

OASIS

Newsletter of the
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OPHTHALMIC ANESTHESIA SOCIETY

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Fall 2010 Newsletter (PDF).**

SUMMER 2010

Welcome to the Summer 2010 issue of OASIS. This issue offers three articles written in collaboration with colleagues at the University of Alabama:

["Hypercapnia: The Changing Story"](#)

["Effects of Perioperative Music on Anxiety, Hemodynamics, and Pain in Women Undergoing Mastectomy"](#)

["Extreme Photophobia with Overbite Greater than Thyromental Distance in a Patient for Ambulatory Eye Surgery"](#)

OAS member, Jameel Khan, who is a resident in Belfast and attended last year's meeting, has also contributed an article. This study will be the subject of his poster presentation at the upcoming annual meeting:

["Comparative Survey of Efficacy and Complications between the Blunt Cannula and the Tri-Port Cannula for sub-Tenon's Block"](#)

Please keep in mind that OASIS welcomes articles from its members.

This issue's [Member Spotlight is on Joseph Bayes](#), our colleague at the Massachusetts Eye and Ear Infirmary. And [Eye Openers!](#) notes the recent promotion of Myra Aultman, OASIS co-editor, at the University of Alabama.

One might wonder: why include an article on women undergoing mastectomy in OASIS? Well, ever since I had the honor of serving on CRNA Pam Binns-Turner's PhD dissertation committee, I have thought this study had implications for our ophthalmic surgery patients. If anything, our patients tend to be older and sicker than her patient population and might indeed benefit from the favorable effects of perioperative music on hemodynamics and pain with out pharmacologic intervention. This poster, presented at the 2008 meeting of the American Society of Anesthesiologists, is included here to stimulate others to pursue similar clinical research in ophthalmic surgery patients.

Hope to see everyone along the Magnificent Mile in Chicago, September 24 - 26, at the OAS meeting!

Gwen Boyd
OAS Vice-President & OASIS Editor

About OASIS

OASIS is the online newsletter of the Ophthalmic Anesthesia Society. It is published three times a year: spring, summer, and fall. Our newsletter's goal is to inform OAS members of general developments in the field and highlight research performed by OAS colleagues. It also showcases individual members and their practices. Its current editors are Gwendolyn Boyd MD and Myra Aultman CRNA of Callahan Eye Foundation Hospital at the University of Alabama.

Invitation to Contribute

Members are invited to submit their own work to OASIS for publication. Please note that all research involving human subjects must be reviewed and approved by the Institutional Review Board (IRB) at the author's institution in order to validate compliance with accepted safety and ethical standards. In addition, if the same or similar material is being published



elsewhere, authors should verify that publication in OASIS will not infringe on any copyright. If you are interested in contributing, please do not hesitate to [contact us](#).

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Member Spotlight

Member Spotlight

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OAS Member since 2004



Massachusetts Eye and Ear Infirmary main campus

Massachusetts Eye and Ear Infirmary (Mass Eye and Ear) was founded in 1824 by Drs Edward Reynolds and John Jeffries. Since its founding it has earned an international reputation for treatment of diseases of the eye, ear, nose, throat, head and neck, and for contributions to medical research and education. Mass Eye and Ear is the Massachusetts General Hospital's division of ophthalmology and otolaryngology. Mass Eye and Ear staff physicians have an appointment at Harvard Medical School.



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Leah Franzone (Student) and Magaret Penny-Capra R.N. welcoming patients to our new surgical suite

Our anesthesia staff includes 22 anesthesiologists (7 part time), 14 Certified Registered Nurse Anesthetists (CRNAs), 3 Nurse Practitioners (NPs), and 3 office staff. Our chief of anesthesia is Dr. Sunil Eappen. Contained within our hospital building of 16 floors, we have (on separate floors) a main operating room theater currently utilizing 14 operating rooms, and a beautiful new 5 room surgicenter (Officially called our surgical suite) which just opened on July 19, 2010. Our anesthesia staff currently are involved in approximately 17,000 cases each year (counting cases in both the main O.R. and our surgical suite) of which almost 50% (8,100) undergo ophthalmic operations. Our anesthesia staff currently provide anesthesia care only at our main campus.



New surgical suite waiting area

The remainder of this spotlight article will focus on our new surgical suite. The medical director of our surgical suite is Dr. Artem Grush, and the nursing administrator is Ms. Kendra Polefka R.N. Our surgical suite volume has grown from about 1500 cases per year when our original surgicenter opened several decades ago, to about 4,800 cases per year.

