

Presentation #1 | Abstract | Cardiac Anesthesia

Use of Tranexamic Acid and Epsilon-Aminocaproic Acid in Coronary Artery Bypass Surgery

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Introduction

Intra and post-operative bleeding can worsen outcomes in patients undergoing coronary artery bypass surgery (CABG). Antifibrinolytic agents, such as tranexamic acid (TXA) and epsilon-aminocaproic acid (ϵ -ACA), reduce intraoperative bleeding. We evaluated the efficacy of TXA and ϵ -ACA on perioperative bleeding in patients undergoing CABG.

Methods

Following IRB approval, medical records of 501 CABG patients from 2021-2022 were examined with patient characteristics, comorbidities, antifibrinolytic therapies, perioperative blood loss, and administration of blood products abstracted for analysis. TXA was used in 202/356 (56% CI 51-62%), while ϵ -ACA was used in 145/299 (48% CI 48-54%) patients. Measures of effect size were developed with standardized mean differences (SMD). JMP 16.2 (SAS Institute, Cary, NC) was utilized for all statistical analyses.

Results

TXA was associated with lower estimated blood loss (EBL) and cell saver administration volumes compared to the ϵ -ACA and the control group. Post-operative drainage at 24 hours was lower in TXA compared to ϵ -ACA and control. Intraoperative blood transfusions were higher with antifibrinolytics compared to patients given no antifibrinolytics. At 24 hours, higher blood transfusions were only observed in TXA, while no relationship was found 48 hours after surgery. Results are shown in table 1.

Conclusion

TXA was more effective in reducing estimated blood loss, cell saver, and post-operative drainage when compared to ϵ -ACA. Patients who received antifibrinolytics had a relatively higher risk for intraoperative blood transfusions in CABG.

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Table 1: Comparisons of Antifibrinolytic Therapy in Patients Undergoing CABG						
Outcomes	No Antifibrinolytic (Ctrl)	Antifibrinolytics				
		Tranexamic Acid	TXA Std. Mean Difference	ε-Aminocaproic Acid	ε-ACA Std. Mean Difference	
Estimated Blood Loss (ml), median [CI]	500 [175-600]	200 [100-200]	0.88	500 [250-500]	0.004	
Cell Saver (ml), median [CI]	524 [400-700]	400 [283-525]	0.88	550 [430-750]	-0.17	
Post-operative Drainage (ml), median [CI]	POD 0	548 [370-750]	450 [300-701]	0.20	631 [480-915]	-0.17
	POD 1	330 [220-490]	260 [170-412]	0.30	368.5 [243-565]	-0.17
Intraoperative Blood Transfusion (units)	0.50 [0.36-0.82]	1.45 [1.06-1.98]		1.10 [0.79-1.55]		
Post-operative Blood Transfusion (units)	POD 0	0.67 [0.46-0.96]	1.21 [0.89-1.63]		1.17 [0.85-1.61]	
	POD 1	1.08 [0.72-1.64]	0.83 [0.56-1.25]		1.12 [0.74-1.70]	

Note: Continuous variables are reported as median [interquartile ranges 25% - 75%]. Dichotomous variables are reported as relative risk [95% confidence intervals]; Standardized differences were based upon means or proportions when divided by their pooled standard deviations.

Ctrl: Control; ε-Aminocaproic Acid; POD: Post-operative Day; TXA: Tranexamic Acid; Std. Mean Difference: Standardized Mean Difference

Presentation #2 | Abstract | Professional Issues

Utilizing Positive Organizational Design Theory and AI Scheduling to Improve Physician Engagement and Patient Safety

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Introduction

The evolving landscape of healthcare has brought many challenges to physicians which have manifested as dissatisfaction, burnout, and lack of work life balance. The Anesthesiologists at Ochsner designed an organizational framework to optimize employee engagement and satisfaction with the help of an AI driven scheduling system.

Methods

The department used a combination of Idealized Design change framework, lectures, and discussions to design a scheduling outline that provided predictability, flexibility, and improved work life balance. After development by the physicians, the framework was built in Lightning Bolt AI scheduling software to maximize the intended benefits.

Results

After design and implementation, vacation approval increased by 35%, and vacation denials decreased by 83%. Physician satisfaction improved from 3.3 to 4.2 in the first 6 months due to better work life balance and workload distribution. In the first 6 months, patient safety increased as well by reducing intraoperative transitions of care by 400 which prevented 26 potential harm events and potential saving of \$300,000.

