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PATIENT SAFETY, PRACTICE MANAGEMENT

Paper No: 15.00

Simple solutions reduce first case delays in the operating room

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Introduction: Approximately forty-two percent of hospital revenue is acquired through the operating room (1). Operating room first case delays are a common problem which may contribute to loss of revenue. In fact, a fifteen minute delay in the morning can easily result in an hour and a half delay by the end of the day (2). This may lead to avoidable overtime and a decrease in the number of cases completed daily. Additionally, these initial delays have the potential to cause a decrease in patient, staff, and physician satisfaction.
Objectives: It was identified that the major cause of delay was late arrival by surgeons. We investigated whether behavior modified with accountability could improve the surgeon's arrival time.
Methods: The Surgery-in-Chief sent an email notice telling the surgeons to arrive to the operating unit twenty minutes prior to the procedure start time. This would allow time for the physician to perform the pre-procedure requirements and enough time for identification of any issues upfront so problems could be resolved before delays begin. It would also allow time for the informal briefing between nursing, anesthesia, and surgeons. An example of the email: "Good Afternoon, As of 2:00pm today you have a scheduled 7:30am start time on Thursday 6/3/10 at HCC2 Surgical Suite/MIUU. All Attendings, please arrive in HCC2 Prep Area no later than 7:10am. Thank you, On Time Start Committee Members".
The arrival times of surgeons were recorded. Those who were habitually late were addressed by the Surgeon-in-Chief.
Results: In the first month of the program, the first case on time starts improved to 35% as compare to 19% from the previous year. By the sixth month, the first case on time starts improved to 80% as compared to 30% in the previous year.
Conclusion: These simple emails became the unlikely simple solutions to tackle first case delays. It has not been identified whether the daily reminders alone or the person sending the reminder resulted in the improvement. These results may be different at an institution where the Surgeon-in-Chief has varying degrees of authority. A private practice fee for service surgeon may not be as influenced as a Hospital or University employed surgeon who reports directly to the Surgeon-in-Chief.
Continued monitoring will also reveal whether the improvement in behavior is sustainable.

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Paper No: 34.00

Total Hip Arthroplasty and perioperative oral carbohydrate treatment

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Introduction: Performing surgery on patients that have fasted over night has several disadvantages. Insulin resistance and prolonged length of hospital stay are just two of them (1-3).
Objectives: The aim of this randomized controlled trial was to determine whether pre and post operative intake of carbohydrates (CH) could reduce discomfort for patients undergoing total hip arthroplasty (THA).
Methods: This study was approved by the local Research Ethics Committee. Sixty consecutive patients scheduled for THA were enrolled. They were randomly allocated in a double blind way to either a 12.5% CH oral solution or water(4). To ensure that the groups were double-blind the placebo group received flavoured water (5). Four hundred mL of these solutions were administered 90 min before induction of anaesthesia and 2 hrs after the end of surgery. All patients received intrathecal anaesthesia with bupivacaine 15 mg. Patients scored their subjective sense of discomfort and pain using a 100 mm visual analogue scale.

The extreme boundaries of the variable being measured were at each end of the scale (5). Variables measured at pre defined times were: anxiety, hunger, nausea, pain, thirst, tiredness and headache. Venous blood samples were drawn at pre defined times and analyzed for plasma concentration of haemoglobin, glucose, albumin and creatinine. Short Portable Mental State Questionnaire (SPMSQ) was used to asses the patients cognitive function. Length of hospital stay (LOS) was defined as time from end of surgery until discharge from ward.

Results: There were no statistically significant differences in LOS, anxiety, thirst or demographic data between the groups. The patients who received placebo felt more hunger pre operatively compared to the CH group. Pain scores were lower in the CH group at 12, 16, 20, 72 and 84 hrs post operatively. Patients in the CH group were more tired from day two and onward. In the placebo group patients felt more nausea pre operatively and at 36 and 48 hrs post operatively. There were no differences in SPMSQ or the parameters analyzed from the blood samples.

