16th Annual Symposium Posters

Moderators: Alexandru Visan, MD & Nick Knezevic, MD

September 23rd – Exhibit Hall

Poster session 1: 10:00 to 10:30

NYS1

Patient Self-Reported Duration of Analgesia after Interscalene Block for Arthroscopic Shoulder Surgery. A Comparison of 0.5% Ropivacaine versus 0.5% Ropivacaine with Buprenorphine and Clonidine

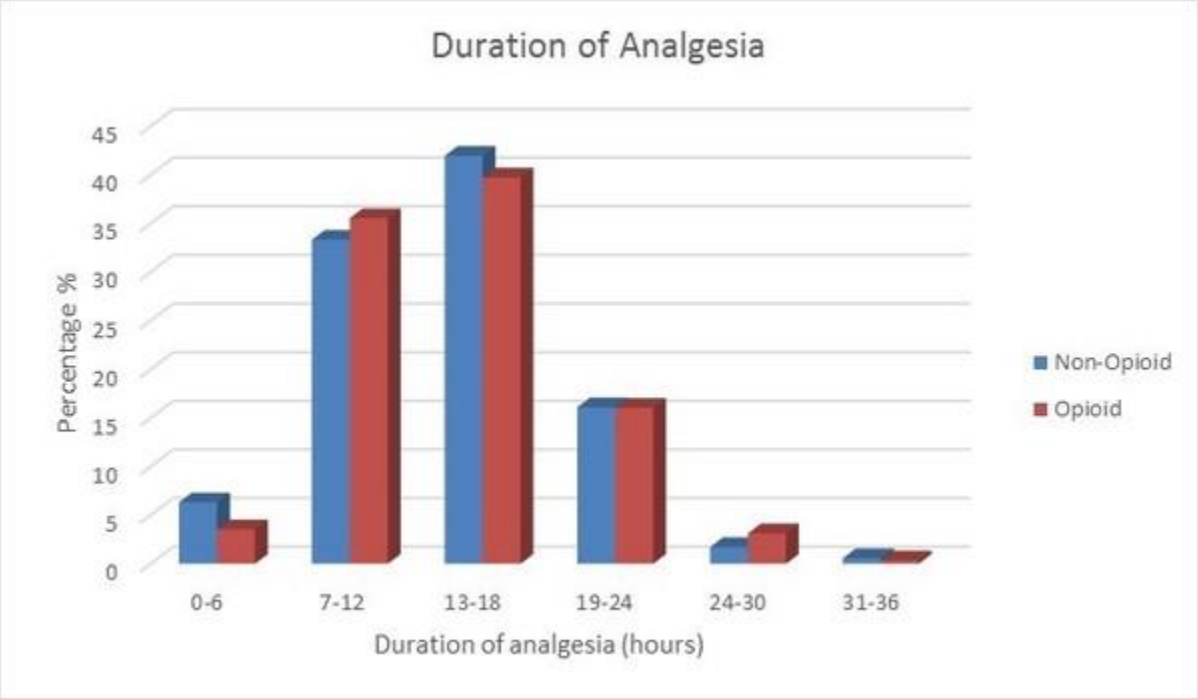
Robin Aldwinckle, Richard Applegate
Anesthesiology & Pain Medicine, UC Davis, Sacramento, United States of America

Introduction: Pain after arthroscopic shoulder surgery can be severe[1], especially in the early post-operative period. Peripheral nerve blocks are commonly used as they provide excellent analgesia. However, analgesia following a single ropivacaine injection is approximately 12 hours. There is good evidence that buprenorphine and clonidine prolong block duration [2]. However, their addition may increase PONV, sedation, bradycardia, hypotension and cost.

Objectives: The purpose of the study was to examine the effect of adjuncts added to a plain local anesthetic for interscalene block on patient reported duration of analgesia.

Methods: IRB approved this retrospective study of 287 arthroscopic shoulder surgery patients given interscalene block between January 2015 and December 2016. The primary outcome measure was patient self-reported duration of analgesia within specified hour ranges. For interscalene block, 'Non-Opioid' patients received 20 ml 0.5% ropivacaine whlie 'Opioid' patients received 20 ml 0.5% ropivacaine with clonidine 50 micrograms and buprenorphine 150 micrograms. All patients received general anesthesia, including 8mg dexamethasone for antiemetic prophylaxis.

Results: There were 174 Non-Opioid and 113 Opioid patients available for analysis. There was no difference between the groups for sex (p=0.701), age (p=0.693) or BMI (p=0.161). The reported duration of analgesia was most frequently 13-18 hours in Non-Opioid patients, and most frequently 7-12 hours in Opioid patients (Chi square p = 0.344). There was no difference between the groups in duration of analgesia up to or over 18 hours
(p=0.552).



Conclusion: We did not find a benefit from the addition of buprenorphine and clonidine to 0.5% ropivacaine for interscalene block as measured by patient reported duration of analgesia after arthroscopic shoulder surgery in this retrospective analysis. Limitations of the study include retrospective data collection, uncertain reliability of patient reported analgesia duration and the possibility of other confounding factors we have not identified

References: 1.Kim et al Clin Orthop Surg. 2014;6:392-400. 2.Kirksey et al PLoS One. 2015;10:e0137312.

NYS2

Comparison of Paracetamol (Apotel®) and placebo for reducing post operative pain after cesarean sections under spinal anesthesia

Ehsan Bastan Hagh, Saghar Samimi, Fardin Yousefshahi, Somayeh Alsadat Moosavian
Anesthesiology, Tehran University of Medical Sciences, Tehran, Iran

Introduction: Acetaminophen is a safe drug in controlling and treatment of mild to moderate pain. Furthermore, Intravenous Acetaminophen (Apotel) has been used for acute and high accuracy pain reduction for years. However; regarding the importance of post operation pain reduction; opium is still a routine drug in surgery wards. As the prevalence of cesarean sections are in an increasing trend in the world ; we aimed to compare the efficacy of Apotel in cesarean sections post operative pain.

Objectives: In this study the analgesic efficacy of acetaminophen infusion was compared with placebo for post operative pain in cesarean sections under spinal anesthesia in Yas Hospital in 2016.

Methods: In this interventional study that was performed as a double-blind randomized clinical trial, 49 women under cesarean section with spinal anesthesia in Yas Hospital in 2016 were enrolled and with block randomization were assigned to receive either intravenous acetaminophen (1 gram) or placebo in recovery ward. Then the pain severity (VAS), used meperidine dose and also the rate of vomiting them were determined and compared across the groups 0, 4, 8, 12,and 24 hours later.

Results: There were lower pain (VAS) in acetaminophen group all over the study but the difference was only significant at forth hour after surgery (P=0.0001). The rate of vomiting was same across the groups. (P > 0.05).

Conclusion: Totally, it may be concluded that acetaminophen infusion has a good efficacy for reduction of acute post operative pain in cesarean sections under spinal anesthesia.

NYS3

Sciatic and Femoral Nerve Block in a Superobese Patient with a Known Difficult Airway

Yohei Denawa, Jacob Guzman
Anesthesiology, Allegheny Health Network, Pittsburgh, United States of America

Introduction: Obesity has become a global epidemic and makes anesthesia more challenging. Obese patients are more likely to present with a difficult airway, OSA, and other medical comorbidities which could impact patient outcomes. The use of regional anesthesia instead of general anesthesia may be advantageous since it avoids airway manipulation, the systemic effects of inhalational agents, and may provide better postoperative pain control.

Case Description: Patient is a 39 y.o., ASA III, superobese male (BMI 53kg/m^2) with a PMH of HTN, CKD, and questionable OSA who presented after a mechanical fall. Patient sustained a right tibial fracture and a fibular fracture. He had multiple facial surgeries secondary to a cleft lip, a class 3 Mallampati airway with poor dentition and a thick neck. He required multiple attempts with video laryngoscopy with previous anesthesia. He underwent I and D of the RLE fasciotomy wounds under sedation and a sciatic and femoral nerve block. In the TICU, he was placed supine with monitors. To allow better exposure of the inguinal crease the pannus was taped cephalad and the femoral nerve was blocked. Subsequently, the sciatic nerve block was performed using the lateral approach. In the OR a difficult airway cart and video laryngoscope was available and he was placed on BiPAP. He was sedated with Midazolam, Ketamine, and a Precedex gtt intra-operatively. The operation lasted about 90 minutes without any complications.

Conclusion: Regional anesthesia is challenging in obese patients. The failure rate is higher due to the increased depth of nerve structures and disappearance of landmarks. The use of ultrasound has mitigated these limitations through direct visualization of nerve structures but the increase in adipose tissue may still lead to aleration of sonoanatomy. The prevalence of OSA in obese patients may be as high as 40%. Sedation with peripheral nerve blocks is difficult because even small doses may cause airway collapse. One solution, as implemented in this case is to use BiPAP. In addition, we avoided medications that would cause respiratory depression such as Propofol and opted for Ketamine and Precedex. Further studies are needed for the optimization of nerve block techniques and sedation for obese patients.

NYS4

Comparison of Serratus anterior muscle block with intravenous patient controlled analgesia in patients undergoing modified radical mastectomy - A randomized double blind control trial

Atin Goyal, Sanjeev Palta, Richa Saroa
Anesthesia and Intensive Care, Government Medical College and Hospital Chandigarh, Chandigarh, India

Introduction: Pain following modified radical mastectomy (MRM) may be moderate to severe in nature. Hence the present study was designed to compare the effectiveness of (SAM) block with intravenous patient controlled analgesia (IV-PCA) in management of postoperative pain in patients scheduled to undergo MRM surgery. A prospective, randomised, double blind trial

Objectives: To evaluate pain using visual analogue scale (VAS**)** and to calculate total dose of morphine consumed in 24 hours in both the group.

