2020 CAS Annual Meeting

Other Topics

(Abstracts & Case Report/ Series)

Contents

Approach to Epidermolysis Bullosa: When It Could Potentially Be the Last Anesthetic!

Keerthi Rao[1]; Richa Sharma[2]; Joel Fish[3]; Clyde Matava[4]

1 Clinical Fellow, Pediatric Anesthesia, Department of Anesthesia and Pain management, The Hospital for Sick Children, Toronto, Canada
2 Staff Anesthesiologist, Department of Anesthesia and Pain Management, The Hospital for Sick Children, Toronto, Canada
3 Associate Professor, Plastic and Reconstructive Surgery, The Hospital for Sick Children, Toronto, Canada
4 Assistant Professor, Department of Anesthesia and Pain management, The Hospital for Sick Children, Toronto, Canada

Introduction: Epidermolysis bullosa (EB) is a rare genetic disorder where excessive skin and mucous membrane fragility lead to bullae formation and ulceration. These patients require multiple procedures in their lifetime and anesthetic challenges encountered include preserving skin integrity, preventing further damage, difficulty in intravenous and airway access owing to scarring and contractures. We describe the novel use of Self-Assembled Skin Substitute (SASS) autologous graft application for the 'curative' management of EB skin lesions. This report highlights a possible long term solution to the dermatologic issues in EB and an appropriately tailored anesthetic technique to aid graft uptake and survivability.

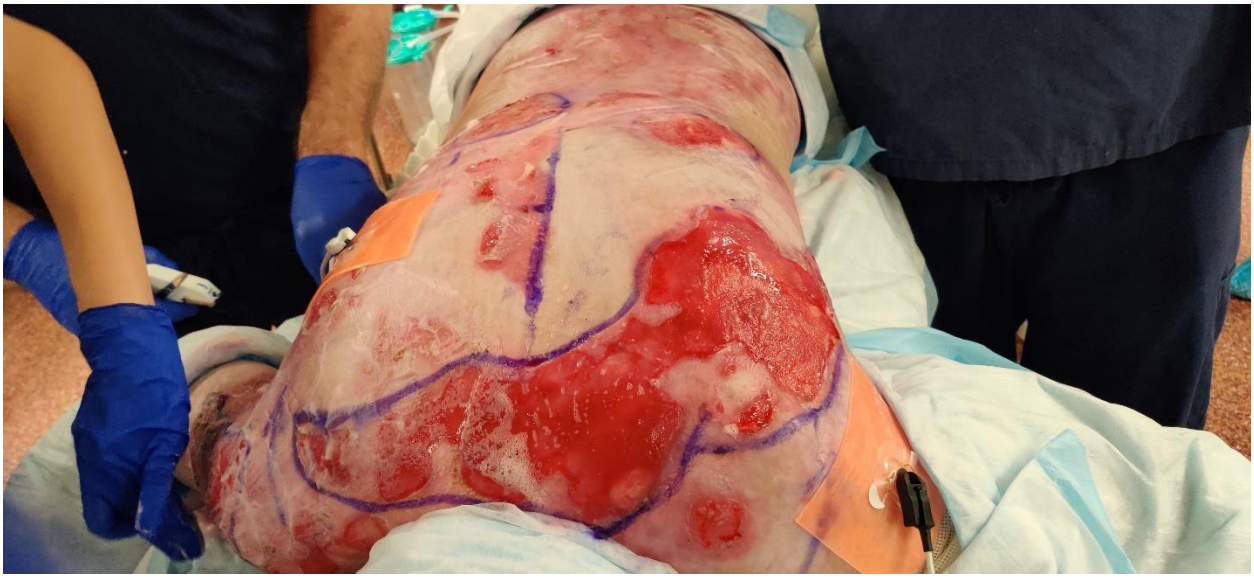
Case presentation: Patient consent was obtained for publication of this case. A 29-year-old male with recessive dystrophic EB was encountered thrice for debridement of the skin lesions on the back, application of the SASS graft and dressing change. Significant preoperative findings were ulceration on anterior and posterior chest, difficult intravenous access, limited neck extension, Mallampatti class IV and 1.5 cm mouth opening. Anesthesia planning included the surgeons, nursing team and designation of specific roles (IV, airway, sedation) to the members of anesthesia team including a strict "No touch" policy unless required amongst the team members.

