Radical vaginal hysterectomy with extraperitoneal pelvic lymphadenectomy in cervical cancer

L. Savino, *M.D.*; **F. Borruto,** *M.D.*; **C. Comparetto,** *M.D.*; **G. B. Massi,** *M.D.*

Department of Gynaecology, Perinatology and Human Reproduction, University of Florence, Florence (Italy)

Summary

Objective: The aim of this work was to examine three types of radical vaginal hysterectomy with different degrees of radicality, performed in order to reduce surgical complications and sequelae in different indications, and to test the feasibility of a new simple and quick technique for extraperitoneal pelvic lymphadenectomy to be used in combination with radical vaginal hysterectomy for treatment of cervical cancer. In this way the advantages of vaginal surgery (e.g.: unnecessary general anaesthesia, reduced surgical trauma, applicability to obese and poor surgical risk patients, fast time-saving procedure) can be preserved.

Methods: We compared retrospectively the long-term results of radical vaginal and radical abdominal operations in a large series of stage IB-IIA cervical cancer patients treated at our institution in Florence from 1968 to 1983. Furthermore, we analysed the results of our experience from 1995 to 1998, when we performed extraperitoneal pelvic lymphadenectomy, followed by radical vaginal hysterectomy, on 48 patients affected by cervical cancer. Extraperitoneal pelvic lymphadenectomy was performed through two small abdominal incisions (6-7 cm). Twenty-two patients (45%) were obese (BMI>30 kg/m^2) and 20 were poor surgical risks. FIGO stage was: IB1 in 18 cases, IB2 in eight, IIA in six, IIB in 12, IIIB in four. Neoadjuvant chemotherapy was given in 12 cases and preoperative irradiation was given in ten. General and regional anaesthesia were used in 30 (62.5%) and in 18 (37.5%) cases, respectively.

Results: As for past experience, in stage IB the five-year survival of 356 patients who underwent radical vaginal hysterectomy and that of 288 who had radical abdominal hysterectomy with pelvic lymphadenectomy were 81% and 75%, respectively ($p<0.05$). Surgical complications were fewer with no mortality in the first group. In stage IIA, survival rates were 68% for radical vaginal hysterectomy and 64% for radical abdominal hysterectomy, in 76 and 64 cases, respectively (p=n.s.). As for the more recent experience, median operative time for extraperitoneal pelvic lymphadenectomy was 20 minutes for each side (range 15-36). In each patient a median of 26 lymph nodes were removed (range 16-48). Positive nodes were found in 12 cases (25%). Median operative time for radical vaginal hysterectomy was 40 minutes (range 30-65). Extraperitoneal pelvic lymphadenectomy complications included: lymphocyst, five cases (10%) and retroperitoneal hematoma, one (2%); all occurred at the beginning of the experience. Radical vaginal hysterectomy complications included: ureteral stenosis, one (2%) and uretero-vaginal fistula, one (2%). All complications occurred in patients who received radiotherapy or chemotherapy preoperatively. Median hospital stay was ten days (range 6-20).

Conclusions: The results of our work demonstrate that our technique for extraperitoneal pelvic lymphadenectomy shows a good applicability to cervical cancer patients submitted to radical vaginal hysterectomy, which has a high rate of cure for stage IB and IIA as shown by our past experience. The procedure of extraperitoneal pelvic lymphadenectomy was quick, easy, and safe, and its realization was not detrimental to the advantages of radical vaginal hysterectomy. Our experience supports the continued use of this combined extraperitoneal and vaginal approach in the treatment of cervical cancer. Moreover, the three classes of radical vaginal hysterectomy allow tailoring the type of the operation to the clinical and physical characteristics of the patients.

Key words: Radical vaginal hysterectomy; Cervical cancer; Surgical treatment; Lymphadenectomy.