When all 5 rooms in the surgical suite are running we assign a CRNA in each of the rooms, a nurse practitioner or 6th CRNA to help perform the anesthesia history and physical, obtain an anesthesia consent, and start an I.V. We also assign two anesthesiologists to ensure patients are prepared for their procedure, and when requested, to perform regional anesthesia blocks with sedation.



Charles River and Longfellow Bridge seen from Mass Eye and Ear main campus

About 90% of our surgical suite procedures are ophthalmologic operations. Cataracts are by far the most common ophthalmologic procedure performed in the surgical suite, but we also perform a fair number of vitrectomies, PKs and a variety of other procedures. About 90% of eye operations for adults are performed under regional anesthesia. (Most of these are performed with an extraconal or anterior intraconal block with a 7/8 inch needle. About 15% of our cataracts are performed under topical anesthesia.) About 10% of the surgical suite procedures are minor otolaryngologic procedures. We have the capability of administering general anesthesia for both children and adults.



New surgical suite work area with Jan Robson R.N. and Carol Crowe (Unit Secretary Coordinator)

Although the overwhelming majority of patients are out-patients, we have the capability of admitting patients to Mass Eye and Ear when indicated. We also have the capability of transferring patients to the Massachusetts General Hospital (via a tunnel connecting the two buildings) in the rare situation that they have serious unstable medical conditions.



Dr. Joseph Bayes

My OAS membership has been very helpful in reinforcing the safety of the use of shorter needles for eye blocks. (Almost all the anesthesiologists in our group routinely use a 7/8 inch Atkinson needle for extra and intraconal blocks). Because of information obtained at an OAS meeting we no longer routinely use epinephrine in block solutions containing bupivacaine (epinephrine does not seem to increase the length of effectiveness when bupivacaine is used). In addition my OAS membership has helped educate me and our staff about other anesthesia techniques that increase the success rate and decrease the risk of complications of regional orbital anesthesia techniques.



Dr. Janine Rodrigues (Anesthesiologist) and Susan McKenna R.N. caring for a patient

Our greatest challenge to practice in the last 12-18 months has been transferring from the old 3 room surgicenter, to the new 5 room surgical suite. This required performing cases on Friday July 16 in the old surgicenter, moving all the equipment and supplies over the weekend, and opening the new surgical suite on Monday July 19. This involved an incredible amount of planning, coordination, and work by our surgicenter staff and went off without a hitch.



Surgical suite staff Debi Simonton Surgical Tech (ST), Arlinx Benjamin (ST), Jamie Sheehan (ST)

Please feel free to visit us if you are in Boston!

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Hypercapnia: The Changing Story

Myra Aultman CRNA and Gwendolyn Boyd MD
University of Alabama at Birmingham, Callahan Eye Foundation Hospital

Anesthesia providers have traditionally ventilated patients with 10-12 ml/kg tidal volumes resulting in a target EtCO₂ ranging from 30-35 mm Hg. However, more recently, the beneficial effects of "permissive hypercarbia or hypercapnia" have been demonstrated to reduce acute lung injury (ALI) as well as to improve peripheral tissue oxygenation in morbidly obese patients. [1,2]

Hager et.al. [2] reported that maintaining an EtCO₂ of 50 mm Hg, described as "mild hypercapnia", would reduce the risk of wound infection in morbidly obese patients. The risk of surgical infection increases as tissue oxygen partial pressures decrease because neutrophils, which contain an oxidase enzyme, can no longer function optimally as phagocytes in an environment of reduced oxygenation. [3] An environment of decreased tissue oxygenation can also occur during hypothermia or perioperative cigarette smoking. [2] Moreover, the tissue oxygenation in morbidly obese patients is much reduced as compared to that of lean individuals. [4] Therefore, morbidly obese patients are at less risk for surgical wound infection with an EtCO₂ of 50 mmHg because of the beneficial effects of carbon dioxide on increasing cardiac output and causing peripheral vasodilation. [2]

A reduced risk of barotrauma (lung stretch or damage from shear forces) is accomplished in obese patients or patients with ARDS when patients are ventilated with tidal volumes of 6-8 ml/kg and a respiratory rate of 10 breaths per minute (bpm), while maintaining a peak inspiratory pressure (PIP) of less than 45 cm H₂O. [5] This can also result in a favorable environment of mild hypercarbia (as indicated by an increased EtCO₂) leading to better tissue oxygenation secondary to peripheral vasodilation and an increased cardiac index. [2] Although lung injury still occurs, lower peak pressure ventilation results in a reduction in mortality according to results from the ARDS Network study. [4] Barotrauma is also seen in COPD patients during ventilatory support which is associated with high peak pressures and variable transalveolar pressure and alveolar distention. [7] Moreover, there is unpredictable gas distribution as a result of positive pressure ventilation at high peak pressures which causes overdistention of some alveoli while allowing consolidation of other alveoli. [5, 8] This maldistribution of ventilation is most evident with lung diseases such as COPD and ARDS.

