle[1], J. Zacherl[1]

[1]Universitätsklinik für Chirurgie, Medizinische Universität Wien, Vienna, Austria; [2]Barmherzige Brüder/Chirurgie, Vienna, Austria; [3]LKH Feldkirch/Chirurgie, Feldkirch, Austria

Background. Gastrointestinal stromal tumors (GIST) are the main mesenchymal neoplasmas in the gastrointestinal tract (GI), but represent less than 1% of all malignant GI-tumours.

Tumour size and mitotic rate correlate with potential malignancy and frequency of recurrence.

Methods. 1998–2004 38 patients (15 female, 23 male; median age 61 ± 15.7a) underwent a gastric resection because of GIST. Follow up investigations included gastroscopy in 27, CT in 23 and endosonography in 18 patients.

Results. The mean tumour size was 5.5 ± 4.3 cm. One patient additionally suffered from synchronous liver metastasis, mesothelial infiltration and peritoneal spreading. Open atypical gastric resection of was done in 17 patients, remnant gastrectomy in 2, antrectomy in 2 and other surgical procedures in 4. Laparoscopic gastric resection was intended in 13 patients, conversion rate was 2/13 (15.4%). R-0 resection was reached in 4/38 (10.6%) patients. No perioperative deaths occurred. 3 tumours histologically were classified as malignant, one as semimalignant. All tumours smaller than 7 cm were considered benign at histology. One patient received Glivec preoperatively, another patient received additive treatment with Glivec but was switched to Taxotere due to toxicity. 3/38 tumours (7.6%) were c-kit negative. After a median follow up of 3.7 years GIST recurrence rate was 2 (5.3%) among patients with R-0 resection. Overall, 5 patients died during follow-up, only one death was caused by GIST.

Conclusions. Histologically proven complete resection is an effective treatment for gastric GIST. Laparoscopic procedures were established with adequate quality in selected patients depending on tumour size. Endosonography may enhance diagnostic accuracy during follow up.

230 Multimodale Therapie – die einzige Option bei gastrointestinalen Stromatumoren?

J. Sauer, K. Sobolewski, K. Dommisch

HELIOS Kliniken Schwerin, Schwerin, Deutschland

Grundlagen. Die Therapie der GIST hat einen Paradigmenwechsel erfahren, der von der Chirurgie zur medikamentösen „Target-Therapie“ mit Imatinib führt. Die Chirurgie wird auf eine supportive Therapie begrenzt. Um die Rolle der Chirurgie in der Behandlung dieser Tumoren zu klären, haben wir unser Krankengut durchgesehen.

Material und Methodik. An unsere Klinik wurden von 1998 bis 2005 insgesamt 26 Patienten mit einem gastrointestinalen Stromatumor behandelt. Die Daten der Patienten wurden anhand der Klinikunterlagen, der Unterlagen im Tumorzentrum und der Unterlagen der Weiterbehandler überprüft. Die Literatur (01/06) wurde mittels Medline-Studie durchgesehen.

Ergebnisse. Es handelte sich um 12 Männer und 14 Frauen im Alter von 31–79 Jahren. Bei 14% der Patienten wurde keine Operation durchgeführt, bei 54% wurde die Operation elektiv durchgeführt und bei 32% der Patienten wurde eine Notfalloperation (gastrointestinaler Blutung, Peritonitis oder Ileus) vorgenommen. In 50% der Fälle wurde der Tumor in der Notfallsituation nicht vollständig entfernt oder war in der histologischen Untersuchung randbildend. Bei 17% der elektiven Operationen war der Tumor nicht vollständig entfernbar. Bei 55% der Patienten lag ein hohes Malignitätsrisiko vor. Nur die Patienten mit nicht vollständiger Tumorentfernung und hohem Malignitätsrisiko wurden mit Imatinib-Dauertherapie bis zu einer eventuellen Progression behandelt. Tumorbedingt verstarben 33% der Patienten mit einer Imatinib-Therapie, aber keine Patienten mit alleiniger chirurgischer Therapie.

Schlussfolgerungen. Die multimodale Therapie bei gastrointestinalen Stromatumoren ist sinnvoll. Die chirurgische Therapie allein kann ausreichend sein. Ein Diktum der Imatinib-Therapie ist abzulehnen, da die Nebenwirkungen des Medikaments nicht unbeträchtlich sind. Jede unnötige Gabe dieses Medikamentes sollte auch unter dem Kostenaspekt (Jahrestherapiekosten: 20.000–99.000 Dollar) unterbleiben.

231 Multimodal therapy of gastrointestinal stromal tumors (GIST). A review of 24 patients

P. Metzger[1], C. Ausch[1], N. Hoelbling[1], V. Buxhofer-Ausch[2], M. Hofmann[3], M. Minai-Pour[4], A. Reiner-Concin[4], W. Hinterberger[2], R. Schiessel[1,3]

[1]Department of Surgery, Danube Hospital, SMZ-Ost, Vienna, Austria; [2]Department of Internal Medicine, Danube Hospital, SMZ-OST, Vienna, Austria; [3]Ludwig Boltzmann Research Institute for Surgical Oncology, Vienna, Austria; [4]Department of Pathology, Danube Hospital, SMZ-OST, Vienna, Austria

Background. Gastrointestinal stromal tumours (GIST) comprise a rare neoplasm of unpredictable malignant potential with an incidence of 4/million persons. Their management has evolved very rapidly over the last years.

Materials and methods. A case note review of 24 patients undergoing laparoscopic (2) or open (22) resection of a presumed gastric (11), small bowel (4), colonic (4), omentum (1), esophagus (1), diffuse abdominal (2) and gastric-small bowel (1) GIST was conducted. The tumours were confirmed to be nonepithelial, nonlymphomatous, nonmyogenic, and nonneurogenic, gastrointestinal neoplasms with an uncertain origin which were CD34-positive and actin- and S-100-negative. The malignant potential was estimated based on the mitotic figures and growth rates.

Results. We included 24 patients with a mean age of 69.9 years (range, 43-86 years). A presumptive diagnosis of GIST was made in 8 cases by endoscopic and radiologic appearance of the lesion. Laparoscopic resection was completed successfully in 2 patients (gastric leasion), in 22 patients open resection was completed. Immunohistochemical diagnosis in all patients was GIST, in 5 patients with malignancy, and in 4 patients with intermediate-grade malignancy. Adjuvant therapy with 400 mg/day imatinib mesylate (Glivec) was administred to 9 patients with a high risk primary tumour. As second line therapy in case of imatinib resistance, the daily dose of the drug was increased up to 800 mg by 2 patients.

Conclusions. Treatment of patients with GIST is multidisciplinary, needing strong cooperation among surgical- and medical oncologists, pathologists and imaging specialists. The complex therapy of GIST is ideally performed at specialized centres.

HT

P001 Hemi-clamshell and inverse-T-incision – improved approach for extended tumor resections

C. Aigner, S. Taghavi, G. Lang, G. Marta, E. Wolner, W. Klepetko

Department of Cardio-Thoracic Surgery, Medical University Vienna, Vienna, Austria

Background. The choice of an appropriate approach is crucial for successful resection of extended cervicothoracic and mediastinal tumors. Often a standard antero- or posterolateral thoracotomy does not provide sufficient exposure. The hemi-clamshell-approach and the newly developed inverse-T-incision might provide an alternative in such cases.

Patients and methods. From 1/2001–5/2005 14 patients underwent resection of extended mediastinal or cervicothoracic tumors via hemi-clamshell-approach (n = 11) or the inverse-T-incision (n = 3). Mean patient age was 50 ± 13 years in 4 female (28.6%) and 10 male (71.4%) patients. The hemi-clamshell-incision consists of a partial upper median sternotomy with an anterolateral thoracotomy in the 2nd–4th intercostal space. The inverse-T-incision combines a partial upper median sternotomy with a bilateral anterior thoracotomy in the 4th intercostal space. We reviewed the results achieved with these approaches.

Results. In 12 patients (85.7%) radical resection of the main tumor was achieved. In 1 case radical resection could not be accomplished due to sternal infiltration and in 1 case due to incipient pleural carcinosis. Median postoperative intubation-time was 0 hours (range 0–96), median ICU-stay 1 day (range 0–38) and median hospital-stay 10 days (range 3–42). Chest-drainages could be removed after 2 days median (range 1–23). Neither wound healing complications nor restrictive functional impairment were observed in any patient. After a mean follow-up of 15 ± 18 months 13 of 14 patients are alive. One patient died 9 months postoperatively to tumor recurrence.

Conclusions. Hemi-clamshell and inverse-T-incision provide excellent access to cervicothoracic and mediastinal tumors. No functional impairments or healing disturbances were observed. These incisions are viable options for extended tumor resections.

P002 Clinical experience with a non-pulsatile left ventricular assist device in patients with end-satge heart disease

M. Schweiger, A. Wasler, G. Prenner, M. Tripolt, M. Schwarz, K. Tscheliessnigg

Klinische Abteilung für Transplantationschirurgie, Medizinische Universität Graz, Graz, Austria

Background. We report a single-centre retrospective clinical experience with a small non-pulsatile left ventricular assist device [Incor, Berlin Heart AG].

Methods. Since January 2004 the Incor was studied in 3 male patients, 56 to 60 years of age. All patients presented with dilatative end-stage heart disease. 2 patients had contraindications for heart transplantation due to either elevated pulmonary vascular resistance [PVR] or hypereosinophlie syndrome; the third patient was already listed for heart transplantation. Implantation was elective in all patients and was performed via cannulation of the left ventricular apex and the ascending aorta.

Results. All patients are still alive; one patient underwent orthotopic heart transplantation 553 days after Incor implantation. Out of the remaining 2 patients [370 and 332 dys. after implantation] who are still under support, the patient with elevated PVR showed normalization of the high pulmonary vascular resistance. He was listed 350 days after Incor implantation for heart transplantation.

Early bleeding complications were seen in 1 patient, 1 patient with severe stroke had to be treated. Driveline infection was seen over the follow-up period in 1 patient and was controlled with oral antibiotics.

Conclusions. The Incor is a small left ventricular assist device with adverse events rates comparable of those of other LVADs. Lifetime may exceed 550 days and more.

P003 Case Report: antithymocyte globuline (rATG) and ECMO bridge as new options in the treatment of giant cell myocarditis

H. J. Ankersmit[1], R. Ullrich[2], B. Moser[1], K. Hoetzenecker[1], S. Hacker[1], P. German[2], C. Krenn[3], M. Grimm[1], E. Wolner[1], A. Zuckermann[1]

[1]Department of CT-Surgery, Medical University Vienna, Vienna, Austria; [2]Department of Pathology, Medical University Vienna, Vienna, Austria; [3]Department of Anaesthesia, Medical University Vienna, Vienna, Austria

Background. Giant Cell Myocarditis (GCM) is a rare form of autoimmune myocarditis characterized by progressive congestive heart failure. The diagnosis is based on Endomyocardial biopsy (EMB) showing macrophage derived giant cells and massiv infiltrates of lymphocytes. Treatment is based on immunosuppression with glucocorticoids, cyclosporine, azathioprin and OKT-3. Heart transplantation is another option. However, success is limited to recurrence of infiltrations.

Clinical summary. A 65-year-old man was admitted to a periphery hospital with thoracic pain, positive heart enzymes and reduced left ventricular function (LVEF 15%). The patient was treated for ACS (lysing therapy, angiography, LAD stent). Despite treatment he totally decompensated, developed malign ventricular tachycardia (Lowen IV) and was transferred to the General hospital Vienna. In this clinical scenario a fermoral veno-arterial ECMO was implanted for further diagnostical clarification, leading to the diagnosis of a GCM. Immunosuppressive therapy with cyclosporine (50 mg/d) and prednisolon (250 mg/d) was initiated. However, ventricular tachycardia did not ameliorate (max. 30x/d), so that rATG (75 mg/d) for 3 days was added to the therapy. Interestingly, cardiac fibrillation episodes abated immediately after initiation of rATG. A control biopsy one week later revealed a complete remission. ECMO could be explanted and the patient was discharged after full recovery with low dose immunosuppression.

Conclusions. This case report shows that ECMO is able to bridge a patient suffering from GCM. Furthermore ATG treatment is an additional option in the treatment of this illness. Further studies have to be performed to prove the benefits of these new therapeutic tools.

P004 Bridging to recovery or bridging to heart transplantation in fulminant myocarditis – experiences using six different support systems

N. Reiss[1], A. El-Banayosy[2], L. Arusoglu[2], R. Kärfer[2]

[1]Service de Chirurgie Thoracique et Cardiovasculaire, Paris, France; [2]Herzzentrum NRW, Bad Oeynhausen, Germany

Background. Acute fulminant myocarditis may lead to cardiogenic shock which is resistant to conventional therapy. In this situation implantation of mechanical circulatory support systems (MCSS) is the only chance to stabilize rapidly hemodynamic conditions in order to bridge the patient to recovery or to bridge to heart transplantation.

Methods. Six different support systems (Biomedicus n = 2, Abiomed n = 1, Thoratec n = 9, Medos n = 1, Novacor n = 5, CardioWest n = 4) were implanted in 22 patients (mean age 34 years). In 10 patients the system was implanted as LVAD, 8 patients received BVAD and in 4 patients a total artificial heart was installed. The mean support time was 150 days (1–560 days).

Results. 6 patients (mean age 39 years) could be weaned after a mean support time of 93 days. 9 patients (mean age 30 years) underwent successful heart transplantation after a mean support time of 287 days. 6 of 22 patients (27%) died on device. 1 patient is currently on the waiting list for heart transplantation.

Conclusions. Implantation of MCSS represents a successful therapeutical tool to reach rapid hemodynamic stabilization in fulminant myocarditis. Both, weaning in cases of recovery and successful bridging to heart transplantation are possible. Patients developing cardiogenic shock in fulminant myocarditis should be transferred to a clinic with MCSS program without delay to improve the bad prognosis.

P005 Prosthesis-patient mismatch in aortic valve surgery: variables influencing postoperative changes of left ventricular myocardial mass

S. Schweiger, I. Knez, A. Yates, A. Mircic, D. Dacar, B. Rigler

Abteilung für Herzchirurgie, Medizinische Universität Graz, Graz, Austria

Background. This prospective clinical study investigated longterm compensatory changes of LV-geometry (indexed myocardial masses and filling volumes) and hemodynamics changes after AVR with main emphasis on genetic variants of the renin-angiotensin-aldosteron-system (RAAS) and prosthetic valve area indices (projected indexed geometric [GOA_{ind}] versus effective orifice areas [EOA_{ind}]).

Methods. In a 4-years follow-up, LV-geometry was recorded by means of 3-dimensional Imatron® Electron Beam Tomography and transprosthetic velocities were measured by echocardiography at controls T0, T1, T2 and T3. A total of 87 patients with critical AS were assigned to following groups according to postoperative recovery of indexed LV-myocardial mass (LVMMind, at least 20% decrease to 84 ± 13.5 gm^{-2})

Results. Multivariate logistic regression report identified a GOA_{ind} of 1.21 cm^2m^{-2} (sensitivity 0.43 and specifity 0.82), but not an EOAind of 0.9 cm^2m^{-2} (sensitivity 0.33 and specifity 0.85), as an independent predictor. Correlation curves between GOAind/ EOA_{ind} and postoperative mean gradients at rest showed similar results. Polymorphisms of RAAS were normally distributed in RECOV/NORECOV patients.

Conclusions. 1.) $LVVM_{ind}$ is a very firm parameter to control postoperative changes in LV-function.

2.) Genetic variants of the RAAS system do not play a significant role in recovery of $LVMM_{ind}$ after AVR due to critical AS.

3.) GOA_{ind} also represents a sensitive factor for perioperative prediction of PPM.

P006 Stent grafting of the thoracic aorta – still a word of caution: chronic perforation of a thoracic stent graft mimicking a tumor of the esophagus

P. J. Oberwalder[1], S. Huber[1], A. Maier[2], F. Smolle-Jüttner[2], B. Rigler[1]

[1]Department Cardiac Surgery, Medical University Graz, Graz, Austria, [2]Department Thoracic Surgery, Medical Universtity Graz, Graz, Austria

Endovascular stent grafts have gained increasing attention as less invasive, technically feasible and safe procedure for the treatment of diseases of the descending thoracic aorta. We describe an almost fatal complication of a stent graft in a 48 year old patient.

In 1981 the pt. sustained a car accident with multiple severe injuries. Subsequently he developed a pseudo-aneurysm at his aortic isthmus region. Endovascular repair of his chronic calcified posttraumatic aortic pseudo aneurysm was performed in 1996. Further course over the next years was uneventful with complete exclusion of the pseudo-aneurysm and no signs for an endoleak. In December 2005 the pt. presented at our emergency room after several attacks of acute hemorrhagic shocks from massive hematemsis. CT and endoscopic evaluation led to tentative diagnosis of perforation of the esophagus due to a tumor. Urgent esophagectomy was initiated through a right sided thoracotomy which led to a massive bleeding due to perforation into the descending aorta. Emergency cardiopulmonary bypass was established and under deep hypothermic circulatory arrest the distal aortic arch and the descending aorta were replaced. 2 days later a second stage procedure for replacing the esophagus was carried out. The pt. was discharged ambulating on postoperative day 26.

Despite promising results stent graft perforation/migration remains a cause of extreme concern in this new exciting treatment of aortic pathology. Long term results in terms on durability of the repair and device integrity remains to be determined.

P007 Long term results of biatrial microwave ablation for treatment of atrial fibrillation

C. Aigner[1], G. Stix[2], R. Seitelberger[1], E. Wolner[1], W. Wisser[1]

[1]Department of Cardio-Thoracic Surgery, Medical University of Vienna, Vienna, Austria; [2]Department of Cardiology, Medical University of Vienna, Vienna, Austria

Background. Microwave is used as energy-source to perform electrical ablation of foci potentially maintaining or triggering atrial fibrillation. Whether atrial fibrillation can be con-

verted to sinus-rhythm in the early postoperative period does not necessarily reflect long-term outcome.

Patients and methods. 28 consecutive patients (age 64 ± 11 years) with established continuous atrial fibrillation for 73 ± 114 (range 6–384) months underwent a biatrial Maze-procedure following the Cox-III-concept from 1/2001–12/2002. AFx-Lynx and Flex4 were used as ablation-devices. Additional procedures performed were mitral-valve-replacement ± tricuspid-valve-reconstruction (n = 13), aortic-valve-replacement (n = 6), mitral-valve-reconstruction ± tricuspid-valve-reconstruction (n = 4), double-valve-replacement (n = 3) and CABG (n = 2).

Results. Median intubation-time was 14.5 hours, ICU-stay 1 day and hospital-stay 13 days. 1 patient died due to liver-failure. Preoperative mean diameter of the LA was 69.3 ± 10.1 mm and 66.8 ± 8.7 mm of the RA. Most recent mean diameter of the LA was 64.3 ± 14.3 mm and 59.7 ± 8.9 mm of the RA. After a follow-up of 40 ± 7 (range 27–48) months freedom from atrial fibrillation was 82.1%. 3 patients initially converted to sinus-rhythm, however switched back after 3 months (n = 1) and 12 months (n = 2) respectively. In 1 patient sinus-rhythm was re-established 3 months and in 1 patient 12 months postoperatively. 4 patients (14.3%) required a pacemaker in the early postoperative period (sick-sinus-syndrome n = 2, AV-block n = 2) and 4 patients later than 1 year postoperatively.

Conclusions. Microwave ablation in atrial fibrillation provides acceptable conversion rates to sinus-rhythm with stable long-term results, even in patients with long established continuous atrial fibrillation. Up to one year postoperatively conversions to sinus-rhythm or back to atrial fibrillation are observed, thereafter conversions to either side are unlikely.

P008 Improved survival of ECMO-assisted rewarming in the treatment of acidential hypothermia

A. Weißenbacher[1], E. Ruttmann[1], L. C. Müller[1], W. Rabl[2], B. Schwarz[3], P. Mair[3], G. Laufer[1], H. Antretter[1]

[1]Department of Cardiac Surgery, Medical University of Innsbruck, Innsbruck, Austria; [2]Department of Forensic Medicine, Medical University of Innsbruck, Innsbruck, Austria; [3]Department of Anesthesiology and Intensive Care Medicine, Innsbruck, Austria

Background. Despite introduction of extracorporeal rewarming in accidental hypothermia, survival of patients is still very poor. Aim of this present study was to evaluate different extracorporeal resuscitation techniques in hypothermia-induced circulatory arrest.

Material and methods. A consecutive series of 57 patients with hypothermia-induced cardio-circulatory arrest, who were admitted to the Medical University Innsbruck, were analysed retrospectively. Thirty-four patients (59.6%) were resuscitated by extracorporeal circulation (ECC) and 23 patients (40.3%) by extracorporeal membrane oxygenation (ECMO). Thirty patients (52.6%) had asystole, 24 (42.1%) ventricular fibrillation and 3 (5.3%) had extreme bradicardia. Reasons for hypothermia were avalanche in 22 patients (38.6%), near-drowning in 21 (36.8%), exposure to cold in 8 (14.1%) und crevasse in 6 patients (10.5%).

Results. Mean body core temperature at admission was 24.6 ± 2.89°C in the ECC group and 24.5 ± 4.9°C in the ECMO group (p = 0.86), mean burying-/submersion time was 94 ± 85 min in the ECC and 82 ± 140 min in the ECMO group (p = 0.70). A sinus rhythm could be established in 17 patients in the ECC- (50%) and in 14 patients of the ECMO group (61%) (p = 0.59). Weaning from ECC or ECMO was possible in 17 ECC patients (50%) and in 13 ECMO-patients (57%) (p = 0.79). A total of 3 ECC patients (8.8%) and 8 ECMO-patients (34.8%) survived hypothermia in the long term follow-up (p = 0.02).

Conclusions. Beyond initial reperfusion period, cardio-circulatory support by ECMO enables the treatment of initial multi-organ-failure and severe pulmonary edema after resuscitation. Therefore, ECMO-assisted resuscitation significantly improves survival in hypothermia patients.

P009 Characterization of highly proliferative endothelial progenitor cells isolated from mediastinal adipose tissue

M. Poteser[1], A. E. Yates[2], H. Maechler[2], A. Graziani[1], K. Groschner[1]

[1]Institute of Pharmaceutical Sciences, Pharmacology and Toxicology, Graz, Austria; [2]Cardiac Surgery, Medical University of Graz, Graz, Austria

Background. Adipose stroma contains stem- and progenitor cells that are able to undergo multilinage differentiation and appear as a potential source of cells suitable for regenerative medicine. These adipose tissue-derived stem cells are so far poorly characterized, and the mechanisms involved in proliferation and differentiation of these cells are elusive. In this study, we tested cell fractions from mediastinal adipose stroma for their potential to differentiate into mature endothelial cells.

Methods. Stromal cells from retrosternal fat pads were obtained by enzymatic digestion. Magnetic sorting was employed to purify fractions of cells displaying expression of specific surface markers. Cells were cultured on fibronectin-coated plates in M199 medium supplemented with VEGF, bFGF and IGF-I, and characterized by RT-PCR and immunocytochemistry.

Results. We isolated a CD34+ cell population that expanded rapidly in VEGF containing medium, acquiring an endothelial-like phenotype within 8 days of culture as evidenced by expression of von Willebrand factor, VE-cadherin and eNOS. In addition, the generated endothelial phenotype included expression of the typical endothelial Ca^{2+} signalling proteins TRPC3 and TRPC4 as well as a potential to form ordered, tube-like structures in semi-solid media. Notably, the TRPC3/TRPC4 expression ratio was higher in the proliferating endothelial progenitors as compared to mature endothelial cells.

Conclusions. Our results demonstrate that human retrosternal fat hosts a significant amount of endothelial progenitor cells with properties reminiscent of the mononuclear endothelial progenitors isolated from peripheral blood, and suggest retrosternal fat as a potential source of cells suitable for therapeutic angiogenesis.

Supported by the FWF.

P010 Highly efficient virus-mediated gene transfer to human veingrafts via intraluminal pressure delivery

O. Y. Bernecker, R. Stigler, S. Semsroth, G. Laufer, J. Bonatti

Medizinische Universität Innsbruck, Innsbruck, Austria

Background. Long term patency rates for coronary artery bypass grafting (CABG) using autologous saphenous vein are poor. Effective and proven pharmacologic interventions to prolong veingraft patency are lacking. Gene therapy seems well suited for the prevention or postponement of veingraft failure. However, a major obstacle in gene transfer to human veingrafts is low transfection efficiency due to age, preexisting veinous disease, and endothelial barrier.

Material and methods. 26 intact human saphenous veins (age 68 ± 7) were cut into rings 15 mm in length. A small piece of each vein was tested for endothelial viability with trypan blue. Individual vein rings were endoluminally incubated with adenoviral vectors expressing a reporter gene (Ad.CMV.lacZ/GFP, 1x10E11 pfu/mL) with variable pressures. Veinsegments were cultured for 7days after transfection and harvested for cryopreservation. Transfection efficiency was evaluated by X-gal-staining and GFP-Western Blot; endothelial integrity and neointima-hyperplasia were evaluated by CD31- and Elastica Van-Gieson-staining.