Introduction

The interest in radical vaginal surgery for the treatment of cervical cancer has recently grown. This kind of surgical approach, which was first used by Schuchardt at the end of the 1800s [1] and was then spread by Schauta in the beginning of the 1900s [2], was very successful in gynaecologic oncology because of the absolutely lower surgical mortality compared to Wertheim's abdominal operation (2.3% and 18.6%, respectively), with the same survival [3]. Due to the excellent studies of pelvic tissue made by Amreich and to the improvements that he brought to this surgical technique, vaginal operations became truly anatomical and reached a degree of radicality before unthinkable [4].

In the '40s, thanks to medical progress in anaesthesia and in perioperative treatments (blood transfusions, intravenous fluid infusions, antibiotic therapy, etc.), extended abdominal hysterectomy, which was improved by Meigs and completed by a systematic pelvic lymphadenectomy [5], allowed the development of oncological surgery in the treatment of cervical cancer: block excision of the neoplasm together with the affected organ and regional lymph nodes. During the following years, the vaginal tradition in oncology was followed only by a few surgical schools (Ingiulla, Navratil, van Bowdijk, McCall) [6-9]. With their experience the Schauta-Amreich operation, although criticized because of the absence of lymphadenectomy, continued to show a great efficiency for the treatment of cervical cancer, not less than abdominal surgery, which allows also pelvic lymphadenectomy.

In 1958 Mitra [10] introduced extraperitoneal pelvic lymphadenectomy in gynaecology. This surgical techni-

Revised manuscript accepted for publication June 10, 2000

que had been already described in 1950 by Nathanson [11] and was applied in urology. Mitra's procedure, which was created to complete vaginal hysterectomy, found little application and was used systematically only by the Dutch School of De Graaf, where very good results were reported [12]. The relative technical difficulty in the execution of vaginal operations, which is also due to the narrowness of the operative field, requires uncommon experience and has limited the spread of this procedure: in fact, cases of cervical cancer with poor surgical risk have usually been treated with radiotherapy.

The growing interest in an accurate prognostic evaluation has recently favoured surgical treatment over radiotherapy in all cases of cancer limited to the uterine cervix. In fact the role of surgery, which was initially exclusively therapeutical, has substantially changed: diagnostic aspects have been emphasized and clinical features of stadiation have been completed with anatomical and surgical evaluations. All this, if on one hand allowed "personalized" therapy using integrated treatments in some cases, on the other hand has pointed out many problems in terms of applicability to those patients with poor surgical and anaesthesiologic risks because of constitutional and pathological characteristics (obesity, cardiovascular disease, etc.). In this light vaginal surgery, for its favourable cost/benefit balance (quick execution, reduced surgical trauma, regional anaesthesia, etc.), acquires an important role in all obese and poor surgical risk patients.

Recently, with the considerable development of endoscopic techniques, it has been possible to associate laparoscopic lymphadenectomy with vaginal hysterectomy, in order to evaluate the regional lymph nodes [13-15]. Furthermore, a simplified technique of extraperitoneal pelvic lymphadenectomy introduced by Massi [16] and applicable to all cases, also with regional anaesthesia, allows a complete vaginal hysterectomy with limited additional cost in terms of complications. Thus, it is no longer necessary to reject a complete anatomical and surgical stadiation in patients who can not undergo abdominal surgery.

Since the '70s the concept that not only treatment in general, but surgery itself should be proportioned to the entity of the disease in order to avoid too aggressive operations in patients with low risk cancers, which could cause an unacceptable number of useless complications and spread. Even with the vaginal approach it is possible to modulate radicality [17], as Piver *et al.* proposed for abdominal surgery [18]. In this way we can perform an operation proportioned to the extension of the neoplasm reducing, when possible, surgical damage, whether anatomical or functional, provoked by the wide parametrial excision of the classical radical Amreich operation.

With the change in oncological trends over the years, the Gynaecological School of Florence's outlines of treatment have also changed. Thus, the patients undergoing vaginal hysterectomy for cervical cancer at the Department of Obstetrics and Gynaecology of the University of Florence can be divided into two groups, corresponding to two different periods. Initially many Schauta-Amreich operations were performed with very important results (Ingiulla, 1966; Massi, 1993) [6, 19]. In the second period radical vaginal hysterectomy was reproposed in association with extraperitoneal pelvic lymphadenectomy and modulated in three different classes of radicality.