Methods: After institutional ethics committee approval. A total of (n=60) female patients with ASA physical status I-II and age between 20-80 years were randomly enrolled using computer generated random number table into two groups of 30 each. All the patients were induced by standard general anaesthesia technique after which (n=30) patients in the intervention group (group S) received ultrasound guided SAM block between latissimuss dorsi and serratus anterior muscle post-induction. The (n=30) patients in the control group (group C) did not receive SAM block. In post-anaesthesia care unit both study groups were connected to IV-PCA pump with morphine. In the recovery suite, at the end of 24 hours (VAS) both at rest and movement, total dose of morphine consumption and any incidence of (PONV) was recorded in a prescribed proforma and was analysed statistically. All quantitative variables were compared using unpaired t-test or Mann-Whitney U test and all qualitative variables were compared using Chi-square test or Fischer exact test

Results: At the end of 24 hours, total dose of morphine consumed by IV-PCA in group S was significantly low (**0.77±0.728 mg**) (**p<0.031**) as compared to group C (**10.17±2.914 mg**). VAS score both at rest and movement was significantly low in group S (**p<0.003**, **p<0.043**) as compared to group C, incidence of PONV was significantly low in group S (**P<0.008**) as compared to group C

Conclusion: Ultrasound guided SAM block is efficacious in providing adequate post operative analgesia in patients undergoing MRM and has an advantage of reduced side effects pertaining to use of opioid analgesics with decreased incidence of PONV and early mobilization of patients in postoperative period.

NYS5

Low Dose Spinal Anethesia For Sectio Cesarian Delivery in Patient with Severe Mitral Stenosis Low Dose Spinal Anethesia For Sectio Cesarian Delivery in Patient with Severe Mitral Stenosis

Dewi Puspitorini Husodo, Ruddi Hartono, Dr. Isngadi
Anesthesiologist, Anesthesiologi and Intensive Care Departement of Brawijaya University, Malang, Indonesia

Introduction: Mitral stenosis is the most common rheumatic valvular lesion seen in pregnancy due to its prevalence in young women. Approximately 25% of patients with mitral stenosis become symptomatic for the first time during pregnancy. Some author said neuraxial anesthesia is contraindicated due to the risk of hypotension after spinal anesthesia

Case Description: To prove the effectiveness of using low dose spinal anesthetic in combination with an opioid adjuvant towards 24-years old primigravida, in labor at 32-34 weeks of gestation with Severe Mitral Stenosis, Mild Mitral Regurgitation, Moderate Tricuspid Regurgitation, moderate pulmonal regurgitation (EF 62%), moderate pulmonal hypertension (PASP 65mmhg) ,Heart Failure st C Functional Class 3 The caesarian section performed under low dose anesthesia used 5 mg of bupivacaine heavy 0,5% and 50 mcg of Fentanyl with the total volume was 2 cc injected in less than 10 seconds through Tuffier's line. Neuroaxial block was achieved in just 5 minutes. It's seen stabilized hemodynamic prior to post injection,after delivery, and post operative. There is no acute heart failure and decrease of hemodinamic in post operative evaluation in ICU. The patient dismissed safely from hospital in the 7th day post operative.

Conclusion: Low dose spinal anesthesia using 5 mg of bupivacaine heavy 0,5% and adjuvant opioid fentanyl 50 mcg can be succesfully used for the performance of Cesarean delivery in severe mitral stenosis patient as regards to onset, adequacy level, duration of the block,haemodinamyc stability and good fetal outcome

NYS6

Role of Hypnosis in Perioperative Period

Vidya Jeurkar
Anaesthesiology, Ashwini Rural Medical college, Solapur, India

Introduction: This study is for evaluation of Hypnosis in perioperative period.
Hypnosis is a consent state of mind in which suggestibility of the mind is exaggerated and critical faculty is bypassed. There is imagining ,role enactment ,and fantasy absorption. 95 % of general population is hypnotizable .It serves as great tool in reliving preoperativeanxiety, reduction in drug requirements and smooth postoperative outcome.in children it serves as a best premedication .In Regional analgesia you get calm , relaxed and immobile patient. Conscious mind is the tip of the iceberg while subconscious is the part floating below the waterline. Hypnosis is the method of tipping this iceberg. The suggestion given to subconscious mind are accepted and followed unconditional in deep trance analgesia can be created in suggested part.

Objectives: To evaluate the efficacy of hypnosis in perioperative period-as a substitute for premeditation, reducing drug requirements and postoperative outcome in General Anaesthesia, Regional analgesia and in children

Methods: 50 patients under going operations from 7 to 65yrs selected.Ethical committee approved the study after taking consent and routine preoperative check up capacity to follow simple commands was assessed. By talking sympathetically good rapport was developed. One or two sessions of hypnotic induction was performed. Hypnosis was done by verbalization with eye fixation and progressive relaxation taking the patient in light trance. Medium trance was obtained by arm rigidity and arm rotation. Deep trance was obtained by counting no with suggestions for heaviness for eyes. Analgesia was created in hand in deep trance subject tested with pinprick. Post hypnotic suggestions were given for better post operative outcome.

Results: Depth of trance assessed 30% deep trance 40% medium 20% light trance and 10% no trance In regional analgesia patient remained in calm, relaxed, immobile Cooperative with minimum or no sedation Induction dose was reduced by 20 to 30% Post operatively pt looked fresh with no nausea and vomiting reduced or no analgesic required in recovery period in children it served as best premeditation

Conclusion: Simplicity is the beauty of this therapy yet it is the most potent, non-pharmacological non invasive and inexpensive tool in armamentarium of Anaesthesiologist.

NYS7

Ultrasound-Guided Retroclavicular Block for Radiocephalic Fistula Aneurysm Resection in a Patient with High-Output Heart Failure and Massive Upper Extremity Edema

Will Kurtz, Kinga Klimowicz
Anesthesiology, Allegheny Health Network, Pittsburgh, United States of America

Introduction: The retroclavicular approach to the infraclavicular region (RAPTIR) is a novel brachial plexus block technique that can provide multiple advantages over the traditional infraclavicular (ICB) and supraclavicular blocks (SCB). Recent studies report comparable efficacy, safety, and ease of adoption of RAPTIR, as well as reduced risk of injury to critical neck and thoracic structures. RAPTIR employs a parallel needle-to-probe alignment, which greatly increases needle visibility.

Case Description: A 69 years old male with end-stage renal disease presented for a ligation/resection of a large aneurysmal left radiocephalic arteriovenous fistula complicated by high-output heart failure symptoms (orthopnea and dyspnea) and massive edema of the left arm and shoulder. Preoperatively, RAPTIR was employed to bypass numerous dilated vessels that obstructed the ICB needle path, and to reduce possible pulmonary complications such as phrenic nerve palsy, diaphragmatic paralysis and pneumothorax (SCB) that could further worsen his respiratory status. A linear array ultrasound probe (8 - 13 MHz, Venue 50 12L-SC; GE Healthcare) was placed parasagittally medial to the coracoid process and caudal from the clavicle. Needle (10 cm, 21 gauge) was inserted through the posterior border of the left clavicle and 30cc 0.5% Ropivacaine was administered to achieve U-shaped distribution around the axillary artery (Figure 1). Complete sensory and motor blockade of the left distal arm was achieved. Postoperatively, patient regained motor functions in less than 4 hours, with good pain control using only oral Tylenol, and was discharged in satisfactory condition on post-op day

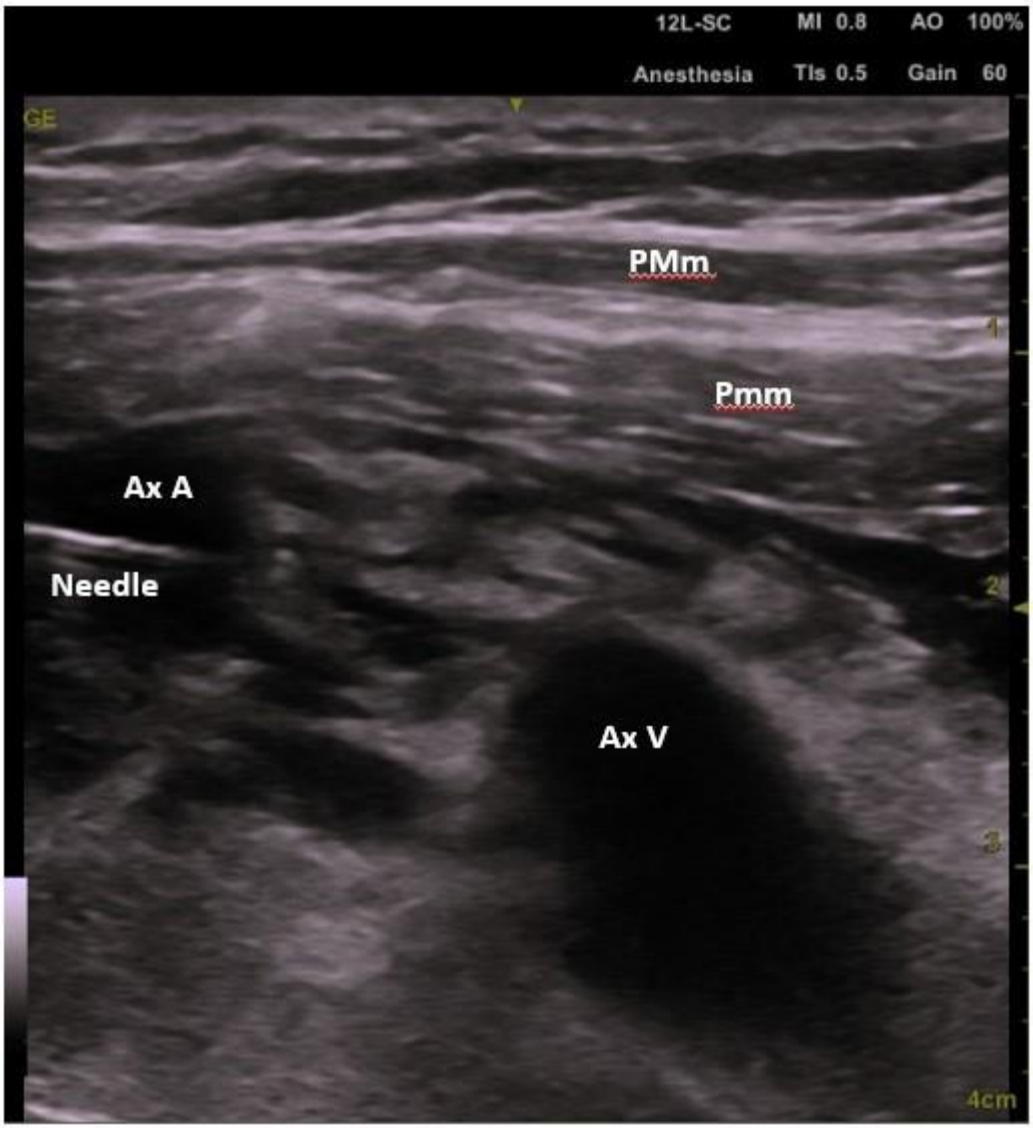


Figure 1.
Ultrasound guidance of the RAPTIR brachial plexus block for this patient. Needle = block needle. Ax A = axillary artery; Ax V = axillary vein; PMm = pectoralis major muscle; Pmm = pectoralis minor muscle.