Results. Veins which underwent gene transfer without pressure showed low transfection efficiency (12% ± 7). In contrast, veins wich were pressure-transfected with either 100 or 150 mmHg showed high transfection efficiency throughout the vessel wall (55% ± 13 and 91 ± 7% respectively, $p < 0.01$). However, CD31 staining revealed a significant loss of endothelium in high-pressure groups, favouring a maxiumum of 75–100 mmHg during transfection.

Conclusions. We here show for the first time that viral transfection using carefully regulated supraphysiological endoluminal pressure greatly enhances transfection efficiency in human veingrafts. Establishing a safe and efficient delivery-method for human cardiovascular gene therapy applications is a crucial step in translation from pre-clinical to clinical gene therapy.

P011 Three-years follow-up evaluation of the mechanical aortic connector device for proximal venous anastomosis

P. Bergmann[1], S. Huber[1], K. Meszaros[1], P. Oberwalder[1], H. Mächler[1], G. Schaffler[2], R. Rienmüller[2], B. Rigler[1]

[1]Department for Cardiac Surgery, Graz, Austria; [2]Department for Radiology, Medical University of Graz, Graz, Austria

Background. More than 40,000 devices for proximal venous aortic connection were implanted worldwide. Short term follow up studies concerning the patency rate of these devices are discussed controversially. Long-term follow up studies are still missing (so far, the longest follow up period has been 12 months). The aim of our study was to evaluate (1) the patency rate of this device in a longer time period and (2) to analyse risk factors for graft occlusion.

Material and methods. Between November 2000 and July 2003, 76 Symmetry™ Aortic Connectors were implanted in 42 pts (CABG and CABG+AVR). Patients underwent a clinically examination and questionary. Additionally, a cardiac CT scan was done using 64 slice CT (Siemens Sensation 64 Cardiac). Bypass grafts were classified as patent or occluded.

Results. From a total of 44 mechanical connectors studied, 24 were occluded, 20 were patent. All mammary artery bypass grafts which were anastomosed in conventional technique were patent. Mean follow-up was 41 ± 10 months (18–52). Gender, age, left-main stenosis, hyperlipidemia, hypertension, renal insufficiency, target vessel, stenosis of the target vessel, diameter of the target vessel, type of surgical intervention, diabetes, LVF, postoperative anticoagulation regime and the connector size showed no significant influence on the bypass-graft patency ($p > 0.05$). The bypass graft flow was recognized to be the only risk factor for bypass graft occlusion ($p = 0.02$).

Conclusions. On the basis of our observations, the use of the connector was abandoned at our institution.

P012 Chirurgische Management eines 7.000 g schweren GI-Liposarkoms

F. Tomaselli, R. Függer

Chirurgische Abteilung, Krankenhaus der Elisabehinen, Linz, Österreich

Wir berichten über die einzeitige, thorako-abdominelle operative Resektion eines 7.000 g schweren GI Liposarkoms.

Eine 49-jährige Patientin wurde mit Dyspnoe an unserer pulmologischen Abteilung stationär aufgenommen. Die radiologische Diagnostik (Thoraxröntgen, thorako-abdominelles CT) zeigt eine inhomogene Tumorformation beginnend im thorakalen Apex links reichend bis in das linke Becken, inklusive inkomplette Verdrängung der linken Lunge, Infiltration des linken Zwerchfells wie komplette Einscheidung der linken Niere wie Pankreas – cauda.

Die ultraschallgezielte diagnostische Biopsie ergibt in der immunhistochemischen Aufarbeitung ein GI-Liposarkom.

Wir führten die einzeitige, thorako-abdominelle (mediane Laparotomie, Sternotomie) R0-Resektion des Tumors inklusive Zwerchfellresektion, Splenektomie, Pankreaslinksresektion wie Nierenentfernung links sowie anschließende Zwerchfellrekonstruktion (Goretexpatch).

Der postoperative stationäre Verlauf gestaltete sich komplikationslos. Die langwierige definitive histologische Aufarbeitung zeigt eine vollständige R0-Resektion, sodass eine weitere onkologische Therapie nicht indiziert ist.

GI-Liposarkome in diesem Ausmaß stellen eine Rarität dar. Es ist jedoch nach ausführlicher präoperativer Planung sowie erweiterter thorako-abdomineller Exploration eine sichere multiviszerale Tumorresektion sinnvoll durchführbar.

P013 Erfahrungen mit der endoskopischen Platzierung linksventrikulärer epikardialer Elektroden zur biventrikulären Stimulierung

T. Schachner, N. Bonaros, A. Oehlinger, E. Ruetzler, G. Laufer, J. Bonatti

Medizinische Universität Innsbruck, Innsbruck, Austria

Background. Epicardial left ventricular lead placement for biventricular pacing is necessary if endocardial lead place-

ment is impossible or if a postintervntional dislocation occurs. The classical approach is via left minithoracotomy.

Methods. 6 patients (aged 68 [40–74] years, 4 male) underwent endoscopic epicardial lead placement using the Da Vinci telemanipulator via a left sided thoracic approach (1 camera port, 2 working ports). The indications for operation were dilative cardiomyopathy in 3, and ischemic cardiomyopathy in 3 patients with a LVEF of 26% (20–30). The NYHA stage was 3 in all patients.

Results. Endoscopic left ventricular lead placement was feasible in all patients, with a median total operative time of 154 (102–218) minutes. The QRS duration decreased from 210 ms (170–210) preoperatively to 130 ms (110–160) with biventricular pacing. Due to stabilisation of the ventricle during insertion of the epicardial lead a superficial epicardial lesion occured in 3 patients which stopped after compression for some minutes. No hospital mortality occured in this series.

Conclusions. Endoscopic epicardial left ventricular lead placement is feasible and an attractive alternative to an approach via minithoracotomy.

P014 Successful endovascular stent-graft treatment of an acute type A dissection

D. Zimpfer[1], M. Czerny[1], R. Gottardi[1], M. Schoder[2], J. Lammer[2], E. Wolner[1], M. Grimm[1]

[1]Department of Cardiothoracic Surgery, Medical University of Vienna, Vienna, Austria; [2]Department of Interventional Radiology, Medical University of Vienna, Vienna, Austria

Background. A 84 year old male was submitted with an acute type A dissection developing paraplegia prior to admission. Due to the advanced age as well as due to substantial comorbidities, a conventional surgical approach was deemed not suitable. Therefore, an alternative approach was chosen.

Methods. In general anesthesia, a custom made covered stent (Jotec, Germany) 46/85 mm was advanced transfemorally into the ascending aorta. Before deploying the stent-graft, the patient was paced up to 180 bpm using a temporary pacemaker lead in order to decrease cardiac output. Consecutively, the stent-graft was deployed.

Results. Endovascular stent-graft placement was performed successfully. The stent-graft was deployed immediately cranially to the coronary arteries at the sinu-tubular junction (TEE controlled) and immediately caudally to the brachiocephalic trunk. Completion angiography revealed regular perfusion of the coronary arteries, complete exclusion of the dissection as well as regular perfusion of the supraaortic vessels. Aortic valve competence was confirmed by TEE. The patient was discharged seven days after the procedure.

Conclusions. Endovascular treatment of type A dissections may represent a promising option for patients not suitable for conventional repair by avoiding extracorporeal circulation and deep hypothermic circulatory arrest.

P015 Treatment of chronic aortic dissection with a new designed hybridprosthesis

M. Gorlitzer[1], W. Wislocki[2], R. Moidl[1], J. Meinhart[1], P. Poslussny[1], N. Fiegl[1], M. Grabenwöger[1]

[1]Department of Cardiovascular Surgery, Hospital Hietzing, Vienna, Austria; [2]Department of Anesthesiology, Hospital Hietzing, Vienna, Austria

Background. This report describes the use of a new combined surgical and endovascular treatment for chronic type A aortic dissection. The aim of this approach is to treat in one session the ascending aorta, aortic arch and two third of the descending aorta.

Materials and methods. A patient with marfan syndrome underwent replacement of the proximal part of ascending aorta because after acute type A dissection. One year later the patient developed an aneurysm of sinus valsalva and severe aortic regurgitation. Therefore a Cabrol procedure was performed. Reoperation because of symptomatic chronic type A aortic dissection of the distal ascending aorta, aortic arch and descending aorta with a maximum diameter of 7 cm was indicated. Intraoperative antegrade stenting of the descending aorta combined with distal ascending aorta and aortic arch repair was performed using the E-vita open endoluminal stentgraft. The stentgraft was deployed under direct vision into the true lumen distally to the origin of the left subclavian artery. The supraortic branches were reimplanted en bloc into the Dacron prosthesis. The proximal anastomosis was performed to the preexisting short ascending aortic prosthesis.

Results. The postoperative course was uneventful and the patient could be discharged after 14 days after operation. Postoperative CT scan revealed a completely thrombosed false lumen 9 days after operation in the stented area of the descending aorta.

Conclusions. This report shows that a combined surgical and endovascular aproach of chronic type A aortic dissection is a feasible option and extends aortic repair without increase of risk.

Oberer Verdauungstrakt

P016 Expression der Transketolase like-1 beim Magenkarzinom

W. I. Staiger[1], J. F. Coy[2], R. Grobholz[3], R. Hofheinz[4], N. Lukan[1], S. Post[1], P. Schubert[2], F. Willeke[1]

[1]Chirurgische Klinik, Mannheim, Deutschland; [2]R-Biopharm AG, Darmstadt, Deutschland; [3]Pathologisches Institut, Mannheim, Deutschland; [4]Onkologische Klinik, Mannheim, Deutschland

Grundlagen. Transketolasen spielen im nichtoxidativen Pentosephosphatstoffwechsel bei der Synthese von Nukleotiden in Tumorzellen eine entscheidende Rolle. Über den Abbau von Glukose können vermehrt Ribonukleinsäuren bereitgestellt werden, was eine erhöhte Proliferationsrate ermöglicht. Im Tiermodell wurde gezeigt, dass durch Hemmung der Trans-

ketolaseenzymaktivität mit Oxythiamin Tumorwachstum signifikant reduziert werden kann. Bei der systematischen Suche nach neuen Markern wurde in eigenen Untersuchungen mit Hilfe der Real-time-PCR-Technologie und Immunhistochemie eine starke Überexpression eines Transketolase-homologen Genes (TKT-like-1) in verschiedenen Tumorentitäten festgestellt. Die Wertigkeit der TKT-like-1 beim Magenkarzinoms und seine Rolle als Prognose- und Differenzierungsmarker wurde in dieser Studie untersucht.

Methodik. Es erfolgte die Analyse der TKT-like-1-Genexpression aus Tumor- und Normalgewebe von 65 Patienten mit Magenkarzinom mit Hilfe der Real-time-PCR-Technologie. Anschließend wurde die Expression der TKT-like-1 durch einen in eigenen Vorarbeiten klonierten monoklonalen Antikörpers auf Proteinebene validiert.

Ergebnisse. Auf mRNA-Ebene war TKL-like-1 bei 7 Patienten (10,8%) deutlich überexprimiert. Die Immunhistochemie zeigt bei 24 Patienten (36,9%) eine zytoplasmatische Reaktion der Tumorzellen und in einigen niedrig differenzierten Tumoren eine starke nukleäre Anfärbung. Normalgewebe zeigt eine schwach-irreguläre zytoplasmatische Reaktion. Die Immunhistochemie zeigt eine Abhängigkeit der TKT-like-1 Expression vom männlichen Geschlecht ($p = 0,01$) und vom niedrigen Differenzierungsgrad ($p = 0,04$) der Tumorzellen beobachten.

Schlussfolgerungen. Die Daten zeigen, dass bei einem relevanten Anteil der Patienten eine Überexpression von TKT-like-1 vorliegt. Dies ist klinisch interessant, da über eine medikamentöse Hemmung des TKT-like ein Angriffspunkt für eine pharmakologische Krebstherapie definiert werden könnte. Allerdings muss der immunhistochemische Nachweis weiter etabliert und an größeren Tumorkollektiven validiert werden.

P017 The role of surgery in the management of bleeding gastroduodenal ulcers in the 21st century

F. Mayer, J. Holzinger, I. Winklhofer, P. Sungler, P. M. Heinerman, H. J. Stein

PMU Paracelsus Medizinische Privatuniversität, Salzburg, Austria

Background. Since the introduction of interventional-endoscopic techniques for controlling bleeding lesions in the GI-tract, the outcome of patients with bleeding gastroduodenal ulcers has been improved significantly. Nevertheless, surgeons are still confronted with indications for an operative intervention, such as early elective or emergency cases of rebleeding or endoscopically not treatable bleeding situations. We assessed the place of surgery in the management of bleeding gastroduodenal ulcers seen at a well experienced interventional endoscopic unit.

Patients and methods. Within the last 24 months 98 patients (m/f-ration 1.4 with medium age of 64a) were admitted to our department with an acute upper-GI-bleeding due to gastroduodenal ulcer and were included in this analysis. Emergency endoscopy was performed immediately by the surgical endoscopist. Acute GI-bleeding could be controlled in 100% during initial endoscopy.

The rate of rebleeding was 18.4% (in median 2.2 days after initial endoscopic control of bleeding). High-risk lesions with significantly higher rebleeding rates are shown in the table.

6 patients (6.1%) needed to be operated on – 3 with an "early elective indication" after a 3rd rebleeding, 2 with tumorous lesions of the stomach, 1 as emergency case of an endoscopical not controllable re-bleeding.

Overall-mortality was 1%, morbidity was found in 3.1%.

Table.

	Localisation, n (%),	rebleeding rate (%)
Bulbus duod. (posterior site)	9 (9.2%)	4 (44.4%)
Bulbus duod. (anterior site)	32 (24.5%)	3 (12.5%)
Bulbus duod. (inferior site)	7 (7.14%)	4 (57.14%)
Pylorus	3 (3.06%)	1 (33.3%)
Antrum (Angulus)	11 (11.2%)	2 (18.2%)

Conclusions. Rebleeding after initial endoscopic hemostasis remains a significant problem of endoscopic therapy for bleeding ulcers. For such patients surgical therapy is a valid option.

P018 Esophageal and gastric complications in liver transplant recipients

H. Bonatti, J. Stauffer, S. Achem, R. Hinder, K. DeVault, A. Sanchez, C. Jean-Pierre, R. C. Dickson, J. Aranda-Michel

Mayo Clinic, Jacksonville, United States

Background. End stage liver disease is associated with portal hypertension but also other esophageal and gastric pathology. Some immunosuppressive agents cause upper gastrointestinal diseases and many opportunistic pathogens can manifest in the esophagus and stomach.

Patients and methods. Between 1998 and 2001, 467 consecutive LTs in 402 individuals were performed at our center. Immunosuppression consisted of Tacrolimus, MMF and steroids. CMV prophylaxis of oral Gancyclovir for CMV mismatch transplants. Proton pump inhibitors (PPIs) were maintained as per protocol for four months.

Results. Twelve patients had gastric interventions preLT including open Nissen fundoplication (1), Angel-Chick prosthesis (1), Billroth II resections (3), Whipple procedures (3), gastric banding (1), gastric bypass (1), other bariatric procedures (2). Two Whipple procedures were performed in combination with LT, the Angel-Chick prosthesis had migrated into stomach and liver and had to be removed. During a median follow up of six years, 53 patients developed esophageal/gastric complications. This included peptic ulcer (1), MMF associated ulcer (3), CMV ulcer (2). Five patients developed CMV gastritis/esophagitis. The 39 cases of esophagitis were caused by Candida albicans (9), HSV (1) and in 29 cases this was attributed to GERD. There were four cases of complicated GERD including two hemorrhages and two strictures, both required balloon dilation. Three significant upper GI bleeds were diagnosed (one being fatal). 55% of patients were maintained long-term on PPIs.

Conclusions. The frequency of gastric and esophageal complications after liver transplantation is high. Esophagitis

can be associated with GERD or opportunistic infectious agents.

P019 Selective ligation of the left gastric artery to allow optimized perfusion of the gastric remnant in the rat

C. Mittermair[1], A. Klaus[1], S. Scheidl[1], M. Maglione[1], G. Brandacher[1], R. Margreiter[1], N. Nguyen[2], H. Weiss[1]

[1]Department of General, Thoracic and Transplant Surgery, Innsbruck, Austria; [2]Department of Surgery, Irvine, CA, USA

Background. In patients with distal esophageal cancer impairment of gastric tube perfusion after partial gastric resection may raise the risk for anastomotic leakage. Modern therapeutic strategies for esophageal cancer include first step staging laparoscopy to identify lymph node involvement prior to esophageal resection. This animal study was conducted to evaluate the feasibility of selective ligation of the left gastric artery and regulation of the gastric perfusion in a rat model.

Material and methods. Ligation of the left gastric artery was performed in Lewis rats (n = 10). Sham operated animals (n = 5) served as controls. Microcirculation was assessed by intravital fluorescence microscopy after a postoperative period of 4 and 8 weeks. Microcirculatory changes were analysed by means of functional capillary density (FCD) and capillary diameters (CD). H&E staining was done to evaluate histomorphological changes of the gastric wall.

Results. None of the animals developed gastric necrosis. All sham operated animals showed regular vascular microcirculation as well as histomorphology. After selective ligation both FCD and CD were sigificantly reduced in the stomach adjacent to the ligation site. In contrast there was a trend towards pronounced microcirculation at the greater gastric curve.

Conclusions. The described technique offers a possible tool to improve gastric remnant perfusion.

Infektiologie/Inflammation

P020 Toxin-producing methicillin-susceptible *Staphylococcus aureus* – a potential source of new emerging MRSA clones

B. Koenig[1], H. Lippert[2], W. Koenig[1], F. Meyer[2]

[1]Department of Microbiology, University Hospital, Magdeburg, Germany; [2]Department of Surgery, University Hospital, Magdeburg, Germany

Recently, we demonstrated rapid dissemination of different methicillin-resistant *Staphylococcus aureus* (MRSA) clones at the University Hospital of Magdeburg including the intensive care units. The majority of them harboured the readily transmissible mec cassette type IV. Thus, theoretically methicillin-susceptible *Staphylococcus aureus* (MSSA) might capture the *mec*A gene from circulating MRSA or MRSA strains may catch mobile toxin genes from MSSA. Therefore, we characterized MSSA strains circulating at the University Hospital in Magdeburg. Among a total of 84 MSSA strains under study, about 40 % possessed the *tst* (toxic shock syndrome toxin) gene and up to four additional enterotoxin genes. *Tst*-positive MSSA strains were predominantly found at the Department of Surgery and belonged to all known *agr* groups (I-IV), to 14 different *spa* types (t008/ t012/ t015/ t019/ t024/ t056/ t065/ t127/ t133/ t162/ t271/ t287/ t399/ t400) and were classified by Multi-Locus-Sequence-Typing (MLST) as ST1/ ST8/ ST30/ ST39/ ST45/ ST101/ ST121/ ST395 and ST426. In contrast, simultaneously circulating MRSA (n = 24) harboured in general two or three genes of the enterotoxin gene cluster and the *tst*-positive MRSA belonged to the well known epidemic strains ST22, ST45, ST228 and were classified as *spa* types t001, t028 and t032. From our results, one may conclude that the pool of circulating MSSA is an important parameter with regard to the epidemiology of hospital- and community-aquired MRSA and their potential virulence.

P021 Detection of methicillin-resistant *Staphylococcus aureus* directly from swab specimens by a real-time PCR assay: a prospective study comparing the IDI-MRSA assay with culture-based method

B. Koenig[1], W. Koenig[1], H. Lippert[2], F. Meyer[2]

[1]Department of Microbiology, University Hospital, Magdeburg, Germany; [2]Department of Surgery, University Hospital, Magdeburg, Germany

Background. Reliable and rapid detection of MRSA carriage is necessary for the prompt isolation of colonized patients and epidemiologic investigation.

Methods. We introduced the FDA-proved IDI-MRSA® amplification assay (real-time PCR) into routine diagnostic, analyzed directly swabs of different sites and compared it with direct plating on mannitol salt agar plates. 3.232 samples from 737 patients at the University Hospital of Magdeburg and the Regional Hospital of Flechtingen were examined.

Results. Among the 3.232 swabs, 221 (6.84%) / 2.852 (87.65%) samples were tested positive / negative by both methods, the IDI-MRSA and the direct plating. 92 (2.85%) specimens were positive for MRSA only by the IDI-MRSA; 58 (1.8%) were positive for MRSA only by direct plating. 31 samples (1.15%) were unresolved by the IDI-MRSA due to PCR inhibition. Among the tested individuals, 26 were detected as MRSA carriers only by the IDI-MRSA while 3 subjects were tested positive for MRSA only by culture. Assuming 100 % correct results by direct plating, the sensitivity / specificity of the IDI-MRSA could be calculated as 84.4% / 96.1% for nasal swabs; 78.7% / 96.9% for all swabs under study, and 94.8% / 99.5% when focussed on the single individuals.

Conclusions. The IDI-MRSA™ assay is a sensitive and specific test for the MRSA detection of MRSA from a swab specimen with no need for an initial culture; it detects MRSA directly from clinical specimens in less than two hours a time saving of almost 46 hours by comparison with culture-based methods.

P022 Leber-Echinokokkose: Wertigkeit der verschiedenen Operationsverfahren

T. P. Kratt, R. Kosieck, R. Viebahn, A. Königsrainer

Chirurgische Universitätsklinik, Tübingen, Deutschland

Grundlagen. Kann eine weniger invasive Methode (Zystenentdachung – Hydatektomie ohne / mit Netzplombierung) im Gegensatz zur Perizystektomie / Leberteilresektion bessere Resultate bezüglich Komplikations- und Rezidivrate erzielen?

Material und Methodik. Retrospektive Untersuchung an 63 Patienten mit einer Echinokokkose im Verlauf von 12 Jahren (49 Fälle = 78% mit E. granulosus und 14 Fälle = 22% mit E. multilocularis).

Ergebnisse. Mittleres Alter bei Erst-Diagnosestellung: 41 Jahre (Range 12–73 Jahre).

Die Nachbeobachtungszeit lag bei 14,2 Jahren (Range 19–324 Monate).

Operationen: 54 von 63 Patienten wurden operiert:

Zystenentdachung/Hydatektomie 64% (n = 37), Perizystektomie / Zystenexzision 15% (n = 9), Leberteilresektion 21% (n = 12 einschl. 3 Fälle mit Hemihepatektomie rechts).

Nach Zystenentdachung bzw. Perizystektomie wurde in 17 Fällen (37%) zusätzlich eine Netzplombe eingelegt (14× nach Zystenentdachung; 3× nach Perizystektomie).

Komplikationen: Spezifische Komplikationen 20% (n = 11): davon Nachblutungen: 2 Fälle – ein Fall mit Resektionserweiterung i.S.e. Hemihepatektomie rechts; Abszeß: 2 Fälle – interventionell jeweils erfolgreich behandelt; Galleleckage: 2 Fälle.

Ohne Netzplombe kam es postoperativ in 3 Fällen zu schwerwiegenden Komplikationen (revisionspflichtige Nachblutung, Abszeß, Gallengangsleckage); nach Netzplombierung keine schwerwiegenden Komplikationen.

Langzeitverlauf: 4 Patienten mit Leber-Rezidiv: 2 Patienten mit lokalem Rezidiv ohne stattgehabte Netzplombierung; 2 Patienten mit Rezidiv in nicht voroperiertem Lebersegment.

Morbidität/Letalität: Fünf Patienten (7,9%) sind verstorben, davon 2 Patienten im Multiorganversagen bei fortgeschrittener Echinokokkose (Letalitätsrate 3,2%). Die Operationsletalität lag bei Null.

Schlussfolgerungen. Die Zysten-Entdachung/Hydatektomie bei Leber-Echinokokkose erscheint gegenüber einer Leberteilresektion als ein weniger komplikationsträchtiges Operationsverfahren.

Eine zusätzlich vorgenommene Netzplombierung kann sowohl Komplikations- wie auch Rezidivrate noch günstiger beeinflussen.

P023 Surgical treatment of hepatic infections with Echinococcus granulosus

A. Pentsch

Kantonsspital, St. Gallen, Switzerland

Background. Echinococcosis is a worldwide zoonosis in the temperate and arctic areas of northern hemisphere. Cystic Echinococcosis (CE) is caused by larval stages of the cestode Echinococcus granulosus, alveolar Echinococcosis (AE) by Echinococcosis multilocularis. The liver is the organ most frequently infected by hydatid disease. The mortality of the disease exceeds 95% in untreated or inadequately treated patients. Surgery, interventional procedures and chemotherapy are the therapeutic options.

Methods. We retrospectively analysed a series of 35 consecutive patients (23 women, 12 men, median age 35 (SD ± 13a), which were operated for abdominal hydatid disease between 1991 and 2004. 25 patients were operated for an hepatic cystic and 10 patients for a hepatic alveolar echinococcosis.