Material and Methods

Surgical technique

VAGINAL HYSTERECTOMY

The three classes of radicality for vaginal hysterectomy proposed by Massi and co-workers are represented in Figure 1, where the little pelvis, the viscera contained in it, and the thickening of the pelvic fascia are shown in a transversal section at the cervix uteri level.

Radicality - Class I

This operation, which is commonly performed for endometrial cancer [20], corresponds to a simple vaginal hysterectomy with few modifications. In cervical cancer, it is indicated for in situ lesions relapsing after conization, for multicentric lesions or for disease extending to the vaginal fornices, and for selected cases of microinvasive cancer in women not considering pregnancy. Technical elements characterizing it are the excision of the upper third of the vagina and the proximal paracolpum; the parametria are excised near the uterus. If a paravaginal incision is necessary due to related stenosis of the vagina, the levator ani muscle fibres do not need to be excised because the pararectal space is not penetrated.

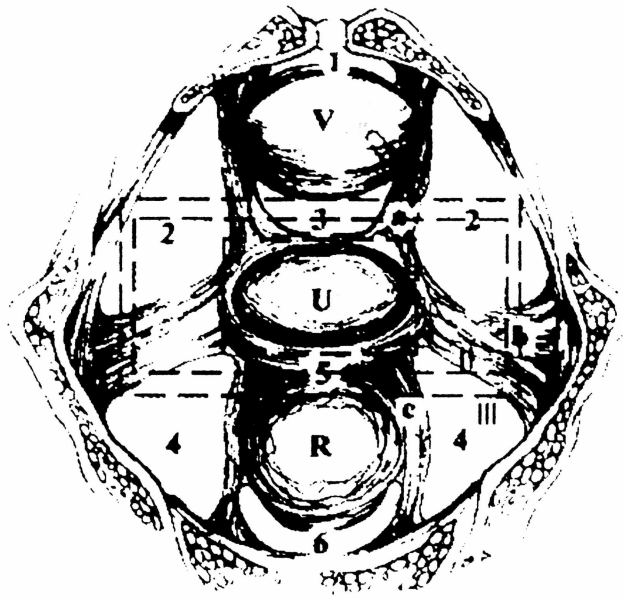

Figure 1. — Representation of the female pelvis in a transversal section with the extension of parametrial excision in radical vaginal hysterectomy according to the three classes of radicality (I-II-III). On the right side an ureteral course has been represented. V = bladder; U = uterus; R = rectus; a = anterior parametrium; b = lateral parametrium; c = posterior parametrium; 1 = prevesical space; 2 = paravesical space; 3 = vesico-uterine space; 4 = pararectal space; 5 = recto-vaginal space; 6 = retrorectal space.

The operation begins with a circular colpectomy. The vagina, put in traction with Collin clamps, is cut with scissors from the lower layers. The upper vaginal stump is then closed with Krobach's forceps so that the cervix is isolated from the surgical field. Then we proceed with the preparation of the vesico-cervical and recto-vaginal spaces. The anterior parametria (vesical pillars) are driven back upwards together with the ureter, which is not visualized in the distal tract. The posterior and lateral parametria are excised near the uterus and the uterine artery is ligated medially to the ureter.

Radicality - Class II

The hysterectomy is extended to complete excision of the lateral and proximal anterior and posterior parametria. The indications include stage IA2 microinvasive cancer (depth of invasion between 3 and 5 mm), multifocal microinvasive lesions which affect the cervix or the vaginal fornices, and selected cases of small size stage IB-IIA invasive cancer (<2 cm).

In comparison with the classical Schauta-Amreich operation, we make a Schuchardt's paravaginal incision which dissects the medial pubo-coccygeous muscle fibres and allows access to the pararectal space. Then we perform a colpectomy (as already seen for class I of radicality) and we prepare the vesico-uterine and paravesical spaces. After the vesical pillar is placed in tension, we excise the caudal fibres of the pillar itself near the uterus with scissors. Then the anterior pillar is smoothly pushed up again and taken out of the uterus so that the upper ureter, which remains in the pillar, can be removed. Thus, the parametrium which departs from the lateral uterine wall is disconnected from the ureter.