Conclusion: Sensory and surgical blockade of distal arm can be achieved successfully via RAPTIR, without the need for additional local anesthetic infiltration or general anesthesia. The horizontal needle trajectory minimizes the risk of pleural injury, and circumvents the thoracoacromial artery, cephalic vein, and lateral cord that could obstruct the ICB needle path. Perpendicular alignment of ultrasound beam and needle shaft greatly improves needle visibility. RAPTIR does not require limb abduction to improve visualization of anatomy, offering further advantage for trauma patients.

NYS8

Is Acupressure Point P6 Stimulation an Effective Antiemetic for Cesarean Section Performed under Regional Anesthesia? Prospective Randomized Clinical Trial

Danielle Levin[1], Shaul Cohen[1], Scott Mellender[1], Ushma Shah[1], Paul Kang[1], Adil Mohiuddin[1], Enrique Pantin[1], Kevin Lee[2], Geza Kiss[1]
[1]Anesthesiology, Rutgers-Robert Wood Johnson Medical School, New Brunswick, United States of America, [2]Anesthesiology, Rowan University School of Osteopathic Medicine, Stratford, United States of America

Introduction: Obstetric patients who receive regional anesthesia for elective cesarean section frequently experience intraoperative nausea and vomiting. Prophylactic therapy with antiemetic agents can carry multiple adverse effects to the mother and baby. These medications are also expensive and frequently subject to nationwide shortages. Studies have shown that acupressure point P6 stimulation significantly reduced the incidence of nausea and vomiting after surgery under general anesthesia; however, there is insufficient information regarding the effectiveness of acupressure point P6 stimulation on reduction of intraoperative nausea and vomiting under regional anesthesia.[1,2]

Objectives: The aim of this prospective randomized clinical trial was to compare the efficacy of no antiemetic therapy versus metoclopramide and ondansetron treatment versus acupressure point P6 stimulation for prophylactic antiemetic treatment during regional anesthesia for scheduled elective cesarean section.

Methods: Following IRB approval and informed consent, a total of 180 consecutively recruited patients were randomly allocated into three groups: Group I (n=60) no antiemetic therapy, Group II (n=60) 10 milligrams of intravenous metoclopramide and 8 milligrams of IV ondansetron upon induction of regional anesthesia, or Group III (n=60) application of acupressure point P6 stimulator on the right forearm from procedure onset until arrival in the post-anesthesia care unit.

Results: There was no statistical significant differences between the demographic characteristics of the three study groups. Patients experienced statistically significantly more nausea intraoperatively in the no antiemetic group than in the pharmacological group (73.3% vs. 23.3%, P<0.00001) or the acupressure group (73.3% vs. 36.7%, P <0.00005). Patients experienced statistically significantly more vomiting intraoperatively in the no antiemetic group than in the pharmacological group (45% vs.16.7%, P=0.001) or the acupressure group (45% vs. 13.3%, P=0.0002). There was no statistically significant difference in nausea or vomiting experienced between the pharmacological and acupressure groups. There was no statistically significant difference in the overall anesthetic care reported between the three study groups.

Conclusion: Both pharmacological therapy and acupressure point P6 stimulation significantly reduced nausea and vomiting intraoperatively for cesarean section performed under regional anesthesia. Our data suggests that acupressure point P6 stimulation is a viable non-pharmacologic therapy for prophylactic antiemetic treatment for caesarean section performed under regional anesthesia.

NYS9

Can Intravenous Propofol Reduce Blood Loss during Suction Evacuation of Pregnancy under General Anesthesia? A Retrospective Review

Danielle Levin, Shaul Cohen, Scott Mellender, Geza Kiss
Anesthesiology, Rutgers-Robert Wood Johnson Medical School, New Brunswick, United States of America

Introduction: During suction evacuation of pregnancy, we routinely provide general anesthesia with inhalation agents. These agents are known to cause the relaxation of the uterine muscle and therefore increase the potential for blood loss[1]. Recently, we began administering intravenous (IV) propofol in an attempt to reduce intrauterine bleeding[2]. In this retrospective review we compared the two anesthetic management techniques.

Objectives: The aim of this preliminary retrospective study was to compare the effects of administration of IV propofol versus the administration of inhalation agents during general anesthesia for suction evacuation of first trimester pregnancy on the amount of blood loss experienced by parturients.

Methods: Following IRB approval, we retrospectively reviewed anesthesia records of 31 pregnant women (gestational age 6-12 weeks) who underwent suction evacuation of pregnancy to determine if anesthetic techniques had an impact on estimated blood loss. In this study, Group I (n=20) received only IV propofol, while Group II (n=11) received inhalation agents.

Results: Both groups had similar baseline characteristics such as age, BMI, gestation, parity and surgical duration. The estimated blood loss was significantly lower among parturients in the IV propofol group when compared to those of the inhalation group (45.7 ± 45.4 ml vs 259.1 ± 444.9 ml; $p<0.04$).

Conclusion: Our preliminary retrospective study showed that parturients in the first trimester of pregnancy who are administered IV propofol during general anesthesia for suction evacuation of pregnancy have significantly less estimated blood loss than those who are administered inhalation agents. Based on these findings, we highly recommend switching over to the use of IV propofol for first trimester parturients who are undergoing suction evacuation of pregnancy. Further research is necessary to determine whether there is advantage of administration of IV propofol for parturients in their second trimester of pregnancy.

References: 1. Stanley, T.H., The fentanyl story, J Pain, 2014, 15(12), 1215-262. 2. Lovich-Sapola, J., Postoperative pain control, Surg Clin North Am, 2015, 95(2), 301-18.

NYS10

Can Intravenous NSAIDs Used in the Perioperative Period Reduce the Time to Discharge?

Danielle Levin[1], Shaul Cohen[1], Scott Mellender[1], Kevin Lee[2], Geza Kiss[1]
[1]Anesthesiology, Rutgers-Robert Wood Johnson Medical School, New Brunswick, United States of America, [2]Anesthesiology, Rowan University School of Osteopathic Medicine, Stratford, United States of America

Introduction: For more than 50 years, physicians have been using opioids to reduce pain felt by patients in the perioperative period[1]. However, the administration of opioid analgesics has been associated with respiratory depression, sedation, nausea, vomiting, constipation, micturition difficulties and physical dependency[2].

Objectives: The aim of this study was to determine whether the administration of non-opioid analgesics, such as Acetaminophen, Ketorolac, Lidocaine, Bupivacaine and Ropivacaine, could achieve adequate postoperative pain management when compared to opioid analgesic treatment and reduce the time to discharge.

Methods: Following IRB approval, postoperative charts of 75 same day surgery patients under general anesthesia were reviewed. Two groups were identified based on the perioperative pain treatment they received: non-opioid analgesics (Group I, n=28) and opioid analgesics (Group II, n=47). Postoperatively, pain scores (0=no pain and 10=worst pain ever) and treatment satisfaction (0=no satisfaction and 10=highest satisfaction) were recorded. P values < 0.05 were considered statistically significant.

Results: There was no statistical significant difference in age, height, weight, pruritus, nausea, vomiting, urinary retention, duration of operation and anesthetic care between the two study groups. Thirty minutes after the operation, there was no statistically significant difference between the mean pain management satisfaction scores in the non-opioid group (Group I, 9±1.5) and opioid group (Group II, 8.6±2.3, P = 0.3). The non-opioid group reported less post-operative pain than those in the opioid group (GI<GII, 1±1.9, 3.6±3.6, P = 0.0001). Furthermore, the non-opioid group experienced shorter time to discharge (163±64 min vs 206±110min; p<0.05).

Conclusion: Our preliminary retrospective study showed that the administration of non-opioid analgesics in the perioperative periods provided less pain and shorter time to discharge with similar high patient satisfaction when compared to opioid analgesics treatment.

References: 1. Stanley, T.H., The fentanyl story, J Pain, 2014, 15(12), 1215-262. 2. Lovich-Sapola, J., Postoperative pain control, Surg Clin North Am, 2015, 95(2), 301-18.

NYS11

Sphenopalatine Ganglion Block Successfully Treats Migraines in a Type I Arnold Chiari Malformation Parturient. A Case Report

Danielle Levin[1], Shaul Cohen[1], Scott Mellender[1], Kevin Lee[2], Geza Kiss[1]
[1]Anesthesiology, Rutgers-Robert Wood Johnson Medical School, New Brunswick, United States of America, [2]Anesthesiology, Rowan University School of Osteopathic Medicine, Stratford, United States of America

Introduction: Patients with Type I Arnold Chiari malformation (CM-1) often present with headaches. Severe headaches can cause very high disability and low quality of life. The frequency of migraines in patients with CM-1 is unclear, and migraine management continues to be challenging for medical professionals. Intravenous corticosteroids are sometimes used for migraines that last longer than 72 hours, but they carry multiple side effects and may be teratogenic. Furthermore, most studies show that less than half of the population are responsive to pharmacological migraine treatments. To our knowledge, there is no clear, effective, and safe treatment of chronic migraines for CM-1 parturients. In this case report, we present a CM-1 parturient who presented to our institution with intractable migraines and was successfully treated with a sphenopalatine ganglion block.

Case Description: A 32 year old G5P2112 patient at 36 weeks gestation with a past medical history significant for a corrected Arnold Chiari malformation presented to our hospital with an intractable headache. The neurology team diagnosed the patient with migraines and treated her with methylprednisolone and morphine. The headache persisted as 9.5/10 on the pain scale. The anesthesiology team then evaluated the patient and recommended sphenopalatine ganglion block (SPGB), even though the neurology team reported that there was minimal data regarding its use in migraines. Our patient consented to SPGB treatment, which consisted of intranasal administration of lidocaine drops, received two treatment courses after which her headache significantly improved to 2/10. Permission for communicating has been obtained from the patient.