Conclusions: In orthopedic surgery it has been shown that patients undergoing THA develop insulin resistance resulting in a reduction of glucose uptake (1). This has been found to be an independent factor determining LOS (2). This study could not confirm this. Furthermore our study found no (or clinically insignificant) differences between parameters monitored. Administering oral CH in the perioperative period results in limited benefits to THA patients.

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Paper No: 67.00

The usefulness of a separate informed consent process for anaesthesia services in a Caribbean public hospital

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Introduction: Informed consent for surgery is both an ethical as well as legal obligation. Professional guidelines require that expressed informed consent should be obtained for any procedure. The role and usefulness of separate consent form for anaesthesia is contentious albeit there is no requirement in law. Studies have shown that many patients do not read or understand preprinted consent forms but sign them anyway. This study sought the relevance of a separate informed consent for Anaesthesia in a Caribbean country.

Objectives: To determine whether a separate written consent improved the adequacy of the informed consent process for Anaesthesia Services

Methods: A questionnaire study was conducted in adult patients undergoing elective surgery in a tertiary care public hospital in Trinidad. Patients were randomly categorized into two groups – Group (A) was required to sign only the hospital's routine 'Consent for Operation' form, Group (B) additionally signed a separate Anaesthesia Consent form. Patients were interviewed postoperatively with an investigator-administered 5-point Likert-scale 8-item questionnaire to generate a composite 'adequacy of consent' index. Responses were analyzed between the groups with respect to gender, educational level, and grade of anaesthetist obtaining the consent.

Results: Two hundred patients were enrolled with 100 in each group. 61% were females, mean age was 44 years. 16% had tertiary education, 55% attended secondary school, 29% achieving a lower level of education. For Group A, the mean adequacy of consent index was 27.9 while for Group B, it was 30.6 ($p<0.001$). Gender, level of education, and grade of anaesthetist did not influence the adequacy of consent index. The signing of separate written consent had a positive impact on the patients' understanding of the nature and purpose of the anaesthesia procedures ($p=0.04$), their satisfaction with the adequacy of information provided about common side effects ($p<0.001$) and rare but serious complications ($p=0.01$).

Conclusions: In a Caribbean setting, the introduction of a separate written consent for anaesthesia improved the overall adequacy of the informed consent process. Patients signing a separate consent form were better informed about the nature and purpose of anaesthesia, common side effects and rare but serious complications.

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Paper No: 118.00

Anesthetic Management of a patient with Acute Coronary Syndrome for hip fracture surgery

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Introduction: Acute coronary syndrome covers the spectrum of clinical conditions ranging from unstable angina to non-Q-wave myocardial infarction and Q-wave myocardial infarction. We describe the management of a patient with a hip fracture under regional anaesthesia. Method: A female 90 years old, ASA III, suffering from left intertrochanteric fracture with a medical history of chronic atrial fibrillation, arterial hypertension, diabetes mellitus type II, iron deficiency anemia and mild renal insufficiency (creatinine=1,8 mg/dl) on preoperative medication with diltiazem (180 mg), candesartan - cilexetil/hydrochlorothiazide (16+12,5 mg), buflomedilhydrochloride (300 mg), clopidogrel (75 mg), aspirin (100 mg), piracetam (800 mg) and folic acid (100+0,35 mg). The surgery was postponed due to preoperative guidelines of anticoagulant drugs (clopidogrel). The day prior the operation a new ECG was significantly different from the ECG entry (ST depression and negative T waves at the rear wall). The cardiac enzymes and the troponin test were also positive (SGOT=101 U/L, SGPT=73 U/L, CK-NAC=331U/L, LDH=467 U/L, Troponin=0.13) which confirmed the diagnosis of possible acute coronary syndrome. A delay of the operation has been suggested from the cardiologists. After consideration of the dangers of further delay of the surgery, we decided to proceed besides high intraoperative mortality.
Results: The hemodynamic monitoring included invasive BP, ECG, continuous monitoring of CO (by Flotrack-vigileo), pulse oximetry, and urinary output. The intraoperative anaesthesia was performed by administration of Ropivacaine 0,75% 1,2 ml subarachnoidaly at L3-L4 level. The patient remained heamodynamicaly stable (CO=3,3-4,2 lt/min) during the operation which lasted 50 min. Postoperatively the patient remained for 60 min in PACU under cardiovascular monitoring and we administered through the epidural catheter analgesic drugs (morphine=3 mg) for two days.
Conclusions: Slow titration of spinal-epidural anaesthesia proved to be safe for a patient with ACS.