The uterine artery is ligated distally to the uterus, but medially to the ureter. The posterior pillar is found between the recto-vaginal and the pararectal space and dissected a few centimetres from the rectus. Excision of the lateral pillar can be made between a valve put into the paravesical fossa which sustains the bladder and the uterus, and another one put in the pararectal space which pulls down the rectus and raises the pelvic lateral wall. The distal tract of the lateral parametrium can also be excised.

Radicality - Class III

Corresponding to Amreich's procedure, the uterine excision occurs in bloc with the parametria and with a wide tract of vagina. It is indicated for stage IB-IIA invasive cancer in obese or poor surgical risk patients and is used instead of Wertheim-Meigs' operation. However the possibility of an association with extraperitoneal pelvic lymphadenectomy extends its indications to all operable cases of cervical cancer.

After Schuchardt's paravaginal incision and preparation of the pararectal space, a colpectomy is performed and the cervico-vesical and paravesical spaces are prepared. After having put the anterior pillar in tension, the ureter is evidenced after excision with a scalpel of the lateral fibres of the pillar itself. The ureter is then mobilized in its parametrial tract up to the subperitoneal pelvic tract. The anterior pillar is then excised near the vesical wall. The uterine vessels can then be ligated and severed far from the uterus without risk. After having prepared the recto-vaginal space and opening the Douglas pouch the utero-sacral ligaments are displayed and excised (in all their extension) close to the rectal wall. Excision of the lateral parametrium occurs near the insertion on the pelvic wall. Excision and ligature of the infundibulo-pelvic ligaments complete the operation.

EXTRAPERITONEAL PELVIC LYMPHADENECTOMY

The aim of extraperitoneal pelvic lymphadenectomy, in the treatment of cervical cancer operable by the vaginal way, is to obtain complete excision of the lympho-adipose tissue which surrounds the common iliac, external iliac, and hypogastric vessels and which is included in the obturator fossa. A good and quick exposition of these structures can be obtained with an oblique incision of 6-7 cm of length, which from a point placed over the crural arch goes up to another point placed medially to the anterosuperior iliac spine. The novelty of this technique, modified from the classical method, is due to the characteristics of the incision of the abdominal wall which allows us to reach the extraperitoneal space without excising the fibres of the muscular fascia that delimitates the external orifice of the inguinal duct, the round ligament and the inferior epigastric vessels.

Under the skin and the subcutaneous tissue the external oblique muscle fascia can easily be displayed. In the same direction of the cutaneous excision first the external oblique muscle fascia is incised and then the underlying muscular fibres of the internal oblique and transverse muscle, near the abdominal lateral wall. Thus we are sure to be lateral to the abdominal reflection of the parietal peritoneum. After penetrating under the internal oblique and transverse muscles the virtual retroperitoneal space is smoothly enlarged with the fingers, showing the psoas muscle and the iliac vessels on its medial border.

A large retractor can now medially displace the peritoneum, showing the pelvic lateral wall with the common iliac and external iliac vessels, together with the origin of the hypogastric artery, which goes down to the umbilical artery. Reaching this exposition does not take more than 2 or 3 minutes, which allows the surgical times to be considerably shortened. The upper and lower limits of the iliac vessels can be quickly identified. Moving up and medially to the peritoneal sac at the caecum level, right, and the sigmoid colon, left, it is possible to find the ureter and the ovarian vessels which, at variable height, cross the iliac vessels medially. The ureter remains visible in a wide tract near the peritoneum until it enters Mackenrodt's ligament. Below, the point where the external iliac vessels go out from the pelvis through the lacuna vasorum can be displayed, to continue to the femoral vessels.