Conclusion: Methylprednisolone did not relief our parturient's symptoms and is a systemic medication that can cause numerous side effects to both the parturient and her baby. Intranasal administration of lidocaine does not travel systemically, so it is safer for parturients[]. Since sphenopalatine ganglion block is a safe and effective treatment option, we hope to have increased awareness of this treatment modality through our case report presentation. We recommend that every parturient who presents with chronic migraines be considered for sphenopalatine ganglion block before one administers systemic medications.

NYS12

Comparison of Post-Operative Pain Relief for ACL Repairs: Block vs No Block

Narasimha Varanasi
Anaesthesia, Cardiff and Vale Health Board, Penarth,Cardiff, United Kingdom

Introduction: The technique of single shot Adductor canal block for ACL repair is gaining popularity because of its opioid sparing affect post-operatively

Case Description: **Objectives:** To compare the post operative pain relief needed in recovery for ACL repairs with and without block. **Methods:** Opioid requirement of 50 patients in the theater and recovery were looked at in a retrospective basis, both with and without block. Of the 50 patients18 patients had Adductor canal block, 28 patients are with GA + Morphine , 2 patients had Spinal and 1 patient GA+ Fascia Iliaca

Anaesthetic	Total opoiod use (Intra+post op)
GA	0-40 mg
GA+ Add canal block	0-15 mg
GA+ FIB	0-16 mg
Spinal	none

Results: Patients who had a GA alone (28 patients) needed morphine between 0-40 mg . 4 patients had 0-10 mgs 14 patients had 0-20 mgs 7 patients had 0-30 mgs 1 patient had 0-40 mgs **GA+ Adductor canal Block:** 0.5% Levobupivacaine 10mls in adductor canal Total 11 patients 7 received 0-5 mgs of Morphine in Total 3 received 0-10 mgs 1 received 0-15 mgs 0.5% Levobupivacaine (10mls) + 0.2% Lidocaine (5 mls) + Clonidine 75 mcgs Total 3 patients 2 patients needed 0-5 mgs of Morphine post operatively Same mixture with post-operative prescription of only 0-200mcg of Fentanyl Total 4 patients 2 patients had 60mcg of fentanyl 2 had 40 mcg of fentanyl **Spinal:** 2 patients 1 had 3mls of 0.2% Heavy Prilocaine with 15 mcg Fentanyl 1 patient had 2.7 mls of 0.5% Heavy Bupivacaine with 15 mcg of Fentanyl Patient did not need any opioids but had to be admitted overnight.

Conclusion: Anterior Cruciate Ligament repair is a very painful operation, requiring a good inta-operative and post-operative pain relief. We have shown that a good block (either and Adductor canal block or Spinal with prilocaine) had been effective in controlling the pain. The advantage with Adductor canal block it has very little motor block, so patients can go back home the same day.

NYS13

Initial Accuracy in Evaluating Gastric Ultrasound Images

Jonathan Kline[1], Brian Selai[2], Michele Ardigo[3], Marilyn Pugh[4]
[1]Education, Twin Oaks Anesthesia, wesley Chapel, United States of America, [2]Education, Twin Oaks Anesthesia, Jewett, United States of America, [3]Anesthesia, Texas Wesleyan University, Ft Worth, United States of America, [4]Stats, Texas Wesleyan University, ft worth, United States of America

Introduction: Evaluation of pulmonary aspiration risk is an important element of the surgical patient's pre-operative interview. An objective evaluation of gastric contents could assist providers' identification of "at risk" patients for pulmonary aspiration. An ideal technique for determining gastric contents should be reproducible, non-invasive, relatively rapid, and usable by even entry level anesthesia providers. Ultrasound evaluation of gastric contents may represent the ideal diagnostic tool.

Objectives: We sought to evaluate the accuracy of entry level anesthesia providers ability, following a short presentation with images, to predict the presence of a full stomach via ultrasound imaging.

Methods: We collected gastric ultrasound images from the first author's anesthesia practice using a curvilinear probe (Terason. Next, we established and executed exclusion criteria from the sample, administered a pre test, and presented a 45-min lecture content. After the lecture, students completed the same questionnaire (pre-test). Finally, we collected and scored the data.

Results: The percent of students who correctly identified each image ranged from a low of 36.9% for one of the "no volume, empty antrum" images to a high of 96.4% for one of the "large fluid volume" images.

Conclusion: We believe we accomplished at least a portion of the sought idea in the study. The results of high of 96.4% positive large fluid volume image identification was encouraging and represents the first of its kind study on this material.

16th Annual Symposium Posters

Poster session 2: 3:30 to 4:00

NYS15

Post-Operative Analgesic Effect of Intravenous Ketamine in Pregnant Women undergoing Emergency Cesarean Section; A Randomized Clinical Trial

Muhammad Imran Khan
Anesthesia, Civil Hospital Karachi / Dow University of Health sciences, karachi, Pakistan

Introduction: Proper Analgesia after cesarean section is of utmost importance and makes the mother's journey post cesarean section much more comfortable. Adequate analgesia helps the mother to be mobile earlier and decreases the chances of developing deep venous thrombosis, it also helps the mother to provide better care to their infants. We should always use safer alternatives instead of opiods in lactating mothers as opiods can be transferred via breast milk and can impact neonates.

Objectives: The objective of this study was to evaluate the effect of intravenous ketamine on postoperative pain in women undergoing Emergency Cesarean Section

Methods: With the Institution Ethics Committee approval a total of 92 consented pregnant women aged 18-45 years, with ASA II, who underwent Emergency cesarean section and who met all of the study's inclusion criteria were included in the study and were divided into two groups, the experimental group and the control group. The Experimental group received 25mg Ketamine injected with 1mg Midazolam whereas control group received only 1mg Midazolam. Pain scores at first, second and third hours after cesarean section and duration between C-Section and first analgesic prescription after intervention were considered as study outcomes.

Results: Ketamine group had significant pain relief properties in compare with control group in second & third hours after cesarean section. In addition Ketamine also increased the duration between cesarean section and the first analgesic prescription

Variable	Ketamine Group	Midazolam Group	P- value
Pain score 1st hour	0.85 ± 0.87	0.94 + 1.02	0.31
Pain scores 2nd hour	3.11 + 1.12	5.53 + 1.61	0.03
Pain scores 3rd hour	5.06 + 1.43	6.87 + 1.33	0.02
First analgesic prescription, h	5.81 + 2.04	4.06 + 1.89	0.03

Conclusion: Intravenous low-dose ketamine combined with midazolam for analgesia during spinal anesthesia for emergency Caesarean section provides more effective and long lasting pain relief than control group and also increases the duration between cesarean section and first analgesic prescription.

NYS16

Hurdles Faced in Achondroplasia By An Anesthetist And Its Successful Management For a Cesarean Section.

Muhammad Imran Khan
Anesthesia, Civil Hospital Karachi / Dow University of Health sciences, karachi, Pakistan

Introduction: Achondroplasia is one of the most common form of dwarfism. It is an autosomal dominant disease with mutations in FGF receptors resulting in endochondrial bone growth retardation.The achondroplastics presents with pathophsiological diversifications,spinal deformity,difficult airway and cardiorespiratory compromises.It poses a great challenge for the anesthetic management and choice of anethesia due to the above problems.

Case Description: The Following case is being presented after the permission from the patient. A 35 years old achondroplastic nulliparous female was admitted throughout patient for elective c-section due to cephalopelvic disproportion. She presented with 33 weeks of gestation and complain of shortness of breath since 6th month of pregnancy which increased in severity as the pregnancy advanced. She was 92 cm tall weigh 35 kg.Physical examination revealed normal size face with large tongue,short neck and Mallampatti class III airway. Her back examination showed marked lumbar lordosis and kyphoscoliosis,impalpable lower lumbar vertebrae and unable to eliminate her lordosis either in lateral or sitting position. Her Echocardiography showed left ventricular dysfunction,mild mitral and aortic valve regurgitation with mild pulmonary artery hypertension.The patient desired regional anesthesia which was attempted at L4-L5 space through midline approach but the effect was unilateral. So then General anesthesia was planned. After Pre-oxygenating for 3 minutes, Induction was done with I/V Propofol and Succinylcholine. On direct laryngoscopy only the tip of epiglottis was visible. We introduced the bougie towards probable location of vocal cords,as the bougie passed the cricoid ring,an ETT of 6.0 mm of internal diameter was loaded on bougie and fed it down the trachea and fixed after confirmation of ETT through auscultation and ETco2 at capnograph. An alive male baby was delivered . Post-operatively patient was shifted to surgical ICU for monitoring and was etubated same day & discharged 1 day later.

Conclusion: We present here a successful anesthetic management of a gravid achondroplastic dwarf. The most important point is the careful preoperative assessment. Anesthesia plan should be specified to individual basis. We hope that this case will help to determine the significance of anesthetic management of achondroplasia and that there is a great need to establish guidelines for management in these cases.

NYS17

Stroke after Internal Jugular Catheterization: Carotid Injury Complications and Management

Santiago Luis
Anesthesia, Cleveland Clinic Florida, Weston, United States of America

Introduction: Central venous catheter placement is a common procedure performed by anesthesiologists. Arterial cannulation is an infrequent but dangerous complication. There is no consensus about whether it should be managed with manual pressure, direct surgical repair or endovascular repair. A casereport of a stroke after an arterial cannulation is made along with a review of the literature to discuss the best treatment for these patients.

Case Description: 72 year old female with a history of hypertension and obesity for an elective total hip replacement. After induction of anesthesia, ultrasound guided catheterization of a two lumen 8.5 F on the RIJ was attempted. Arterial pressure was observed prior to the utilization of the line.. Hemostasis was achieved with manual compression after vascular surgery consultation It was decided to proceed with the surgery. Within 24 hours the patient presented with weakness of her left upper extremity, left facial weakness and dysarthria. A Stat MRI and Ultrasound of the carotids were performed. An acute infarct in the distribution of the RMCA was seen. Given the carotid artery cannulation, the possibility of embolization due to thrombus at the puncture site was suspected. All the symptoms improved with full recovery.