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Paper No: 120.00

Anaesthesia management of a patient with steele-richardson- olszewski syndrome

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Introduction: Progressive Supranuclear Palsy (PSP), also known as Steele-Richardson-Olszewski syndrome, is a neurodegenerative disease that affects cognition, eye movements, and posture. Characteristics include supranuclear, primarily vertical, gaze dysfunction accompanied by extrapyramidal symptoms and cognitive dysfunction. Currently, no therapy has proved effective. We describe the anaesthetic management of a patient with PSP undergoing an elective cholecystectomy.
Methods: A 67-year old female patient, ASA III, 58 kg and 161 cm height came to our hospital for an elective open cholecystectomy due to chronic cholecystitis. The patient had a history of arterial hypertension, DM type II, osteoporosis, hypercholesterolemia and PSP diagnosed 5 years ago, under treatment with quinapril hydrochloride+ hydrochlorothiazide, repaglinide, alphakalcidole, rosuvastatin, levodopa-carbidopa, entacapone, fluoxetine. The patient had ankylosis of the atlanto-occipital joint, hypertonia of respiratory muscles, rales on both lungs on auscultation, disorder of speech, expression, feelings, balance and walking, dysphagia, difficulty in swallowing, hypertonia of upper limbs and signs of Parkinsonism. Laboratory tests revealed iron deficiency anemia and hypoproteinemia. We ensured a bed in ICU in case needed. Preoperatively it was administered 40 mg omeprazole and bronchodilators. One hour prior anaesthetic induction we administered Levodopa-Carbidopa per os (to avoid intraoperative hypotension and muscle rigidity) and infused 400 ml RL solution, 50 mg ranitidine and 5 mg ondasetron. Intraoperative monitoring included ECG, SpO2 and invasive BP. Anaesthesia was induced with etomidate 18 mg, fentanyl 100 mcg and rocuronium 30 mg. Face mask ventilation and tracheal intubation were difficult (2nd try). Ventilation achieved by use of IPPV, tidal volume 450=ml, respiratory rate 14=br/min, FiO2=0.5 and Ppeak~27 mmHg. Maintenance of anaesthesia was achieved with Desflurane 6% and O2/Air (1/2). We administered 0,6 mg phenylephrine for hypotension and 200 mcg fentanyl plus 600 mg Paracetamol for analgesia. Total volume of fluids was 1100 ml RL.
Results: The operation lasted 114 min uneventfully. The wound was infiltrated with Ropivacaine 0, 5 % 17 ml. The

patient emerged 14 min later with sugadammex 240 mg (TOF 2/4), VT 320=ml, RR=15 br/min, inspiratory effort=-17 mmhg, SpO2=99% and FiO2=0,5. Patient was extubated, although level of consciousness could not be assessed, and transferred to the PACU under continuous monitoring of ECG, SpO2 and BP. The level of communication increased 15 min later with help from patient's environment.
Conclusions: Thorough preoperative evaluation and careful perioperative management resulted in an uncomplicated procedure.