Another major disadvantage of hyperventilation occurs during cardiopulmonary resuscitation. The effectiveness of CPR is reduced when venous blood return to the right heart is prevented with the lack of chest wall recoil during hyperventilation and positive pressure ventilation. When negative intrathoracic pressure is not allowed, coronary perfusion pressure is reduced, leading to an increased likelihood of death. [9]

"Permissive hypercarbia is a technique that refers to a strategy of ventilation that allows the arterial carbon dioxide levels to rise in a controlled fashion in order to reduce lung injury at the expense of gas exchange. [10] Hypercapnic acidosis attenuates the inflammatory responses and barotrauma that sometime result from previously accepted tidal volumes during mechanical ventilation. [10]

The PaCO₂ is the most effective regulator of the diameter of the blood vessels in the brain. It has been a traditional practice to hyperventilate neurosurgical patients (to an EtCO₂ of 24 mm Hg or a PaCO₂ of 30 mg Hg) for craniotomy in order to reduce the diameter size of those vessels allowing for a decrease in intracranial pressure. However, the reduction in the size of the arterioles, while reducing intracranial mass, also increases cerebral vasculature resistance causing a reduction in blood flow. Could the combination of positive pressure ventilation, which causes a decrease in venous return and cardiac output, and reduced cerebral blood flow as a result of hyperventilation, play a role in post-operative

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cognitive dysfunction? Hypocapnia as a result of hyperventilation has been shown to reduce cerebral blood flow during cognitive effort. [11] Moreover, specific to our practice of ophthalmic anesthesia, vasoconstriction and reduced blood flow may interfere with the perfusion of the retina, which is supplied by choroidal and central retinal arterial circulation. [12]

Finally, hyperventilation, with resultant reduction in arterial CO₂, can diminish a patient's respiratory drive until "metabolic activity can replenish CO₂ levels" as well as "trap" opioids in brain tissue. [13] This occurs because respiratory alkalosis, as a result of hyperventilation, alters the lipid solubility of a drug such as fentanyl. [14] Fentanyl becomes more lipid soluble with an increasing pH, so that it is not only better able to cross the blood-brain barrier but also more readily binds to brain tissue. [13] Increased fentanyl binding in addition to entry across the blood brain barrier can result in a reduced need for additional analgesia in the post-operative patient. Additional dosages of fentanyl during this period could place these patients at risk for respiratory arrest, even if they seem fully awake and alert.

A literature review by Hill and Joshi [15] revealed that mild hypercapnia, defined as EtCO₂ of 40 mm Hg or higher, could be beneficial unless in an environment of elevated intracranial pressure or hypercapnic respiratory acidosis. The authors wrote that mild hypercapnia "should become a standard of care, except with the caveats previously described." [15]

In summary:

- Hyperventilation can cause decrease coronary perfusion pressure which can be lethal during CPR.
- Hypocarbica and hyperventilation at high peak pressures in morbidly obese critically ill patients with ARDS or COPD can result in reduced tissue oxygenation and barotrauma.
- Hypocarbica and hyperventilation (due to increased cerebral arterial resistance) may be associated with cognitive dysfunction during the perioperative period.
- Hyperventilation and hypocarbica can result in decreased respiratory drive.
- Hyperventilation and hypocarbica can result in opioid trapping in brain tissue which can put a patient at risk for a respiratory arrest in the perioperative period.
- Mild hypercarbica (50 mm Hg) is beneficial in reducing wound infection in morbidly obese patients.
- Mild hypercarbica (50 mm Hg) results in improved lung function in critically ill patients.

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Effects of Perioperative Music on Anxiety, Hemodynamics, and Pain in Women Undergoing Mastectomy

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Carol Prickett, PhD
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Background

Mastectomy can produce significant stress and anxiety for women. Anxious patients often require larger amounts of anesthesia for induction and maintenance and manifest greater fluctuations in hemodynamics. (1)

- Elevated anxiety results in increased sympathetic nervous system activation with immune system depression and delayed wound healing (2)
- Music used as a non-pharmacologic intervention can reduce stress
- Prior studies suggest slow, soft, non-vocal music decreases physical and psychological indices of stress (3)

Patients and Methods

- Quasi-experimental, repeated measures design
- Convenience sample of 30 women ages 42-70 randomly assigned equally into music intervention and control groups
- Music intervention group selected and listened to music perioperatively (preop, intraop, postop)
- Music selections offered were inspirational, classical, easy listening, and new age
- Control group had headphones without music

Hypothesis

Women receiving a perioperative music intervention will have a significantly greater decrease in mean arterial pressure (MAP), heart rate, anxiety, and pain from time 1 (T1) to time 2 (T2).