Conclusion: The inadvertent carotid artery catheterization during the perioperative period is a rare complication. Proper preventive measures can avoid this event. The introduction of a large catheter in the carotid artery can increase the chances of devastating complications such as hematoma, pseudo aneurysm, pneumothorax, stroke and death. Complications usually happen in 15% of the patients who had a CVC placement, the risk of having an arterial lesion is even less. The treatments available are: Withdrawal of the needle with manual pressure, open exploration with direct arterial repair and percutaneous treatment. Manual pressure is proven to be an easy and cost-effective way to manage the complications, nonetheless, the risk of complications are higher with this treatment if compared with the other two. The need to stop the ongoing surgery and have vascular surgery evaluation should be considered in order to prevent any more harm to the patient. This decision should be based on elective surgery vs emergency surgery and large catheter introduction.

NYS18

Ileostomy Reversal Wound Infiltration with Exparel Does not Effect Hospital Length of Stay

Scott Mayer[1], Ina Zimfirova[2], Todd Patterson[3]
[1]Student, Tulane University School of Medicine, New Orleans, United States of America, [2]Advocate Lutheran General Hospital, Park Ridge, United States of America, [3]Anesthesiology, Advocate Lutheran General Hospital, Park Ridge, United States of America

Introduction: Bupivicaine Hydrochloride 0.5% (Sensorcaine) is a commonly infiltrated at the end of various surgeries to reduce postoperative pain. A longer acting formulation of Bupivicaine 13.3% (Exparel) has been shown to reduce postoperative pain for 48 to 72 hours. Exparel has been found to be more effective than Sensorcaine for postoperative pain managemnt in total knee arthroplasty, bunionectomy, hemorroidectomy, breast augmentation surgery, and inguinal hernis repair. While the benefits of Exparel in reducing postoperative narcotic requirements has been well established, other potential benefits, such as reducing hospital stay have not been investigated. This study investigates using Exparel versus Sensorcaine for hospital length of stay in patients undergoing Ileostomy reversal.

Objectives: The objective is to compare Exparel and Sensorcaine and determine, if analgesia provided by intraoperative wound infiltration has an effect on length of hospitalization.

Methods: A retrospective chart review was performed on all patients undergoing ileostomy reversal during 2014 and 2015. Data was extracted from 28 patient charts, with 16 patients receiving introperative wound infiltration with Exparel and 12 patients receiving Sensorcaine. Data was extracted for age, gender, body mass index (BMI), length of surgery, postoperative intravenous narcotic dose, and length of hospital stay.

Results: In comparing the Sensorcaine and Exparel we found there was no statitically significant difference in age (53.1 vs 53.4), gender, or BMI (25.0 vs 26.6). Both groups have a preponderance of females. Surgical operating room time was not significantly different with the Sensorcaine group averaging 69.3 and Exparel 77.7 minutes. While, on average, the Exparel group required less than half the dose of postperative intravenous hydromorphone (56.2 mg) compared to the Sensorcaine group (136.1 mg), this was not statistically significant. Hospital stay was similar between the comparison groups (83.3 vs 80.0 hours)

Conclusion: Our colorectal surgeons use intraoperative Exparel on all non-laparoscopic colon surgeries. Several studies have shown Exparel superior to Sensorcaine in reducing postoperative narcotic reqirements in surgeries illiciting moderate and severe postoperative pain. We retrospectively studied all patients undergoing ileostomy reversal during 2014 and 2015 to see if switching to Exparel has shortened hospital stay. We did not find a significant difference in hospital stay between the two groups.

NYS19

An Audit to determine the use of CO2 monitoring during sedation in regional anaesthesia in Derby Royal Hospitals, United Kingdom

Amy Mitchell
Anaesthetics Department, Derby Royal Hospital, NE, United Kingdom

Abstract: Introduction Latest UK recommendations for standards of monitoring from the AAGBI [1] state that in “Regional techniques and sedation for operative procedures: Patients must have appropriate monitoring, including: pulse oximeter, NIBP, ECG and end-tidal carbon dioxide monitor if the patient is sedated.” The aim of this audit was therefore to assess whether patients undergoing regional anaesthesia with sedation were having capnography monitored and recorded. Method Data was collected in the Royal Derby Hospital Orthopaedic Suite over a 2 day period and included all patients over the age of 18 having an orthopaedic procedure under a regional anaesthetic with sedation. Sedation included the use intra-operative sedative drugs Midazolam and Propofol (boluses and TCI). For any patients that met these criteria their anaesthetic charts were looked at in recovery to see if there was any evidence of the use of monitoring of capnography intra-operatively (e.g. ET CO2, capnography monitoring ticked) Results 24 patients met the criteria over the 2 day period (14 on 22/05/17, 10 on 23/05/2017). Of these 24 patients 8 of these were sedated with propofol TCI, 1 with propofol boluses and 15 patients were sedated with midazolam (between 2-5mg). Of these 24 patients only 2 (8%) of these had any evidence in their anaesthetic charts that they had been monitored with capnography. 0% of patients given solely midazolam had recorded evidence of capnography monitoring. 22% of patients that had received propofol for sedation had evidence of capnography monitoring Discussion/Recommendations Derby Hospital currently do not have consistent access to oxygen masks and nasal cannulae with integrated capnography ports in every theatre and if requested are often difficult to find. Lack of appropriate equipment can make it difficult to adhere to guidelines. Patients who undergo sedation during regional anaesthesia should be having capnography monitored as routine as per AAGBI guidelines. This will become easier with consistent access in all theatres to oxygen delivering devices with integrated capnography ports. The department now plans to do this in June 2017.

References [1] Association of Anaesthetists of Great Britain and Ireland. Recommendations for standards of monitoring during anaesthesia and recovery 2015. Anaesthesia 2016; 71: 85-93.

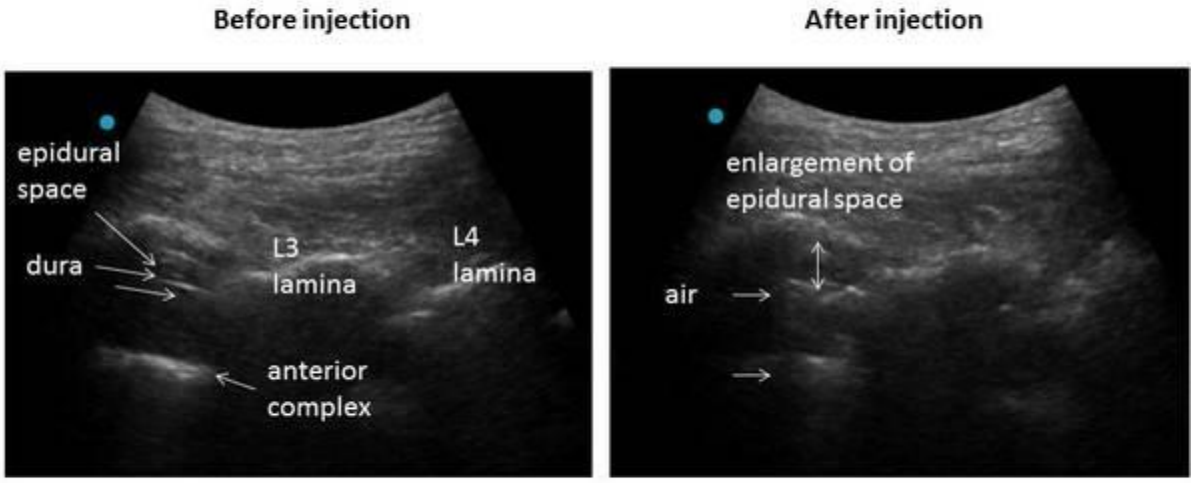
NYS20

Usefulness of Ultrasound Observation during the Blood Patch for the Patient with Intracranial Hypotension

Yasuhiro Morimoto, Hitomi Nagao
Anesthesia, Ube Industries Central Hospital, Ube, Japan

Introduction: During the blood patch for the patient with intracranial hypotension, reliable injection into the epidural space is necessary. We will report a case in which epidural blood injection was observed by ultrasound. The permission for presentation has been obtained by the patient.

Case Description: The patient was fifty years old male, who suffered headache five months ago. The symptom worsened gradually. One month ago, he was diagnosed as the intracranial hypotension by cisternography, and then lumbar epidural blood patch was performed. The patient was laid in lateral decubitus position. Ultrasound observation was used to determine the L3/4 lumbar spine space and to measure the distance between the skin to epidural space. A 18G Tuohy needle was inserted in L3/4 by median approach. After the needle reached to the epidural space that was confirmed by the loss of resistance technique, the catheter was inserted 3cm into the epidural space. The patient blood with small amount of air was injected via the catheter with ultrasound observation by curved array probe (Sonosite SII) by sagittal view. The hyper echoic flash was observed in the anterior, posterior and lateral side of the epidural space in L2/3 after injection of the blood. Enlargement of the posterior epidural space was also observed. Twenty mL of blood was injected without any neurologic symptom. The post procedure course was uneventful, and the patient's headache
improved.



Conclusion: We could observe the injection image into the epidural space by ultrasound. The fluoroscopy is commonly used for epidural blood patch. Use of ultrasound is easier than fluoroscopy and no risk of radiation. Although more cases should be required to evaluate the usefulness of ultrasound, we conclude that the use of ultrasound should be considered to check the blood injection into epidural space during the blood patch.

16th Annual Symposium Posters

NYS21

The Ability of Anesthesiologists to Distinguish Closely Associated Nerve Elements in the Interscalene Groove

Nicole Verdecchia, Michael Kentor, Jim Ibinson, Steven Orebaugh
Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, United States of America

Introduction: In the interscalene groove, nerve roots and trunks are in close proximity, and may not be visible as separate structures. This may increase the risk of insertion of the needle-tip within the epineurium.

Objectives: To determine whether anesthesiologists can distinguish between nerve elements lying in close proximity on ultrasound images.

Methods: Brachial plexus elements were harvested from four non-preserved cadavers, and arranged in a water bath. Ultrasound images were taken of nerve roots and trunks lying one atop the other at the C5-C6 nerve root level, and the superior and middle trunk level. Three scenarios were created: separation of two nerve structures (either two nerve roots or two nerve trunks) by a 2 mm metallic spacer, two nerve structures in direct contact, and two nerve structures separated by a thin layer of fascial tissue. Volunteer anesthesiologists and residents viewed the images and were asked to denote whether they could distinguish the nerves as two separate structures. In a second survey, eight images of two nerve roots in contact were mixed with eight images of one single nerve trunk were distributed to the same responders, who were asked to identify them as “two roots” or “one trunk”.