Paper No: 132.00

Anesthesia management for total cystectomy in an elderly patient, with an intraoperative blood loss of 56,600 ml

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Introduction: Massive bleeding is a major cause of intraoperative death, and it is a situation that anesthesiologists should always be prepared for. We herein report on a case of total cystectomy surgery on an elderly patient resulting in a blood loss of 56,600 ml, in which the management of anesthesia was completed safely without causing any postoperative neurologic symptoms.
Case: An 81-year-old woman patient, 136 cm in height and weighing 41kg, received total cystectomy and an ileac conduit.
Anesthetic management: Induction of anesthesia was using propofol and fentanyl and maintained with sevoflurane and fentanyl. Sudden severe bleeding occurred two hours from the beginning of surgery and the amount of bleeding from extirpation of the bladder and uterus was 12,700ml. An average bleeding volume of 400 ml per 5 minutes, and a systolic blood pressure of 60 to 80 mmHg, Cardiac Index (CI) 1. 8 to 2.9 ml/min/kg was maintained through the combined use of high-speed blood transfusion at 100 ml/minute and catecholamine. The intraoperative Hb value was 3.6 g/dl, the Plt value was 1 thousand/il, and APTT and PT could not be measured, thus leading to DIC. The bleeding was restored to a normal state 10 hours following the start of surgery. At the end of surgery, the Plt was 130.0 thousand/il, APTT was 31. 4 seconds, and PT was 15.5 seconds, with the total bleeding amounting to 56,600ml. 126 units of packed RBC, 105 units of FFP, 80 units of platelet, 13,250ml of albumin preparation, 27,750ml of crystalloid solution, and 4,000ml of colloid solution were used. No postoperative complications were observed.
Discussion: A case of a surgery with severe bleeding that took an extended period of time was safely anesthetic-managed by means of the anesthesiologist providing updates on the second-by-second changes in the physical status of the patient to the surgeons, nurse, and the person performing blood transfusion, and by all involved closely communicating with each other. SVV and CI of FloTrac® were useful as indexes for the circulation management of severe bleeding. The total cost was 2,435,064 yen for the transfusion materials alone, but the medical expenses incurred by the patient are covered by the National Health Insurance System in Japan.

Paper No: 153.00

Disposable laryngeal tube s – a randomized comparison of two insertion techniques performed by novice users

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Objective: The disposable laryngeal tube S (LTS-D) is a supraglottic single-lumen ventilatory device being blindly inserted into the esophagus. Using a standard insertion technique recommended by the manufacturer frequently resulted in prolonged and repeated insertion attempts and even failure to insert the tube at all. We tested the hypothesis that, with a modified insertion technique the number of placement attempts lasting more than 45sec could be significantly reduced.
Methods: After IRB approval and written, informed consent, 54 adult patients undergoing trauma surgery under propofol-fentanyl-based general anesthesia had an LTS-D inserted by first-time users, randomly using either a standard or modified technique. The modified technique used the Guedel tube approach", by rotating the tip of the LTS-D by 180° prior to insertion. Simultaneous chin lift to create sufficient retropharyngeal space was performed with the thumb of the other hand. When the tip of the LTS-D touched the hard palate the tube was again rotated by 180° and pushed down into the esophagus until elastic resistance was felt. Ventilation was initiated and rated sufficient with an initial end-tidal CO2 >20mmHg. The time required for successful placement (cessation of mask ventilation until the first sufficient tidal hub was delivered via the LTS-D) was the main outcome variable.
Results: All users were novices regarding clinical use of the LTS-D regardless of the technique applied. A brief mannequin-based demonstration of the device and the particular technique to be used was given prior to insertion. Both patient groups showed no significant differences in terms of age, weight, height, and body mass index. The time required for successful insertion was 73±41sec with the standard

technique compared to 40 ± 8sec when the modified technique was used (P=0.0003). Insertion attempts lasting longer than 45sec were observed in n=20/27 patients (74%) and in n=6/26 patients (23%) in the standard and modified technique groups, respectively (P=0.0003). In one patient of the modified technique group, placement was entirely impossible.

Conclusion: Our modified technique significantly reduced the time required for successful insertion of an LTS-D when performed by first-time users. Also, insertion within a 45sec time frame was significantly more frequent with the modified technique, i.e. allowing placement of the LTS-D within two cycles of cardiopulmonary resuscitation. Since all users were novices, we could not determine a learning curve. Although likely, however, it remains speculative at this stage if the time required for insertion could be further reduced with increasing clinical experience and training.