Analysis

- Independent t-tests were used to analyze change scores resulting from T1 and T2 measurements on each dependent variable (MAP, HR, anxiety, pain)
- Study design minimized floor effect for anxiety, carefully controlled for surgical procedure, anesthetic, music application, blinding of observers, and homogeneous patient characteristics
- Participants were used as own control group

Results

Mean and Standard Deviation for Time 1, Time 2 and Change Scores

Variable	MAP	HR	Anxiety	Pain
T1 mean (SD)	98.7 (15.7)	77.9 (10.7)	41.5 (15.8)	11.8 (17.6)



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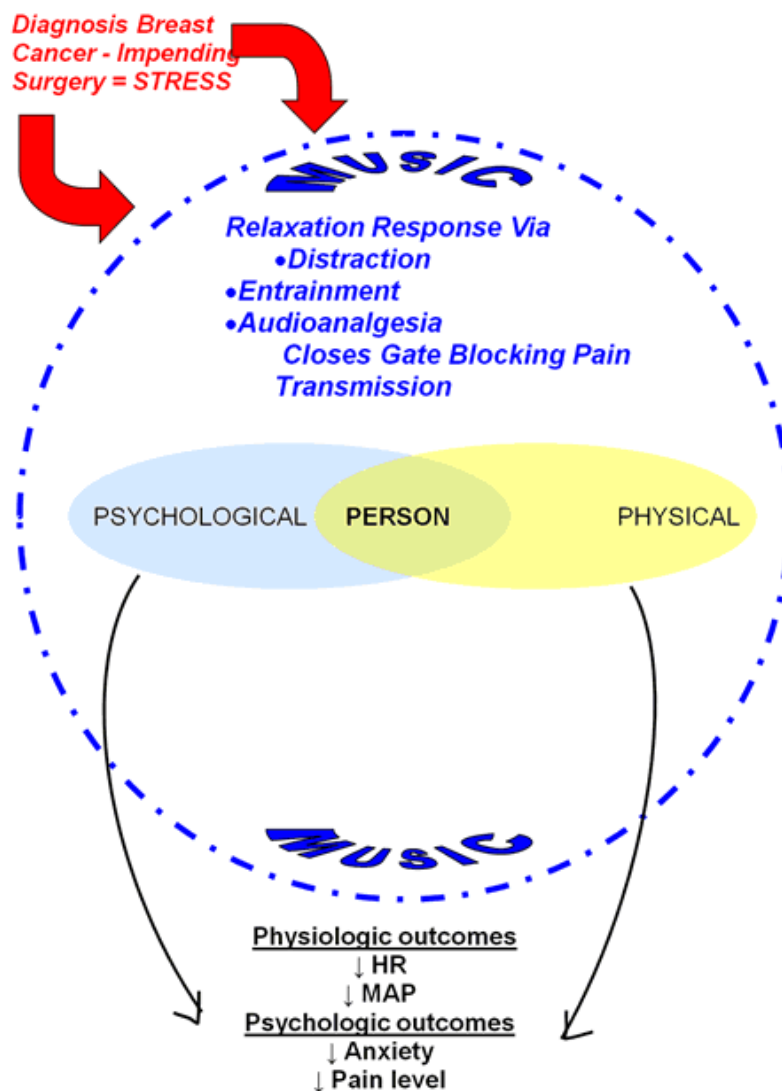
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Music				
T1 mean (SD) Control	92.1 (18.2)	19.1 (12.4)	41.9 (14.5)	14.2 (14.3)
T2 mean (SD) Music	83.6 (13.0)	79.9 (14.9)	30.7 (12.3)	41.5 (30.2)
T2 mean (SD) Control	96.6 (14.3)	85.9 (12.7)	49.7 (18.9)	64.9 (20.9)
T1-T2 Change Music	15.1 (17.1)	-2.0 (11.4)	10.8 (7.7)	-29.7 (19.8)
mean (SD)				
T1-T2 Change Control	-4.5 (15.3)	-6.8 (10.9)	-7.7 (11.6)	-50.7 (19.2)
mean (SD)				
t-value	-3.312	-1.18	-5.164	-2.94
significance	.003*	0.248	.000*	.007*

- Women in music group had decreased MAP, whereas women in control group had increased MAP
- No significant difference in heart rate change between women in music and control groups
- Women in music group had decreased anxiety, whereas women in control group had increased anxiety
- Women in music and control groups had increased pain, but the increase was significantly less for the women in the music group



Discussion, "Implications for Practice

Discussion

Women in the music group had significantly lower MAP, anxiety, and pain.