Results: When a 2mm space was provided between nerve elements, most providers were able to distinguish the two structures on US imaging (Table 1). However, when the structures were touching, discrimination of separate structures was reduced ($p<0.01$). In the second portion, incorrect responses ranged from 25-46%, with no significant differences between groups (Table 2).

Table 1. Number of responses for nerve elements when they are separated by a metallic spacer, a piece of fascia, and touching for attending responses, CA2 resident responses, and CA1 resident responses. “Yes” responses indicated the ability to distinguish two separate nerve elements, while “No” responses indicated that the anesthesiologist was not able to discriminate between the two on the ultrasound image. *Spacer vs. Fascia $p<0.01$ for attendings, $p<0.05$ for CA2s, and $p<0.01$ for CA1s *Spacer vs. Touching $p<0.01$ for attendings, $p<0.01$ for CA1s, not significant for CA2s *Fascia vs. Touching not significant for attendings, $p<0.01$ for CA2s, and $p<0.01$ for CA1s

		% Yes Responses	**% No Responses**	**Total # Responses**
Spacer	*Attending*	54	46	120
	CA2	69	31	144
	CA1	88	12	144
Fascia	*Attending*	8	92	119
	CA2	37	63	144

	CA1	55	45	144
Touching	*Attending*	12	88	115
	CA2	59	41	138
	CA1	74	26	138

Table 2. Number and percentage of correct responses when responders identify either “two roots” or “one trunk” on ultrasound imaging, separated by experience level. *There were no significant differences in the number of correct responses between two roots vs. one trunk.

	Type	**# Correct**	**% Correct**
Attendings (n=5)	*Roots*	26/40	65
	Trunk	30/40	75
CA2 (n=6)	*Roots*	30/48	63
	Trunk	30/48	63
CA1 (n=6)	*Roots*	35/48	73
	Trunk	26/48	54

Conclusion: When nerves are in close proximity in anatomic situations, it is not possible to consistently discriminate their borders, even for experienced providers, underscoring the importance of cautious needle insertion into anatomic situations where such arrangements prevail.

NYS22

Ultrasound Guided Thoracic Paravertebral Block with Sedation for Mastectomy in Elderly Patients

Domenico Pietro Santonastaso, Annabella De Chiara, Vanni Agnoletti
Anaesthesia And Intensive Care Unit, Emergency Department., AUSL Romagna, M. Bufalini Hospital, Cesena, Italy

Introduction: Thoracic paravertebral block (TPVB) is an option in breast surgery for the postoperative analgesia but also to anesthetic technique. We report two cases for which we used TPVB with only sedation for mastectomy in elderly patients.

Case Description: Two women aged 91 and 92 with ASA status III, scheluded for radical mastectomy, after written informed consent, received a TPVB at two levels (T3-T4 and T5- T6) using an ultrasound system (SonoSite M-Turbo), 5-10 MHz linear ultrasound transducer. The block was performed in a sterile manner with a 22 G x 50 mm needle using the "out-of-plane" technique. 7 ml of Ropivacaine 0,7% were administered for each level forty minutes before surgery. Sensory blockage was assessed by cold sensation to an alcohol–soaked sponge and by pin prick testing and it had occurred from T2 to T7 level. For the sedation we used intravenously remifentanil 0,05 mcg $kg^{-1}min^{-1}$, according Ramsay Score Scale of 2. We preoperatively established that a bolus of 0,05 mcg/kg Fentanyl would be used if during surgery blood pressure or heart rate exceeded 20% of the preoperative value. Surgery was completed in 80 minutes, no fentanyl bolus was required, no respiratory depression occured and there was no reduction in patients heart rate or blood pressure associated with sympathetic blockade. Acetaminophen 1gr IV was administered 40 min before the end of surgery and then every eight hours. The patient was monitored for pain intensity using a visual analogue scale (VAS) at time 0 and 6-12-24 h after surgery. Pain never exceeded 2 on the VAS pain score. No post-operative nausea and vomiting were reported.

Conclusion: Anesthesia for elderly patients can be challenging due to comorbidities, frailty, advancing age. Ultrasound guided TPVB with sedation appears an effective and reliable form of aneshesia for breast surgery. This technique is associated with a superior control of the pain, a reduction in opioids consumption, during and after surgery, a decrease in postoperative nausea and vomiting and length of hospital stays. TPVB with sedation is a possible anesthetic technique in breast surgery for patients in which general anesthesia is undesirable or poses an unacceptable risk.

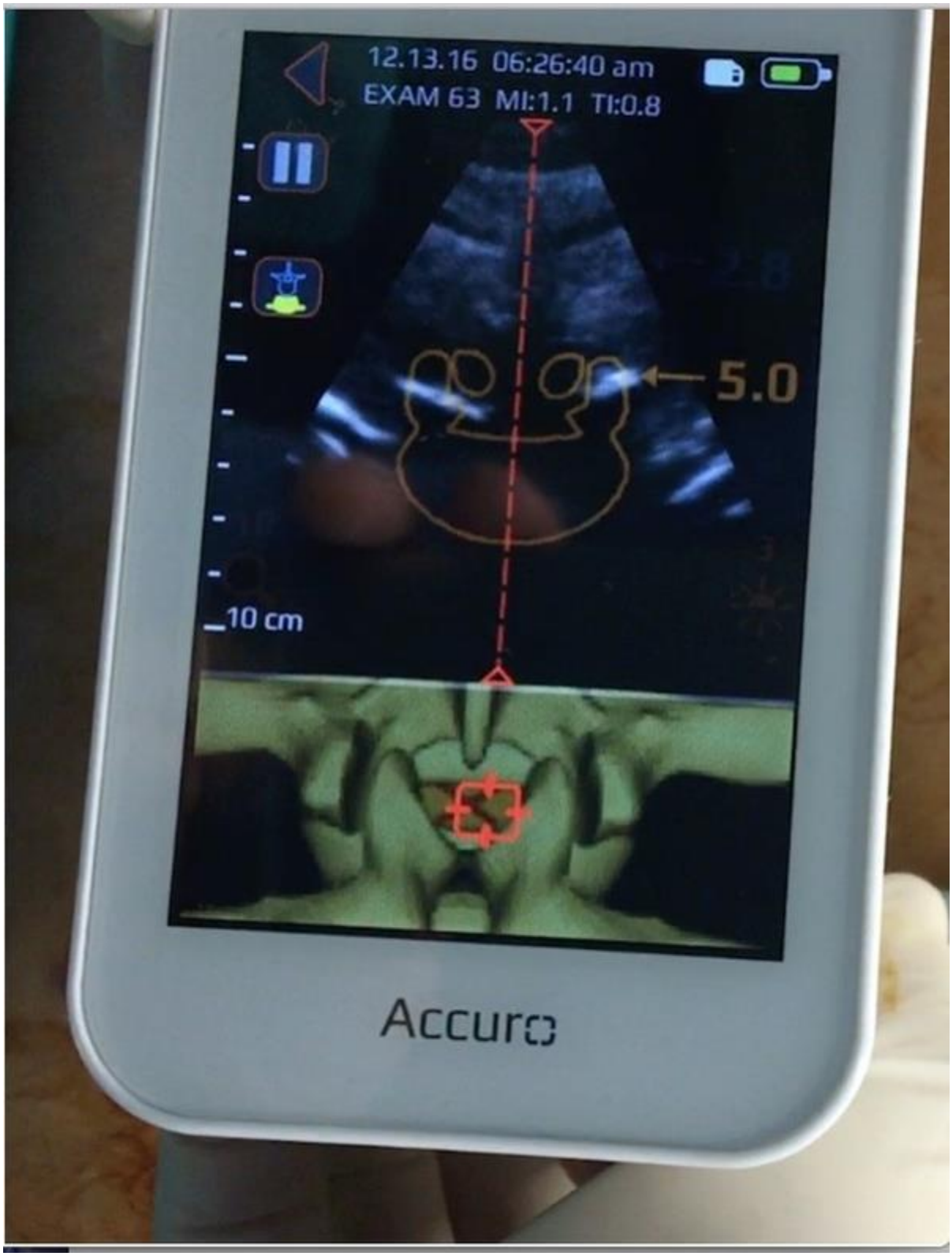
NYS23

3D Ultrasonography to Identify the Epidural Space in Obese Pregnant Woman

Domenico Pietro Santonastaso, Annabella De Chiara, Nicoletta Stievano, Vanni Agnoletti
Anaesthesia And Intensive Care Unit, Emergency Department., AUSL Romagna, M. Bufalini Hospital, Cesena, Italy

Introduction: The gold standard for pain treatment in labor is epidural analgesia. Abnormal anatomical conditions may make the procedure difficult or impossible. We report a case for which we used a handheld ultrasound to identify the interlaminar space of obese pregnant woman

Case Description: A 37year old woman, G1P1, presented at 38 weeks of gestation no comorbidities and a body mass index of 42 kg/m^2. The patient reported it was impossible to insert the epidural catheter during her previous birth. In the sitting position, back flexion was fairly good and the spinous process was vaguely palpable. It was decided to support the technique by ultrasound imaging using a 3D ultrasonography with a 12mm and 5-MHz probe (Accuro^{TM} , Rivanna^{TM} Medical). By having the patient in a sitting position, the Accuro^{TM} was positioned to scan the lumbar area up to the automatic identification of interlaminar epidural space and depth. The depth of epidural space detected by ultrasonography was 5.0 cm. Using a 18 gauge Touhy needle at L3-L4 interspace, with a loss-of-resistance to saline technique, the epidural space was exactly identified at 5.0 cm, and a multi-orifice catheter was inserted. 3D ultrasound enabled the exact identification of epidural space depth so that only a single and effective attempt was required.



Conclusion: The UK National Institute for Health and Care Excellence has issued full guidance on ultrasound-guided catheterization of the epidural space, because multiple attempts at needle placement

for neuraxial block may cause patient discomfort, a higher incidence of postdural puncture headache and nerve trauma. The 3D ultrasonography was supposed to help the anesthesiologist to localize the optimal point of needle insertion, tilt angle and depth of epidural space, reduced the number of epidural space identification attempts, thus reducing possible complications. The ultrasonography 3D approach appears to be safe, effective, easy to perform, with a short procedural time. However, further investigation will be carried out to improve the quality of epidural analgesia.