Results. We performed pericystectomy in 14, atypical liver resection in 11 and right hemihepatectomy in 10 cases. The median follow up was 7.6 years. Recurrent disease was recognised in 2 cases (5.7%), the postoperative morbidity was 25.7%, mortality was 2.8% (1 patient died by biventricular heart-failure on the 5th postoperative day)

There was a relevant higher morbidity for hemihepatectomy than for pericystectomy and atypical liver resection.

Conclusions. The long term results in disease control by combination of surgical treatment and anthelmintic therapy are very satisfying. The procedure of choice should be smallest possible operation-method. Less radical procedures benefit in a shorter hospital stay and show a lower morbidity.

P024 Inhibitory effect of various non-antibiotic substances on *Helicobacter pylori* growth *in vitro*

R. Krausse[1], F. Meyer[2]

[1]Department of Microbiology, University Hospital, Kiel, Germany; [2]Department of Surgery, University Hospital, Magdeburg, Germany

Background. Previous studies have reported on the inhibition of *H. pylori* by antioxidant, certain vitamines and metals.

The aim was to test various non-antibiotics substances such as D-alpha-Tocopherol Vitamine E®), the solution of a trace metal element complex (Inzolen®), the selective COX-2 inhibitor Meloxicam (Mobec®), the Lactic acid in sour milk concentrate (Lactisol®) and a novel prostaglandin derivative Alprostadil (Prostavasin®) for their *in-vitro* inhibitory activity toward two *H. pylori* strains (ATCC49503&one clinical isolate).

Methods. The inhibitory effect of the compounds on *H. pylori* growth (10^7cells/ml) was analyzed in brain heart infusion broth supplemented with serum&yeast extract, and different concentrations of: Vitamine E®18.75,35.7&75.0 mg/ml; Inzolen®0.25,0.5&1.0 ml; Mobec®1.9,3.8&7.5 mg/ml; Lactisol® 25,50&100 mg/ml; Prostavasin®0.1,0.2&0.4 µg/ml. The anti-helicobacterial activity was detected at different time intervals by 0,24,48&72h of microerophilic incubation (37°C).

Results. Prostavasin® had the best antibacterial activity on both *H. pylori* strains. By a lower concentration of 0.1 µg/ml no growth was seen after 48 h. Vitamin E® inhibited the bacteria growth after 24 h of incubation. The inhibitory effect of Inzolen® was strain-&concentration-dependent; while the reference strain showed no growth after 48 h, a significant lower bacteria count and no growth after 24&48 h, respectively, was detected by the isolate using the higher concentration of 3.8 mg/ml. By Mobec®, a decrease of bacteria count and no growth was seen after 24&48 h, respectively. Lactisol® exhibited an immediate inhibitory effect by the higher concentrations (50&100 mg/ml) while no growth changes was detected by 25 mg/ml after 72 h.

Conclusions. The inhibitory impact of the tested non-antibiotics compounds on the *in-vitro* growth of *H. pylori* suggests some beneficial effects on the deleterious consequences of the infection with this bacterium.

P025 Activation of Ornithine Decarboxylase by Cyclooxygenase-2 in *Helicobacter Pylori*-Stimulated Macrophages: A Mechanism for Dysregulation of Innate Immune Response

A. Scholz[1], F. Bussiere[2], F. Meyer[1], K. T. Wilson[2]

[1]Department of Surgery, University Hospital, Magdeburg, Germany; [2]GI Research Division, Vanderbilt University, Nashville, TN, USA

Background. Responding to *H. pylori*(Hp)-stimulation: 1) ODC is upregulated in macrophages, producing polyamines that dysregulate host-innate immune responses by inhibiting antimicrobial NO-production & inducing apoptosis; & 2) COX-2-activation regulates Th1-responses by PGE_2-generation & its 2nd messenger cyclic-AMP(cAMP). Since cAMP can mediate ODC-activation, we determined the role of COX-2, PGE_2 & cAMP in the ODC-induction by Hp.

Methods. HpSS1-bacteria/lysates&recombinant urease were used to stimulate RAW264.7-macrophages in presence/absence of: PGE_2 (1 μM); cell-permeable cAMP-analogue (8-bromo-cAMP[0.1mM]); COX-2-specific inhibitors NS-398 (1 μM) & DFU (1 μM); & anti-PGE_2-Ab2B5 (135 μg/ml). A-264bp-minimal ODC-promoter was used for luciferase-reporter-assays, & ODC-mRNA assessed by real-time-PCR, protein by Western-blotting, & enzyme-activity by conversion of ^{14}C-L-ornithine to $^{14}CO_2$. Electromobility-shift-assay (EMSA) was performed using as a DNA-probe the ODC-promoter-sequence from –264 to –35bp, which contains the cAMP-response-element (CRE)-binding site from –41 to –49bp.

Results. Hp-preparations induced 10-fold increases in ODC-promoter-,mRNA-,protein-&enzyme-activity that paralleled each other and peaked at 6 h ($p < 0.01$ each). PGE_2 or cAMP alone did not induce ODC. However, both PGE_2&cAMP similarly potentiated by 3–4-fold the induction of ODC-promoter-activity,mRNA-levels & enzyme-activity by Hp-preparations ($p < 0.05$ each). COX-2-inhibitors significantly attenuated ODC-activity by 50.1 ± 12.4% & 63.9 ± 11.2% for NS-398 & DFU, respectively, and anti-PGE_2-Ab-inhibited ODC-activity by 51.8 ± 3.1% ($p < 0.05$ for all). EMSA revealed that nuclear extracts from Hp-stimulated macrophages exhibited significant binding to the ODC-promoter, but addition of cAMP did not affect the amount of binding, and a consensus sequence probe for CRE did not bind to nuclear extracts from unstimulated or Hp-stimulated cells.

Conclusions. In macrophages, ODC-induction by Hp is mediated by COX-2-activation. PGE_2&the associated cAMP-generation augments ODC-induction by a mechanism that likely involves enhancement of binding of transcription-factors to Hp-response-elements in the ODC-promoter, rather than by binding to the CRE. COX-2-activation by Hp may have important downstream-biological effects resulting from polyamine-synthesis-stimulation.

P026 Role of cytokines and adhesion molecules in the development of multiple-organ dysfunction syndrome in acute pancreatitis

S. Chooklin, A. Perejaslov, I. Bihalskyy

Medical University, Lviv, Ukraine

Background. Development of the multiple-organ dysfunction syndrome (MODS) often determined the unfavorable outcome of necrotizing pancreatitis. Activation of leukocytes and endothelium, its interaction and liberation of various inflammatory mediators, plays the key role in the MODS development and progression.

Material and methods. Levels of some interleukins (IL), such as IL-1β, IL-8, and IL-18, and adhesion molecules (ICAM-1, E-selectin) were studied in 66 patients with necrotizing pancreatitis. The control group compiled 37 patients with mild pancreatitis.

Results. MODS is the typical for the early stages of severe acute pancreatitis. Increased levels of all mediators were noted in all patients with acute pancreatitis already at the time of admission. By that, the highest levels were in patients with necrotizing pancreatitis. The highest levels of IL-1β, IL-8, and IL-18 were in ascitic fluid but peaked levels of adhesion molecules were in plasma. Concentration of IL-1β, IL-18, ICAM-1, and E-selectin clear correlated with the severity of MODS and development of local complications (necrosis and fluid collections). Peaked levels of mediators were noted at the third day in patients with favourable clinical course. Unfavourable clinical course (development of septic complications and/or lethal outcome) accompanied by the permanent high levels of mediators with the tendency to its increase after the first week.

Conclusions. Thus, the necrotizing pancreatitis characterized by the elevated levels of pro-inflammatory cytokines and adhesion molecules, which determined the MODS development. The blocking of the excessive synthesis of inflammatory mediators ameliorates its cytotoxic effects and improves the clinical course of necrotizing pancreatitis.

P027 A novel experimental technique for graft pancreatitis in mice

M. Maglione[1], S. Schneeberger[1], W. Mark[1], P. Obrist[2], M. Hermann[3], R. Margreiter[1], G. Brandacher[1]

[1]Department of General and Transplant Surgery, Innsbruck Medical University, Innsbruck, Austria; [2]Department of Pathology, Wagner-Jauregg Hospital Linz, Linz, Austria; [3]Center for Islet Cell Transplantation, Innsbruck Medical University, Innsbruck, Austria

Background. Various suture-techniques for murine pancreas transplantation have been described, but severe technical problems have limited its widespread use. We therefore designed a surgical model for cervical heterotopic pancreas transplantation utilizing a cuff-technique.

Material and methods. C57BL6 mice were used as donor and recipient pairs. Recipients (n = 27) were rendered diabetic with streptozotocin and subsequently transplanted. The donor pancreas was isolated using a no-touch technique and then placed in the recipients cervical region. Vascular anastomoses were completed by pulling the portal vein over

the external jugular vein-cuff and the donor aortic segment over the carotid-cuff and fixed with a 8-0-ligature thereby facilitating a non-suture technique. To test applicability of this model graft microcirculation was evaluated by intravital microscopy following prolonged cold ischemia.

Results. The immediate success rate was > 90%. Donor operation lasted 40 ± 5 min and dissection of recipient vessels 20 ± 4 min. Revascularization time was 4-6 min, resulting in a total pancreas ischemia time of 33 ± 6 min. No thromboembolic complications on the cuff-side were observed. Preoperative glucose levels were 518 ± 59 mg/dl and returned to normal by po day 1 (88 ± 13 mg/dl). Histology on po days 10 and 30 showed almost normal islet cell and acinar architecture of all grafts. In groups with prolonged cold ischemia graft microcirculation was significantly reduced paralleled by increased inflammation, interstitial edema, hemorrhage, acinar vacuolization and focal areas of necrosis compared to non-ischemic controls.

Conclusions. This new model provides an excellent tool to further investigate the pathophysiology as well as novel therapeutic strategies of graft pancreatitis, preservation and ischemia reperfusion injury.

P028 Outbreak of Candida krusei infection in surgical patients

H. Bonatti[1,2], N. Berger[2], I. Stelzmueller[2], C. Lass-Floerl[2]

[1]Mayo Clinic, Jacksonville, FL, USA; [2]Medical University of Innsbruck, Innsbruck, Austria

Background. Candida krusei (CK) is resistant to Flucoazole and has been increasingly isolated in severe surgical infections particularly in immunocompromised hosts.

Patients and methods. All cases of CK infection occurring during 18 months at the Innsbruck medical university were included. CK were grown on Sabouraud agar, chromosomal DNA was extracted using the QIAamp Tissue kit, clonality was investigated using RAPD – PCR with primers M13, OPA-18 and OPE-18.

Results. Seven patients with CK infection were identified: all were treated on the transplant intensive care unit including one patient with pleural empyema following esophageal perforation, one patient with a ventricular assist device who developed CK pneumonia, three pancreas recipients with intraabdominal infection, one liver recipient with ischemic cholangipathy and CK cholangitis requiring retransplantation and a lung recipient with CK pleural empyema. Treatment consisted of caspofungin (3), voriconazole (1) and combination of the two (2); in one case no antifungal therapy was given after surgical removal of infected hematoma. Infected collections were evacuated surgically (n = 3) or through pig-tail drainage (n = 3). CK infection was successfully managed in all cases, only the patient with the assist device died from multi organ failure; one pancreas graft was lost. The first four patients in this series (i.e. 57%) harboured the identical CK strain. The remaining cases were random infections.

Conclusions. CK infections represent increasing complications and clonal outbreaks must be considered on intensive care units with solid organ recipients being at particular risk. Rapid diagnosis and treatment with new antifungal agents allow successful therapy of these infections.

Leber/Onkologie

P029 Hepatozelluläres Karzinom im Senium Wertigkeit der Therapieverfahren: Operation versus Chemoembolisation

T. P. Kratt, L. Joel, R. Viebahn, A. Königsrainer

Chirurgische Universitätsklinik, Tübingen, Deutschland

Fragestellung. Bei Patienten mit einem Lebensalter über 70 Jahren ist die Therapieform eines hepatozellulären Karzinoms (HCC) gelegentlich schwierig festzulegen.

Welche Resultate kann eine weniger invasive Methode (Chemoembolisation/TACE) im Vergleich zur Leberteilresektion erzielen?

Studiendesign. Retrospektive Untersuchung an 42 Patienten über 70 Jahre bei Erstdiagnosestellung eines HCC.

Vergleichsgruppe: 70 Patienten zwischen 60 bis 70 Jahre.

Mittl. Nachbeobachtungszeit: 6 Jahre (Range 24–132 Monate).

Ergebnisse nach stadienabhängiger Auswertung:

1.) Der Anteil der weiblichen Patienten nimmt in der 8. Lebensdekade deutlich zu.

2.) Keine Heilung durch Chemoembolisation, dagegen Heilung durch Operation in 33%.

3.) Nahezu identische Komplikationsraten in beiden Gruppen.

4.) Chemoembolisation verlängert Überleben deutlich in HCC-Stadium II und III bei Patienten unter 70 Jahren, dagegen kein eindeutiger Effekt bei über 70jährigen Patienten.

5.) Eine Operation auch bei Patienten mit über 70 Jahren ist im Vergleich zur alleinigen Chemoembolisation bzw. im Vergleich zu jüngeren Patienten, die operiert wurden, *nicht* risikoreicher (perioperative 30-Tage-Letalität jeweils null in Gruppe 1 und 2).

P030 The resection of colorectal liver metastases – A defensible therapy option also in the high age

L. Mirow, P. Hildebrand, M. Kleemann, U. Roblick, C. G. Bürk, H. P. Bruch

Universitätsklinikum Schleswig-Holstein, Lübeck, Germany

Background. The oncological resection of colorectal liver metastases offers with achievement of a R0 situation a potential chance of curation. On account of the clear reduction of morbidity during the last years the indication was also arranged with elder patients increasing for operation. The purpose of the present analysis is the result evaluation of the liver resection in the high age.

Methods. For better comparability only metachrone resections were evaluated with colorectal liver metastases of the last 10 years. In the whole group of 113 patients 16 patients were older than 75 years. This sub-group was confronted with the group among 75-year-old with regard to intervention magnitude, intraoperative complications, morbidity and mortality.

Results. With the more than 75-year-old patients became 4 hemihepatectomies, 7 segmentectomies or bisegmentectomies, 6 atypical Resections and 3 RFAs carried out. With a morbidity of 25% none of 16 patients passed away in the inter-

vention. The mortality in the whole group of the younger patients amounted to a total of 3.6% with a morbidity of 19.5%.

Conclusions. The dates show that metachrone resections of colorectal liver metastases are also practicable with patients in high age with comparable outcomes.

P031 Liver packing for navigated radiofrequency therapy in primary liver malignancies

H. G. Weiss[1], A. Klaus[1], W. Mark[1], G. Brandacher[1], M. Haidu[2], P. Kovacs[2], R. Margreiter[1], R. Bale[2]

[1]General, Thoracic and Transplant Surgery, Innsbruck, Austria; [2]Department of Radiology, Medical University of Innsbruck, Innsbruck, Austria

Background. In patients with primary liver tumors and multiple comorbid conditions or tumor infiltration in central vascular pedicles surgical therapy may not be suitable. Alternatively, radiofrequency (RF) ablation is considered in those patients. RF ablation in the liver is hampered by various parameters such as anatomical adjacencies of surrounding organs including heart, lungs, esophagus, stomach and bowel. This study describes a novel technique for optimized ablation by use of laparoscopic liver packing.

Material and methods. Three patients who were not suitable for surgical liver resection were included in this ongoing pilot study. In general anestesia laparoscopic liver mobilisation was performed. The liver was packed using swabs soaked with 5% glucose solution. Thereby all tumors in the liver were isolated from the adjacent organs. The patients were subsequently treated by RF ablation which was carried out by means of navigated CT-guidance. Then all swabs were removed laparoscopically.

Results. Laparoscopy could be carried out in all patients without morbidity and mortality. All visible tumors of the liver ($n > 3$, range of particular tumor size: 8–9 cm) could be reached by navigated CT-guided radiofrequency ablation (9–12 RF-probes/patient). Liver packing effectively prevented organ injury in all patients. Patients were discharged from hospital on postoperative day 4. A follow-up CT-scan after three to seven months described sufficient focal tumor necrosis.

Conclusions. For the first time a multimodular treatment including laparoscopic liver packing and High-tech RF ablation is described for patients with primary liver malignancies unsuitable for surgical resection.

Coloproktologie

P032 Chirurgie im Senium: Ergebnisse kolorektaler onkologischer Resektionen bei über 80-jährigen Patienten

T. P. Kratt, H. Hess, A. Königsrainer

Chirurgische Universitätsklinik, Tübingen, Deutschland

Material und Methodik. Retrospektive Studie: 394 Patienten mit kolorektalem Karzinom: Gruppe 1 mit 197 Patienten: 80 Jahre und älter bei Erstdiagnosestellung bzw. Gruppe 2 mit 197 Patienten 60 bis 79 Jahre. Im jüngeren Kollektiv 58% der Pat. mit Rektumkarzinom bzw. in der Gruppe der über 80-Jährigen 65%. Altersdifferenz zwischen Gruppe 1 bzw. 2 bei beiden Geschlechtern 15 Jahre. Erfasst wurden relevante Komorbiditäten und postoperative Komplikationen. Nachbeobachtungszeit Gruppe 1: 39 Monate bzw. Gruppe 2: 63 Monate.

Ergebnisse. Nahezu identische Anzahl von postoperativen Komplikationen in beiden Altersgruppen; vergleichbare Komplikationsraten nach Tumorlokalisation waren: Colon-Eingriffe: 36% postoperative Komplikationen bei älteren bzw. 38% bei jüngeren Pat. bzw. Rektum-Eingriffe: 38% bei älteren gegenüber 41% postop. Komplikationen bei jüngeren Patienten. Die Anzahl der Komorbiditäten hat zwischen beiden Altersgruppen keinen entscheidenden Einfluss bzgl. der postoperativen Komplikationsraten. Auch der Vergleich der Patienten mit 3 und mehr Grunderkrankungen zeigte zwischen beiden Altersgruppen keine relevanten Unterschiede. – Mehr Notfalleingriffe bei älteren Patienten (14% vs. 5% aller Eingriffe). – Nach Notfalleingriff treten mindestens ein Drittel mehr postoperative Komplikationen auf (Gruppe 1: 31% Komplikationen nach elektiven bzw. 42% nach Notfalleingriffen/Gruppe 2: 34% Komplikationen nach elektiven bzw. 49% nach Notfalleingriffen). – Mehr kurative Eingriffe bei jüngeren Patienten: 64% vs. 48% in der Gruppe der über 80jährigen Patienten. – Pat. mit Colon ascendens-Karzinom haben in beiden Altersgruppen kürzere Überlebenszeiten als Pat. mit Rektumkarzinom.

Schlussfolgerungen. Ein stadiengerechtes chirurgisches Vorgehen nach onkologischen Therapieprinzipien ist auch bei über 80jährigen Patienten trotz meist bestehender Grunderkrankungen anzustreben. Dies gilt insbesondere auch für Patienten mit Rektumkarzinom.

P033 Welchen Stellenwert hat die chirurgische Therapie des M. Crohn im Kindesalter?

T. Meyer, B. Höcht

Abteilung für Kinderchirurgie, Chirurgische Universitätsklinik, Würzburg, Deutschland

Der Morbus Crohn im Kindesalter erfordert von Pädiatern und Kinderchirurgen ein Höchstmaß an Zusammenarbeit. Die Therapie der Wahl erstreckt sich neben der Ernährungstherapie, auf die relativ engen pharmakologischen Behandlungsmöglichkeiten. Bei Therapieresistenz, Verschlechterung der Symptomatik und/oder Komplikationen kann eine sparsame, chirurgische Therapie eine entscheidende Verbesserung bringen. Hauptfrage unserer Untersuchung war, inwieweit Kinder von solch einer sparsamen Operation profitieren.

Ergebnisse. In der Kinderchirurgischen Abteilung der Chirurgischen Universitätsklinik wurden im Zeitraum von 1986-1999 17 Kinder (7 Mädchen und 10 Jungen) wegen therapierefraktärer Folgen eines Morbus Crohn operiert. Das Durchschnittsalter zum Zeitpunkt der Erstmanifestation des Morbus Crohn betrug 11,8 Jahre (8–16 Jahre; Median: 12 Jahre), zum Zeitpunkt der Erstoperation 14 Jahre (12–17 Jahre; Median: 14 Jahre). Der Untersuchungszeitraum reichte von 1–70 Monate (Mittelwert: 15,9; Median: 14). Bei den 17 Kindern wurden insgesamt 25 Operationen durchgeführt; 14 Operationen erfolgten aufgrund akuter Komplikationen des M.

Crohn, wie Ileus, Abszesse und Perforation; 11 Operationen konnten elektiv, im symptomfreien Intervall, vorgenommen werden. Bei allen Kindern konnte der Morbus Crohn durch die Operation histologisch bestätigt werden. Die postoperative Nachuntersuchung der Kinder zeigte, dass im Verlauf die medikamentöse Therapie, hier vor allem die Steroiddosis, deutlich vermindert werden konnte. Entgegengesetzt proportional hierzu kam es bei allen Kindern zu einer deutlichen Gewichts- und Größenzunahme. Ein Rezidiv konnte in unserem Patientengut bisher nicht beobachtet werden.

Schlussfolgerungen. Die Therapie der Wahl des Morbus Crohn im Kindesalter ist und bleibt die konservative Behandlung. Eine chirurgische Intervention – die auch in Zukunft kritisch betrachtet werden muss – kann die konservative, medikamentöse Therapie im Wachstumsalter positiv beeinflussen.

P034 Myocutaneous flaps for primary closure of complicated perineal wounds in patients with longstanding Crohn's disease

D. Schaden[1], G. Schauer[1], F. Haas[2], A. Berger[1]

[1]Krankenhaus der Barmherzigen Brüder, Graz, Austria; [2]Abteilung für Plastische Chirurgie, LKH Graz, Graz, Austria

Background. Complex perianal wounds can be extremely difficult to treat and primary closure of these defects can be a challenge even for experienced surgeons. So far, myocutaneous flaps for wound closure after removal of malignant tumors are a well accepted option, but there are only a few reports focussing on primary closure of the perineal wound after proctectomy for Crohn's disease. We describe our experience with wide excision of the diseased perineum using a combined abdominoperineal two-team approach.

Material and methods. We performed proctocolectomy with permanent intestinal stoma in five patients with longstanding extensive Crohn's disease. All five patients had fistulizing perineal Crohn's disease combined with Crohn's colitis. Each patient received at least one flap for primary wound closure, either a rectus abdominis myocutaneous flap or a gracilis flap.

Results. Indication for surgical intervention included anal or bowel stenosis, septic condition, fecal incontinence or a combination of these features. One patient had a simultaneous adenocarcinoma of the sigmoid colon. Five patients underwent a total of 7 flaps. Three months after surgery complete healing was achieved in four patients, one patient suffered recurrence in the region of his right thigh. Mean follow up was 19.6 months (range 12–43 months).

Conclusions. Myocutaneous flaps are a promising therapeutic option in patients with chronic perianal disease. With the transposition of well vascularized tissue into the perineal defect complete healing and control of sepsis can be achieved in the majority of patients.

P035 Resection margins in rectal cancer

M. Lucovnik, M. Omejc

Department of Abdominal Surgery, Ljubljana, Slovenia

Background. Outcome in rectal cancer depends on stage, technical aspects of surgical excision, and use of neoadjuvant and adjuvant chemoradiation. A positive circumferential resection margin is associated with a high risk of local recurrence and distant metastases after total mesorectal excision. Sphincter-saving resection, that is, restoration of bowel continuity, is one of the main objectives of surgical treatment of rectal cancer. We examined the importance of different circumferential and distal resection margin distance and its influence on 5-year survival.

Material and methods. 105 patients with rectal cancer who underwent a potentialy curative R0 sphincter saving procedure including TME without preoperative chemoradiation between years 1994 and 2000 were included in the analysis. Distance of resection margin was measured after fixation on pinned specimen.

Results. In univariate analysis there was no significant difference in 5-year survival when distal resection margin was $\leq$ 1 cm comparing to $>$ 1 cm ($p = 0.91$), but 5-year survival was adversely affected by circumferential margin of $\leq$ 2 mm comparing to $>$ 2 mm ($p = 0.0095$). In multivariate analysis independent prognostic factor was Dukes stage but not the distance of the circumferential or the distal margin.

Conclusions. Radial margins are more important predictor of disease survival than distal margins. A distal margin of 1 cm below the edge of the tumor may be appropriate clearance for most patients, what enables a sphincter-saving resection also in very low lying tumors. Distant disease recurrence continues to be the predominant mode of failure.

P036 Biliverdin and bilirubin: natural inhibitors of tumor cell growth?