- Findings support conceptual model which hypothesized that a perioperative music intervention can lower MAP, anxiety, and pain by reducing the stress response in women undergoing mastectomy through audioanalgesia, entrainment, and distraction which are all components of the Relaxation Response.
- Findings suggest that a perioperative music intervention can improve immediate postoperative outcomes for women undergoing mastectomy for breast cancer.

Implications for Practice

- Results are both statistically and clinically significant
- Music is a low cost and non-invasive intervention that is easily implemented in the perioperative setting reducing mean arterial pressure, anxiety, and pain in women undergoing mastectomy
- Several participants commented about how they enjoyed the music and it provided comfort to them
- Perioperative music is an efficacious intervention with the potential to improve patient outcomes and satisfaction

Future Research

- Expand perioperative music intervention to include other populations: men, children, other surgical procedures

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Extreme Photophobia with Overbite Greater than Thyromental Distance in a Patient for Ambulatory Eye Surgery

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Abstract

A 34 y/o male with xeroderma pigmentosa with extreme photophobia and painful eyes, presented for an evaluation of an amniotic membrane placed previously for a symblepharon (fibrous tissue connecting the conjunctiva to the eyelid). He had had numerous skin cancers removed since age 8. Currently, his protuberant overbite was greater than his thyromental distance, compounded by neck contractures, near absent nares and inability to open his mouth more than two finger breadths. During two recent MAC anesthetics airway obstruction occurred. One was converted to general with difficult insertion of LMA while the other was completed with ketamine and propofol with chin lift.

What is Xeroderma Pigmentosa? 1-3

Persons with xeroderma pigmentosa are unable to repair ultraviolet ray induced damage to their cutaneous cellular DNA. Normally, the body repairs this damage. Consequently, the skin gets very thin and patches of varying color (splotchy pigmentation) appear. Xeroderma pigmentosa also causes telangiectasias, spidery blood vessels in the skin as well as skin cancer. Skin cancer often occurs before the child is 5 years old.

Symptoms include:

- A. Sunburn that does not heal after minimal sun exposure, beginning in early infancy. Marked freckling occurs before the age of two years
- B. Blistering also after minimal sun exposure
- C. Spider-like blood vessels under the skin
- D. Patches of discolored skin getting worse with time
- E. Crusting of the skin
- F. Scaling of the skin
- G. Oozing raw skin surfaces
- H. Photophobia

Exams and Tests

- A. A family history of xeroderma pigmentosa. XP is inherited in an autosomal recessive manner. The parents of an individual with XP are obligate carriers of a mutation in one of the nine genes associated with XP.
- B. The eye exam may show:
 1. Corneal clouding
 2. Keratitis
 3. Lid tumors
 4. Blepharitis Atrophy of the skin of the lids results in ectropion, entropion, or in severe cases, complete loss of the lids.



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C. Prenatal evaluation may include

1. Amniocentesis
2. Chorionic villous sampling
3. Culture of amniotic cells

D. Postnatal testing may include:

1. Culture of skin fibroblasts
2. Skin biopsy

Treatment

A. Children with this condition require total protection from sunlight. Even the light coming through windows and fluorescent bulbs is dangerous. When the person must go in the sun, protective clothing should be worn. High protection (SPF 30 or greater) sunscreen and very dark, UV-protected glasses should be worn.

B. Recently reconstruction of the DNA repair-deficient xeroderma pigmentosum skin has been possible using a T4N5 liposome DNA repair lotion (DimericineT®). The occurrence of the most common form of skin cancer, basal cell carcinoma, has been decreased by 30% and actinic keratosis, a pre-cancerous form of skin cancer, was reduced by 68% with the use of this lotion.

C. Treat small, premalignant skin lesions such as actinic keratoses with topical 5-fluorouracil or freeze with liquid nitrogen; treat larger areas with dermatome shaving or dermabrasion to remove damaged superficial epidermal layers; treat skin neoplasms with electrodesiccation and curettage, surgical excision, or chemosurgery; use high-dose oral isotretinoin to prevent new neoplasms; treat neoplasms of the eyelids, conjunctiva, and cornea surgically; corneal transplantation for those with severe keratitis and corneal opacity.

Course and Prognosis

Despite the above measures and also as a result of multiple removal of skin cancers, disfigurement occurs. Prognosis is poor and most persons with this condition die early in adulthood of skin cancer.



Case Report

This 34 year old male began having lesions surgically removed from around his eyes at the age of two years. His first skin cancers were removed at age 8. His sister also had XP and died several years prior to this admission from a sarcoma extending into her brainstem. The patient's only other documented medical problems were depression and insomnia for which he took Zoloft, trazedone and Ambien.