Conclusion

Navigating the challenges of today's physicians is a daunting task. However, employing a change process which starts from an idealized state and works backward to the current state removes many of the perceived obstacles in the path allowing physicians to focus on a system which prioritizes workload distribution, predictability, flexibility, and satisfaction. Employee engagement correlates with patient safety and physician well-being. Ochsner used AI-scheduling to further optimize the benefits.

	Pre-Change	Post-Change
Transitions of Care (%)	10.4%	8.89%
Transitions of Care (Total)	2,628	2,329
Total Cases	25,614	26,172

Presentation #3 | Case Study | Fundamentals of Anesthesiology

Unique Management of Rare Bleeding Disorder Perioperatively

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Case Project Description

Bleeding, Infection, Sepsis are a few of the major concerns when managing a patient with bleeding and clotting disorders. Hemophilia A and VWF deficiency are more commonly encountered. Hemophilia B is rare and can be challenging to manage if such patients undergo urgent surgeries. Understanding the disease will help not only with better perioperative management, but also necessary to decrease the perioperative morbidity and mortality especially due to bleeding or infectious sequelae such as sepsis. Here we present a case with Hemophilia B also known as Christmas Disease or Royal Disease coming for I&D of large groin abscess which developed from a hematoma due to prior trauma. Incision and Drainage was planned for a 48-year-old with male with history of Christmas disease and hepatitis C with significant erythema, expansion and an elevated WBC 17,000. Preoperative examination showed factor IX activity of 8% with no inhibitor development. Preoperative Benefix was given to increase the patient's factor IX levels to >20% prior to surgery. Patient was managed by anesthesia without requiring blood transfusion during surgery and had an uneventful post-operative period. Factor IX levels after surgery were noted to be >70%.

Presentation #4 | Abstract | Regional Anesthesia and Acute Pain

Retrospective Study of Regional Anesthesia or General Anesthesia for Percutaneous Transluminal Angioplasty

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Introduction

Revascularization is vital in treating peripheral arterial disease (PAD). When medical management fails, patients with severe claudication and critical ischemia can undergo Percutaneous Transluminal Angioplasty (PTA). The patient population requiring PTA often has numerous comorbidities, and we propose these patients may experience fewer adverse events when regional anesthesia is utilized in lieu of general anesthesia.

The primary objective of this study is to determine whether patients who received regional anesthesia with femoral and sciatic nerve block had a lower rate of morbidity post-procedure versus patients who received general anesthesia for PTA for lower extremity revascularization.

Methods

A retrospective chart review of patients > 18 years old who underwent technically successful PTA of a lower extremity between January 1, 2019 and December 31, 2020. Exclusion criteria include: prior complications with anesthesia, and bilateral revascularization procedure. Primary outcome is morbidity within 30 days of the procedure including myocardial infarction (MI), cerebrovascular accident (CVA), and acute kidney injury (AKI). Secondary outcomes include ICU stay, mortality, re-intubation, opioid use during and 24 hours after procedure, and nausea and vomiting (PONV).

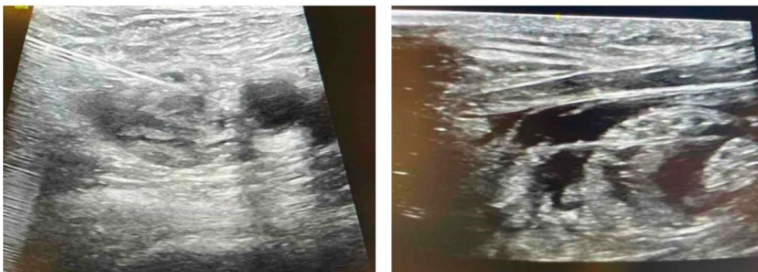
Results

A total of 81 patients were compared. After comparison, only one patient in each group had expired in the 30 days postoperatively ($p=1$). There were significant differences in patient opiate requirements between the groups. The regional anesthesia group received less intraoperative opioids than the general anesthetic group ($p=0.0001$). Conversely, the regional anesthetic group received more opiates during the postoperative period. Secondary outcomes of ICU admissions, ICU discharge time, need for postoperative ventilation or reintubation, development of postoperative nausea or vomiting, postoperative MI, postoperative AKI, postoperative CVA produced insignificant differences in rates between the two groups.

Conclusion

Regional anesthesia showed largely equivocal outcomes in patient morbidity and mortality.