P. Kogler[1], R. Sucher[2,1], M. Janakiraman[1], A. Drasche[1], M. Hermann[3], M. Wurm[4], A. Amberger[5], D. Öfner[2], R. Margreiter[2], J. Troppmair[1], R. Öllinger[2,1]

[1]Daniel Swarovski Research Laboratory, Innsbruck, Austria; [2]Department of General-, Thoracic- and Transplant Surgery, Innsbruck, Austria; [3]KMT Laboratory, Medical University Innsbruck, Innsbruck, Austria; [4]IBAL-Project, Department for General-, Thoracic- and Transplant Surgery, Innsbruck, Austria; [5]Tyrolean Cancer Research Institute, Medical University Innsbruck, Innsbruck, Austria

Background. For decades bilirubin, end product of heme catabolism, has been considered as a toxic waste product of our bodies, until 1987, when its potent antioxidant effects were first described. Serveral clinical studies now show an inverse correlation between elevated plasma bilirubin levels and the incidence/mortality of colorectal and breast cancer. Based on these findings, we hypothesized that bilirubin and its precursor biliverdin may control tumor cell growth experimentally.

Material and methods. Colon, breast, pancreas, liver and gastric cancer cell lines were obtained from ATCC and treated with PBS (control), biliverdin or bilirubin. A Casy Cell Counter was used for proliferation assays. Cell cycle progression and apoptosis were analyzed by FACS. Western blot analysis was carried out to investigate intracellular signaling cascades. Further, cells were treated with pharmacological inhibitors of MEK and PI3-kinase in presence or absence of biliverdin/bilirubin.

Results. Biliverdin and bilirubin significantly inhibited proliferation of all cell lines tested in a dose dependent manner. This antiproliferative effect mainly was mediated by

induction of G0/G1 cell cycle arrest and apoptosis through strong activation of AKT and ERK resulting in profound overexpression of the cell cycle regulator p27. The antiproliferative effects were dependent on AKT and ERK activation, in that inhibition of upstream PI3-kinase and MEK reversed the effects observed under biliverdin/bilirubin treatment.

Conclusions. Our data suggest that biliverdin and bilirubin are potent inhibitors of tumor cell growth by interferring with mitogen activated protein kinase signaling pathways and may explain the decreased incidence of cancer associated with hyperbilirubinemia.

P037 Do geographic and educational factors influence the quality of life (QOL) in rectal cancer patients with a permanent colostomy?

B. Holzer[1,2], H. R. Rosen[1], and the study group for QOL in rectal cancer[1]

[1]Department of Surgery, Danube Hospital, SMZ-Ost, Vienna, Austria; [2]Ludwig Boltzmann Research Institute for Surgical Oncology, Vienna, Austria

Background. The aim of this study was to evaluate possible social and geographic factors which could have an impact on QOL of patients following abdominal perineal excision of the rectum (APR). Although the number of patients with rectal cancer, who need to be treated with APR and construction of permanent colostomy, has markedly decreased in the past, there is still controversy about the influence on QOL caused by this procedure.

Material and methods. In a study patients operated on for low rectal cancer by APR were evaluated by a QOL questionnaire to assess fecal incontinence. The results for the of QOL, as well as for subjective general health were evaluated with regard to age, gender, education and geographic origin.

Results. Thirteen institutions in 11 countries included data from 257 patients. While the analysis of general health did not reveal any significant differences, the analysis of the four QOL domains showed the significant influence of geographic origin. The presence of a permanent colostomy showed a consistently negative impact on patients in southern Europe as well as in patients of Arabic origin. On the other hand, age, gender and educational status did not reveal a statistically significant influence.

Conclusions. This is the first study to show the influence of geographic origin on QOL of patients with a permanent colostomy. Possible factors such as weather, religion or culture which may influence the outcome of patients following surgical treatment of rectal cancer should be taken into account when QOL evaluations are considered.

P038 Toxic megacolon in infectious colitis: conservative management and subsequent surgical resection?

B. H. von Rahden[1], D. Gmeiner[1], R. Rettenbacher[1], H. W. Waclawiczek[1], J. Hutter[1], H. U. Schlicker[2], L. Datz[3], H. J. Stein[1]

[1]Department of Surgery, University Hospital Salzburg, Salzburg, Austria; [2]Department of Pathology, University Hospital Salzburg, Salzburg, Austria; [3]Department of Radiology, University Hospital Salzburg, Salzburg, Austria

Background. Toxic megacolon (TM) is a rare but potentially fatal complication of colitis, characterized by 1.) total or segmental non-obstructive colonic distension > 6 cm 2.) in presence of acute colitis, 3.) with associated signs of systemic toxicity. Formerly, TM has been estimated a complication of solely ulcerative colitis, but nowadays association with any form of colitis, including infectious colitis, is recognized.

Patients and methods. Based on a case of a patient with TM due to infectious colitis, we present the currently available evidence for surgical strategies.

Results. Distension of the left hemicolon (max. 12 cm) was recognized (CT, colon contrast enema) in a 42-year-old patient, suffering from diffuse abdominal pain and diarrhea. Campylobacter colitis was diagnosed by stool culture and histopathologic evaluation of biopsies. Signs of systemic toxicity were moderate (afebrile, CRP = 22.9 mg/dl; WBC= 5.61G/l). Conservative management of the acute phase was indicated, in absence of severe complications (especially perforation), requiring immediate surgical intervention. Furthermore there was no dilation of stomach and small intestine, which is proposed as reliable predictor for TM-associated complications (Am J Gastroenterol 2002; 97:1169–1175). The patient received IV antibiotics (ciprofoxacine and metronidazole) and repeated colonic decompression, according to current recommendations. Surgical resection (colectomy) is scheduled after complete recreation of the patient and evaluation by totol coloscopy and biopsy.

Conclusions. Conservative management of TM complicating infectious colitis (antibiotics, endoscopic decompression) is justified, when there is neither clinical nor CT-morphologic evidence for complications requiring surgical intervention. Small intestinal/ gastric dilation may be a useful predictor.

P039 Epiploic appendagitis – a frequent misdiagnosis?

W. Schief[1], M. Pichler[1], M. Hirschburger[1], C. Ploetz[1], K. Cziupka[1], D. Lommel[2], W. Padberg[1]

[1]Klinik für Allgemein-, Viszeral-, Thorax-, Transplantations- und Kinderchirurgie, Universität Giessen-Marburg, Giessen, Germany; [2]Abteilung diagnostische Radiologie, Universität Giessen-Marburg, Giessen, Germany

Background. Epiploic appendagitis is a inflammatory self-limiting disorder, independent of a primary inflammation of the bowel. His pathogenesis is quite unknown. Possible causes are appendageal torsion or spontaneous thrombosis of an appendageal vein. The main clinical characteristic is the focal abdominal pain with little peritoneal irritation. Most

commonly epiploic appendagitis can be treated conservatively. In a few cases complications such as paracolic abscesses have been reported.

The correct diagnosis can be uncovered by radiologic imaging such as ultrasound or computed tomography.

Although epiploic appendagitis is more often described by radiologists it is rarely discussed between surgeons.

Methods. We review the literature and report the case of a 36 years old female patient presenting in the emergency room with abdominal pain and peritoneal irritation in the left abdomen, increased leucocyte count and CRP-concentration.

Radiologic imaging showed a non specific inflammation of the mesenterium. Therefore we decided to perform laparoscopy.

Results. Laparoscopy uncovered localized fatty inflammation of the epiploic appendage and adjacent major omentum without affection of the bowel.

Histopathology of the appendage showed an inflammation accompanied by several necrosis.

Laparascopic findings retrospectively correlated with the radiologic imaging, that in this case could have avoided the surgical procedure.

Conclusions. Epiploic appendagitis is an often not considered cause of acute abdominal pain which can mimic more common diseases such as acute appendicitis or diverticulitis. In case of doubt, high resolution imaging by computed tomography is of great value to avoid unnecessary surgical procedures. The knowledge of this differential diagnosis should spread through the clinicians

P040 Laparoscopic colon and rectal surgery for malignant diseases

M. Rogy, M. Barlan, B. Dauser

Chirurgische Abteilung, KH der Barmherzigen Brüder, Vienna, Austria

Background. Laparoscopic colon and rectal surgery for malignant diseases is of increasing importance in high volume surgical departments In accordance with the literature we are reporting our own experience and results of laparoscopic colon- and rectum-resections between 2002–2006/01.

Material and methods. 164 patients (100 female, 64 male), med. age 70.4 years (26a–92a) underwent a laparoscopic colon- or rectum-resection. 61% (n = 100) had a benign disease, 39% (n = 64) a malign disease. In 44 patients the tumor was located in the colon, in 20 patients in the rectum. 3 patients had a rectum-resection due to an infiltration of prostate cancer.

Results. Over 31% were carcinomas stadium UICC II, 37% UICC III and the mean number of harvested lymphnodes was 16.4. Conversation rate was 10% (n = 17/164). Intraoperative complications were 2 ureterlesions and 1 small bowellesion.

Conclusions. Our oncological results, conversions-rates and complications are comparable with the recent literature. In our series there is no difference in the number of harvested lymphnodes or in recurrance rate between open and laparoscopic colon- and rectum-resection. The main advantages of laparoscopic surgery: Less post operation pain, quicker recovery, small incisions etc. were also seen in our patients.

P041 Stapled anopexy correcting haemorrhoidal prolapse 5-years follow-up of 192 patients

S. Riss, M. Glöckler, M. Glöckler jr., M. Abrahamowicz

Department of Surgery, St. Elisabeth Hospital, Vienna, Austria

Background. Stapled anopexy, developed by A. Longo, corrects prolapsing haemorrhoids by means of circular resection of mucosa above the haemorrhoidal tissue, that is lifted and fixed in a physiological position. The proven benefit is low postoperative pain and a convincing reduction of symptoms. It was our aim to investigate the results 5 years postoperative.

Material and methods. From May 1999 – May 2000 220 patients were operated on and continuously followed up in a prospective study with a standardised protocol. 5 years postoperative 192 patients were available for follow-up. Their symptoms and anatomy were compared with the preoperative findings. Patients' satisfaction was rated as: excellent, good, fair, poor.

Results. Follow-up rate: 87.3%; mean age 58 years (range 28–87); 39% female, 61% male. Preoperative haemorrhoidal degree: II° 15.6%, III° 71.4%, IV° 13.0%. During the follow-up period re-operation was done in 2.1% because of residual or relapsing haemorrhoidal prolapse. Final postoperative anatomical result after 5 years: no prolapse 97.4%, II° 1.6%, III° 1.0%, IV° 0%. The total relapse rate was 4.7 %, if cases with re-operations are included. Symptom control pre- to 5 years postoperative: pain 61.5% (severe 19.3%) to 3.6% (severe 0%), itching 27.5% to 1.6%, soiling 13.6% to 2.7%, bleeding 54.1% to 3.7%, straining 32.0% to 7.4%. Urgency at soft faeces, the only long-term side effect, occurred in 2.1%. 94.1% of the patients judged their results as being excellent or good.

Conclusions. The presented data fill a major gap concerning very long-term results after stapled anopexy and show excellent outcomes.

P042 The ODS score – a novel instrument to evaluate patients with obstructed defecation

S. Riss, M. Glöckler, M. Abrahamowicz, A. Longo

Department of Surgery, St. Elisabeth Hospital, Vienna, Austria

Background. The obstructed defecation syndrome (ODS) encompasses anatomical and functional alterations causing difficulty or incapability to void formed faeces. Intussusception and rectocele are considered to be the main pathology causing mechanical obstruction whilst pelvic dissynergy is regarded as a common functional cause of ODS. For lack of a specific ODS scoring system in literature it was our purpose to create an useful instrument to evaluate the symptomload of patients, suffering from obstructed defecation.

Methods. For the scoring system we selected symptoms and parameters which are regarded to be typical for the outlet syndrome. Therefore we included the need of laxatives, enemas and digitation as important signs of the inability to void formed faeces. Further we integrated straining intensity and straining extension, the feeling of incomplete evacuation, recto-perineal discomfort/pain, the frequency of defecations,

be it rare or excessive, and the reduction of daily life activity due to the disorder of defecation.

Results. Totally the score contains 9 items. The maximum points of each item are related to its specifity to ODS. E.g. digitation maximally scores 7, whereas defecation frequency maximally scores 3. The complete ODS score ranges from 0 (no obstruction) to 40 points (severe obstruction). It is a questionnaire, which can be done in 5 to 10 minutes. In our clinic 3600 patients were assessed by this score. They understood the questions and had no difficulties answering them.

Conclusions. The ODS score is a feasible and short questionnaire and an useful instrument to assess patient's symptomload of obstructed defecation.

Onkologie

P043 ILK-RT-PCR distinguishes rhabdomyosarcoma from other mesenchymal tumors

S. B. Watzka[1,2], J. Pammer[3], P. N. Wurnig[1], P. H. Hollaus[1], G. E. Hannigan[4], G. Weigel[2]

[1]Department of Thoracic Surgery, Otto Wagner Hospital, Vienna, Austria; [2]Clinical Department of Cardiothoracic Surgery, Medical University of Vienna, Vienna, Austria; [3]Department of Pathology, Medical University of Vienna, Vienna, Austria; [4]Department of Clinical Pathology, The Hospital for Sick Children, Toronto, Ontario, Canada

Background. The differential diagnosis of rhabdomyosarcomas (RMS) from other soft-tissue sarcomas may be challenging. Integrin-linked kinase (ILK) is a serine/threonine protein kinase, which interacts with β1 and β3 integrins, which is mainly expressed in striated muscle, and which plays a role in oncogenic transformation. We investigated the transcription and expression of ILK in rhabdomyosarcomas as compared to other soft-tissue sarcomas.

Material and methods. Eleven cases of rhabdomyosarcoma, seven other malignant mesenchymal tumors (MMT) and three benign mesenchymal tumors (BMT) underwent immunohistochemistry against integrin-linked linase, skeletal-muscle actin, smooth-muscle actin, desmin, and myogenin, as well as RT-PCRI and RT-PCRII of ILK RNA. Results were compared by statistical means.

Results. All patients with RMS were positive in ILK-PCRI, while only one patient out of seven with MMT had a positive PCR result ($p = 0.00$); all patients with BMT were ILK-PCRI-negative. Regarding ILK-PCRII, nine out of 11 patients with RMS were positive, while four MMT patients out of seven were ILK-PCRII negative ($p = 0.006$). ILK antibodies stained between 1 and 35% of all cases (not significant). From the other antibodies, only myogenin was highly specific for RMS ($p = 0.002$).

Conclusions. ILK-RT-PCR is a valuable instrument for differentiation of RMS from other soft-tissue sarcomas.

P044 Die Rolle der Hyperthermie im multimodalen Therapiekonzept beim metastasierenden Melanom und Brustkrebs

M. Y. Rigler, P. Kohek, M. Spenger, M. Puchinger, H. J. Mischinger

Univ.-Klinik für Chirurgie, Graz, Österreich

Die Ansprechraten von Haut- oder Lymphknotenmetastasen des Melanoms auf die systemische Chemotherapie sind gering. Über die Erfahrungen bei metastasierender Veränderung des Melanoms sowie über Lokalrezidive im Bereich der Brustwand beim metastasierenden Mammakarzinom wird anhand von 15 Patienten mit metastasierendem Melanom und 18 Patienten mit Lokalrezidiven der Brustwand berichtet. Etwa 2/3 der Patientinnen mit Lokalrezidiven weisen gleichzeitig eine generalisierte Metastasierung auf und ein weiteres Viertes entwickelt Metastasen kurz nach der Diagnose Lokalrezidive. Erfahrungen über Oberflächenhyperthermie und tiefer regionärer Hyperthermie in Kombination mit Strahlentherapie und oder Chemotherapie mit Caboplatin werden bei metastasierendem Melom berichtet. Die wissenschaftliche Grundlage dieser Kombinationsbehandlung, welche eine Hyperthermie, eine Strahlentherapie und eine Chemotherapie umfasst sind die bekannten Phänomene, dass Hitze tumorös veränderte Zellen in ihrem Wachstum hindert bzw. sogar abtöten kann. Die Wirkung von ionisierenden Strahlen und Zytostatika wird durch die Hyperthermie HT außerordentlich verstärkt. Hitze verhindert einen Repair sowohl von subletalen wie auch potentielle Strahlenschaden, wenn eine Temperaturerhöhung solange dauert, als der Strahlenschaden repariert werden sollte. Bei 18 Mammapatientinnen und 15 Patienten mit malignem Melanom wurde die Kombination von Strahlen- und Chemotherapie gut vertragen, das Ansprechen wurde klinisch und/oder computertomographisch und/oder sonographisch evaluiert.

Die Ergebnisse der Remissionsraten (4 CR, 9 PR und 3 SD beim Mammakarzinom sowie 5 CR, 6 PR und 2 SD) zeigen, dass sowohl beim Thoraxwandrezidiv als auch beim inoperablen Melanom ein lokales Ansprechen mit Oberflächenhyperthermie wie auch tiefer regionärer Hyperthermie in Kombination mit Strahlentherapie und /oder Chemotherapie erzielt werden kann.

P045 Local hyperthermia: treatment possibility of metastatic melanoma

M. Spenger[1], U. Lenhart[1], I. Wolf[2], E. Richtig[2], M. Rigler[1], P. Rehak[3], P. Kohek[1]

[1]General Surgery Medical University Graz, Graz, Austria; [2]Dermatology Medical University Graz, Graz, Austria; [3]Division of Medical Technology and Data Analysis, Medical University Graz, Graz, Austria

Background. The melanoma is the most malignant tumour of the skin. The incidence increases all over the world. Successful treatment of lymph node metastasis is difficult to achieve by chemotherapy alone.

Materials and methods. For the treatment of the malignant melanoma a microwave applicator is used (Type Ma 120®, BSD, Salt Lake City, Utah, USA), which is characterized by a frequency of about 915 MHz, a therapeutic depth of

3 cm and a power of 100 Watt. Hyperthermia treatment induces temperatures of approximately 42°C. A therapeutic cycle includes 6 sessions two times a week, each lasting 60 minutes.

Results. Besides the physiological warming-up in the radiation field you cannot find any side-effects.

Randomized studies verify that the combination of hyperthermia and radiation is much more effective than only Radiation.

Conclusions. Local hyperthermia is very effective in combination with customary radiation. On the one side it has been shown a regression of the tumour and on the other side a later appearance of recurrence. Quality of life is enhanced and the survival time is increased in patients treated with this regime. Therefore hyperthermia can be successfully used in patients with metastasis melanoma.

Because of the impressing results in patients with malignant melanoma, the "Hyperthermia Working Group" of the Medical University Graz under Prof. P. Kohek will conduct a randomizes controlled trial in cooperation with the Department of Dermatology.

Transplantation

P046 Effect of an selective inhibition of the inducable NO-synthase (iNOS) on microsomal cytochrom P450 isoencymes (CYP) after nach orthotopic liver transplantation (oLTx) in the rat model

E. Matevossian[1], M. Stangl[1], M. Werner[2], C. Heidecke[3], J. R. Siewert[1], B. L. Brücher[1]

[1]Klinikum rechts der Isar, Munich, Germany; [2]Pathologie, TU-München, Munich, Germany; [3]Universität Greifswald, Greifswald, Germany

Background. The role of nitrid-oxide-synthase (iNOS)-inhibitor amino-guanidin-hydro-chlorid (AGH) after oLTX on the microsomal level remains unclear. The effects of an AGH-treatment on the activities of CYP-isoenzymes (1A1, 1A2, 2E1, 3A4) and histology were examined within a rat model.

Methods. Thirty rats were used and divided into three groups: group 1 (controls = syngene DA rats; n = 6), group 2 (allogeneic DA rats without immunosupression (n = 11) and group 3 (allogeneic DA rats with AGH-treatment; n = 13). On postoperative days 5, 8 and 10 liver-biopsies (with immunohistology for control of the rejection), laboratory investigations of transaminases and NO_2/NO_3-levels (indirect NO-measurement by HPLC-method) had been performed.

Results. Rejection of the organ after oLTx occurred 11.2 ± 1.8 d in group II and 11.4 ± 1.7 in group 3 (n.s.). AGH-treated rats (group 3) revealed a significant decrease of the NO_2/NO_3-level ($p < 0.05$). On the 5th postoperative day, activities of CYP-1A1, –3A4 and –2E1 were significantly lower ($p < 0.05$) and of CYP-1A" higher ($p < 0.05$) (group 3 versus 2). At postoperative day 8 and 10, the activities of all CYP-isoenzymes were significant higher in AGH-treated rats compared to allogen oLTx (group 3 versus 2). Histologically the rejection after AGH-treatment was less distinct compared to allogene oLTx. No significant prolonged survival could be observed after AGH-treatment.

Conclusions. An AGH-treatment leads to an effective iNOS-inhibition, increase of the activity of CYP and less distinction of the rejection. Although an increase of the activity of CYP can be observed, no prolonged survival and therefore no protection before a oLTX rejection can be observed.

P047 Expression profiles of the immunomodulatory enzyme indoleamine 2,3-dioxygenase following small bowel transplantation

S. Scheidl[1], A. Klaus[1], H. Weiss[1], S. Schneeberger[1], F. Offner[2], E. Werner[3], R. Margreiter[1], D. Fuchs[3], G. Brandacher[1]

[1]Department of General and Transplant Surgery, Innsbruck Medical University, Innsbruck, Austria; [2]Department of Pathology, Academic Hospital Feldkirch, Feldkirch, Austria; [3]Division of Biological Chemistry, Biocenter, Innsbruck Medical University, Innsbruck, Austria

Background. Indoleamine 2,3-dioxygenase (IDO) via tryptophan depletion and the production of proapoptotic metabolites inhibits T-cell proliferation and leads to T-cell anergy. IDO is activated by INF-γ and has been demonstrated to play an essential role in maternal tolerance. The role of IDO following small bowel transplantation has not been claryfied yet.

Material and methods. Allogeneic, full length heterotopic small bowel transplantation was performed in rats. Syngeneic transplants and native bowels served as controls. Intragraft IDO mRNA expression was assessed by quantitative RT-PCR (Taqman technology). In addition, to verify protein expression immunostainings for IDO were performed.

Results. Allografts were rejected after seven days as confirmed by H&E histology. There was a significant increase in IDO mRNA expression during acute rejection whereas remained unchanged in syngeneic controls. Native bowels revealed no IDO gene expression. Expressional results in all groups were confirmed by IDO immunohistochemistry.

Conclusions. Despite its tolerogenic effect in maternal immunity strong expression of IDO in small bowel allografts despite massive induction does not prevent rejection. IDO activity, however, may serve as a novel marker of immune activation and via modulation of tryptophan catabolism offer a potential tool to abrogate the alloimmune response.

P048 Incisional hernia following liver transplantation – incidence and predisposing factors

J. Kahn[1], F. Iberer[1], H. Müller[1], D. Duller[1], P. Rehak[2], K. Tscheliessnigg[1]

[1]University Clinic of Surgery, Medical University Graz, Graz, Austria; [2]University Clinic of Surgery, Biomedical Engineering and Computing Unit, Medical University Graz, Graz, Austria

Background. Patients after orthotopic liver transplantation (OLT) have a high risk of developing incisional hernia (IH). In the literature incidences between 5 and 17% are reported.

Patients and methods. In 90 patients, who underwent OLT between October 1996 and December 2005, a retrospective analysis on the occurrence of IH was performed. Surgical access for OLT was a transversal upper laparotomy. Age, gender, primary disease, immunosuppressive regimen and two different closure techniques (running suture or single sutures in layers) were evaluated.

Results. In 73 patients (76.7%, Group 1) healing of the incision was without problems, in 17 patients (23.3%, Group 2), IH occurred. Total survival was similar between the groups (86.3% vs. 94.1%, n.s.). No difference between the groups concerning age, gender, and immunosuppression was found. Also, the technique of abdominal closure had no impact on the development of IH. Primary disease influenced the development of IH significantly. No IH was found in patients with hepatocellular carcinoma (n = 15), whereas end-stage liver cirrhosis (n = 75) was distinctly associated with development of IH ($p < 0.02$). The overall incidence of IH in cirrhotic patients was 29.3%.

Conclusions. Neither the technique of abdominal closure nor the kind of immunosuppressive regimen influenced herniation after OLT. No development of IH was observed in patients, who underwent OLT due to malignancy. End-stage liver cirrhosis, the most frequent indication for OLT, seems to be a risk factor for the development of IH.

P049 Hemodialysis access surgery – Is there an increased risk of acquiring hepatitis C virus compared to other elective vascular interventions?

A. Assadian, C. Senekowitsch, G. W. Hagmüller

Wilhelminenspital, Vienna, Austria

Background. We evaluate whether dedicated surgeons might have a significantly higher risk of acquiring hepatitis C infection compared to other vascular surgeons by assessing the prevalence of hepatitis C patients who are on chronic hemodialysis and to compare the frequency to patients undergoing elective vascular interventions.