The current series of surgical procedures began a few months previously for an EUA, RLL symblepharon repair, and placement of amniotic membrane. Following administration of propofol, the "airway was difficult to maintain" and then was "lost." A #3 LMA insertion was difficult in this 6 foot, 160 pound male and was only successful after 30 mg succinylcholine had been given. A month later, he had returned for the left symblepharon repair and corneal scraping with amniotic membrane, as well as a bandage contact lens on the right

eye. This time a MAC anesthetic was chosen. Again, airway obstruction occurred, necessitating a constant chin lift throughout the procedure. In neither of these two anesthetics did the oxygen sat fall below 90%.

Three months later the patient returned for corneal scraping and placement of a bandage contact lens on the left eye. His photophobia had worsened to the point that he wore both dark glasses and held a baseball cap to cover his entire face. Examination of the airway despite dimming the lights was exceedingly painful. A marked overbite was present approximately the same length as his thyromental distance. He was unable to open his mouth more than two fingerbreadths with a Mallampati of 4. In addition, neck extension was extremely poor. His near absent nares appeared friable.

Anesthetic Management

The patient was transported to the dimmed operating room with his cap over his face and dark glasses. The planned anesthetic was a general with LMA. Propofol 200 mg was administered IV in contrast to the 70 mg in the first mentioned anesthetic. When airway obstruction occurred, a nasal airway was inserted without relief of the obstruction. A #3 LMA was then inserted without difficulty and sevoflurane with nitrous oxide administered for the fifteen minute surgery. Upon awakening, the patient's pain was relieved with morphine and the lights redimmed. Recovery was uneventful. Two months later, an EUA of both eyes, when photophobia and severe eye pain had been significantly ameliorated, was done with midazolam 2mg, four ten mg doses of propofol, and three ten mg doses of ketamine.

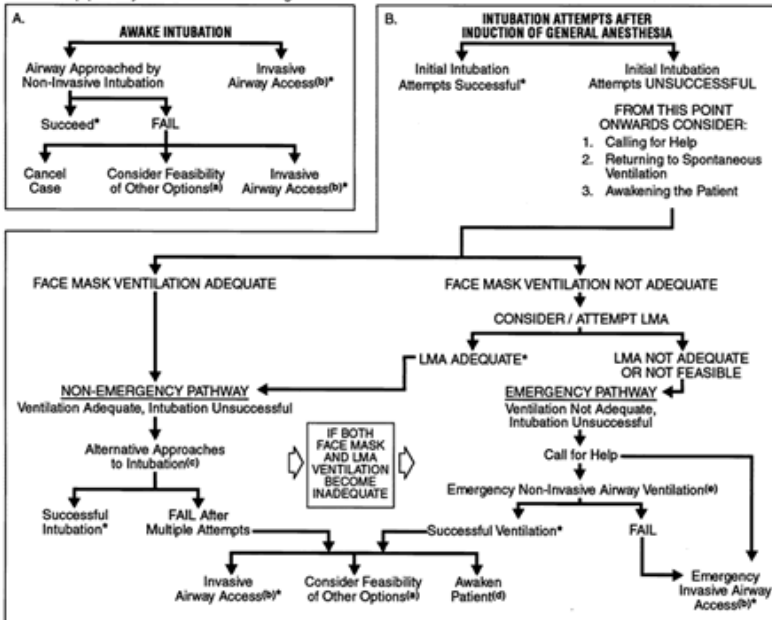
ASA Difficult Airway Algorithm

Step 1 of the ASA Difficult Airway Algorithm⁴ assesses the patient's airway. In this patient, both ventilation and intubation were likely to be difficult compounded by the patient's severe pain limiting his ability to cooperate. Anterior chamber eye surgery does not require paralysis and therefore LMA, unless otherwise, contraindicated can provide a good airway obviating the need for tracheal intubation while maintaining spontaneous ventilation. Due to the lack of tissue in the anterior neck with clearly visible landmarks for cricothyrotomy for either jet ventilation or tracheostomy, neither of these alternative airways were likely to be difficult to perform. Supplies for both alternatives were immediately available as well as fiberoptic bronchoscopy.