During the first anesthetic intravenous access was secured under ultrasound guidance, sedation instituted with midazolam, remifentanil and dexmedetomidine infusions. Upon achieving topical airway anesthesia using lidocaine sprays and nebulization, a 6 cuffed armored endotracheal tube was placed through the right nostril using a 4.5 F fibreoptic bronchoscope and secured with sutures. Non-adhesive silicone based dressings (IV DermTM, MepitacTM) were used on intravenous access and taping the eyes shut. Head, face and pressure points were well padded prior to positioning prone, monitoring was modified using a clip on saturation probe on the ear, non-invasive blood pressure cuff on a well-padded arm with prolonged cycling interval, and electrocardiogram electrodes on defibrillation gel pad pieces placed on the back.

During the encounter for SASS graft application, the same technique described above was followed, but there were additional concerns to promote graft survivability. Hypotensive episodes were encountered and mean arterial pressure was maintained above 65 mmHg using intravenous phenylephrine boluses to ensure adequate tissue perfusion.

During the encounter for dressing change, sedation was instituted with sublingual lorazepam sedation and nitrous oxide by mask, thereby preserving hemodynamic stability. Good graft take was noted at this time.

Discussion: The SASS graft could be a potential long term dermal solution in EB and in addition to the routinely practiced modifications and caution, it is vital to promote graft-take by ensuring adequate perioperative tissue perfusion. This encounter also provided us with an opportunity to review the documented literature and attempt to formulate guidelines for the management of such a case for the best possible outcome.



Assessment of Burnout Syndrome Among Anesthesia Providers from a Low Income Country: A Quantitative Analytical Cross Sectional Study

Eugene Tuyishime[1,2,3]; Paulin Ruhato Banguti[1]; Dylan Bould[4]

1 University of Rwanda, Kigali, Rwanda
2 University Teaching Hospital of Kigali, Kigali, Rwanda
3 OhioHealth Learning, Riverside Methodist Hospital, Columbus, Ohio, USA
4 Children's Hospital of Eastern Ontario, Ottawa, ON, Canada

Introduction: Despite having many studies done in high income countries, there is paucity of data on burnout for anesthesia providers in low-middle income (LMI) countries. Therefore this study aimed 1) to evaluate the prevalence of burnout amongst anesthesia providers in a singular LMI country and 2) to determine factors associated with burnout amongst anesthesia providers in this singular LMI country.

Method: Ethics approval (No 056/CMHS-IRB/2018) was obtained from the local University of Rwanda/College of Medicine and Health Sciences institutional review board.

Design: A quantitative analytical cross sectional study

Setting: Anesthesia providers from 12 hospitals including 4 teaching hospitals, 1 referral hospital, 1 provincial hospital, and 6 district hospitals.

Main outcomes:
1) Mean score response on 22 questions of the full Maslach Burnout Index Health System Survey (MBI-HSS): 9 for emotional exhaustion, 5 assessing depersonalization, and 8 for personal accomplishment.

2) Factors associated with burnout among anesthesia providers.

Results: The response rate was 72.3% (99/137) with the majority of respondents men (63.6%), married (64.3%), from teaching hospitals (76.1%), from urban area (85.7%), non physician (66.7%), and with experience of below 5 years (73.7%). The mean age was 34.6 (SD=6.4) and the average weekly working hours was 57.5 hours (SD=12.1). The prevalence of burnout (defined as high emotional exhaustion or high depersonalization) amongst anesthesia providers in this singualr LMI hospitals was 47.5%.

Measured level of burnout as assessed by high emotional exhaustion, low personal accomplishment, and high depersonalization was 46, 15.2 and 8.1%, respectively. Using a multiple logistic regression, we detected that sleeping hours, rights about the schedule, right drugs, right team, and sufficient salary were independently associated with burnout.

Discussion: The prevalence of BOS among anesthesia providers in this singular LMI is high and of major concern. The study identifies key areas upon which interventions could be planned namely adequate sleep, appropriate schedule, right drugs, team support structures, and sufficient remuneration.