NYS24

A Randomized Controlled Trial of Pre-Procedural Ultrasound Techniques Versus the Conventional Landmark Technique of Spinal Anesthesia in Elderly Patients

Sahar Siddik, Marwan Rizk, Nathalie Bteich, Aline Toukhtarian, Joanna Bouez
Anesthesiology, American University of Beirut Medical Center, Beirut, Lebanon

Introduction: Ultrasound (US) imaging has become an increasingly popular procedure among anesthesiologists to guide neuraxial blockade. Though the parasagittal oblique view has consistently offered better ultra-sonographic view of the neuraxis compared to the transverse median view, there have been no studies in the literature comparing these two approaches to each other and to the traditional landmark midline approach in elderly patients for the teaching of novice anesthesia residents.

Objectives: The aim of this study is to find the optimal technique for performing spinal anesthesia in the elderly by residents in training.

Methods: The study was approved by the Institutional Review Board at the American University of Beirut Medical Center. Written informed consent was obtained from all patients. Patient recruitment will continue to a total of 180 patients aged >60 years, ASA 1 to 4. So far, 61 patients were randomized into 1 of 3 groups: 1- US-guided-paramedian technique (group UP) 2- US-guided-midline technique (group UM) 3- Landmark-guided-midline technique (group LM) Patients in the US groups had a pre-procedural US scan performed by the attending physician to locate and mark a suitable needle insertion point. Afterwards, a first-year resident performed the spinal procedure. The primary outcome was the rate of successful dural puncture on the first needle insertion attempt. A subsequent needle insertion attempt was defined as needle insertion preceded by complete withdrawal of the introducer needle from the patient's skin. Needle redirection attempt was defined as any change in needle insertion trajectory that does not involve complete withdrawal of the introducer needle from the patient's skin.

Results: Demographic data were not different among the three groups. The first-attempt success rate in group UM was higher than that in group UP (72.7%vs.28.6%;*P*=0.006). Results comparing first-attempt success rates between US groups and LM group were not different (Table

Table 1

	UP N=21	UM N=22	LM N=18	*P value*
Successful dural puncture on 1st introducer needle attempt	6 (28.6)	16 (72.7)	10 (55.6)	0.02
	Chi-square between UP & UM: P=0.006; UM & LM : P=0.3; UP & LM : P=0.1			
Successful dural puncture	9 (42.9)	16 (72.7)	15 (83.3)	0.02
	Chi-square between UP & UM: P=0.05; UM & LM : P=0.4; UP & LM : P=0.01			
Number of spinal needle redirections by resident during 1st attempt	21 [4 (3;7)]	20 [1.5 (0;3)]	18 [2 (0.75;3)]	0.001
	Scheffe between UM & UP: P-value = 0.001; UP & LM: P-value=0.01			
Number of spinal needle redirections by resident during 2nd attempt	13 [3 (2.5;3.5)]	4 [3 (2.25;3)]	7 [2 (1;3)]	0.03
			Scheffe between LM & UP: P-value = 0.04	
Number of spinal needle redirections by resident during 3rd attempt	5 [3 (3;3)]	3 [2 (2;3)]	5 [2 (1.5;4)]	0.3
Total number of needle redirections by resident	21 [9 (5;9.5)]	20 [1.5 (0;4)]	17 [3 (2;5.5)]	<0.001
		Scheffe between UM & UP: P-value <0.001; UP & LM: P-value= 0.008		
Time taken to perform SA by resident, seconds	21 [220 (149;28)]	22 [107(69;182)]	16 [138(57;186)]	0.05
Total time to perform SA by resident*, seconds	21 [290(187;353)]	22 [198(145;260)]	16 [154(68;210)]	0.007
			Scheffe between LM & UP: P-value = 0.007	

*Total time = time to establish landmark by attending + time to perform SA by resident
Results are expressed as n [Median (Q1; Q3)] or n (%)

1).

Conclusion: The preliminary results of this study indicate possible superiority of the pre-procedural US-guided midline approach to perform spinal anesthesia compared to the pre-procedural US-guided paramedian approach.

NYS25

Brachial Plexus Block With Liposomal Bupivacaine for Total Shoulder Arthroplasty or Rotator Cuff Repair: Results from a Randomized Controlled Trial

Manish Patel[1], Jeffery Gadsden[2], Xiaodong Bao[3], Thomas Bendtsen[4]
[1]Orthopedic Surgery, Eastern Virginia Medical School, Franklin, United States of America, [2]Division Of Orthopaedic, Plastic And Regional Anesthesiology, Duke University Medical Center, Durham, United States of America, [3]Massachusetts General Hospital, Harvard Medical School, Chesnut Hill, United States of America, [4]Aarhus University Hospital, Aarhus C, Denmark

Introduction: There is a need for local anesthetics that provide consistent, prolonged postsurgical pain control with peripheral nerve blockade, and are simple to administer. Liposomal bupivacaine (LB) is a prolonged-release formulation of bupivacaine, approved for surgical site infiltration.

Objectives: To evaluate the efficacy and safety of single-injection brachial plexus block with LB for total shoulder arthroplasty (TSA) or rotator cuff repair.

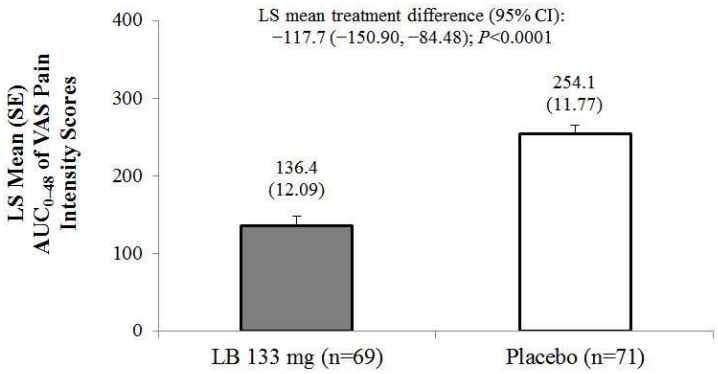
Methods: This was a phase 3, multicenter, randomized, double-blind, placebo (PBO)-controlled trial to meet standard US Food and Drug Administration approval for analgesics. The trial was conducted at 16 study sites in Belgium, Denmark, and the US. All sites obtained independent ethics committee approval. Adults undergoing primary unilateral TSA or rotator cuff repair with American Society of Anesthesiologists (ASA) status of 1, 2, or 3 were randomized (1:1) to LB 133 mg or PBO (total volume 20 mL for each) as ultrasound-guided, single-injection brachial plexus block. The primary endpoint was pain intensity through 48 hours postsurgery, measured by area under the curve (AUC) of visual analog scale (VAS) pain intensity scores ($AUC_{0–48}$). Secondary endpoints were postsurgical opioid consumption, the percentage of patients who were pain-free, and safety.

Results: Analysis included 140 patients (LB, n=69; PBO, n=71). LB significantly reduced mean $AUC_{0–48}$ of VAS pain intensity scores by 46% (P<0.0001; **Figure**) and total postsurgical opioid consumption by 77% (P<0.0001; **Table**) and significantly increased the proportion of opioid-free patients by 89% (P=0.008; **Table**). Effects on other secondary efficacy endpoints also significantly (all P<0.05) favored LB versus PBO (**Table**). The incidence of ≥1 treatment-emergent adverse event (AE) was similar between groups (LB, 79.7%; PBO, 77.5%). Nausea was the most commonly reported AE (LB, 24.6%; PBO, 36.6%).

Conclusion: In patients undergoing TSA or rotator cuff repair, single-injection brachial plexus block with LB 133 mg significantly improved pain scores over 48 hours and reduced or eliminated opioid consumption, with 13% of patients remaining opioid-free during the postsurgical period. The tolerability profile of LB was comparable with that of

placebo.

Figure. AUC_{0-48} of VAS Pain Intensity Scores



AUC=area under the curve; LB=liposomal bupivacaine; LS, least squares; VAS=visual analog scale.

Table. Opioid-Related Endpoints

Outcome	LB 133 mg (n=69)	PBO (n=71)	*P* Value
Total opioid consumption 0–48 h, mg			
LS geometric mean (SE)	25.0 (5.35)	109.7 (22.97)	<0.0001
Opioid-free patients, n (%)	9 (13.0)	1 (1.4)	0.008
Patients pain-free*, n (%)			
PACU	18 (26.1)	2 (2.8)	<0.0001
24 h	4 (5.8)	0	0.04
48 h	4 (5.8)	0	0.04
Median (95% CI) time to opioid rescue, h	4.2 (1.52–8.50)	0.6 (0.48–0.68)	<0.0001

*Composite endpoint defined as VAS score ≤1.5, no prior rescue medication use, and all prior VAS scores ≤1.5.
LB=liposomal bupivacaine; LS, least squares; PACU=post-anesthesia care unit; PBO=placebo; VAS=visual analog scale.

NYS26

Addition of liposome bupivacaine to bupivacaine 0.5% in wrist nerve blocks improves analgesia compared to bupivacaine 0.5% alone for Dupuytren's contracture release

Catherine Vandepitte, Joris Duerinckx, Ine Leunen, Sam Van Boxstael, Hassanin Jalil, Sofie Louage, Ingrid Meex, Sigrid Christiaens, Gülhan Özyürek, Marijke Cipers, Max Kuroda
Ziekenhuis Oost-Limburg, Genk, Belgium

Introduction: Liposome bupivacaine (LB, EXPAREL®) is a delayed release formulation of local anesthetic, FDA approved for infiltrations but not for nerve blocks.1 To investigate its potential benefits in peripheral nerve blocks, we studied the quality of Ulnar (U) and Median (M) nerve blocks with LB in subjects having Dupuytren's contracture release utilizing injections of collagenase Clostridium histolyticum (CCH) into the affected cords.2 Pain associated with the procedure occurs during CCH injections in Phase 1 of treatment, the intense inflammatory response after injections (3-5 days), and during manipulation to break up the cords 48 hours after injection in Phase 2 of treatment.