DIFFICULT AIRWAY ALGORITHM

1. Assess the likelihood and clinical impact of basic management problems:
 - A. Difficult Ventilation
 - B. Difficult Intubation
 - C. Difficulty with Patient Cooperation or Consent
 - D. Difficult Tracheostomy
2. Actively pursue opportunities to deliver supplemental oxygen throughout the process of difficult airway management
3. Consider the relative merits and feasibility of basic management choices:
 - A. Awake Intubation vs- Intubation Attempts After Induction of General Anesthesia
 - B. Non-invasive Technique for Initial Approach to Intubation vs- Invasive Technique for Initial Approach to Intubation
 - C. Preservation of Spontaneous Ventilation vs- Ablation of Spontaneous Ventilation

4. Develop primary and alternative strategies:



* Confirm ventilation, tracheal intubation, or LMA placement with exhaled CO₂

- a. Other options include (but are not limited to): surgery utilizing face mask or LMA anesthesia, local anesthesia infiltration or regional nerve blockade. Pursuit of these options usually implies that mask ventilation will not be problematic. Therefore, these options may be of limited value if this step in the algorithm has been reached via the Emergency Pathway.
- b. Invasive airway access includes surgical or percutaneous tracheostomy or cricothyrotomy.
- c. Alternative non-invasive approaches to difficult intubation include (but are not limited to): use of different laryngoscope blades, LMA as an intubation conduit (with or without fiberoptic guidance), fiberoptic intubation, intubating stylet or tube changer, light wand, retrograde intubation, and blind oral or nasal intubation.
- d. Consider re-preparation of the patient for awake intubation or canceling surgery.
- e. Options for emergency non-invasive airway ventilation include (but are not limited to): rigid bronchoscope, esophageal-tracheal combitube ventilation, or transtracheal jet ventilation.

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The Xeroderma Pigmentosum Society is available as a support group. Its website is www.xps.org. Information regarding the disease as well as services such as on-line discussion groups for parents and summer camps are available.

The presentation of this case report was approved by the Institutional Review Board of the University of Alabama at Birmingham. Patient photo used with permission of patient and University of Alabama IRB.



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Comparative Survey of Efficacy and Complications between the Blunt Cannula and the Tri-Port Cannula for sub-Tenon's Block

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Introduction

Sub-Tenon's block is a well established method of providing anaesthesia for cataract surgery. It is a safer and effective alternative to peribulbar block (1). It can be performed by using different cannulae (2, 3), the most commonly used is the 19 gauge blunt curved posterior sub-Tenon's cannula (25mm long curved, with a flat profile and a single blunt end hole) (4). The "Tri-Port sub-Tenon cannula" is a 21 gauge Sub-Tenon cannula with a pencil point tip having three ports (1 central and 2 lateral) (5).

Methodology

A prospective survey of patients undergoing cataract surgery under sub-Tenon's block was conducted between Feb – Apr 2010. The ethical committee was approached and a formal ethical committee approval was deemed unnecessary by the 'Trust review board'. In our department, there is Consultant preference to the use of cannula for performing sub-Tenon's block. This was a survey of the current practice at our department. Sub-Tenon's blocks were performed mostly by Consultants and experienced trainees. The anaesthetist performing the block documented the details following the block. Surgical assessment was done by the Consultant surgeon prior to surgery and the results documented. Chemosis, ptosis and motor block were graded subjectively. Amount of local anaesthetic (LA) used and additional top-up were documented. Surgical assessment included chemosis and local bleeding, graded subjectively.

Statistical Methods

Descriptive statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean \pm SD (Min-Max) and results on categorical measurements are presented in Number (%). Significance is assessed at 5 % level of significance. Chi-square and Fisher Exact test has been used to find the significance of study parameters on categorical scale between two or more groups.

Results

A total of sixty patients were included in the survey with 35 in the Blunt cannula group and 25 in the Tri-Port cannula group. A total of 7 patients in the Blunt group and 3 patients in the Tri-Port group were not assessed surgically, hence excluded from surgical assessment.

In our survey, there was no statistically significant difference in the demographics (gender, age). There was a statistical significant difference in moderate chemosis, (P 0.002) with a higher incidence in the Tri-Port group. The amount of local anaesthetic (LA) used was statistically significant, with smaller amounts 4 and 4.5 mls used in Tri-Port group compared to 5 ml in the Blunt group. There was no statistically significant difference in the ptosis seen and additional top-up between the groups. There was a statistical significant difference in motor blockade being complete (P 0.03) in 36 % of patients in Tri-Port group and 11.4 % in the blunt group. There was no statistically significant difference in chemosis and sub-conjunctival bleed observed prior to the start of the surgery.