Ketamine Co-Induction for Major Depressive Disorder

Jordon Steeg[1]; Jonathan Gamble[1]; Jagmeet Bajwa[1]

1 Department of Anesthesiology, Perioperative Medicine and Pain Management, University of Saskatchewan, Saskatoon, Canada

Background: Major depressive disorder (MDD) is common, with a life prevalence of up to 11.3% amongst Canadians.[1,2] A majority of these patients will require an operation and are at risk of both worsening depressive symptoms and increased postoperative pain.[3] Ketamine has been demonstrated to rapidly improve MDD symptoms.[4,5,6] However, the effect of ketamine on MDD symptoms when used as an adjunctive induction agent for general anesthesia remains largely unstudied.[7]

Methods: Ethics approval was obtained from the local REB. This single-center, blinded, randomized clinical trial planned a convenience sample of 50 patients aged 18-65 years with self-reported diagnosis of MDD, currently taking a medication prescribed for MDD, and presenting for gynecologic surgery requiring general anesthesia. Patient and assessor were blinded to group allocation. Enrolled patients were computer-randomized to receive either a general anesthetic which included 0.5mg/kg of ketamine on induction (intervention arm) or a general anesthetic absent of ketamine (control arm). MDD severity was scored using the validated Montgomery-Asberg Depression Rating Scale (MADRS) measured preoperatively, upon post-anesthetic care unit (PACU) discharge, and on postoperative days 1, 3, 7, and 30. Other measures included verbally reported pain score (VRS) observed on the same time intervals as well as opiate analgesia requirement in PACU in milligram morphine equivalents. Primary outcome was MADRS on postoperative day 1. Patients were surveyed during their hospital admission when possible, but were reached by telephone after hospital discharge. MADRS and VRS scores were analyzed using repeated measures mixed ANOVA.

Results: 50 women with a mean age of 41 years (SD 11.5) were recruited. The baseline characteristics between groups were similar. Mean and 95% confidence intervals (CI) for MADRS score on postoperative day 1 were similar with 7.4 (6.1 to 8.8) and 5.6 (4.2 to 7.1) in the control and ketamine groups respectively; VRS scores at 24h postoperatively were also similar at 3.7 (3.0 to 4.4) and 3.6 (2.9 to 4.4) in the control and ketamine groups respectively. Opiate analgesic requirements were 6.9 milligrams (SD 6.7) and 7.5 milligrams (SD 7.7) in the control and ketamine groups respectively.

Conclusion: This study suggests that ketamine as a co-induction agent as part of general anesthesia for patients with MDD requiring gynecologic surgery does not reduce the severity of MDD or pain scores on postoperative day 1. This may be due to a low baseline MDD severity and surgery not normally associated with severe postoperative pain.

REFERENCES:

1. Bloom D, Cafiero E, Jané-Llopis E, Abrahams-Gessel S, Bloom L, Fathima S, et al. The global economic burden of noncommunicable diseases. Geneva: World Economic Forum; 2011.
2. Pearson C, Janz T, Ali J. Mental and substance use disorders in Canada [Internet]. Ottawa, ON: Statistics Canada, Health Statistics Division; 2013 Sep 18 [cited 2017 Mar 24]. Available from: http://www.statcan.gc.ca/pub/82-624-x/2013001/article/11855-eng.htm .
3. Ghoneim M, O'Hara M. Depression and postoperative complications: an overview. BMC Surg. 2016;16(5):1-10.
4. Krystal J, Karper L, Seibyl J, Freeman G, Delaney R, Bremmer J, et al. Subanesthetic effects of the noncompetitive NMDA antagonist, ketamine, in humans: psychotomimetic, perceptual, cognitive, and neuroendocrine responses. Arch Gen Psychiatry. 1994;51(3):199-214.
5. Berman RM, Cappiello A, Anand A, Oren DA, Heninger GR, Charney DS, et al. Antidepressant effects of ketamine in depressed patients. Biol Psychiatry. 2000;47(4):351-4.
6. Caddy C, Giaroli G, White TP, Shergill SS, Tracy DK. Ketamine as the prototype glutamatergic antidepressant: pharmacodynamic actions, and a systematic review and meta-analysis of efficacy. Ther Adv Psychopharmacol. 2014;4(2):75-99.
7. Kudoh A, Takahira Y, Katagai H, Takazawa T. Small-dose ketamine improves the postoperative state of depressed patients. Anesth Analg. 2002;95(1):114-8.

Postoperative Pneumonia Prevention: A Retrospective and Cross-Sectional Survey Based Review of How We're Doing

Naveen Sivaranjan[1]; Hamsa Asif[1]; Jessica Pudwell[1]; Romy Nitsch[1]

1 Department of Obstetrics and Gynecology, Kingston General Hospital, Kingston, Canada

Background: Pneumonia is the third most common postoperative complication in surgical patients. The iCOUGH Pulmonary Program, developed by Boston University School of Medicine, employed 6 simple intervention strategies including incentive spirometry, coughing and deep breathing, oral care, patient education, early mobilization, and head of bed elevation, that dropped the incidence of postoperative pneumonia from 2.6% to 1.6% at their center. Our project utilizes a retrospective chart review and a cross-sectional survey of multidisciplinary care providers examining the current state of the frequency of these interventions to prevent postoperative pneumonia at Kingston General Hospital (KGH).