Paper No: 162.00

Incidence and risk factors of undetected postoperative hypoxaemia at a Teaching Hospital in Africa, Rwanda: The usefulness of Portable oximeter

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Introduction: All surgical patients, especially those who have undergone abdominal surgery are at risk of postoperative hypoxaemia. However, there have been few studies on the incidence, morbidity and treatment of postoperative hypoxaemia in sub-Saharan African hospitals, possibly because most hospitals do not necessarily have the resources to routinely monitor oxygen saturation and administer oxygen to all surgical patients postoperatively. In this study, an incidence of postoperative hypoxaemia was reported in patients undergone abdominal surgery and risk factors affecting postoperative oxygen saturation were investigated at Kigali University Teaching Hospital, Rwanda.

Methods: This prospective observational study was conducted in 125 patients who underwent abdominal surgery in over a period of 5 months from October 1st, 2010 to March 1st, 2011. Oxygen saturation (SpO2) was measured by a portable pulse oximeter in all patients breathing ambient air or supplemental oxygen immediately on arrival to the postanaesthesia care unit (PACU). Additional SpO2 was measured at 3 hours and 6 hours after surgery and it was measured in the morning and in the afternoon of the 1st and 2nd postoperative days. Hypoxaemia was defined Sp02 < 90%. Risk factors were identified from age, body weight, ASA physical status, smoking history, duration of anaesthesia, anaesthetic agents used, types of surgery and surgical incision, use of analgesics for postoperative pain control.

Results: This study revealed that the incidence of hypoxaemia on admission to the PACU was 24 % for all the patients and 27 % of the patients transferred from the operating theatre without supplemental oxygen. The incidence varied depending on time during the postoperative period. At 3 hours after surgery, it dropped to 9.6%, thereafter it started rising and reached at 17.6% on the 2nd postoperative day. A half of patients became hypoxaemic at least one time during the study period. Seven percentages of patients were hypoxaemic at more than five measurement times. A multivariate analysis showed ASA PS III and IV, and age>65 as an independent risk factor of postoperative hypoxaemia.

Discussion and Conclusion: Our study showed that hypoxaemic events are common following abdominal surgery. ASA PS III & IV and age> 65 are the independent risk factors. This study strongly suggests that patients undergoing abdominal surgery should be continuously monitored with pulse oximeter and oxygen delivery devices should be available to all postoperative patients at any African hospitals and to Hospital authorities an high dependency unit must be develop and well equipped with skilled medico-nursing staff.

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Paper No: 206.00

CO_2 EMBOLIA IN A LAPAROSCOPIC HEPATECTOMY: Case report

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Introduction: Laparoscopic surgery is a modern technique performed wordlwide thanks to its multiple benefits compared to the traditional approach(open surgery). However, there are certain complications, and among them some can be mortal. Although fairly rare, gas embolism from CO_2 is a well known complication of laparoscopic procedures. CO_2 embolism can cause the death of the patient as it progresses undetected. A correct and prompt diagnosis should be done as to quickly apply the adecuate terapeuthic procedures. We hereby present a case of CO_2 embolia in a laparoscopic liver resection.

Case Report: Male individual Aged 51, ASA II undergoing a laparoscopic left lobe hepatectomy due to a suspicious nodule. During the laparoscopic procedure which was being carried out normally, an episode of CO_2 embolia occurred. Arterial blood pressure, end tidal concentration of CO_2, oxygen saturation and arterial gases were considered to be within the normal range for this kind of procedure. The surgery was performed in the head up position. During dissection, the surgeon opened suprahepatic veins. Then we saw the image on the left.
Discussion: We interpreted this phenomenon (abrupt decrease in the ET CO_2, arterial blood presure and SpO_2, as seen on the tendences) as a gas embolism. The surgeon was inmediately informed and pneumoperitoneum was interrupted. At the same time, we aspirated the central venous catheter trying to get rid of the gas bubbles. Even though described, no gas was obtained through the catheter. We therefore started treatment: the patient was placed in Trendelemburg position, oxygen was supplied at 100% concentration and lungs were manually ventilated for a moment, fluids were administered enerically as well as phenilephrine. After stabilization, which took us 5 minutes, surgery continued in the open way. The patien did not present any further complications and had a normal 5 day post operative period after which he was discharged from hospital.
Conclusion: Gas embolism from CO_2 can have multiple systemic results. An accurate and complete monitorization is mandatory when performing laparoscopic liver surgery, as to diagnose this kind of complications. This enables the patient to improve his/her possibilities of a fast and easy recovery. Despite not having transesophageal echocardiography, all the former physiological parameters considered allowed us to identify the embolia and to treat it accurately.