Design. A retrospective chart and data analysis of all patients on chronic hemodialysis was conducted. As a comparative group, the prevalence of anti-HCV antibodies and positive HCV RNA PCR among patients admitted for elective vascular surgery was assessed.

Results. Of 285 patients on chronic hemodialysis, 202 had both, antibody test for HCV and specific HCV RNA PCR testing. 5% were antibody positive, and 4% were also PCR positive and therefore infectious. One patient was acutely infected. Of 4,963 vascular surgical patients, 1,141 (23%) had an anti-HCV antibody ELISA test and specific HCV RNA PCR testing. 0.4% were antibody positive and 0.2% (n = 2; CI95 = 0.03–0.7%) were also PCR positive and hence infectious. No acutely infected patient was detected in this population.

The chance of operating on a HCV positive and infectious patient among hemodialysis patients was almost 27 times higher than among elective vascular surgical patients ($P < 0.0001$; OR = 26.56; CI95 = 5.42–253.40).

Conclusions. Dedicated hemodialysis access surgeons have a higher risk to acquire hepatitis C infection compared to vascular surgeons performing all other elective vascular surgical interventions. For surgeons operating on high risk HCV patient collectives, PCR testing every three months would be advisable.

P050 Fat luck: three siblings with non alcoholic steatohepatitis requiring liver transplantation

H. Bonatti, K. Norman, A. Sanchez, C. Jean-Pierre, R. C. Dickson, J. Aranda-Michel

Mayo Clinic, Jacksonville, FL, USA

Background. Accompanying the epidemics of obesity, non alcoholic steatohepatitis (NASH) emerged as common liver disease. Liver transplantation (LT) is the treatment of choice for NASH associated end stage liver failure.

Patients and methods. We retrospectively analyzed the clinical course of three siblings (2 brothers/1 sister aged 58, 63 and 75 years) who underwent LT for NASH between 1998 and 2005 at our institution. Immunosuppression consisted of Tacrolimus, MMF and steroids.

Results. All three were initially diagnosed cryptogenic cirrhosis, all were morbidly obese, none had DM. Both brothers had HCC. All had MM alpha-1-antitrypsin phenotype, none had the C282Y and H63D mutations, all were HBV core antibody negative and negative for ANA, AMA and ASMA antibodies. BMI at time of LT was 41.3, 43.4 and 41.2 kg/m^2. The sister developed rejection, a bile leak requiring conversion to hepaticojejunostomy, CMV gastric ulcers, pneumonia and a prolapsed disk during follow up, however, is currently alive after 7 years with a well functioning graft still being morbidly obese without DM. The first brother developed a biliary stricture, which was successfully managed by ERCP. Following tumor progression he underwent chemotherapy and died subsequently four years post LT. The second brother had an uneventful recovery and is currently alive with a well functioning graft after seven months.

Conclusions. This is the first report on three siblings undergoing LT for NASH. As all possible causes of known inherited contributors to the liver disease were excluded, morbid obesity must be assumed to be the cause.

Minimalinvasive Chirurgie

P051 „Schnittstelle Troikart“ – *Ενδοκοπιε* goes MIC

M. Knauer[1], M. Hufschmidt[1], R. Burger[2], M. Cejna[2], E. Wenzl[1]

[1]Abteilung für Allgemein- und Thoraxchirurgie, LKH Feldkirch, Österreich; [2]Zentrales Röntgeninstitut, LKH Feldkirch, Österreich

Grundlagen. Die chirurgische Endoskopie erfährt im intraoperativen Einsatz einen deutlichen Wertzuwachs: sie besitzt eine diagnostische, qualitätssichernde Kontrollfunktion; ermöglicht interventionell die MIC mit therapeutischer Zielsetzung. Schließlich wird bei ausgewählten Indikationen die interventionell-endoskopische Therapie durch die MIC

vorbereitet. Diese Konzepterweiterung verdeutlichen sechs Fallbeschreibungen.

Methodik. siehe Tabelle

Ergebnisse. Laparoskopie und interventionelle Endoskopie bereichern sich über die „Schnittstelle Troikart". Der Aspekt der MIC-optimierten endoskopischen Sanierung lässt neue chirurgische Vorgehensweisen erwarten. Vorteile sind Bewahren gültiger chirurgischer Vorgehensweisen, Steigerung Patientenkomfort, Verfahrensvereinfachung, Komplikationsbeherrschung ohne Zeitverzug, Adaptationsmöglichkeit chirurgischer Strategien sowie Möglichkeit gleichzeitigen Screenings und Stagings.

Multimodale Therapieansätze, interventionelle Endosonographie und neue Technologien öffnen Behandlungsspektren, an deren Entwicklung, Indikationsstellung und Beurteilung die Kombination aus Endoskopie und Laparoskopie maßgeblich beteiligt ist.

Schlussfolgerungen. Die Wertigkeit der operationsbegleitenden diagnostischen oder interventionellen chirurgischen Endoskopie ist aus der konventionellen Chirurgie bekannt. Einige Verfahren bewährten sich bei konventionellen Eingriffen, bevor sie minimal-invasiv Anwendung fanden.

Die interventionelle chirurgische Endoskopie steht im Gegensatz zur gastroenterologischen. Beschriebene Schwierigkeiten im Operationssaal wiegen leichter, ist der Endoskopiker Chirurg. Die Endoskopie trägt durch Vermeidung komplexer instrumenteller Situs-Exposition zur minimal-invasiven Verfahrensvereinfachung bei.

Die Resektion neoplastischer Läsionen muss Rezidive, Residualinseln sowie Komplikationen vermeiden. Topographie, Kontur und Größe der Neoplasie definieren ein Risikoprofil, für das sich die kombinierte endo-laparoskopische Sanierung mit der Möglichkeit sofortiger Komplikationsbeherrschung oder – bei richtungsweisender Schnellschnittdiagnostik – onkologischer Therapieadaptation bewährt hat.

Therapieoptimierende MIC-Präparation kommt auch bei komplexeren Pathologien zum Einsatz. Beispielhaft die hepatico-biliäre Anastomosenstriktur mit laparoskopischer temporärer Stumpfjejunostomie, endoskopischer Anastomosendehnung und Residualsteinextraktion. Folgerichtig und richtungsweisend werden chirurgische Strategien und Techniken – konventionell oder laparoskopisch – zur Ermöglichung endoskopischer Sekundärsanierungen beschrieben.

Methoden und Fallbeispiele

Konzept	Begleitende dagnostische, qualitätssichernde Kontrollfunktion	Gewinn	Beispiel
I	Serviceleistung Ursachendiagnostik Topographische Identifikation Befundausmaß Kaliber-/Dichtigkeitskontrolle	Serviceleistung Topographische Identifikation Befundausmaß Kaliber-/Dichtigkeitskontrolle	Fall 1: topografische Läsionssicherung Fall 2: Dichtigkeitsprüfung
II	Endoskopisch assistierte MIC-geführte Therapie	Palliation bei Inoperabilität Therapievervollständigung Situsexposition	Fall 3: intra-operative ERCP Fall 4: Schwellendurchtrennung Zenker-Divertikel
III	MIC-assistierte endoskopisch geführte Therapie	Komplikationskontrolle Ermöglichung endoskopischer Zugang	Fall 5: Vollwandexzision Colonpolyp Fall 6: Revision hepatico-jejunale Anastomose

P052 Laparoscopic resection of complicated urachal remnants: the new standard?

N. A. Forster, T. Köstler, O. Schöb

Spital Limmattal, Schlieren, Switzerland

Urachal remnants in form of a sinus, cyst, diverticulum or fistula occur following incomplete obliteration of the allantois after birth. Clinically they present in form of a palpable infraumbilical mass or recurrent umbilical discharge. Thus far the standard treatment of choice was open surgical resection using a transverse midline or infraumbilical incision. Over the past years though, a number of authors have performed laparoscopic resections with excellent results. Unfortunately, due to the low incidence of such remnants experience has been limited to single case reports or very small patient collectives thus preventing it being established as a standard approach.

We present the case of an otherwise healthy 26 year-old female patient with recurrent umbilical discharge. Diagnostic laparoscopy secured the suspected diagnosis of an urachus fistula, which was subsequently resected in toto using two working trocars. Because of the known risk of malignant transformation a small portion of the bladder apex was also resected using a stapler. Histology confirmed the diagnosis.

Together with our experience and the data found in the literature we conclude that laparoscopy may be used as the primary treatment approach in complicated urachal disease.

P053 Cardiopulmonary decompensation after desufflation of capnoperitoneum

C. Matthes, T. Huckstadt, S. Richter, T. Ploenes, F. Schier

Department of Pediatric Surgery, University Medical Center Mainz, Mainz, Germany

Background. Laparoscopic operations involve capnoperitoneum with elevated abdominal pressure, followed by desufflation. Due to lack of time in the operating room routine, surgeons are trying to expedite operations. Subsequently, desufflation is performed very quickly and the effects of this procedure are neglected.

Materials. While performing an experimental laparoscopic study, 20 piglets aged 2 to 3 weeks, mean weight 6.2 kg, were exposed to abdominal pressures up to 24 mmHg

for 90 minutes, followed by prompt desufflation. Heart rate, mean arterial pressure, pulmonary arterial pressure and endtidal CO_2 were registrated.

Results. 3 out of 20 piglets died after quick desufflation. After initial increase of heart rate, rapid decrease of all parameters followed, leading to cardiopulmonary decompensation.

Conclusions. Rapid abdominal desufflation after laparoscopy can cause fatal cardiopulmonary reactions. As a consequence, further desufflations during this study were performed step-by-step, allowing the pigs to adjust to modified pressure conditions and resulting in stable vital parameters.

Quick desufflation after laparoscopic procedures should be avoided. Further investigations have to be performed to specify the dependence of cardiopulmonary reactions on different abdominal pressure levels and duration of capnoperitoneum.

P054 Video-assisted thoracoscopic T2-T5 sympathectomy for the treatment of palmar and axillary hyperhidrosis

S. Pedevilla, R. Rieger

Chirurgische Abteilung, KH Gmunden, Austria

Background. Thoracic sympathectomy is the most effective treatment for upper limb hyperhidrosis; however, controversies exist about the appropriate surgical technique.

Material and methods. A retrospective review was carried out of 103 patients who underwent 203 thoracic sympathectomies for palmar (162 hands) and axillary (166 axillae) hyperhidrosis. In all cases video-assisted thoracoscopic resection of the sympathetic chain T2 to T5 was performed.

Results. There was no mortality, no severe complication, and no conversion to a thoracotomy. Minor morbidity was 11.6% including 3 cases of transient unilateral miosis. No patient sustained a complete Horner syndrome. Transient postsympathectomy neuralgia was observed in 65%. Postoperatively, excessive sweating was eliminated in all cases.

After a mean follow up of 30months 161 of 162 hands (99.4%) and 124 of 166 axillae (74.7%) remained dry. In one hand (0.6%) and 42 axillae (25.3%) moderate sweating recured but in no case it reached the preoperative extent and no patient needed reoperation. Compensatory sweating occured in 94% of patients but was mild and clinically insignificant in 75%. 91% of patients were very satisfied with the result of the operation, 9% were dissatisfied mainly because of compensatory sweating.

Conclusions. Thoracoscopic resection of the sympathetic chain from T2 to T5 is an effective and safe operation for eliminating excessive palmar and axillary sweating. The major disadvantage is compensatory sweating which may be troublesome in up to 10% of patients.

P055 Bouveret Syndrome and gallstone ileus with obstruction in the ileum – a very rare combination of two rare diseases: decrease of mortality by combined endoscopic and minimal invasive surgery

M. Lang, F. Hofbauer, U. Swoboda

Chirurgische Abteilung, a.ö. KH, Oberpullendorf, Austria

Gallstone ileus is a rare kind of mechanic ileus of the small bowel that we find in only 1–3%. Much more rare is the Bouveret Syndrome. That means incarceration of a gallstone in the duodenum with consecutive gastric obstruction. This occures in only 3% of all cases of gallstone ileus. In 90% the gallstone induced obstruction occures in the terminal ileum.

We refer a combination of both: Bouveret Syndrome and small bowel.

The 75 year old woman presented with a 1-day history of malaise with upper abdominal pain and nausea. The primary diagnostic was done with ultrasonography and gastroscopy. The sonography revealed a cholelithisasis. The gastroscopy showed 5 gallstones in the stomach and duodenum. One great occluding stone in the duodenum beneath a cholecystoduodenal fistula. We extracted the stones endoscopically. Because the patient worsened and the further diagnostics showed a small bowel ileus we performed the diagnostic laparoscopy and enterolithotomy. Some weeks later we performed finally the laparascopic cholecystectomy and the laparoscopic closure of the fistula.

Refered mortality rate is up to 25%. We mean that the combination of endoscopy and minimal invasive surgery can decrease the mortality.

In addition we estimate, that also in standard hospitals this rare disease can be diagnosted quickly and without great effort and expensive diagnostics, if there exists experience in endoscopy and laparascopy. Too one should think on this rare disease in elder patients with bowel obstruction, gallstones and pneumobilia to accelerate diagnosis and therapy. This could decrease the mortality.

P056 Short term effects of laparoscopy in pigs

T. Huckstadt, C. Matthes, S. Richter, T. Ploenes, F. Schier

Pediatric Surgery, University Medical Center Mainz, Mainz, Germany

Background. This investigation was initiated to quantify changes in pulmonary and cardiac parameters during increasing intraabdominal pressures up to 24 mmHg without ventilatory adaptation.

Material and methods. Eleven piglets (body weight 4.27–7.3 kg) were anesthesized. The investigation was started on normocarbia. The intraabdominal pressure (IAP) was raised in 6 mmHg steps up to 24 mmHg, followed by desufflation. Each pressure level was maintained for 20 minutes. Tidal volume (V_T), endtidal carbon dioxide pressure ($etCO_2$), heart rate (HR), mean blood pressure of carotic (p carot) and pulmonary artery (p pulm) and arterial oxygenation (p_aO_2) were registrated. Compliance of the respiratory system (C_{rs}) was calcu-

IAP	0 mmHg	6 mmHg	12 mmHg	18 mmHg	24 mmHg	0 mmHg	0 mmHg+
C_{rs} [mL/cm H_2O kg]	1.1	0.8*#	0.65*#	0.52*#	0.41*#	0.9#	1.0
V_T/kgBW [mL/kg]	10	9*#	8*#	7*#	6*#	10#	10
etCO_2 [mmHg]	38	42	45*	50*	58*#	44*#	39#
p_aCO_2 [mmHg]	45	47	52*	61*#	69*#	51*#	44#
p_aO_2 [mmHg]	562	470*#	450*	468*	449*	571#	553
mean p carot [mmHg]	60	47*#	34*	35*	36*	60#	58
mean p pulm [mmHg]	19	22	20	21	23	22	20

mean values, * statistical significant to baseline ($p < 0.05$), # statistical significant in comparison to previous IAP-step ($p < 0.05$), + after 20 minutes

lated. These parameters were examined once more 20 minutes after desufflation.

Results.

HR didn't change significantly during procedures, there was only a slight trend to tachycardia.

Conclusions. Impairment of vital parameters has proven to be reversible. Ventilatory parameters immediately returned to normal, while intravascular CO_2 required a longer adaptation time.

P057 Accidental gas embolism caused by vessel injury during laparoscopy

S. Richter, T. Huckstadt, C. Matthes, T. Ploenes, F. Schier

Department of Pediatric Surgery, University Medical Center Mainz, Mainz, Mainz, Germany

Background. During laparoscopy, vessel injury caused by the Veres needle can produce gas embolism. This is a rare, but severe complication. Currently, it is unknown whether carbon dioxide or air embolism is causing similar reactions. The aim of the current study is to evaluate if there are different cardiopulmonary reactions while either air or carbon dioxide are injected into the venous system.

Methods. Eleven male piglets aged 2 to 3 weeks, mean weight 6.15 kg ± 1.15 kg, underwent capnoperitoneum (10 mmHg) and continuous intravenous injection of air (n = 7) or carbon dioxide (n = 4). One piglet of the latter group received an additional single bolus of 20 ml CO_2. The protocol was approved by the local ethical commission for animal studies. 0.2 ml air/kg/min or 0.4 ml CO_2/kg/min was injected. Heart rate, mean arterial pressure, pulmonary arterial pressure and endtidal CO_2 were monitored continuously.

Results. Air embolism was letal in all piglets after 22 minutes, being equivalent to 2.7–3 ml/kg. All piglets survived CO_2 embolism. Arterial CO_2 pressure increased, other cardiopulmonary parameters were stable within physiological range. Bolus injection of CO_2 caused additional increase of pulmonary arterial pressure and heart rate, plus decrease of mean arterial pressure and endtidal CO_2. However, these parameters returned to normal within 60 minutes.

Conclusions. Even small amounts of injected air can lead to death. Moderate intravenous administration of carbon dioxide including bolus injection is tolerated. Air contamination of the insufflation system should be avoided under all circumstances to prevent letal outcome after accidental vessel injury.

P058 Bariatrische Chirurgie ein ästhetischer Eingriff?

S. W. Pfarr[1], M. Sykora[2], E. Fritsche[1], A. Scheiwiller[2], J. Metzger[2]

[1]Abteilung für Plastische Chirurgie, Luzern, Switzerland; [2]Abteilung für Viszeralchirurgie, Luzern, Switzerland

Grundlagen. Bariatrische Chirurgie ist eine anerkannte Therapieform bei morbider Adipositas. Neben der Reduktion der Komorbiditäten besteht auch ein psychologischer Aspekt. Patientenerwartung an die Ästhetik sind hoch. Diese Studie beschäftigt sich mit bariatrischen Eingriffen unter Berücksichtigung plastisch-chirurgischer Folgeeingriffe.

Methodik. Eingeschlossen wurden Daten von 137 Patienten, welche eine bariatrisch-chirurgische Therapie am KSL erhielten. Als Operationsindikation dienten die in der Schweiz geltenden gesetzlichen Bestimmungen. Nachkontrollen erfolgten bis zu 6 Jahre postoperativ.

Ergebnisse. 137 Patienten (Median 40J, 22–64 J, w 76,1% / m 23,9%, praeop. BMI-Median 46, Range 35–68). Von 1998–2000 wurden 56 gastric-bandings (ba), kein gastric-bypass (by) und von 2001–2005 24 bandings sowie 55 bypass-Operationen durchgeführt. 2-Jahres-Kontrollen waren bei 60 Patienten (ba 49 [81,7%]/ by 11 [18,3%]) möglich. Insgesamt zeigten 65% ein EWL von mehr als 50%.

Eine Konsultation in der plastischen Chirurgie erfolgt nach 11/2–2 Jahren. 16 Patienten (11,6%, 100% w, Altersmedian 41 J.) hatten eine Sprechstundenkonsultation in der plastisch Chirurgie mit operationswürdigem Befund. Lediglich 50% wurden nach Kostengutsprache der Krankenkasse operiert. Nach exzessivem Gewichtsverlust resultiert überschüssiges Integument bei entleerter Fettschürze, persistierende Mammahyperplasie/-ptose und der Oberarme/-schenkel. Hauptspektrum waren Abdominoplastik, das circumferential-body-lifting, kombiniert mit Korrekturen der Oberschenkel/-arme oder einer Mammareduktion/-straffung.

Schlussfolgerungen. Bariatrische Chirurgie ist kein ästhetischer Eingriff. Ästhetische Einschränkungen sind Ergebnisse der bariatrischen Chirurgie. Hieraus folgt der Patientenwunsch nach einer plastisch-chirurgischen Korrektur der Problemzonen. Bei fehlender kassenärztlicher Pflichtleistung werden diese oft nicht übernommen.

P059 Perigastric versus pars flaccida approach in Roux-Y gastric bypass in morbidly obese patients

A. Perathoner, A. Klaus, F. Aigner, H. Nehoda, G. Mühlmann, G. Brandacher, R. Margreiter, H. Weiss

General, Thoracic and Transplant Surgery, Medical University of Innsbruck, Innsbruck, Austria

Background. In morbidly obese patients two different techniques of pouch formation are performed. One which excludes the anterior trunk of the vagal nerve and another which dissects this nerve by stapeling the entire perigastric tissue to simplify the procedure. Both techniques are assessed by means of clinical outcome.

Material and methods. This retrospective study comprised a total of 25 morbidly obese patients (Median BMI = 43 kg/m^2) undergoing laparoscopic Roux-Y gastric bypass as their first bariatric procedure. Group 1 consisted of 10 patients without vagal nerve dissection and group 2 consisted of 15 patients operated on with the stapeling technique. All patients were followed postoperatively regarding to our standardized protocol. Clinical parameters, such as weight loss, complications and a satiety score were assessed. Serum values of ghrelin, secretin and gastrin were measured.

Results. All procedures could be successfully performed by laparoscopy. No patient in group 1 suffered from a complication whereas two patients in group 2 were re-operated on postoperative day 2 and 5 due to bleeding and lost drain salvage, respectively. All patients significantly reduced body weight ($p < 0.01$ compared to preoperative) during a median follow-up of 18 months.

Parameters of satiety assessment did not differ between the two groups. In addition, serum values of secretin, gastrin as well as ghrelin showed no statistical significant difference between group 1 and group 2.

Conclusions. Both procedural techniques are safe and effective in terms of weight reduction. The role of the anterior vagal nerve remaines neglectable with regard of clinical outcome.

P060 Ist die thorakale PDA in der Fast Track Surgery unumgänglich?

M. G. Möschel, A. Büsel, D. Wohlgenannt

KH Hohenems, Hohenems, Österreich

Im Jahr 2005 haben wir 27 Darmoperationen nach unseren Kriterien der fast track surgery durchgeführt. Da die Anästhesisten unseres Hauses der routinemäßigen thorakalen Periduralanästhesie kritisch gegenüber standen, haben wir uns dazu entschlossen, bei sonstiger Beachtung aller üblichen Kriterien auf diese zu verzichten.

In der Folge haben wir diejenigen Parameter untersucht, auf die die PDA nach der Theorie der fast track surgery den größten Einfluss haben sollte; die Komplikationsrate, die Vermeidung der postop. Paralyse sowie die Schmerzkontrolle. Wir haben insgesamt 4 Komplikationen gesehen (14,8%). Neben einer Pneumonie und einem Bauchdeckenabszess kam es zweimal zu einer Anastomoseninsuffizienz.

Als Kriterien für die postop. Darmparalyse haben wir die Notwendigkeit einer Antiemetikagabe und den Zeitpunkt des ersten Stuhlgangs untersucht: 89% der Patienten haben nie ein Antiemetikum gebraucht. 82 % der Patienten haben den ersten Stuhlgang innerhalb der ersten 2 postop. Tage abgesetzt.

Zur Schmerzkontrolle haben nur 18,5% der Patienten unsere Standard-i.v.-Medikation mit je zweimal täglich 1000 mg Paracetamol sowie 75 mg Diclofenac länger als bis zum zweiten postop. Tag gebraucht. 66,6% der Patienten benötigten keine zusätzliche s.c. Gabe eines Morphins. Lediglich bei 3,7% war eine mehr als einmalige Gabe notwendig. Negative Effekte auf die Darmmotilität waren nicht nachweisbar.

Schlussfolgerungen. Ein positiver Einfluss der thorakalen PDA auf die untersuchten Parameter ist nach unseren Erfahrungen nicht nachweisbar.

Chirurgische Endokrinologie

P061 The FNAC in endemic multinodular goitre region – a diagnostic roulette

I. Hassan[1], A. Zielke[1], H. H. Müller[2], P. Barth[3], M. Rothmund[1]

[1]Department of Visceral, Thoracic and Vascular Surgery, Philipps University Marburg, Marburg, Germany; [2]Institute of Epidimiology and Biometry, Philipps University Marburg, Marburg, Germany; [3]Institute of Pathology, Philipps University Marburg, Marburg, Germany

Background. We aimed to determine the clinical value of fine-needle aspiration cytology (FNAC) in the preoperative assessment of thyroid nodules.

Material and methods. A total of 100 patients with preoperative FNAC because of thyroid nodule, who underwent thyroid resection were included in the Study. The preoperative FNAC was classified in five groups (Weiß&Pilz-Classification). 0: no thyroid cells; I: normal thyroid cells; II: degenerative thyroid cells no malignacy; III: unclear dignity follicular neoplasia; IV: malignant thyroid cells. The Results of FNAC were compared with the histopathological postoperative diagnosis.

Results. In 24/100 cases no thyroid cells were present. In 15 patients carcinoma were found in the histopathological postoperative diagnosis. The statistical analysis of the data regarding the operation indication was: Sensitivity 90%, specificity 40.9%; likelihood-ratio (LR) was 0.24 for benigne goitre, 13.2 for maligne goitre and 0.55 for follicular neoplasia. Regarding the diagnosis of a follicular neoplasia, a posteriori LR was 70% of a positive test and 4.1% of negative test.