Methods: Patients were identified through medical records diagnosis codes and charts were reviewed to identify the incidence of postoperative pneumonia as well as the utilization of iCOUGH related interventions. A cross-sectional survey of care providers working on post-operative wards in General Surgery, Orthopedics, and Obstetrics/Gynecology was conducted. The survey focused on the care providers' understanding of the incidence of postoperative pneumonia in relation to other wards at KGH and to other hospitals in our area, their personal application of postoperative pneumonia prevention techniques, and the major barriers to intervention implementation.

Results: Of the 2420 orthopedic surgery patients, 40 were diagnosed with a postprocedural respiratory disorder during admission. Of these 40, postoperative pneumonia was found in 27 (1.12%) of cases. A total of 4 patients sat up in their chair and 1 walked on postoperative day (POD) 0. Patients were up in their chairs 3x/day by POD 4.29 ± 4.44 and ambulating 3x/day by POD 6.3 ± 4.32. A total of 55 care providers were surveyed. Most care providers did not know the incidence of pneumonia relative to other hospitals (33/55) and other floors (29/55) at KGH. All respondents could identify at least 1 intervention to prevent pneumonia (mean 2.87 ± 1.05), however, no one could list more than 5. "Lack of patient engagement" (29/55) and "inadequate staffing" (23/55) were noted as the major barriers to implementing interventions, with feedback suggesting that patient education should be a target for improvement.

Discussion: Poor patient awareness, as well as lack of patient engagement in interventions, are major barriers that prevent healthcare providers from performing the interventions to prevent postoperative pneumonia. From our cross-sectional survey, it's clear that the next focus should be improving staff and patient education regarding postoperative pneumonia.

REFERENCES:

Cassidy, Michael R., et al. I COUGH: reducing postoperative pulmonary complications with a multidisciplinary patient care program. JAMA surgery 2013;148(8): 740-745.
Smetana GW. Postoperative pulmonary complications: an update on risk assessment and reduction. Cleve Clin J Med. 2009;76(suppl4):S60-S65

Sugammadex Use Audit in the Main Operating Room (OR) of a Large, Tertiary Care Hospital

Christopher L Pysyk[1]

1 Department of Anesthesiology and Pain Medicine, The Ottawa Hospital, University of Ottawa, Ottawa, ON, Canada

Introduction: Sugammadex became available for clinical use in 2017 at The Ottawa Hospital (TOH), a tertiary care, academic health sciences centre (AHSC). Indications for sugammadex use at TOH included reversal of rocuronium-induced neuromuscular blockade when reversal was not possible or incomplete with neostigmine. To better understand the number and context of sugammadex administrations, the Quality & Patient Safety (QPS) Committee of the Department of Anesthesiology and Pain Medicine conducted an audit of Main OR sugammadex utilization.

Methods: Ethics approval was waived by the local REB. Using data available in the electronic Anesthesia Information Management System at TOH, a list of all patients administered sugammadex in the first 24 months of sugammadex availability was provided to the QPS Committee. From this list, a random number-generated, convenience sample of 10% of patients who had received sugammadex was reviewed. The audit assessed: type and urgency of surgery, age and sex of patient, presence of neuromuscular blockade monitoring, timing and dose of muscle relaxant and sugammadex administered, and presence of trainee. A monthly report of total sugammadex administrations in the Main OR was also generated.

Results: Sugammadex administration events increased for each successive 6-month interval over the first 24 months of sugammadex availability. 42 of 418 (10%) cases with sugammadex administration were reviewed. Male patients represented 25 of 42 cases (59%). Non-elective patients accounted for 19 of 42 cases (45%). 18 of 42 cases (43%) involved sugammadex administration after 1530 h. Residents provided care in 20 of 42 cases (48%) where sugammadex was administered. General surgery accounted for the largest surgical patient population (19 of 42 cases, 45%) receiving sugammadex. No cases of sugammadex use for emergency airway rescue were noted. 29 of 42 cases (69%) met institutional indications for sugammadex administration. Neuromuscular transmission (NMT) monitoring was documented in 37 of 42 cases (88%). Attributable use of sugammadex was related to practice management (19/42, 45%) with 5 of 42 (12%) cases involving 0.15 to 0.25 mg/kg of rocuronium administered within last 30 minutes of the procedure. NMT monitor equipment failure was noted in 8 of 37 (19%) cases where NMT monitors were used. Sugammadex was given instead of neostigmine in 5 of 32 cases (16%) where reversal with neostigmine was possible based on NMT Train of Four values.