Figure 1. Femoral block (L), popliteal block (R)



Presentation #5 | Abstract | Pain Medicine

Treatment of Chronic Craniofacial Pain with Wireless Peripheral Nerve Stimulation: A Case Series

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Introduction

Chronic craniofacial pain can result from infection, trauma, or surgery and can be a significant cause of morbidity in patients (1, 2). The various etiologies of craniofacial pain are most commonly treated with opioids with or without anticonvulsants and antidepressants. Failure of medical management as well as technological advancement has meanwhile accelerated the use of neurostimulation (3). PNS has been found to be effective for alleviating pain that is intractable to medical therapy, physical therapy, nerve blocks, and transcutaneous electrical stimulation (4). PNS has been shown to be a viable therapeutic option for those suffering with chronic and disabling pain (2). We hypothesize a clinically significant level of pain reduction following implantation with a wireless PNS device in those with chronic craniofacial pain.

Methods

This retrospective case series will evaluate patients with craniofacial pain who have undergone wireless peripheral nerve stimulation using a novel and minimally invasive system. Numerical Rating Scale (NRS) pain scores will be assessed pre- and post- implantation. Electronic medical records (EMR) will be used to collect data on demographic factors and etiologies of chronic craniofacial pain in participating patients. A t-test analysis will be completed to compare means of pre- and post- procedure pain scores and disability index. Data will be analyzed by the statistical analysis team.

Results

The results will be analyzed and prepared prior to the LSA conference.

Conclusion

This retrospective case series illustrates that wireless peripheral nerve stimulation should be considered as an effective treatment option for with chronic craniofacial pain.

Presentation #6 | Case Study | Ambulatory Anesthesia

Arterial Cannulation in a Patient with Persistent Superficial Branch of the Radial Artery

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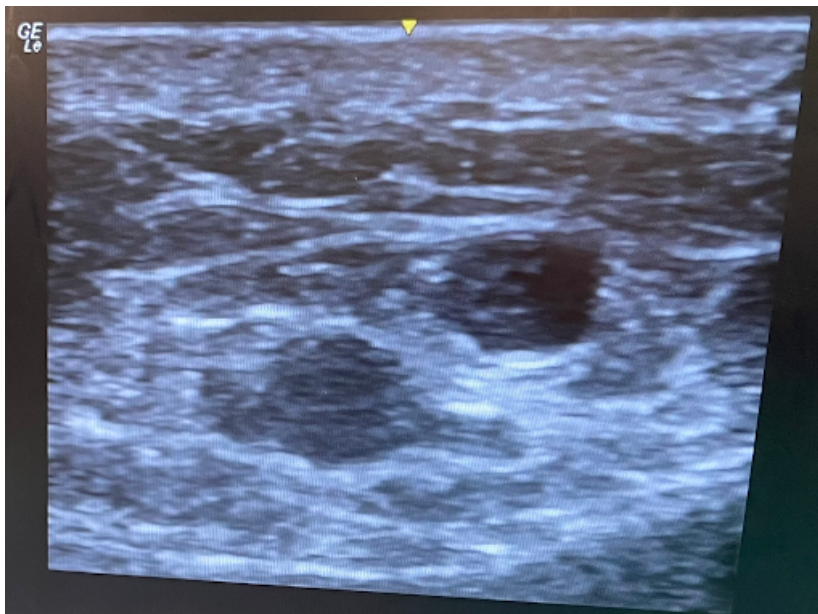
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Case Project Description

Within this case report, we present a 41 year old male patient with a past medical history of metastatic testicular cancer (seminoma) who presented for robotic retroperitoneal lymph node dissection found to have two pulsating structures on ultrasound of the left forearm when scanning for arterial line placement.

Following brief discussion of which artery to cannulate, we proceeded with successful cannulation of the deeper pulsating vessel uneventfully. The arterial line was removed post operatively and the patient experienced no vascular complications.

The radial artery develops by division of brachial artery into superficial and deep branches. Of the 2 branches, the superficial branch obliterates while the deep branch persists.(1) However, the superficial branch can persist in about 0.5%-1%.(2) The variants of the radial artery were classified by Manners Smith into 2 types. Type 1 where there is a single dorsal division which is entirely superficial is the more common type. In type 2 the dorsal division splits into 2 parts- superficial and deep. Our patient comes under type 2.(3) There has been a case report of accidental radial artery puncture while trying to obtain venous access in cephalic vein.(4) It was pointed out that though the variant is rare, since the number of patients who get a cephalic vein cannulation is considerable, the total number of patients who get an accidental radial artery puncture could be high. The anomalous position of the artery could also make locating the radial pulse difficult, thus it is recommended to search for it more proximally.