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Table 1: Anaesthetic assessment

Anaesthetic assessment	Criteria	Blunt group	Tri-Port group	P value
Number of patients		35	25	
Demographics				
1. Gender	Male	16 (45.7%)	9 (36.0%)	0.596
	Female	19 (54.3%)	16 (64.0%)	0.596
2. Age in years	Range	47-94 yrs	58-89 yrs	-
Chemosis	None	20 (57.1%)	4 (16.0%)	0.002**
	Mild	11 (31.4%)	7 (28.0%)	1.000
	Moderate	3 (8.6%)	11 (44.0%)	0.002**
	Severe	1 (2.9%)	3 (12.0%)	0.298
Amount of LA used	4 ml	0	9 (36.0%)	<0.001**
	4.5 ml	7 (20.0%)	16 (64.0%)	0.001**
	5 ml	22 (62.9%)	6 (24.0%)	0.004**
Ptosis	None	2 (5.7%)	3 (12.0%)	0.640
	Partial	11 (31.4%)	11 (44.0%)	0.417
	Complete	22 (62.9%)	11 (44.0%)	0.191
Motor block	MR + other muscles	28 (80.0%)	14 (56.0%)	0.085+
	Partial MR	3 (8.6%)	2 (8.0%)	1.000
	Complete	4 (11.4%)	9 (36.0%)	0.030*
Additional Top up		1 (2.9%)	0	1.000

Table 2: Surgical assessment

Surgical assessment	Criteria	Blunt group	Tri-Port group	P value
Chemosis	None	13 (37.1%)	8 (32.0%)	0.786
	Mild	12 (34.3%)	9 (36.0%)	1.000
	Moderate	3 (8.6%)	5 (20.0%)	0.259
Sub-conjunctival bleed	None	12 (34.3%)	3 (12.0%)	0.071+
	Mild	12 (34.3%)	14 (56.0%)	0.118

	Severe	4 (11.4%)	5 (20.0%)	0.470
Total		28 (100.0%)	22 (100.0%)	-

+ Suggestive significance (P value: $0.05 < P < 0.10$)

* Moderately significant (P value: $0.01 < P \leq 0.05$)

** Highly significant (P value: $P \leq 0.01$)

The Statistical software namely SAS 9.0, SPSS 15.0, Stata 8.0, MedCalc 9.0.1 and Systat 11.0 were used for the analysis of the data.

Discussion

The sub-Tenon's block has a lesser incidence of complications like retrobulbar haemorrhage, optic nerve damage and perforation of the globe when compared to techniques using sharp needles (1, 6). The main difference between performing the sub-Tenon's block with the blunt cannula and using the Tri-Port cannula is that in the former a prior incision of the Tenon's capsule is required using the Westcott scissors. The use of Tri-Port needle appears to be less invasive, with a lower incidence of conjunctival trauma and good quality block (5). In our survey, we had a statistically significant incidence of moderate chemosis (anaesthetic assessment) in the Tri-Port group but no statistically significant difference when assessed surgically. This could have been due to the chemosis resolving over the period between performing the block and surgical assessment. Also, there is a likelihood of inter-individual difference in assessment. The Tri-Port cannula technique requires a smaller opening when performing the block, hence lesser volume of LA is lost and the amount of LA is required to produce the block is less. The Tri-Port group had a statistically significant complete motor blockade when compared to the Blunt group, most likely due to less loss of LA during the block from a smaller opening in the conjunctiva. None of the patients had major complications during performing the block.

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EYE OPENERS!

Myra Aultman named Chief Nursing Executive at Callahan Eye Foundation Hospital

OAS member, Myra Aultman CRNA, was named Assistant Vice President and Chief Nurse Executive for the Callahan Eye Foundation Hospital at the University of Alabama at Birmingham, effective July 1, 2010. She will be responsible for patient care services. Prior to this appointment, Aultman was Chief Nurse Anesthetist for CEFH.

Video: www.youtube.com/uabnews

Text: www.uab.edu/news

Tweets: www.twitter.com/uabnews

Thanks to Ophthalmology Management for this link to a recent story featuring the Beverly Hills practice of Sam Masket MD, where our own Dean Berkus is anesthesiologist:
<http://www.opthalmologymanagement.com/article.aspx?article=102788>

Dan Simonson on YouTube:

OAS Member Dan Simonson produced a video demonstrating the significance of needle selection when performing ophthalmic anesthesia techniques. Have a look: [YouTube](#)

Member-Get-A-Member Discount

Encourage your colleagues to attend the OAS Annual Meeting as a first-time visitor, and we'll knock \$50 off YOUR registration for each new attendee you bring with you. Simply have your colleagues contact Staff at [Info](#) and let us know their attendance is at your invitation so you can receive the discount.

Call for Case Discussions

We want to include your difficult cases in our annual Sunday morning Case Discussion that is chaired by Dr. Marc Feldman. Please email a summary of cases which have presented your team with decision-making challenges when patient or OR safety was in question. Send all cases to the Administrative Office via email to [Info](#) by August 15, 2010.



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