Conclusion: The number of sugammadex administrations increased successively in a non-random fashion over the first 24 months that sugammadex was made available in the Main OR of a tertiary care AHSC. Though the majority of sugammadex administrations met institutional indications, opportunities for improved stewardship may involve targeted approaches to processes of care, such as clinical practice management of rocuronium-induced muscle paralysis, and structural factors, such as ensuring the availability of functional NMT monitors.

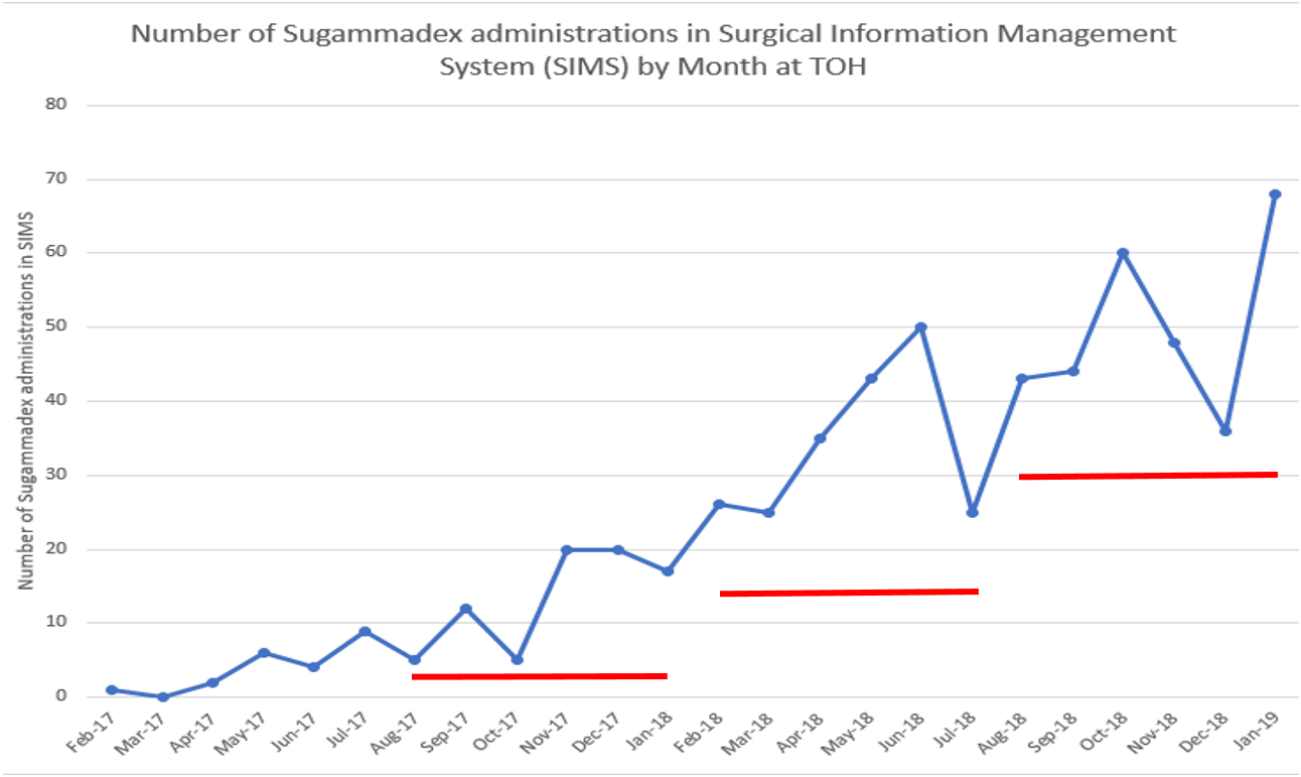


Figure 1 - Run chart displaying the number of sugammadex administrations in Main Operating Room over the first 2 years of sugammadex availability. Red bars correspond to the median number of sugammadex administrations in the preceding 6-month interval. For example, the red bar over August 2017 to January 2018 is the median number of sugammadex administrations from February 2017 to July 2017.