Conclusions. In selected patients the a priori probability of malignant findings is high in thyroid nodules. Despite this high a priori bad performance data of the FNAC disappoint probability. The mean reason for such results in Germany, it is not only the unfavourable diagnostic conditions by a higher prevalenz of thyroid nodules in endemic goiter region but also the result of the absence of specialized Cytologist, who accomplish the FNAC at the patient up to the receipt of meaningful material after selection of the suspected nodule.

P062 The pyramidal lobe – a source of pitfalls in total thyroidectomy

E. M. Braun[1], G. Wolf[1], H. J. Mischinger[1], L. Hausleitner[2], F. Anderhuber[2]

[1]Surgical Clinic, MUG, Graz, Austria; [2]Institute of Anatomy, MUG, Graz, Austria

Background. In total thyroidectomy macroscopic complete removal of the thyroid tissue is mandatory. A missed pyramidal lobe may reveal scintigraphic residues after operation. An anatomical study was performed to evaluate frequency and extent of accessory thyroid glands and pyramidal lobes of the thyroid.

Material and methods. For this study at the Insitute of Anatomy (MUG) the frequency, size and location of the pyramidal lobe was analysed in 58 cadavers. The thyroid was totally exposed and the pyramidal lobe was measured and its relations to the surrounding structures were noted. These results were compared to scintigraphic images.

Results. A pyramidal lobe occured in 55 % of the investigated thyroids. 50 % of them exceeded 2 cm, with 9/58 reaching the cranial border of the thyroid cartilage. All those were less than 5 mm in diameter. In 5 cases the pyramidal lobe extended to the hyoid bone. One case showed an accessory thyroid gland at the thyrohyoid membrane. Scintigraphic analyses in vivo revealed no comparable amount of pyramidal lobes.

Conclusions. The pyramidal lobe occures in more than 50% of all thyroids but is rarely diagnosed by scintigraphic imaging. This has to be taken into account in order not to leave residual thyroid tissue along the thyroglossal duct in total thyroidectomy.

Hernie

P063 Intraoperative tensiometry as a decision-making aid for the treatment of large abdominal wall hernias

C. Hollinsky, R. Bobak Wieser, R. Kocijan, S. Sandberg

Kaiserin Elisabeth Spital, Vienna, Austria

Background. The outcome of treatment for large ventral abdominal wall hernias is currently unsatisfactory. New treatment options are introduced in this study.

Material and methods. From 1995 to 2005, 587 ventral hernias were operated on in our surgical department. The hernia gap was very wide in 54 cases. In these cases primary abdominal wall closure could be performed only under strong lateral tension. Intraoperative tensiometry was conducted in these patients to determine the horizontal forces and to establish whether the forces could be reduced by the individual steps of treatment.

Results. Intraoperative tensiometry revealed horizontal forces of 10 to 60 Newton. An RTL technique based on lateral loads was performed in 4 cases, an RTL technique with the use of an onlay mesh in 29 cases, while an RTL procedure using the Ramirez technique and an onlay mesh was done in 21 cases. One patient died after surgery in the intensive care unit, following a lesion in the small intestine and sepsis. Hematomas occurred in 8 patients (14.8%); the haematomas required surgical revision in 2 cases. Recurrent hernias were noted in 6 cases (11%) and two patients (3.7%) complained of strong chronic pain.

Conclusions. Intraoperative tensiometry is a very useful decision-making aid for the treatment of abdominal wall hernias; more extensive use of this procedure is warranted. The results are convincing even after selective surgical treatment. Besides, further research into the prevention and treatment of incisional hernias is also required.

P064 Simplified preperitoneal implantion using a memory ring armed polypropylene patch in open inguinal hernia operation

G. Federmann[1], M. Brauckmann[2]

[1]Klinik für Allgemein- und Visceralchirurgie, Klinikverbund Bassum & Sulingen, Bassum, Germany; [2]Chirurgische Klinik, Kreiskrankenhaus Idstein, Idstein, Germany

Background. Open inguinal herniotomy using preperitoneal implantated mesh was established by Usher, Stoppa, Wantz and others as a successful procedure, but it is technically difficult and time consuming. Therefore until today this procedure is not used in a big range. But also laparoscopic procedures (TEP, TAPP) demand a very skilful operational technique and a “high tech” equipment, and therefore – and because of economical reasons – are not widely used.

Material and methods. Since 15.12.2006 we use a simplified technique in the preperitoneal implantation of a lightweight memory ring armed polypropylene mesh (Polysoft Hernia Patch™) as developed by E. Pelissier in open inguinal hernia operation.

The video shows and explains the procedure techniques, which slightly differ in operating direct resp. indirect groin hernias. The technique mainly is applied in large hernias (mainly Type Schumpelick 3).

Results. In contrast to the normaly time-consuming Wantz technique this simplified procedure using the described Patch reduces the average operation time to 32 to 38 minutes.

Conclusions. This new operation technique simplifies the preperitoneal placement of a patch in herniotomy of large inguinal hernias. It can be performed quickly and therefore under economical aspects seems to be a suitable operation technique under hospital as well as under ambulant conditions.

P065 Open preperitoneal implantation of a memory ring armed polypropylene patch (Polsoft Hernia Patch™) in inguinal hernia operation – time analysis

G. Federmann[1], V. Dathe[1], M. Brauckmann[2], D. Buchsteiner[2]

[1]Klinik für Allgemein- und Visceralchirurgie, Klinikverbund Bassum & Sulingen, Bassum, Germany; [2]Chirurgische Klinik, Kreiskrankenhaus Idstein, Idstein, Germany

Background. Under increasing economical pressure optimal treatment of inguinal hernia requires a well-organized

treatment, and therefore the choice of the procedure and its operative time gains increasing importance. Other features as patient conditions and surgeon's personal experience are influenced only partially. In contrast, a standardized and despite different operation situs constant reconstruction phase can reduce operation time and operation costs.

Material and methods. Since 15.12.2004 and 30.1.2006 we treated 212 Hernias in 195 patients by implantation of a preperitoneal placed memory-ring-armed light weight polypropylene patch (Polysoft Hernia Patch™). We recorded total operation time, starting phase (cut-subcutaneum), preparation phase (opening external fascia – start of reparation), reparation phase (implantation of patch – closure of external fascia) and closing phase (until suture).

Results. Total operation time in medial hernias was 31 min (18–107), in lateral hernias 35 min (18–65) and in combined hernias 36.4 min (20–65). Operation was finished within 30 minutes in 51.9 %, within 40 minutes in 84.7 % and within 45 minutes in 88 % of all hernias. In average starting phase lasted 3.5 min, preparation phase 15.2 min, reparation phase 8.9 min and closing phase 4.9 min. Compared to total operation time the reparation phase was relatively constant, whereas the preparation phase increased analogous to the operation time.

Conclusions. Based on our results the open preperitoneal implantation of a memory-ring-armed polypropylene patch (Polysoft Hernia Patch™) in inguinal hernia operation is adequate to meet the economical demands.

P066 Laparoscopic hernia repair (TAPP) of an incarcerated Spieghelian hernia: case report

G. Köhler[1], G. A. Bernhardt[1,2], A. Baumgartner[1], G. Gruber[1], K. Gruber[1]

[1]Chirurgische Abteilung, LKH Weiz, Weiz, Austria; [2]Abteilung für Allgemeinchirurgie, LKH Voitsberg, Voitsberg, Austria

Background. Spieghelian hernia (Hernia linea semilunaris) presents a rare case of abdominal wall herniation. Little data about this type of hernia is available in literature and only a few cases are published using different operation methods.

To our knowledge this is the first presentation of case of a Spieghelian herniotomy using the transabdominal preperitoneal patch technique (TAPP) with a partially absorbable lightweight mesh.

Methods. We report the case of a 66-year-old male patient with clinical and sonographic diagnosed left sided, incarcerated, abdominal wall hernia (Spieghelian hernia). The hernia repair was performed in TAPP technique using a partially absorbable lightweight mesh (Ultrapro®, Ethicon). The operation was performed as described for groin hernia repair in TAPP technique. The mesh was fixed with titanium clips and the peritoneal wall was closed using an absorbable suture.

Results. The patient left the hospital on the fourth postoperative day in good general condition without pain. Two weeks after surgery he returned to every day activities. After a follow-up period of six month he is still doing fine with no signs of recurrence.

Conclusions. Spieghelian herniotomy using the transabdominal preperitoneal patch technique (TAPP) presents a safe operation method resulting in good clinical and perfect cosmetic outcome with little postoperative pain and high patient satisfaction.

P067 Mesh positioning for laparoscopic incisional hernia repair: it's as simple as that

T. Kapp, M. Zünd, J. Lange, A. Zerz

Kantonsspital St. Gallen, St. Gallen, Switzerland

Background. During laparoscopic incisional hernia repair there are two difficulties: extensive adhesiolysis and correct positioning of the mesh for a sufficient coverage of the hernia gap can be time consuming.

Our procedure simplifies the otherwise difficult and laborious mesh positioning.

Surgical procedure. First, we perform the adhesiolysis, reposition the hernia content and resect the hernia sac. The mesh will be marked in the center with an approximately 20 cm long suture and then inserted into the abdomen. Through the middle of the hernia gap we percutaneously puncture an Endoclosure needle, grasp the suture and lead it out. This way the mesh will be positioned centrally under gap. Additionally we fix the mesh (Protrac) in each corner with simple interrupted sutures using the Endoclosure technique. For this the Endoclosure needle will be punctured percutaneously and through the mesh. Laparoscopically we introduce a suture into the needle and pull it back subcutaneously. Again we puncture the abdominal wall and the mesh, grasp the suture and tie the knot extra-corporally.

Results. In 2005 we operated 25 patients with hernia gap diameters between 3 and 5 cm. During this time the procedure was evaluated and standardized. Median hospital stay was 4 days, median duration of operation 70 min. We encountered 2 complications (8%).

Conclusions. Due to this simple procedure for mesh positioning otherwise laborious steps are simplified and can be performed without problems. The laparoscopic adhesiolysis remains the technically most demanding step and is crucial for the feasibility of a laparoscopic incisional hernia repair.

P068 Laparoskopische Herniorraphie zur Versorgung des kindlichen Leistenbruches

C. Berkhoff, A. Hellinger

Allgemein- und Visceralchirurgie, Fulda, Germany

Grundlagen. Pathogenetisch liegt bei der kindlichen Leistenhernie, anders als beim Erwachsenen, in der Regel eine fehlende Obliteration des processus vaginalis peritonei vor.

Die operative Versorgung in offener Technik nach Czerny bzw. Ferguson sieht daher die hohe Bruchsackabtragung auf Niveau des inneren Leistenringes vor.

Bei der laparoskopischen Herniorraphie wird eben dies durch den transabdominalen Verschluß des Bruchsackes auf Höhe des inneren Leistenringes erreicht.

Methodik. Im Nabelgrund wird ein 5 mm Trokar offen eingebracht und ein Pneumoperitoneum mit 6 mm Hg angelegt. Über 2 Braunülen mit 2 mm Durchmesser, die auf Nabelhöhe eingebracht werden, erfolgt der Verschluß mit nicht resorbierbarer Naht unter Verwendung zweier 2 mm Nadelhalter.

Seit 2½ Jahren haben wir unser Spektrum durch die laparoskopische Herniorraphie erweitert.

Bei 187 Kindern versorgten wir 213 Hernien, 46 davon laparoskopisch. Bei Kindern vor dem ersten Lebensjahr, sowie bei Inkarzeration operierten wir weiterhin offen.

Wir stellen unsere ersten Erfahrungen mit dieser Technik vor.

Schlussfolgerungen. Die laparoskopische Herniorraphie ist eine relativ neue Technik der Versorgung kindlicher Leistenbrüche. Insbesondere profitieren Kinder mit beidseitigen Hernien, Rezidivhernien, mit unsicherem Hernienbefund, sowie solche mit occulten kontralateralen Lücken.

Die für die offene Technik beschriebenen Kurz- und Langzeitkomplikationen wie Hodenhochstand, -atrophie, obstruktive Azoospermie (durch Traumatisierung des ductus deferens) sind zugangsbedingt nicht zu erwarten.

P069 Laparoscopic procedures in Morgagni/Larrey hernia

G. Federmann

Klinik für Allgemein- und Visceralchirurgie, Klinikverbund Bassum & Sulingen, Bassum, Germany

Background. Morgagni/Larrey hernias are present in about 3% of all diaphragmal hernias in adults. Their symptoms differ from asymptomatic findings to incarcerated hernias. Typical symptoms are pain in the upper bowel near the costal bow (e.g. at night), pressure feeling in the upper bowel, but dyspnoea as well.

Material and methods. During the years we saw 4 cases in laparoscopy using different therapies: in 2 cases we observed a typical Morgagni/Larrey hernia in clinically asymptomatic patients during a laparoscopic cholecystectomy. In these we left them without further therapy. There were no late complications or symptoms caused by these hernias.

In a 69 year old man we assured a symptomatic Morgagni/Larrey hernia by laparoscopy and closed the diaphragmal gap by running suture. In the further course this patient was free of symptoms. – At least, in a 78-year old women a big symptomatic Morgagni hernia (dyspnoea) was assured by radiology showing a part of the transverse colon in the right thorax. During laparoscopy the colon and omentum was reduce into the abdominal wall and the hernia defect was closed using a Composix Kugel Patch™. The patient was dismissed 2 day after operation free of symptoms.

Conclusions. Underlined by the presented cases it can be shown that Morgagni/Larrey hernias in adults can be treated adequately according to their size by laparoscopy. Especially in larger defects, combined or surface covered Polypropylene patches can provid a tension free closure of the defect.

Chirurgische Forschung

P070 Influence of neuromuscular electrical stimulation on muscle metabolism in patients undergoing major abdominal surgery

S. Stättner[1], E. M. Strasser[2], M. Quittan[2], M. Klimpfinger[3], E. Roth[4], J. Karner[1]

[1]Chirurgie, SMZ-Süd, Vienna, Austria; [2]Institut für Physikalische Medizin und Rehabilitation SMZ-Süd, Vienna, Austria; [3]Pathologisch-bakteriologisches Institut SMZ-Süd, Vienna, Austria; [4]Chirurgische Forschung, Universitätsklinik für Chirurgie, Vienna, Austria

The development of muscle weakness and atrophy is a major problem of patients undergoing major abdominal surgery as the reduction of lean tissue mass is associated with diminished immune responsiveness, increased infection rates, delayed tissue healing, complications during weaning of mechanical ventilation and delayed recovery. Upon mechanical stimulation, muscles are able to produce stimulatory paracrine and autocrine factors, activating translation initiators and thereby stimulating muscle hypertrophy. Therefore the aim of this study is to investigate the acute influence of neuromuscular electrical stimulation (NMES) on muscle metabolism in a randomised, controlled, observer-blinded, cross over study design.

Patients with elective major abdominal surgery between 18 and 65 years are included. The legs of the patients are randomly classified as treatment leg and control leg. NMES stimulation of musculus quadriceps femoris was performed from the first until the 4th postoperative day (30 min / day). The control leg obtains the same therapy as the treated leg but the electrical intensity of the stimulation does not lead to muscle contraction.

Muscle biopsies are gained 2.5h after the last NMES from the treated leg and the control leg by a needle biopsy. Muscular proteins (IGF-1Ea, MGF, ubiquitin and free amino acids) using RT-PCR, Western Blot and HPLC as well as histological sections (light- and EM- microscopy) are analyzed.

We present preliminary data of our first patients and give an overview of our methodological approach.

P071 Does hyperbaric oxygenation (HBO) have a positive effect on porcine pancreas preservation?

P. Stiegler[1], S. Schaffellner[1], V. Matzi[2], H. Klemen[2], V. Stadlbauer[3], J. Greilberger[4], S. Hallström[4], F. Smolle-Jüttner[2], C. Lackner[5], F. Hackl[1], F. Iberer[1], K. Tscheliessnigg[1]

[1]Department for Transplantation Surgery, Medical University Graz, Graz, Austria; [2]Department for Thoraxic Surgery and Hyperbaric Medicine, Medical University Graz, Graz, Austria; [3]Department for Gastroenterology and Hepatology, Medical University Graz, Graz, Austria; [4]Institute for Physiological Chemistry, Medical University Graz, Graz, Austria; [5]Department for Pathology, Medical University Graz, Graz, Austria

Background. In order to achieve sufficient numbers of viable islet cells for xenotransplantation, better protocols for

organ preservation, isolation and purification are needed. The aim of this study was to assess the influence of pre-oxygenated preservation solutions and a specially designed preservation solution based on a-ketoglutaric acid on the porcine pancreas.

Methods. University of Wisconsin solution (UW), Celsior, Perfadex and NaCl are oxygenated with 100% oxygen for 50 minutes at 1.5 bar using a hyperbaric chamber. Porcine pancreata are harvested at a local slaughter house and stored in pre-oxygenated and not oxygenated preservation solutions at 4°C. Tissue cuts are performed to assess the occurrence of apoptosis using HE and caspase antibody staining. Malondialdehyde, lipase, amylase, carbonylated proteins and ATP/ADP ratio are measured to show the influence of the different solutions on the porcine pancreas.

Results. Is it feasible to pre-oxygenate UW, Celsior, Perfadex and NaCl. The oxygen levels can be raised up to 100 times in the preservation solutions using HBO. Occurrence of apoptosis is dependent on the preservation solution and there is a significant difference between UW, Celsior and Perfadex. Preservation of porcine organs using the solution based upon α-ketoglutaric acid seems to be advantageous over conventional preservation solutions.

Conclusions. HBO has a positive impact on porcine organ preservation. As ischemically damaged islet cells are likely to undergo cell death or loose functionality due to hypoxia, the use of pre-oxygenated preservation solutions is a promising method to achieve better yields after islet isolation and transplantation.

P072 Influence of Pringle maneuver in liver resections on hepatobiliary transporter expression in hepatocytes and postoperative jaundice

G. A. Bernhardt[1,2], G. Zollner[3], H. Cerwenka[1], H. Bacher[1], P. Kornprat[1], K. Zatloukal[4], M. Trauner[3], H. J. Mischinger[1]

[1]Klinische Abteilung für Allgemeinchirurgie, Medizinische Universität Graz, Graz, Austria; [2]Abteilung für Allgemeinchirurgie, LKH Voitsberg, Voitsberg, Austria; [3]Abteilung für Gastroenterologie und Hepatologie, Medizinische Universitätsklinik, Medizinische Universität Graz, Graz, Austria; [4]Institut für Pathologie, Medizinische Universität Graz, Graz, Austria

A number of perioperative factors are known to cause postoperative jaundice in abdominal surgery.

The Pringle maneuver during liver resection leads to an ischemic reperfusion injury which facilitates liver damage in some patients. It remains unknown if hepatobiliary transporter systems play a role in the development of postoperative hyperbilirubinemia.

Seventeen patients entered the study divided into two groups: group one with postoperative hyperbilirubinemia (eight patients); group two with normal bilirubine levels (nine patients). Two liver tissue samples where taken from each patient. The first sample at the beginning of surgery and the second about 30 minutes after ending of Pringle maneuver.

RNA levels of most important hepatobiliary transporter systems (NTCP, BSEP MRP2, MDR3) as well as HSP70 as positive control where determined using real-time PCR technology. The differences between first and second sample were measured and RNA levels were correlated with postoperative bilirubine levels.

Three patients were excluded because of poor quality of the isolated RNA. HSP70 in the remaining 14 patients showed a 3.7fold increase in sample two compared to sample one ($p < 0.001$). Hepatobiliary transporter RNA levels did not change significantly. No correlation with the postoperative bilirubine levels could be identified. There were no differences between group one and two.

On a transcriptional level no changes in hepatocytes could be identified to be responsible for postoperative jaundice. Presumably changes on a posttranscriptional level account for the development of postoperative jaundice. Further studies have to investigate this hypotheses and have to show if changes could be targets for pharmaceutical therapy.

P073 An in-vivo stress model and whole gene tissue array as modern research tool to identify stress proteins as diagnostic markers and therapeutic targets

G. A. Bernhardt[1,2], H. Bacher[2], H. Cerwenka[2], P. Kornprat[2], A. El-Shabrawi[2], K. Zatloukal[3], H. Mischinger[2,1]

[1]Abteilung für Allgemeinchirurgie, LKH Voitsberg, Voitsberg, Austria; [2]Klinische Abteilung für Allgemeinchirurgie, Medizinische Universität Graz, Graz, Austria; [3]Institut für Pathologie, Medizinische Universität Graz, Graz, Austria

In the past different proteins were identified to play a role in the mechanism of inflammation and stress response in the human body. For instance HSP70 was found to be of relevant importance as a fast reacting protein. Gene array technology offers a potential tool to get new information about regulation processes. The ischemic reperfusion injury (IR-injury) due to the Pringle maneuver during liver resections demonstrates a unique in-vivo model to study stress situation in the human body.

According to an established, already published protocol, liver tissue samples of selected liver patients were collected over the past years and stored in fluid nitrogen. Whole gene liver tissue arrays were performed to detect certain proteins in the IR situation that are elevated in the situation of stress compared to liver samples taken before Pringle maneuver.

At the moment final data are missing.

First data are promising to find new proteins as potential diagnostic markers and therapeutic targets. As it is known that most fast reacting proteins (like HSP70) are not only isolated on single organs but also playing a role in the entire body, the findings of this study might be of relevance for all organs under ischemic conditions.

Plastische und Rekonstruktive Chirurgie

P074 Management segmentaler Tibiadefekte mit Titancage, intramedullärer Nagelung und Spongiosaplastik

M. Klein, P. A. Ostermann

Klinik für Unfall-, Wiederherstellungs- und Orthopädische Chirurgie, Bocholt, Deutschland

Grundlagen. Für die Rekonstruktion langstreckiger Defekte großer Röhrenknochen stehen verschiedene Verfahren zur Verfügung. Die funktionellen und kosmetischen Ergebnisse sind jedoch oft nicht zufriedenstellend.

Methodik. Zwischen 2002 und 2005 erfolgte bei 3 Patienten (2m, 1w) eine Segmentresektion im Bereich der Tibia. Bei einem Patienten lag der Verdacht auf eine ossäre Metastase eines malignen Melanoms vor und bei einem anderen Patienten der Verdacht auf eine Metastase eines Nierenzellkarzinoms. Eine Patientin hatte eine pathologische Fraktur des distalen Unterschenkels bei metastasierendem Mamma-Ca. Hier erfolgte die Entfernung der betroffenen Tibiasegmente und die Rekonstruktion des Defektes mittels Titancage, intramedullärer Nagelung und Spongiosaplastik. Das Durchschnittsalter lag bei 54 Jahren (41–69 Jahre). Nach durchschnittlich 22 Monaten (6–42 Monate) wurden die Patienten klinisch und radiologisch nachuntersucht. Die postoperativ funktionellen Ergebnisse wurden mit dem Enneking-Score erfasst.

Ergebnisse. Die Patienten wurden ab dem 1. post-OP Tag unter schmerzadaptierter Vollbelastung an Unterarmgehstützen mobilisiert und konnten nach 14 Tagen entlassen werden. Im Rahmen der Routinenachuntersuchungen stellte sich bei einem Patienten deine gelockerte proximale Verriegelungsschraube dar, ein Patient wies einen nach distal gewanderten Nagel auf. Hier erfolgte der Wechsel des Kompressionsnagels. Radiologisch zeigte sich bei allen Patienten ein fest eingeheilter Titankorb. Die Patienten wiesen im Enneking-Score eine sehr gutes bis exzellentes Ergebnis auf.

Schlussfolgerungen. Die Vorteile des dargestellten Verfahrens liegen in der sofortigen schmerz-adaptierten Vollbelastung, der sofortigen freien Bewegung der angrenzenden Gelenke. Außerdem wird die Behandlungs- und Rehabilitationszeit, im Vergleich zu anderen Operationsverfahren deutlich verkürzt. Die Technik ist einfach und kostengünstig und es wird das in jeder unfallchirurgischen und orthopädischen Klink vorgehaltene Instrumentarium verwendet.

P075 Der Stellenwert der Sonographie bei CTS-Diagnostik?

F. Kömürcü[1], P. Messmer[1], O. Sommer[2], M. Deutinger[1]

[1]Abteilung für Plastische und Wiederherstellungschirurgie, KH Hietzing, Wien, Österreich; [2]Röntgen-Institut, KH Hietzing, Wien, Österreich

Grundlagen. Klinische und elektroneurographische Untersuchungen in der Diagnostik des CTS sind etabliert.

Ziel dieser Studie war es, festzustellen, Inwieweit ein Ultraschall des N. medianus die Diagnose sinnvoll ergänzen kann.

Methodik. Bei 17 Patienten (21 Hände) wurden präoperative und postoperative Sonographiemessungen an zwei standardisierten Stellen durchgeführt, am proximalen Rand des Retinakulum flexorum und in der Mitte des Retinakulum flexorums. Die prä- und postoperative Messwerte der Sonographie wurden verglichen.

Ergebnisse. Die präoperative Symptome wie Nachtschmerzen, Gefühlstörungen, subjektive Kraft, Thenaratrophie, Flaschenzeichen besserten sich in 82% der Fälle. Die Ultraschallmesswerte änderten sich postoperativ nicht.