Then the paravesical space is prepared, entering the areolar tissue included between the iliac vessels and the bladder, after which the obturator lymph nodes contained between the paravesical space and the pelvic lateral wall can be isolated. By penetrating carefully between the psoas muscle and the iliac vessels, these vessels in all their length can be isolated. Then we penetrate deeply along the medial wall of the obturator muscle until the base of the obturator fossa, evidentiating an avascular space between the pelvic wall, laterally, and the obturator lymph nodes, medially. These are now well isolated under the iliac vessels, between the lateral and the paravesical space. After having exposed the pelvic vessels with the lympho-adipose tissue surrounding them, a lymphadenectomy can be performed with the same technique used for the conventional transperitoneal approach. At the end of the lymphadenectomy we make a wide opening of the peritoneum in order to allow the drainage of blood in the peritoneal cavity and to prevent the development of lymphocysts or retroperitoneal haematomas. A single drainage is left for some hours in the pelvis in order to observe any eventual abnormal bleeding which can occur during the early hours after the operation.

Patients

As already mentioned, radical vaginal operations performed in the Department of Obstetrics and Gynecology of the University of Florence for cervical cancer can be divided into two different periods.

The first period includes the operations performed first by Ingiulla [6] and then by Gasparri and Massi [21]. In the second period, which goes from January 1995 to December 1998, 48 patients affected by cervical cancer were submitted to extended vaginal hysterectomy of variable radicality (class II in 18 cases and class III in 30 cases) in association with extraperitoneal pelvic lymphadenectomy. The age of the patients ranged between 35 and 64 years (mean 48). Twenty-two patients (45%) were obese (BMI>30 kg/m^2) and 20 presented associated pathologies (heart disease, hypertension, diabetes, etc.) so that they were poor anaesthesiological risk (in 30% of these cases there were two or more associated diseases). As regards the FIGO stage, the patients were thus distributed: IB1 18 cases, IB2 8, IIA 6, IIB 12, and IIIB 4. Twelve patients had been previously submitted to neoadjuvant chemotherapy and ten to irradiation. The surgical operation was performed under general anaesthesia in 30 cases (62.5%) and under spinal anaesthesia in 18 cases (37.5%).

Results

As for the past experience by Ingiulla, 327 patients operated on with the Schauta-Amreich operation for cervical cancer at all stages until 1966 obtained results in terms of survival comparable with the ones of other authors on patients operated on by the abdominal way. Massi and co-workers instead made a comparison between two groups of patients operated on in the same Department by two different surgical ways. Even if it was not a randomised clinical study, the two groups of patients (356 operated on vaginally and 288 abdominally, respectively), all at stage IB, result quite homogeneous and it is possible to compare the two different surgical procedures. The group treated with extended vaginal hysterectomy had a better five-year survival than the one in which extended abdominal surgery was performed (81% and 75%, $p<0.05$). This difference was no longer present after exclusion of the cases who received adjuvant radiotherapy, leaving 283 Schauta-Amreich and 175 Wertheim-Meigs with a five-year survival of 83% and 78%, respectively (p=n.s.). Operative mortality was absent in the Schauta-Amreich group whereas two patients died in the Wertheim-Meigs group (0.8%). Severe complications were quite infrequent in both groups, 4.5% and 5.3%, respectively. The same analysis for stage IIA demonstrated a five-year survival of 68% in 76 cases operated on with the Schauta-Amreich operation and 64% in 64 cases operated on with the Wertheim-Meigs operation (p=n.s.).

In our recent experience, the mean length of lymphadenectomy has been 20 minutes for each side (range: 15-36), while radical vaginal hysterectomy has been performed in 40 minutes (range: 30-65). The median operative blood loss was 75 ml (range: 25-300). The number of lymph nodes removed varied between 16 and 48 (median 26) and lymphnodal metastases were found in 12 cases (25%). The median postoperative hospitalisation has been 10 days (range: 6-20). Postoperative complications related to lymphadenectomy include five cases of lymphocysts (10%) and one case of retroperitoneal haematoma (2%). In three cases the lymphocysts cleared up spontaneously, in one percutaneous drainage was necessary, and in another one surgical drainage. Retroperitoneal haematoma cleared up spontaneously. If we compare the mean technical parameters related to the operation and the incidence of complications between the patients treated at the beginning of our experience and those treated later, when at the end of lymphadenectomy a prophylactic opening of the peritoneum was constantly performed, great differencies come out. In fact all the complications occurred in the first group of patients (Table 1). Moreover, four of the six patients who underwent complications had been previously submitted to irradiation (3 cases) or neoadjuvant chemotherapy (1 case). Therefore, in the first group the presence of complications was associated to a previous treatment in 66% of the cases. The complications of radical vaginal operation were one ureteral stenosis (2%) and one ureterovaginal fistula (2%), both in patients previously submitted to radiotherapy or chemotherapy.