Objectives: To test the hypothesis that addition of LB 1.3% to bupivacaine in U+M nerve blocks results in improved analgesia and longer duration of sensory-motor block compared to blocks performed with bupivacaine alone.

Methods: After EC and FAGG approval (EUDRACT 2016-001656-22), 32 subjects were randomized to receive U+M blocks with either a mixture of 5 mL of LB 1.3% and 2.5 mL 0.5% bupivacaine or 7.5 mL 0.5% bupivacaine per nerve. Treatment consisted of injections of CCH into the affected cords on the palmar side of the hand. Onset and duration of block, adequacy of analgesia for CCH injection and fingers manipulation to break up the Dupuytren's cords, onset and duration of block, and post-intervention pain scores were assessed.

Results: Addition of LB to bupivacaine significantly prolonged sensory block (4.3 days for the LB mixture group versus 1.2 for the bupivacaine alone group ($p<0.001$), and lowered pain scores 24 hours through day 5 after treatment (GEE $p=0.004$), Figure 1. While 85% of subjects who received the LB mixture had adequate analgesia for fingers manipulation 48 hours after their CCH injections, 94% of subjects who received bupivacaine alone required additional anesthesia. Patient satisfaction was higher in the LB mixture group throughout the first postoperative week (GEE $p=0.007$). The incidence of side effects was low and similar between the groups; no subjects developed neurological deficits.

Conclusion: Addition of LB to bupivacaine in U+M blocks resulted in similar block onset, but longer block duration, improved pain scores and satisfaction in subjects having Dupuytren's contracture release. Moreover, the addition of LB provided anesthesia and analgesia for both phases of treatment with a single injection.

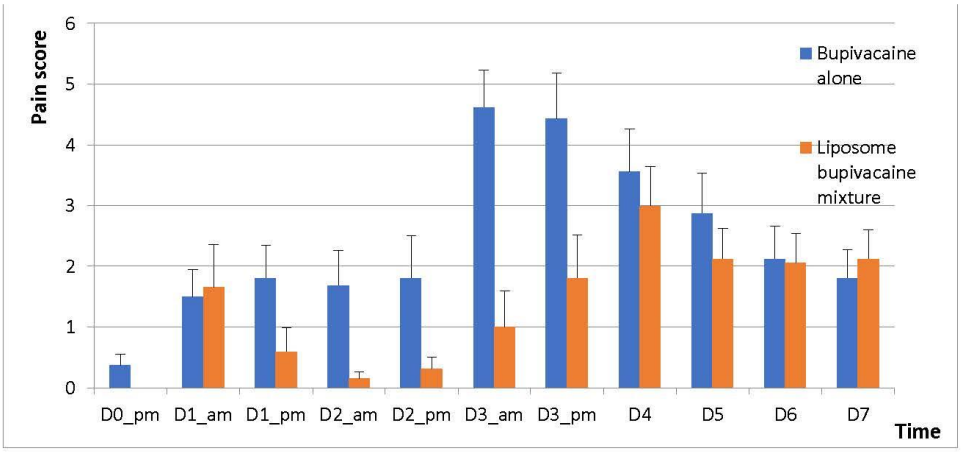


Fig. 1: Postoperative pain.

References:

1 Hamilton TW, Athanassoglou V, Mellon S, Strickland LH, Trivella M, Murray D, Pandit HG. Liposomal bupivacaine infiltration at the surgical site for the management of postoperative pain. Cochrane Database of Systematic Reviews 2017, Issue 2. Art. No.: CD011419. DOI: 10.1002/14651858.CD011419.pub2.

2 Odinsson A, Brenne LE, Lurie TB, Finsen V. Dupuytren's contracture: The safety and efficacy of collagenase treatment. J Hand Surg Asian Pac 2016;21(2):187-92.

NYS27

Liposome bupivacaine in ankle blocks decreases opioid consumption compared to bupivacaine alone or general anesthesia after corrective osteotomy

Sam Van Boxstael, Jo Wierinckx, Catherine Vandepitte, Ine Leunen, Hassanin Jalil, Sofie Louage, Ingrid Meex, Sigrid Christiaens, Gülhan Özyürek, Marijke Cipers, Max Kuroda
Ziekenhuis Oost-Limburg, Genk, Belgium

Introduction: Efforts to improve postoperative pain management have led to increase in opioid-prescriptions[1]**.** Opioid usage can lead to tolerance, worse treatment outcomes, addiction and overdose deaths[2]. Hallux valgus surgery (corrective osteotomy) is a common outpatient surgery,[3] often accompanied by severe and sustained postoperative pain. Nerve blocks are recommended to reduce pain and the consumption of opioids, but have a limited duration of effect.[4]

Objectives: To determine whether addition of liposome bupivacaine (LB; EXPAREL®) to bupivacaine in ankle blocks decreases postoperative pain and opioid consumption after osteotomy compared to ankle blocks with bupivacaine alone or general anesthesia (GA).

Methods: After EC and FAGG approval (EUDRACT 2016-000961-22), 40 subjects scheduled for hallux valgus surgery were randomized into one of three study groups (Figure 1). One group (n=14) received GA; the other two groups received ultrasound-guided ankle blocks (deep peroneal and posterior tibial nerves) with bupivacaine 0.5% alone (7,5mL per nerve; n=14) or with a mixture of bupivacaine 0.5% and LB 1.3% (2.5mL & 5mL, respectively) (n=12). All groups received multimodal analgesia consisting of IV dexamethasone, ketorolac, acetaminophen and opioids as needed. Onset and duration of blockade, post-interventional pain scores and adequacy of analgesia were assessed up to 7 days after surgery.

Results: Ankle blocks significantly reduced pain scores (GEE p=0.016). Mean opioid consumption was higher in the GA group (48 mEq) compared to the bupivacaine alone group (28 mEq, p=0.116) or the LB mixture group (8 mEq, p<0.001) (Figure 2). Duration of sensory block was longer in the LB mixture than in the bupivacaine alone group (independent t test p-value, p<0.05); the groups did not differ in motor block duration. A greater proportion of subjects who received LB were able to ambulate through POD 4, p=0.007. There were no neurological deficits.

Conclusion: Ankle blocks significantly reduced pain and mean opioid consumption after hallux valgus surgery. Bupivacaine alone reduced opioid consumption by 40% whereas addition of LB further facilitated ambulation and reduced opioid consumption seven-fold (85%) compared to GA.

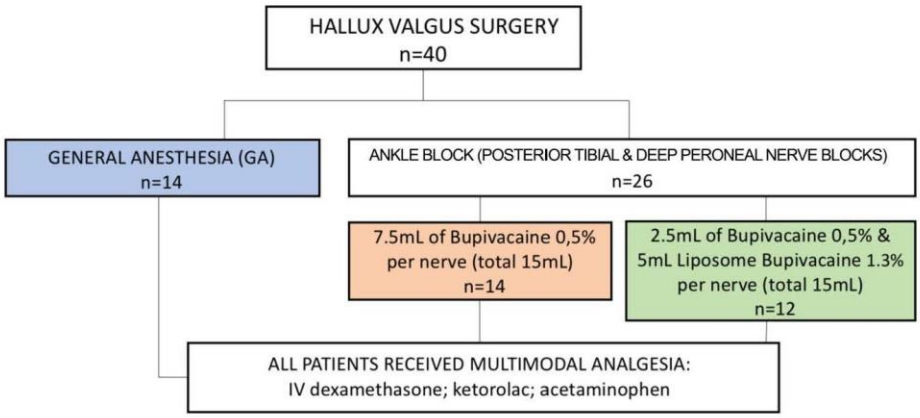


Fig.1: Randomization of subjects undergoing hallux valgus surgery.

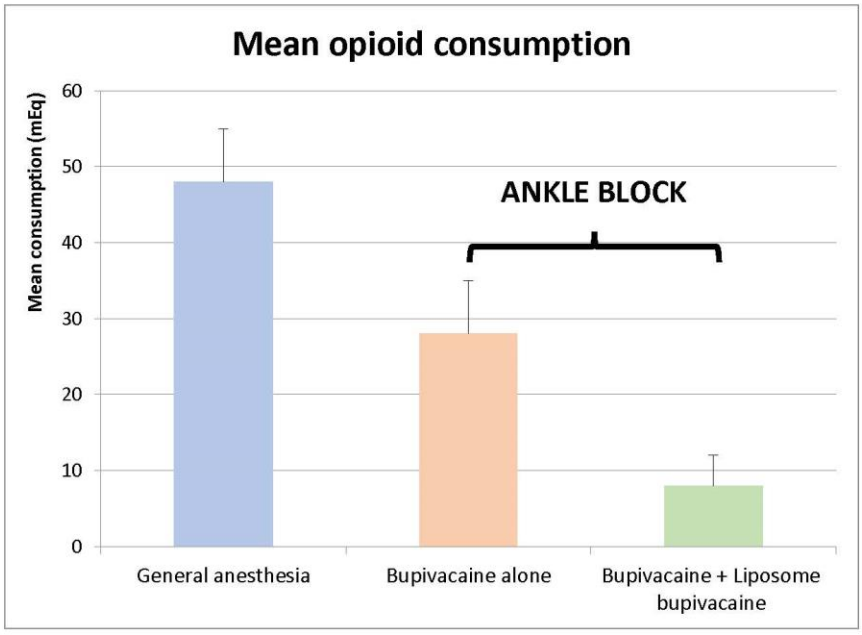


*Fig.2: Mean opioid consumption * 1-way ANOVA; p=0,001*

References:

1 Frieden TR, Houry D. Reducing the risks of relief — The CDC opioid-prescribing guideline. N Engl J Med 2016;374(16):1501-4.

2 Morris BJ, Mir HR. The opioid epidemic: Impact on orthopaedic surgery. J Am Acad Orthop Surg 2015;23(5):267-71.

3 Mann RA, Coughlin MJ. Hallux valgus–etiology, anatomy, treatment and surgical considerations. Clin Orthop Relat Res 1981;Jun(157):31–41.

4 Klein SM, Nielsen KC, Greengrass RA, Warner DS, Martin A, Steele S. Ambulatory discharge after long-acting peripheral nerve blockade: 2382 blocks with ropivacaine. Anesth Analg 2002; 94(1): 65-70.