Schlussfolgerungen. Im Ultraschall konnten morphologische Veränderungen des N. medianus festgestellt werden. Diese änderten sich nach der Operation nicht. Die klinische Symptomatik besserte sich, sodass der Ultraschall keine Rückschlüsse auf den Schweregrad der Kompression zulässt.

P076 Integration of vacuum assisted closure therapy in a multimodal treatment concept for complex diabetic foot ulcers

S. Schrinner, M. Gesslein, J. Pauser

Klinik für Unfall und Orthopädische Chirurgie, Klinikum Nürnberg Süd, Nürnberg, Germany

Background. Vacuum assisted closure therapy (V.A.C.) has become more and more established for treatment of complex wounds in the recent years. Nevertheless benefit of this procedure in treating diabetic foot ulcers with critical limb ischemia is still under debate.

Methods. V.A.C. therapy is commonly used in our foot unit for the treatment of neuropathic-ischemic foot ulcers to achieve rapid formation of granulation tissue, reduce infection and therefore support limb salvage. Since this procedure requires optimal débridement of necrotic tissue we combined V.A.C. therapy with different strategies of modern wound treatment.

Results. Particularly the treatment of critical ischemic foot ulcers without possibility of arterial reconstruction the use of medicinal larvae (Lucilia sericata) and advanced wound dressings for wound bed preparation ahead of V.A.C. therapy showed encouraging results. Complete wound closure was achieved afterwards continuing modern wound care or with help of split thickness grafting. We demonstrate our concept on the basis of two patients with severe diabetic foot gangrene regarding toes and lateral foot column each with forefoot phlegmon.

Conclusions. V.A.C. therapy can be integrated in a modern wound treatment concept at any stage without problems. Combination with different surgical procedures or conservative methods of wound treatment might yet improve results. In critical limb ischemia this concept can set the stage for limb salvage even in severe diabetic foot ulcers.

P077 Standards bei der Behandlung von Brandverletzten

L. Kamolz[1], H. Andel[2], T. Rath[1], M. Frey[1]

[1]Abteilung für Wiederherstellungs- und Plastische Chirurgie, Medizinische Universität Wien, Wien, Österreich; [2]Univ.-Klinik für Anästhesie und Allgemeine Intensivmedizin, Medizinische Universität Wien, Wien, Österreich

Grundlagen. Das Verbrennungstrauma führt zu massiven physiologischen Veränderungen. Die optimale Behandlung beruht daher auf einem profunden Wissen bezüglich der Veränderungen, die lokal und systemisch nach einem Verbrennungstrauma ablaufen. Ziel dieses Abstraktes und Vortrages ist die gegenwärtigen Standards bei der Behandlung von Verbrennungen zu presentieren.

Material und Methodik. Es wurden basierend auf die rezente Fachliteratur und gepaart mit den Erfahrungen an unserem Zentrum die wichtigsten Faktoren, bezüglich der Fragestellung: Standards in der Behandlung von Brandverletzten, evaluiert und herausgearbeitet.

Ergebnisse. Die exakte Bestimmung der Verbrennungsfläche, der Verbrennungstiefe und die adequate Volumensubstitution in der Frühphase sind von essentieller Bedeutung. Die derzeit gültigen chirurgischen Therapiestandards für Brandverletzte basieren auf einem frühzeitigem Debridement (tangentiale, epifasziale Nekrosektomie) und einer frühstmöglichen Deckung (Keratinozyten, Spalthaut, Lappenplastik). Weiters kommt der Behandlung und Korrektur des Hyper- bzw Katabolismus des Brandverletzten und der Vermeindung von Infektionen entscheidende Bedeutung zu. Für die Behandlung von Schwerbrandverletzten Patienten wurden in den letzten Jahrzehneten spezialisierte Verbrennungszentren gegründet, die eine diesen Standards entsprechende Versorgung garantieren. Um möglichst einfach und früh Patienten, die von der Behandlung an einem Brandverletzten-Zentrum profitieren würden, zu detektieren, wurden von der Amerikanischen Gesellschaft für Verbrennungsbehandlung entsprechende Kriterien für den Transfer von Patienten an ein Brandverletzten-Zentrum entwickelt.

- Verbrennungen > 10% KOF
- Verbrennungen: Gesicht, Hände, Füße, Damm
- Operationspflichtige Verbennungen
- Elektrisches Trauma
- Chemisches Trauma
- Inhalationstrauma
- Verbrennungspatienten mit schweren Zusatzerkrankungen
- Verbrennungspatienten mit schweren Zusatztraumen, wobei die Verbennung krankheitsbestimmend ist

Schlussfolgerungen. Diese derzeit gültigen Therapiestandards basieren auf einem mit der Verbrennungsbehandlung erfahrenen interdisziplinäres Behandlungsteam und einem entsprechend ausgestattetem Verbrennungszentrum.

P078 Schwerer Verlauf einer Infektion mit Humanem Papillomavirus

J. Roka, V. Moser, K. Schrögendorfer, P. Palkovits, A. Salat, M. Frey

Abteilung für Wiederherstellungs- und Plastische Chirurgie, Medizinische Universität Wien, Wien, Österreich

Dank der erfolgreichen antiretroviralen Therapie nimmt die Zahl der langzeitüberlebenden HIV-positiven Patienten zu. Dadurch drängt ein Begleitproblem des Immundefekts immer stärker in den Vordergrund: das Humane Papillomavirus (HPV). Die Gruppe der Erkrankungen, die durch HPV verursacht sind, setzt sich nicht nur aus benignen Tumoren (Warzen) zusammen, sondern auch aus malignen Prozessen (Plattenepithelkarzinomen). Die häufigste Lokalisation ist der Anogenitaltrakt. Wir berichten über den extrem seltenen und „bösartigen" Krankheitsverlauf eines jungen HIV-positiven Patienten.

Bei C.S., 1977 geboren, seit 1996 HIV-infiziert und unter antiretroviraler Therapie, wurden 1997 erstmals perianale Kondylome festgestellt. Ein Abstrich ergab eine Infektion mit HPV des low-risk-Typs, Analkanal und Rektum waren frei.

Sechs Jahre später fanden sich HPV-Läsionen beider Hände subungual, gluteal und intraanal. Im Jahr darauf wurde ein Bowen-Karzinom reseziert, 10 Monate später eine bowenoide Papulose des Präputiums. Zwischenzeitlich kam es auch zur Exkochleation multipler vulgärer Warzen. Trotz Ausschöpfung evidenzbasierter antiviraler Therapiemethoden kam es zu einer raschen Progredienz des Befalls im Sinne massiv wuchernder Warzen an Fingern und Zehen mit destruktiver Beteiligung des Knochens.

Der stigmatisierende Befund hinterließ auch am psychischen Zustand des Patienten Spuren: eine Phlegmone des Zeigefingerendgliedes zwang zu dessen Amputation. Nach dem Akuteingriff fasste der Patient den Entschluss zur Amputation aller warzenbefallenen Endglieder seiner Finger. Gleichzeitig wurde auch die Sanierung des Analkanals dringlich – in einer Biopsie waren eine AIN II° und high-risk-HPV nachgewiesen worden. In einer Sitzung wurden beide Regionen chirurgisch behandelt, die Histologie erbrachte Plattenepithelkarzinome G1 pT4 bzw. pT2.

Dieser Fallbericht illustriert in unikaler Weise die Grenzen empirischer und standardisierter Therapiekonzepte trotz Evidenz-basierter Medizin.

Gefäßchirurgie

P079 Faktoren für das Überleben nach Mesenterialinfarkt

A. Pentsch

Kantonsspital, St. Gallen, Schweiz

Grundlagen. Der Mesenterialinfarkt ist ein hochakutes Geschehen und hat nach wie vor eine sehr hohe Mortalität. Er

ist nicht sehr häufig aber wenn er auftritt wird die Diagnose häufig zu spät gestellt. Trotz aller neuen Entwicklungen in der Medizin hat sich die Sterblichkeitsrate in den letzten Jahrzehnten kaum verändert.

Methodik. Wir haben im Zeitraum vom Februar 1995 bis August 2003 45 Patienten mit der Diagnose Mesenterialinfarkt retrospektiv untersucht. Das Überleben wurde mit Kaplan-Meier-Survival-Estimates dargestellt und eine Multivariatenanalyse durchgeführt.

Ergebnisse. Es handelte sich um 20 Männer und 25 Frauen im Alter zwischen 45 und 95 Jahren (Median Age 78a). Bei 73% der Patienten war eine kardiovaskuläre Vorerkrankung bekannt (KHK, PAVK, CVI), bei 36% bestand ein Vorhofflimmern. Die Anamnesedauer, vom Auftreten der ersten abdominellen Symptomatik bis zum OP-Zeitpunkt, betrug im Mittel 24 Stunden (Range 3–120 h). 25% aller Patienten sind innerhalb der ersten 24 Stunden verstorben. Nach 3 Tagen waren noch 71% aller Patienten am Leben. Die 30-Tage-Mortalität betrug 50%.

Schlussfolgerungen. Eine Verbesserung der Ergebnisse ist nur durch Verkürzung des Zeitintervalls möglich. Bei Verdachtsdiagnose muss frühzeitig eine gezielte Diagnostik inclusive Angiographie durchgeführt und die Möglichkeit einer Revaskularisation überprüft werden. Multimodale Therapieprinzipien (Chirurgie, endovaskuläre Therapie, Pharmakotherapie) müssen evaluiert werden.

P080 Laparoscopic release of median arcuate ligament syndrome

E. P. Cosentini, C. Neumayer, A. Prusa, M. Riegler, G. Kretschmer, B. Teleky

Univ.-Klinik für Chirurgie, MUW, Vienna, Austria

Background. Median arcuate ligament (MAL)-syndrome is a rare disorder due to compression of the celiac artery by extraluminal structures that traverse the aortic opening of the diaphragm. Surgical management requires complete division of the ligament and/or performing a bypass from the supraceliac aorta to the distal celiac artery. Our video demonstrates a minimally invasive techniqe managing a patient with MAL-syndrome via laparoscopic access.

Material and methods. We report a case of a 47-year-old man who presented with a four-month history of postprandial abdominal pain, nausea and weight loss. Angiography revealed a significant stenosis of the proximal celiac artery. The patient underwent laparoscopic decompression by dividing the fibers forming the inferior margin of the arcuate ligament and by skeletonizing the aorta to some extent at the level of the celiac axis. In addition celiac plexus fibers and enlarged lymphatics were transected.

Results. The patient's postoperative course was uncomplicated and he was discharged within 5 days of surgery. A postoperative angiogramm confirmed no residual stenosis. At the 5-month postoperative follow-up he reported complete resolution of symptoms.

Conclusions. Laparoscopy offers a less invasive but equally efficient method to manage median arcuate ligament syndrome and appears to be a safe alternative to open surgery. Regardless of the good preliminary results for this patient, further cases with longer follow-up are required before concluding that this method is valid.

P081 New diagnostic and therapeutic approach in the celiac trunk compression syndrome

J. Danis[1,2], A. Shamiyeh[3], P. Pichler[4], P. Kiblböck[4], S. Al-Kattib[5], R. Hubmann[1]

[1]L. Boltzmann Forschungsinstitut für Operative Laparoskopie, Linz, Austria; [2]IInd Department of Surgery, General Hospital, Linz, Austria; [3]IInd Department of Surgery, General Hospital, Linz, Austria; [4]Interventional Radiology, General Hospital, Linz, Austria; [5]Radiology, General Hospital, Linz, Austria

Background. Aetiology and treatment of the celiac compression syndrome remains controversial. The external compression, near the origin of the truncus coeliacus occurs during the inspiration and ceases during the expiration and occurs postprandial abdominal angina. In contrary to the fixed narrowing, an intermittent compression causes seldom large size collaterals.

Functional MR- or CT angiography during inspirium and expirium with 3-D MIP reconstruction enables diagnosis. Laparoscopic deliberation of the celiac trunk is a new, minimal invasive procedure, which was recently developed in our institute.

Diagnostic and treatment. Two patient were investigated by means of functional CT and MRI- Angiography. Both were operated laparoscopicaly. Hepatic, splenic and left gastric arteries were visualised. A total length of the celiac trunk as well as 2 cm aortic segment above the origin of the trunk were deliberated by means of ATLAS-Ligasure device in one, and Ultrascission equipment in another patient.

Results. The postprandial pain disappeared immediately after surgery and no more occurred in the follow up. Functional CT and MRI angiography stated absent narrowing of truncus coeliacus during the inspiration, which was confirmed preoperatively. Both patients were discharged five days after surgery.

Conclusions. Functional CT and/or MRI abdominal angiography is useful method for diagnostic of the truncus coeliacus external compression syndrome. Laparoscopic deliberation of the celiac trunk is appropriate problem solving with minimal invasive intervention.

P082 Influence of homocysteine on early restenosis after carotid eversion endarterectomy in local anesthesia

A. Assadian, C. Senekowitsch, G. Hagmüller

Wilhelminenspital, Vienna, Austria

Background. Homocysteine appears to be involved in the genesis of postprocedural intimal hyperplasia and arterial thrombosis. Increasing levels of plasma Hcy induced intimal hyperplasia and luminal stenosis in animals.

Patients and methods. Of 398 consecutive patients, 363 were included in the study; 38% had asymptomatic, the remaining 62% symptomatic internal carotid artery (ICA) stenosis. Patients had preoperative assessment of Hcy and other traditional atherosclerosis risk factors.

Results. Complete follow up data were available for 312 patients. Five patients suffered from perioperative stroke, 2 patients died perioperatively, accounting for a perioperative

stroke and death rate of 2%. Thirty four patients fulfilled criteria of the endpoint (11%), 17 patients (5.5%) had a restenosis between 50 and 69%, 6 patients (2%) developed a restenosis of > 70%, 6 patients (2%) died of stroke ipsilateral to the operated side and 5 patients (1.6%) had an asymptomatic occlusion of the operated ICA.

Conclusions. The results of this study do not demonstrate a significant difference of plasma Hcy in patients with early restenosis, occlusion or stroke after carotid endarterectomy compared to those without. While Hcy is a recognized independent risk factor for atherothrombosis, our study does suggest that there is no association of Hcy alone with early restensosis after eversion endarterectomy. However, patients with high grade restenosis, occlusion or stroke ipsilateral to the operated ICA had significantly elevated HbA1C and creatinine compared to those without restenosis, corroborating the finding that elevated plasma Hcy may be a strong risk factor especially among diabetic patients.

Qualitätssicherung, Ökonomie, Recht

P083 Kann man mit einer universitären Spitzenmedizin in Österreich positiv bilanzieren?

H. Mächler, B. Rigler

Univ.-Klinik für Chirurgie, Medizinische Universität Graz, Graz, Österreich

Grundlagen. Seit 1997 sind die Krankenanstalten zur Erfassung und Meldung von medizinischen Einzelleistungen auf der Grundlage des Leistungskataloges verpflichtet. Ab 2004 stehen der Diagnoseschlüssel ICD-10 BMSG 2001 und der Leistungskatalog BMGF 2004 zur Erfassung zur Verfügung. Hinsichtlich der Kostenanalysen werden jene auf strategischer Ebene beurteilt, durch die Vielfalt der Kostenstellen und Kostenarten bleibt das Leistungs-Erlös-Verhältnis oft unklar. Es stellt sich nun die Frage, ob man mit universitärer Spitzenmedizin positiv bilanzieren kann.

Methodik. Es wurden an der klinischen Abteilung für Herzchirurgie Graz neben der LKF-Dokumentation und dem Diagnose- und Leistungsberichtes die Epidemiologie sowie die Klassifikationssysteme lt. dem MEL-Katalog und dem Leistungskatalog BMAGS 2000 dargestellt. Es wurde der Einzelkostennachweis in Primärkosten und Sekundärkosten sowie in Fixkosten und variable Kosten betreffend fünf verschiedener Kostenstellen untersucht.

Ergebnisse. Im Kernbereich der Abteilung wurden 2003 850 große herzchirurgische Eingriffe (ohne die 250 Herzschrittmacheroperationen) durchgeführt. In den OP-Klassen VI-VIII wurden insgesamt 1349 Operationen durchgeführt. Die LKF-Gesamtpunkte betrugen 17,5 Millionen, die der Intensivstation 4,2 Millionen. Die Kostenanalyse anhand der Erfassung der 400 verschiedenen Kostenarten und der Erfassung der Artikel-Hitlisten mit 1890 Artikelbezeichnungen ergab nach der Kostentrennung und Korrektur Ausgaben hinsichtlich aller Primär- und Sekundärkosten von 11 Millionen Euro. Im Vergleich dazu wurden nach der Umrechnung der Euro-Punkte 18,1 Millionen Euro erarbeitet. Im Fall einer Leistungssteigerung von 850 auf 1000 große herzchirurgische Eingriffe würden die Kosten 11,7 und der Erlös 21,1 Millionen Euro betragen.

Schlussfolgerungen. Unerwartet kam es nach dem erfolgten Kosten-Erlösvergleich zu einer Überdeckung, wie es der kostenintensive Bereich einer universitären Herzchirurgie nicht hätte vermuten lassen können.

P084 Rechtliche Grundlagen in der Telemedizin – national und international

L. Kronberger

Sektion Chirurgische Forschung, Universitätsklinik für Chirurgie, Medizinische Universität Graz, Graz, Österreich

Durch die Telemedizin werden die folgenden Rechtsmaterien berührt:

- Datenschutz und Datensicherung
- Berufsrecht
- Schadenersatzrecht
- Aufklärungspflicht
- Produkthaftung
- Versicherungsrecht
- Strafrecht
- Dienst- und Arbeitsrecht
- Krankenanstaltenrecht
- Patientenrechte und -pflichten
- Konsumentenschutzgesetz
- Kostenproblematik
- Sozialversicherungsrecht
- Grenzüberschreitende Telemedizin

Diese Rechtsmaterien sind für den kaum rechtsgeschulten Mediziner fast unüberschaubar.

Aufgrund der Informationstechnologie, welche auch in der Medizin nicht mehr wegzudenken ist und sowohl Hard- und Software als auch Datentransfer und -sicherheit betrifft, erscheint es notwendig, die gesetzlichen Grundlagen in Erinnerung zu rufen, aber auch an Hand von Beispielen darzustellen.

Diese läßt sich nach Tätigkeiten oder Funktionen einteilen. Schwamberger zählt zu den Inhalten TeleTeaching, TeleDiagnose, TeleTherapie. Tätigkeitsfunktionen sind TeleKonsultation, TeleKonferenz, TelePräsenz und TeleChirurgie betroffen.

In Bezug auf die Unmittelbarkeit des Arztes stellt Nentwich eine Zunahme des Grades an unmittelbarer Intervention vor Ort unter folgenden Prämissen vor. Die §1 und §22 Abs. 2 ÄrzteG 1984 aber auch §49 Abs2 ÄrzteG 1998 stellt fest, dass der Arzt seinen Beruf persönlich und unmittelbar, allenfalls in Zusammenarbeit mit anderen Ärzten auszuüben hat.

Der Arzt muss in der Lage sein, die mit seinem Handeln verbundenen Gefahren zu beherrschen. Radner schlägt zur Klarstellung im ÄrzteG folgendes vor: Jeder Arzt ist auch berechtigt, ärztliche Handlungen iSd §2Abs2 ÄrzteG im Wege der Telemedizin durchzuführen, soweit die Daten und Informationen ausreichen, um die notwendige Kenntnisse vermitteln. In weiterer Folge werden auch die übrigen o.a. Rechtsbereiche und ihre tw. problematischen Auswirkungen auf den einzelnen Mediziner dargestellt.

P085 Telemedicine – fake or fact?

L. Kronberger

Sektion Chirurgische Forschung, Universitätsklinik für Chirurgie Graz, Graz, Austria

Telemedicine means medicine at a distance and combines the use of telecommunications, computer technologies, and informatics – the applied science of collecting, storing, and retrieving data to support informed decision making – to improve the effectiveness and efficiency of healthcare.

Telemedicine is most frequently used to describe care-related applications while Telehealth encompasses other functions such as education and training, health promotion, public health, health services management, technical information retrieval, etc. The Internet offers the potential to allow convenient access to authoritative information at the point-of-care.

The mission of a any unit in medicine is to support and to promote, protect and maintain the health of all those entrusted to the care of patients with any, anytime, anywhere. Telemedicine includes Teleconsultation, Teleradiology, TeleLab, as well as Telesurgery in the Future.

Although we have only few experiences in Telemedicine (Teleradiology), Medical University Graz has a strong interest in using information technology to help provide specialty expertise to primary care providers to enhance diagnosis and treatment of complicated medical problems in order to help maintain readiness. A close cooperation should be discussed with the IT-Department of the said University and this of the Hospital. IT technology is an increasing branch in medicine. Nevertheless personal care and communication is important in the future as it was in the past and the present.

P086 Gesundheitsökonomisch relevante Humanfaktoren in der Chirurgie – Kann die Gestaltung der Arbeitszeit des Chirurgen Einfluss auf chirurgische Ergebnisse haben?

K. Adamer, F. Pressl

Chirurgie, KH Steyr, Austria

In 149 Fällen nach insgesamt 5511 Operationen während 20 Monaten wurde an der Oberösterreichischen Schwerpunktchirurgie Steyr eine ungeplante Rückkehr in den Op gemäß Faktor X, QIP, notwendig. Die Erstoperationen dieser vom Qualitätsmanagement erfassten Fälle wurden untersucht hinsichtlich der dem Hautschnitt ununterbrochen vorangegangenen Dienstzeit des Operateurs und eingeteilt in drei Gruppen (grün 0–13 Stunden, gelb 13–24 Stunden und rot über 24 Stunden). Dieses Ergebnis wurde in einem zweiten Schritt verglichen mit der sonst an dieser Abteilung üblichen Verteilung von Operationen bezüglich dieser Arbeitszeitgruppen. Das Ergebnis war eindeutig und hochsignifikant: Bei Operationen, denen ein ungeplanter Zweiteingriff folgen musste, war der Anteil der Operateure aus dem gelben und roten Bereich zusammen, also jenseits von 13 vorausgegangenen Dienststunden um 50% größer als sonst an unserer Abteilung üblich. Vergleicht man grünen mit rotem Bereich, also unter Aussparung der nächtlichen akuten Operationen findet sich mit 4,8% im roten Bereich eine bei gleichem Patientengut knapp doppelt so hohe Rate an Revisionen als im grünen mit 2,5%, wobei ein Vergleich zwischen assistierten Lehroperationen und von Chirurgen selbstständig ausgeführten Operationen keinen signifikanten Unterschied ergab.

Sollte nach einer Koste-Was-Wolle-Optimierung von Operationsmethoden, Medikamenten und Geräteausstattungen der Operateur selbst über Humanfaktoren wie Konzentrationsvermögen, Geduld, Risikobereitschaft, Selbsteinschätzung, Auffassungsfähigkeit, Handlungssorgfalt und anderen und deren physiologischer Modifizierung im Rahmen von Diensten noch ein beträchtliches Verbesserungspotential von chirurgischen Ergebnissen in sich tragen? Auch bei vielleicht gegensätzlicher verbreiteter Meinung durch etablierte Eminenzen sind wir nach Datenlage zu einem kritischen Blick auf unseren blinden Fleck verpflichtet – gegenüber den Patienten aber auch uns selbst und der Chirurgie insgesamt.

Fallberichte

P087 Isolierte thyreoidale Manifestation einer Histiozytose X – Fallbeispiel

C. Siegmund, J. Schabram

St. Josef-Krankenhaus, Giessen, Deutschland

Wir möchten den ungewöhnlichen Fall einer Histiozytose X (Langerhans-Histiozytose) der Schilddrüse vorstellen.

Die Operationsindikation war bei der 58jährigen Patientin durch eine Struma multinodosa Grad III mit hyper- und hypofunktionellen Knoten gegeben. Sonographisch hatten sich multiple überwiegend echokomplexe Läsionen dargestellt. Laborchemisch bestand eine latent hyperthyreote Stoffwechsellage, bei leicht erhöhten TPO- und TG-Antikörpern der Verdacht auf eine begleitende Autoimmunthyreoiditis.

Wegen des vollständigen knotigen Umbaus der Schilddrüse war ein totale Thyreoidektomie erforderlich. Der operative und postoperative Verlauf waren komplikationsfrei.

Die konventionelle Histologie zeigte neben einer Struma colloides nodosa mit lymphozytären Infiltraten (Hashimoto-Thyreoiditis), ein umschriebenes eosinophiles Infiltrat mit polyglonalen Zellen. Immunhistochemisch konnte die Diagnose einer CD1a und S-100 positiven histozytäeren Langerhans-Histiozytose gestellt werden.

Die ergänzende hämato-onkologische Diagnostik einschließlich MRT (Neurocranium), CT (Körperstamm), Skelettszintigraphie und Knochenmarksbiopsie ergab keinen Hinweis für eine weitere extrathyreoidale Manifestation.