Presentation #7 | Case Study | Pediatric Anesthesia

Anesthetic Management for Robotic Thymectomy in a Pediatric Patient

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Case Project Description

Myasthenia Gravis (MG) is an autoimmune disorder caused by autoantibodies to acetylcholine receptors resulting in neuromuscular dysfunction that manifests as ocular disease, bulbar symptoms, limb weakness, and impaired respiratory function (Ionita and Ascadi 2013). Juvenile myasthenia gravis is a rare form MG in children less than 18 years old with an incidence of 1 in 200,000 to 1,000,000; this form represents 10-15% of all myasthenia gravis cases (Ng and Hartley 2021). Treatment of MG consists of medical therapy—steroids, IVIG, plasmapheresis, acetylcholinesterase inhibitors, immunosuppressants—and surgical intervention for refractory cases via thymectomy. Historically performed via sternotomy, this procedure has also been demonstrated using minimally invasive techniques, including robot assisted thymectomy in children (Hartwich et al 2012). Robotic thoracic surgeries present unique anesthetic considerations including limited intraoperative access to the patient, possible one lung ventilation, and patient positioning, (Maurulli 2017, Karlekar 2015). Additionally, myasthenia patients are at increased risk of postoperative respiratory complications including the need for prolonged postoperative mechanical ventilation. We present the anesthetic management of a juvenile myasthenia gravis patient undergoing robot assisted thymectomy including two-lung ventilation throughout surgery with successful extubation in the operating room.

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Presentation #8 | Case Study | Obstetric Anesthesia

Primigravida with Postural Orthostatic Tachycardic Syndrome, Ehlers-Danlos, and Mast Cell Activation Syndrome Presents for Induction of Labor

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Case Project Description

Introduction: A 21-year-old female with known history of postural orthostatic tachycardic syndrome (POTS), Ehlers-Danlos, hypermobility subtype, and Mast Cell Activation Syndrome was admitted at 37 weeks for induction of labor. Exercise tolerance was limited secondary to POTS and the patient has documented resistance to local anesthetics from history of RIJ port placement, which she uses to give herself weekly fluid boluses to manage POTS.

Methods: The patient received Cervidil three times over the course of 27 hours prior to placement of epidural. 600cc bolus was given prior to placement of epidural and 200cc bolus

was given after completion of procedure. Right abdominal pain was reported twice after placement of epidural, resulting in bolus of 0.1% bupivacaine. Catheter was pulled back 2cm and epidural was bolused again, but right abdominal pain persisted. Epidural was replaced after 18 hours and second epidural provided 2 hours of pain relief. Decision was made to proceed with c-section given patient comorbidities and general anesthetic was provided.

Results: 1) Delivery of viable baby girl without complication. 2) Failure of two epidural catheters and, eventually, successful general anesthesia. Although a literature review warned of frequent failure of regional anesthesia with Ehlers-Danlos, and possible complications of general anesthesia, the clinical judgement of the anesthesiologist was to proceed with regional with care. This case highlights interesting challenges in OB, as well as fosters discussion for how this patient could best be managed.

Presentation #9 | Abstract | Fundamentals of Anesthesiology

Effect of Spanish Phrase Sheet on Cultural Humility and Comfort Interacting with Spanish Speaking Patients

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Introduction: Communication between patients and providers is necessary for effective patient care. Language barriers have been shown to contribute to medication non-adherence, patient dissatisfaction, and higher risk of medical errors. This project investigates the impact of supplying anesthesia providers with a focused sheet of Spanish phrases on provider language fluency and cultural humility.

Methods: 18 resident physicians at Tulane Lakeside hospital completed questionnaires measuring Spanish fluency and cultural humility in addition to the frequency of Spanish phrase sheet use and comfortability communicating with Spanish speaking patients. Anesthesia providers were then given a sheet of focused Spanish phrases to be used for a 45 day period. Sheets were used when interacting with limited English proficiency (LEP) patients in the setting of pre-operative period, operative period, post-operative period, and following neuraxial and regional anesthetic procedures. Residents then completed the post-implementation questionnaire. Residents also documented if professional translational services were used during the encounter. Professional translation services were equally available throughout both phases of the study.

Results: Mann Whitney U-test analysis will be used to compare language fluency, cultural humility, professional interpreter use, phrase sheet use, and comfortability communicating with LEP patients.

Conclusion: We anticipate that our results will show increased language fluency, cultural humility, and comfortability communicating with LEP patients when a phrase sheet was made available.