Table 1. — *Postoperative complications of extraperitoneal pelvic lymphadenectomy.*

Complications	Cases 1-20 (n=20)	%	Cases 21-48 (n=28)	%
Lymphocyst	5	25	–	–
Retroperitoneal haematoma	1	5	–	–

Discussion

The experience of the Florentine School with the use of radical vaginal surgery for the treatment of cervical cancer has shown that the curative possibilities of this kind of operation are not inferior to those obtained by the abdominal way. Moreover, the advantages include an enlargement of the operability, less mortality and morbidity, and shorter hospitalisation. The association of extraperitoneal pelvic lymphadenectomy allows us to maintain all the advantages of the vaginal way and thus to fill a gap which has always represented a limit to this kind of operation in gynaecologic oncology.

These considerations lead us to say that, even if the abdominal operation retains rightfully a fundamental role in most operable cases, the vaginal approach offers the highest probabilities of survival with the lowest damage in all those situations (obesity, older women or patients with associated diseases and poor surgical and anaesthesiological risk) in which an abdominal operation is contraindicated. These results are in agreement with the modern trends of oncologic surgery which sustain the opportunity to obtain a good prognostic evaluation with reduced surgical trauma in every case without renouncing

to local radicality. The latter, indeed, can be obtained with vaginal hysterectomy in a shorter time than an abdominal operation with a reduced surgical risk, a lower incidence of complications and, above all, with the use of regional anaesthesia. All these factors, which affect the postoperative course and allow shorter hospitalisation, contribute both to higher patient compliance to therapy and to a reduction of medical costs.

The introduction of a modulation of the radicality of a vaginal operation finally allows us to obtain a personalized approach in all cases, which today is required in every oncologic treatment. The advantages of a modulated operation are clear: a less extended excision of the parametria, with subsequent reduced damage to the fibres of the nervous plexuses, will determine proportionally less important problems to urinary and intestinal functions. Moreover, even if we excise a wide tract of the vagina, it is possible to perform particular surgical procedures for the prevention of postoperative bladder or vaginal cuff prolapse and urinary incontinence.

As for extraperitoneal pelvic lymphadenectomy, our technique has shown many advantages, both technical and clinical, of this kind of approach. In fact from a technical point of view this procedure allows us to reach the pelvic vascular and lymphatic structures with extreme quickness; moreover, with lymph node excision being equal, this way is as sure as the transperitoneal way. From a clinical point of view the small incisions that we make result in reduced surgical trauma, practically negligible as regards the postoperative course. Furthermore, the lack of direct manipulation of the intestinal tract reduces the time necessary to functional recovery. In the end, this technique allows the utilization of regional anaesthesia, with the consequent advantages in the reduction of surgical risk and the enlargement of operability.

As already seen before, these advantages are the same as in vaginal surgery, so that we can say that extraperitoneal pelvic lymphadenectomy becomes in practice its ideal complement. This brings us to conclude also that the execution of a radical vaginal hysterectomy could in theory be used for all operable cases of cervical cancer and not only for selected cases with obesity and poor surgical risk.

References

[1] Schuchardt K.: "Eine neue Methode der Gebärmutterexstirpation". *Zentralbl Chir*, 1893, *20*, 1121.

[2] Schauta F.: "Die Operation des Gebärmutterkrebses mittels des Schuchardtschen Paravaginalschnittes". *Mschr Geburtshilfe Gynakol*, 1902, *15*, 133.