Die erste hämatologische-onkologische Nachuntersuchung 6 Monate postoperativ war unauffällig.

P088 Isolated chest wall metastasis from esophageal carcinoma after transhiatal esophagectomy at 1,5-year follow-up: a case report

J. Lindenmann, V. Matzi, C. Porubsky, A. Maier, F. M. Smolle-Juettner

Division of Thoracic and Hyperbaric Surgery, Department of General Surgery, University Medical School, Graz, Austria

Background. In esophageal cancer, the liver, lung and the bones are the most common sites of metastases. Isolated metastases affecting the chest wall are quite extraordinairy and occur very rarely.

Methods. In February 2004, a 59-year old male patient was admitted with esophageal adenocarcinoma, associated with dysphagia III and weight loss of 10 kg. A transhiatal esophagectomy and retrosternal gastric pull-up with collar esophago-gastrostomy, associated with abdominal lymphadenectomy, was performed. The definitive histopathological staging showed an adenocarcinoma, UICC stadium I. The first check-up six months later showed no suspicion of distant metastases and/or local recurrence.

In August 2005, an isolated subcutaneous tumor at the area of the right ventro-lateral chest wall was detected. The MRT-scan of the thorax showed a solid subcutaneous expansion. The surgical biopsy of this lesion confirmed the suspicion of an isolated chest wall metastasis of the resected esophageal adenocarcinoma.

Results. A R0-resection of the metastasis was carried out without any complications, the chest wall deficiency became stabilized using a prolene-mesh and could be closed directly by skin and subcutaneous tissue. An adiuvant polychemotherapy and/or radiatio was not performed due to R0-resection and the poor prognosis of the patient.

Conclusions. In case of transhiatal esophageal resection without operative participation of the chest wall, an isolated thoracic wall metastasis can be explained by an occult widespread dissemination of the tumor cells. In our opinion, the final decision of surgical resection of a chest wall metastasis should should always be made in an interdisciplinary tumor conference.

P089 Severe obscure gastrointestinal bleeding in a 16 year old patient with intestinal malrotation

G. Schauer[1], D. Schaden[1], G. Fleischmann[2], H. Orthaber[3], A. Berger[1]

[1]Chirurgische Abteilung, KH der Barmh. Brüder, Graz, Austria; [2]Interne Abteilung, KH der Barmh. Brüder, Graz, Austria; [3]Radiologische Abteilung, KH der Barmh. Brüder, Graz, Austria

Background. Meckel diverticulum is the most common congenital anomaly of the gastrointestinal tract. It represents the remnant of the omphaloenteric duct at its junction with the ileum and may contain heterotopic, acid-producing gastric mucosa, which can cause chronic bleeding. We report a case of a 16 year old patient with massive obscure gastrointestinal bleeding.

Material and methods. The patient was admitted with severe gastrointestinal bleeding. He reported diarrhoea and melena for several days. He was anemic and complained about fatigue. Laboratory examination showed a hemoglobin level of five g per decilitre. Four units of packed red cells were transfused. Esophagogastroduodenoscopy and colonoscopy were performed and showed bloodstained mucosa in the terminal ileum. Under suspicion of a Meckel`s diverticulum a CT angiography was performed and showed active bleeding in the area of the terminal ileum. The patient underwent laparoscopic exploration, the diverticulum was found to be adjacent to the umbilicus, malrotation of the intestine was diagnosed. We performed resection of the diverticulum and appendectomy.

Results. The postoperative course was uneventfull with no further signs of gastrointestinal bleeding. Histology revealed ectopic gastric mucosa of fundus type and the patient was dismissed on 4th postoperative day.

Conclusions. Meckel's diverticulum should be suspected particularly when there are symptoms of gastrointestinal bleeding in younger patients.

Laparoscopy is safe and efficient in the diagnosis and treatment of Meckel's diverticulum, offering the opportunity to explore for malrotation and perform obligatory appendectomy.

P090 Adenomyoma of the round ligament mimicking inguinal hernia

G. Schauer[1], D. Schaden[1], A. Szyszkowitz[1], K. Prein[2], A. Berger[1], S. Lax[2]

[1]Chirurgische Abteilung, KH der Barmh. Brüder, Graz, Austria; [2]Pathologische Abteilung, LKH West, Graz, Austria

Background. Extrapelvic endometriosis is a very rare condition. Endometriosis of the extraperitoneal part of the round ligament is reported to be right-sided in 90% of the cases and occasionally associated with an inguinal hernia.

Materials and methods. We report the case of a 49-year-old woman presenting with a palpable inguinal mass. A preoperative CT-scan showed an expansion of 4.5 × 3 cm within the right inguinal canal, suspected to be a remnant of the Wolff duct.

Intraoperative exploration revealed a consistent yellowish lump adjacent to the round ligament, conducting a lateral inguinal hernia. Resection of the tumor and herniotomy according to Marcy were performed. An instant histological section excluded malignancy.

Results. The definite histological examination showed a nodule of smooth muscle building a fascicular texture mixed with endometrial mucosa of cystic glandular structure, without signs of increased mitotic activity or atypia.

This confirmed the diagnosis of an adenomyoma of the round ligament, an extremely rare condition in this location.

Conclusions. Surgery is the treatment of choice for inguinal hernia as well as for endometriosis and is to be considered locally curative, since malignant transformation is hardly ever reported in literature.

Due to the benign character of the lesion no further treatment or follow up is required, unless the patient shows symptoms of intraperitoneal endometriosis.

P091 Vacuum assisted closure system in the management of open abdomen and intestinal fistula – a case report

W. Bruenner[1], C. Kölblinger[2], F. Schwarzl[3]

[1]Abteilung für Chirurgie, LKH Graz West, Graz, Austria; [2]Abteilung für Anästhesie, LKH Graz West, Graz, Austria; [3]Abteilung für Plastische Chirurgie, Universitätsklinik, Medizinische Universität Graz, Graz, Austria

Background. Loss of abdominal domain and soft-tissue contraction makes primary closure of the open abdomen impossible in many severely ill patients. Poor wound healing and additional complications ensue with the formation of intestinal fistulas. This report describes the successful use of a modified VAC-System in dealing with this problem.

Methods. The result of using the VAC-System in a modified way was studied in one patient with laparostoma and high volume output intestinal fistula with a daily secretion rate of more than 1000 ml to control the effluent and prevent the obstruction of the evacuation tube by using an additional passageway to the standard VAC-System.

Results. The modification of the VAC-System was found to be highly effective in controlling high output fistula effluent (more than 500 ml/24 h), in preventing obstruction of the sponge and evacuation tube by solid particles and as well as skin inflammation. After stabilisation of organ functions, wound conditioning and physical therapy for mobilisation of the patient, a plastic surgery procedure for abdominal closure was performed after 6 weeks.

Conclusions. An abdominal wall defect with high output intestinal fistula in a patient with adhesive intestinal obstruction who had failures in several attempts at surgical closure was successful treated with the VAC-System. Management of high output intestinal fistula is a difficult challenge in the controlling fistula effluent and skin protection. The use of a modified VAC-System can be an effective method to prevent skin excoriation, to control the fistula effluent, and to condition the wound for definitive surgical closure.

P092 Vacuum assisted closure system in the management of anastomotic leakage

M. Silles, B. Walzel, P. Patri, A. Tuchmann

SMZ Floridsdorf, Vienna, Austria

Background. Anastomotic leakage following low anterior resection is associated with high morbidity and mortality. Object of treatment is sufficient drainage and management of the septic focus. The VAC system constitutes a minimally invasive option applicable in selected cases.

Material and methods. The application of negative pressure-available commercially as Vacuum Assisted Closure (VAC) device-constitutes an effective method to speed up cleansing and healing of complex wounds. Provided there is local control, a protective stoma and absence of septic complications, this system offers also an option in treating anastomotic leakage. A polyurethane sponge is guided by colonoscopy through the leakage into the wound cavity, applying negative pressure therapy of 75–100 mmHg. Dressing has to be changed every two or three days until the wound cavity has diminished considerably.

Results. Between 11/03 and 11/05 a total of four patients received VAC treatment for accelerated intestinal wound closing at the Department of Surgery, Floridsdorf Hospital. In two patients a primary protective ileostomy was created. After confirming the diagnosis in the other two patients, an ileostomy and an intra-abdominal drainage were placed by laparoscopy. In one case treatment had to be discontinued because of general septic complications. The other patients received VAC treatment for periods ranging between 5 and 24 days. Endoscopic control before removal of the ileostomy revealed an uncomplicated anastomosis.

Conclusions. Combined with an early colonoscopy the intestinal VAC therapy constitutes a practicable, minimal invasive method within the spectrum of managing anastomotic leakage following rectal resection.

P093 Rarity: Left sided gallbladder without situs inversus

T. Steffen, M. Zünd, J. Lange

Klinik für Chirurgie, Kantonsspital St. Gallen, St. Gallen, Switzerland

Background. A gallbladder which is left sided of the ligamentum falciforme is a rare variant and often associated with other anatomic anomalies. Especially a left sided gallbladder without situs inversus is a rarity an may lead to problems during laparoscopic cholecystectomy.

Methods. We present a case report of a left sided gallbladder which could be treated by laparoscopic cholecystectomy.

Results. In our patient a left sided gallbladder was found by hazard during laparoscopic cholecystectomy. The preoperative sonography showed normal conditions and was not able to detect the anatomic variant. We present the problem of recognition during laparoscopy and describe the difficulty of the procedure of laparoscopic cholecystectomy in this case. No other anatomic anomalies were found in our patient.

Conclusions. In literature a prevalence of such cases at 0.04% is described. Anatomic variants of the hepatobiliary system often lead to conversion during the operation. For major procedures in hepatobiliary surgery anatomic variants are a source of complications and need to be known exactly preoperative. Often variants of the portal vein and the intra- and extrehepatic gall system are found. In our case this had no relevance. In literature only very few cases of left sided gallbladder without situs inversus are described.

P094 Solid-pseudopapillary tumor of the pancreas (Frantz-Tumor) in a 12 years old girl

J. Hager, A. Klein-Franke, I. Gassner, A. Kreczy, A. Königsrainer

Univ.-Klinik für Chirurgie, Innsbruck, Austria

Background. Solid-pseudopapillary tumors of the pancreas are considered as very rarely occurring neoplasms, typically concerning girls during puberty and young ladies. They are a matter of entities with low malignance. Most of these tumors grow benigne, anyway metastases (liver, lymphnodes, great omentum) can develop and local relapses are possible.

Case report. A 12 years old female patient was admitted to the hospital cause of upper abdominal pain consisting for 3 weeks. Physical examination of the abdomen was without pathological findings, as well standard laboratory parameters were at normal ranges. Ultrasound of the abdomen showed a well definable, partially solid as well as cystic pancreas tumor with 8 cm in diameter, without indication of metastases. Diagnosis was confirmed by CT and by MRT. The patient strongly was suspected of having a solid-pseudopapillary pancreas tumor, a pylorus conserving duodenocephalopancreatectomy (Traverso-Longmire) was performed.

Results. The suspected diagnosis was verified by histological examination, the previous course (2 years) was without complications.

Conclusions. Solid-pseudopapillary tumors of the pancreas spread out displacing, metastases occur rarely. Diagnosis is based on the fact that these tumours particularly concern young girls and radiological findings show a displacing tumor with solid and cystic parts. For treatment exclusive tumour resection is sufficient, therefore an adequate amount of pancreas tissue can be conserved.

Key words: Solid-pseudopapillary tumour of the pancreas, Frantz tumour, Pylorus conserving duodenocephalopancreatectomy.

P095 Current treatment of anal cancer: review and report of a rare case of local advanced anal cancer

M. Pichler, K. Cziupka, W. Schief, J. Albrecht, W. Padberg

Department of General-, Thoracic-, Transplantation and Pediadric Surgery, University of Giessen-Marburg, Germany

Background. Anal cancer (AC) is rare and represents fewer than 2 % of all gastrointestinal neoplasms. During the past few decades standard of care in this disease has shifted from radical surgery to organ-preserving chemoradiation therapy introduced by Nigro et al. in 1974. Despite the overall excellent results of this therapy, few patients with isolated locoregional failure may be candidates for salvage abdominoperineal resection. This procedure is associated with significance perineal wound morbidity in up to 66% of patients. Therefore, flap reconstruction should be considered.

We reviewed the literature and present the current strategy in AC and a rare case of a local advanced AC and its successful surgical treatment.

Material and methods. A search of original literature of management of AC was carried out using Medline databases from 1970 to 2006. We report a case of a 75 year old man presenting with a locally advanced AC which had not been responding to chemoradiation therapy. Extensive abdominoperineal resection was necessary. For reconstruction we used two myocutaneous gracilis muscle flaps and a fasciocutaneous gluteal flap.

Results. Introduction of organ-preserving chemoradiation therapy provides an effective sphincter preserving first line treatment modality.

As we show in our case in local advanced stage of AC extensive surgical resection followed by reconstruction surgery can lead to content result.

Conclusions. In cases of local recurrence or treatment failure salvage abdominoperineal resection is necessary for curability.

Sonstige

P096 Endoscopic endonasal pituitary and skull base surgery – the Graz experience

M. H. Mokry[1], G. Clarici[1], H. Stammberger[2]

[1]Department for Neurosurgery, Graz, Austria; [2]Department for ENT and ORL, Medical University of Graz, Graz, Austria

The microscopic standard approach has been used successfully since many years. During the last years an increasing number of publications appeared in the literature describing the endoscopic transsphenoidal approach as a serious alternative with the chance of improving surgical morbidity, outcome and shortening of hospital stay. Since three years, we started to use this approach.

89 procedures were performed in 82 patients. Histological diagnosis were pituitary adenomas in 69, pituitary carcinoma in 1, chordomas in 2, rhabdomyosarcoma in 1, meningiomas in 2, rathke cysts in 2, metastasis 1, fibrous dysplasia in 1, neuroma in 1 and PNET in 1 patient.

The already very low complication rate was not further reduced endoscopically but in most patients the duration of hospital stay was shorter. The use of the endoscope provides the following advantages: Due to the wide angle view of the front lens all the important anatomical landmarks can be identified. Therefore the opening into the sellar floor can be extended as far lateral and superior as necessary. Direct view to the parasellar and suprasellar space is possible. Angled front lenses open the way to the suprasellar cisterns widening the indication for this approach to lesions that microscopically simply cannot be touched. The endoscopic view provides a far better differentiation of adenoma and pituitary tissue.

The endoscopic endonasal approach makes the transsphenoidal approach a valuable tool for the removal of complex pituitary adenomas and various skull base lesions that otherwise only could be attacked via much more complicated transcranial procedures.

P097 The pill, hormone-replacement therapy, induced abortion and breast cancer – is there a connection?

L. Kronberger

Sektion Chirurgische Forschung, Universitätsklinik für Chirurgie, Medizinische Universität Graz, Graz, Austria

In the 1960s, “the pill” liberated women socially to a previously unthinkable extent. Oncological and social consequences are sought in the scant available literature.

At the EBCC in Barcelona in 2002, Marathe Kumle of the Institute of Community Medicine in Tromso, Norway, mentioned breast-cancer risk of 26% for women who took the pill.

Interestingly, this risk rises to 144% in women over 45 years of age who take the pill. In a meta-analysis of 33 international studies that were independent of each other, 27 of them showed an increased incidence in breast cancer after abortion; four of these studies even showed a twofold increase. As early as 1993, Laing reported on the finding of the Howard University Tumor Registry of an abortion-breast-cancer risk among African American women. The total risk was calculated as 180% over 40, which increased to 370% over 50. As African-Americans make up only 12% of the American population but have 36% of the total abortions, this amounts to the threat not only of creeping genocide but also of a socioeconomic time bomb. In March 2000, the RCGO advised its members to mention the increased breast-cancer risk in the context of abortion counselling and warned them against playing this risk down. Some 40 years after the introduction of the pill these revolutionary events require critical examination from the oncological and social points of view. This is especially important in view of the precarious financial position not only of national health services in Austria, Germany and Switzerland.

P098 Clinical comparison EVLT versus conventional surgery

B. Obermayer, A. Butz

KH Göttlicher Heiland, Vienna, Austria

Within our quality control we clinically re-examined patients, who were operated on with the EVTL technique between September 2004 and May 2005.

It was possible to clinically re-examine 17 patients from 33 operated patients. In comparison 201 patients were clinically re-examined by means of the conventional surgery with stripping of the long saphenous vein.

The details on the intra and postoperative pains, inflammation, period of the complete regeneration and the period of the status of illness are comparable.

The absence of irritations of the nervus saphenus and the reduction in postoperative haematomas illustrates the benefit of the EVTL group. The advantage in the conventional group is the non existence of venous reflux at the time of examination.

P099 How to improve performance of robotic totally endoscopic coronary artery bypass grafting

J. O. Bonatti[1], T. Schachner[1], N. Bonaros[1], A. Oehlinger[1], E. Ruetzler[1], P. Jonetzko[2], U. Kreaden[3], G. Feuchtner[4], O. Pachinger[2], G. Laufer[1]

[1]Cardiac Surgery, Medical University of Innsbruck, Innsbruck, Austria; [2]Cardiology, Innsbruck, Austria; [3]Intuitive Surgical, Sunnyvale, United States; [4]Radiology, Medical University of Innsbruck, Innsbruck, Austria

Background. Robotic totally endoscopic coronary artery bypass grafting (TECAB) has so far been limited by long OR times and high conversion rates. We investigated whether specific surgical measures taken during the learning curve can influence procedural performance.

Methods. From 2001 to 2005 60 patients underwent endoscopic left internal mammary artery to left anterior descending artery grafting using the daVinci™ telemanipulation system and remote access perfusion. The following measures were taken with the intent to improve procedure performance: 1) introduction of a fixed team of surgeons at case 14, 2) application of fibrin glue to seal the anastomosis at case 28, 3) use of a 4th port for transthoracic assistance at case 49.

Results. Over this 60 patient series operative time was significantly reduced $y(\text{min}) = 546\text{-}57 \times \ln(x)$ x = TECAB Nr. ($p < 0.001$). The occurrence of surgical errors was nonsignificantly reduced throughout the learning curve but problem severity level (on a scale of 5) fell from 1.3 during the first 40 cases to 0.4 during the last 20 cases ($p = 0.002$). Use of a stable OR-team as well as application of fibrin glue reduced the conversion rate from 39% to 9% ($p = 0.018$) and from 26% to 6% ($p = 0.032$) respectively. Use of an additional port has so far not shown an effect on adverse events.

Conclusions. With increasing case number problem severity level falls during implementation of TECAB on the arrested heart. Use of a stable OR-team as well as sealing the anastomosis with fibrin glue can lead to a reduction of conversion rates.

P100 Enteroscopic biopsy of the pancreaticoduodenal graft as a novel tool for immunological monitoring after pancreas transplantation – a feasability study

W. Mark, H. Weiss, C. Margreiter, F. Aigner, S. Schneeberger, G. Brandacher, R. Margreiter

Medical University Innsbruck, Innsbruck, Austria

Background. Despite refinements in immunosuppression immunological complications account for up to 11.4% of graft losses after pancreas transplantation (PTx) during the first posttransplant year. Since serological markers for immunological monitoring of the pancreas are not reliable and percutaneous biopsy is a risky procedure we hypothesized that the duodenal portion of the graft might be accessible by endoscopic biopsy.

Materials and methods. In this prospective study we modified our standard procedure for PTx in that the duodenojejunal anastomosis was fashioned more proximal than in an earlier series i.e. 20 cm below the flexure of Treitz. Between 5/2005 and 12/2005 we included 13 patients in the protocol with scheduled biopsies on postoperative days 7, 90 and 365. The procedure was performed under general anesthesia with an enteroscope (230 cm of length, Fuji®) or a pediatric coloscope (180 cm, Fuji®) using jet wash or air insufflation. Histological findings were graded with respect to interstitial and vascular changes.

Results. Sixteen endoscopies were performed in this cohort, 11 on postoperative day 7 and 5 on day 90. The feasability rate was 94% (15/16). In all but 1 patient suffering from melena biopsies were taken and showed unspecific inflammation in 2 cases, grade 1 rejection in 1 case and grade 0 in 11 patients. The procedure was well tolerated by all patients and no procedure related complication occurred.

Conclusions. This is the first report of a novel tool of immunological monitoring in PTx. The procedure is feasable and safe.

P101 Qualitätstestvergleich von Medizinprodukten am Beispiel von 5 mm Laparoskopieoptiken

J. Hutter, C. Rabl, H. J. Stein

Universitätsklink für Chirurgie, Paracelsus Medizinische Privatuniversiät Salzburg, Austria

Grundlagen. Die tägliche Arbeit des Chirurgen ist konfrontiert mit technischen Neuerungen. Deren Einsatz und Ankauf wird häufig nach Testung ohne Vergleichsmöglichkeit entschieden.

Im Gegensatz zum privaten Konsum, wo der Vergleich von Geräten und deren publizierte Ergebnisse Entscheidungsgrundlage für den Kauf sind, sind derartige Vergleiche von Medizinprodukten und schon gar nicht die Publikation der Ergebnisse üblich. So wird der direkte Wettbewerb von Herstellern von Medizin Verbrauchs- und Gebrauchsgütern nie über Testergebnisse geführt.

Durch den Ausfall einer Laparoskopieeinheit auf den direkten Unterschied zwischen Optiken aufmerksam geworden, haben wir einen Direktvergleich zwischen 5 mm Optiken von 6 verschieden Herstellern unter den gleichen Bedingungen durchgeführt.

6 Hersteller stellten 5 mm 30° Laparoskope zur Verfügung, mit welchen im Rahmen eines identen Testaufbaus Testfilme digital aufgenommen wurden. Die Aufnahmen wurden geblindet, einzeln durch 13 Probanden nach dem Gesamteindruck bewertet, wobei nur die 3 besten gereiht wurden.

Ergebnisse. In der Wertung wurden folgende Ergebnisse erzielt: Optik Nr 2 mit einer Gesamtbenotung von 1,27, Optik Nr 6 mit Note 1,80, Optik 1 mit Note 2,67, Optik 5 Note 2,83, Optik 3mt Note 3.

Für die Untersucher wie auch die Beurteilenden war der deutliche sichtbare Unterschied der einzelnen Optiken auffallend.

Als Folge dieser Untersuchung wurde die Einkaufsabteilung unserer Klinik aufgefordert Einkaufsverhandlungen mit der am Besten bewerteten Firma aufzunehmen. Wichtig ist hierbei, dass die Kosten der Optiken auch für die endgültige Entscheidung nicht ausschlaggebend waren.

Schlussfolgerungen. Diese Ergebnisse sollen Aufforderung an alle Entscheidungsträger sein, im Rahmen von Einkäufen auch von Medizinprodukten direkte Vergleiche durchzuführen, wie diese im täglichen Konsum üblich sind.

P102 Laparoscopic treatment of paraoesophageal hernias with hiatoplasty and fundoplication

C. Rabl, B. H. von Rahden, M. Baschata, H. J. Stein

Department of Surgery, Paracelsus Private Medical University, Salzburg, Austria

Background. The operative strategy for treatment of paraoesophageal hernias is discussed controversially.

Patients and methods. We report about our experiences and results with laparoscopic closure of the hiatus (hiatoplasty) and fundoplication (either Toupet or Nissen). Between October 2000 and November 2005 10 patients (2 male, 8 female) were treated for paraoesophageal hernias, using a laparoscopic technique (median age 67.5 [56–80] years).

Results. Surgery for paraoesophageal hernias (hiatoplasty and fundoplication) was successfully performed with the laparoscopic approach in all 10 cases, no technical problems occurred and there was no necessity of conversion to open surgery. The median operating time was 208 [170–328] minutes. Most of the time was spent dissecting the hiatal hernia, whereas reconstruction (hiatopasty and fundoplication) was performed comparably fast. Short-and long-term results of this treatment are good: 90% of the patiens are satisfied with their treatment and would have the procedure performed again. This is very well in concert with the majority of patients (90%) being free of symptoms at the time of follow-up (14 [12–55] months), and no evidence of recurrence. The morbidity of the procedure accounted for 20%, with moderate gas bloat syndrome in one case and mild dysphagia (with no requirement for dilatation) in one other case.

Conclusions. The laparoscopic treatment of paraoesophageal hernias with laparoscopic hiatoplasty and fundoplication is a feasible and successful method, with good long-term results, good patient satisfaction, as well as a low frequency of recurrence.

Author index

Medieninhaber und Herausgeber: Springer-Verlag GmbH, Sachsenplatz 4–6, 1201 Wien, Österreich. – Datenkonvertierung und Umbruch: Manz Crossmedia, 1051 Wien, Österreich; Druck: Druckerei Ferdinand Berger & Söhne Gesellschaft m. b. H., 3580 Horn, Österreich. – Verlagsort: Wien. – Herstellungsort: Horn.

Printed in Austria
P. b. b. / Erscheinungsort: Wien / Verlagspostamt 1201 Wien