[3] Wertheim E.: "The extended abdominal operation for carcinoma uteri (based on 500 operative cases)". *Am J Obstet Gynecol*, 1912, *66*, 169.

[4] Amreich I.: "Zur Anatomie und Technik der erweiterten vaginalen Carcinomoperation". *Arch Gynakol*, 1924, *122*, 497.

[5] Meigs J. V.: "The Wertheim operation for carcinoma of the cervix". *Am J Obstet Gynecol*, 1945, *40*, 542.

[6] Ingiulla W.: "Five-year results of 327 Schauta-Amreich operations for cervical carcinoma". *Am J Obstet Gynecol*, 1966, *96*, 188.

[7] Navratil E.: "Indications and results of the Schauta-Amreich operation with and without postoperative roentgen treatment in epidermoid carcinoma of the cervix of the uterus". *Am J Obstet Gynecol*, 1963, *86*, 141.

[8] van Bouwdijk B.: "Treatment of cancer of the cervix uteri". *Am J Obstet Gynecol*, 1956, *72*, 100.

[9] McCall M. L.: "A modern evaluation of the radical vaginal operation for carcinoma of the cervix". *Am J Obstet Gynecol*, 1963, *85*, 295.

[10] Mitra S.: "Extraperitoneal lymphadenectomy and radical vaginal hysterectomy for cancer of the cervix (Mitra technique)". *Am J Obstet Gynecol*, 1958, *78*, 191.

[11] Nathanson I. T.: "Extraperitoneal lymphadenectomy in the treatment of cancer of the cervix". In: "Progress in Gynaecology". Meigs J. V., Sturgis S. H. Eds. Grunn & Stratton, New York 1950.

[12] De Graaf J.: "The Mitra-Schauta operation in combination with preoperative irradiation as treatment for carcinoma of the cervix". *Gynecol Oncol*, 1980, *10*, 267.

[13] Dargent D.: "A new future for Schauta's operation through presurgical retroperitoneal pelviscopy". *Eur J Gynecol Oncol*, 1987, *8*, 292.

[14] Querleu D., Leblanc E., Castellani B.: "Laparoscopic pelvic lymphadenectomy in the staging of early carcinoma of the cervix". *Am J Obstet Gynecol*, 1991, *164*, 579.

[15] Childers J. M., Hatch K., Surwit E. A.: "The role of laparoscopic lymphadenectomy in the management of cervical carcinoma". *Gynecol Oncol*, 1992, *47*, 38.

[16] Massi G. B.: "La linfoadenectomia extraperitoneale nell'approccio chirurgico vaginale alle neoplasie uterine". *Riv Ostet Ginecol*, 1995, *8*, 51.

[17] Massi G. B., Savino L., Susini T.: "Three classes of radical vaginal hysterectomy for treatment of endometrial and cervical cancer". *Am J Obstet Gynecol*, 1996, *175*, 1576.

[18] Piver M. S., Rutledge F., Smith J. P.: "Five classes of extended hysterectomy for women with cervical cancer". *Obstet Gynecol*, 1974, *44*, 265.

[19] Massi G. B., Savino L., Susini T.: "Schauta-Amreich vaginal hysterectomy and Wertheim-Meigs abdominal hysterectomy in the treatment of cervical cancer: A retrospective analysis". *Am J Obstet Gynecol*, 1993, *168*, 928.

[20] Massi G. B., Savino L., Susini T.: "Vaginal hysterectomy versus abdominal hysterectomy for the treatment of stage I endometrial carcinoma". *Am J Obstet Gynecol*, 1996, *174*, 1320.

[21] Gasparri F., Massi G. B.: "Isterectomie radicali per via vaginale". In: Trattato italiano di Ginecologia. Dallepiane G., Maurizio E., Tesauro G. Eds. PEM, Rome 1979, 327.

Address reprint requests to:
CIRO COMPARETTO, M.D.
Department of Gynaecology, Perinatology and Human Reproduction
University of Florence
Viale Morgagni, 85
50134 Florence (Italy)