Paper No: 208.00

Anesthesia for enteroscopy procedure in a world gastroenterology organizing training center in Thailand

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Background and Objective: Enteroscopy procedure is another diagnosis and treatment option for gastrointestinal tract abnormalities especially for small bowel pathologies. The objective of the study is to study and review anesthetic data from a World Gastroenterology Organizing Training Center in Thailand as a basis for further research.
Methods: Retrospectively analyzed the patients on whom enteroscopy procedure had been performed during the period of March, 2005 to April, 2011 in Siriraj GI Endoscopy Center. The patients' characteristics, preanesthetic problems, anesthetic techniques, anesthetic agents, anesthetic time, type of procedure and complications were assessed.
Results: There were 145 patients who received the procedure during study period. The age group of 50-69 years was the highest one (46.9%). Most patients had ASA class II (57.2%). The indications of procedure were gastrointestinal bleeding (58.6%), chronic diarrhea (15.2%), protein losing enteropathy (2.1%) and others (24. 1%). Hematologic disease, cardiovascular disease and hypertension were the most common pre-anesthetic problems. General anesthesia and intravenous sedation was the anesthetic technique mainly employed. Anesthetic agents were mainly administered with propofol, midazolam and fentanyl. The mean anesthetic time was 92.8 ± 48.4 minutes. The indications for enteroscopy procedure were gastrointestinal bleeding (58.6%), chronic diarrhea (13.8%), protein losing enteropathy (2.1%) and others (15.5%). Single balloon and oral intubation was the most common type and route of enteroscopy. The most frequent anesthetic complication was hypotension.
Conclusion: During anesthetic management for enteroscopy procedure, special techniques or drugs in anesthesia are not routinely required, however, the anesthetic personnel had to optimize the patient's condition for safety and there should be an awareness of complications.

Paper No: 209.00

A comparison between experienced anesthetic nurse and anesthetic trainee administered deep sedation for colonoscopy

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Introduction and Objective: A high number of complication rates during deep sedation are higher than during mild or moderate sedation. There were limited data about anesthetic trainee deeply sedated colonoscopic patients. The objective of the study is to review our sedation practice and to compare the clinical effectiveness of an experienced anesthetic nurse and anesthetic trainee administered deep sedation for colonoscopic procedure in adult patients.
Methods: We undertook a retrospective review of the sedation service records of adult patients who underwent colonoscopy. All endoscopies were performed by staff endoscopists and fellows in gastroenterology. All analgesia and sedation was administered by anesthetic nurse or anesthetic trainee. The primary outcome variable is the complication

rate. The secondary outcome variables are the total number of staff consultation, ease of intubation, and patient and endoscopist satisfaction.

Results: A total of 438 endoscopies were performed during the study period. Of these, 220 patients were sedated by experienced anesthetic nurse (group N) and 218 patients were sedated by anesthetic trainee including resident and nurse student in anesthesiology (group T). All sedations were supervised by the staff anesthesiologist. Analgesic and sedative agents in both groups were propofol, midazolam and fentanyl and were comparable dose among the two groups. There were no significant differences in patients' characteristic, mean sedation time, indication and type of intervention between the two groups. The complication rate in both groups was comparable. There were also no significant differences in staff consultation, ease of intubation, and patient and endoscopist satisfaction between the two groups. Serious complications were none.

Conclusion: Experienced anesthetic nurse and anesthetic trainee administered analgesia and sedation supervised by the staff anesthesiologist for colonoscopic procedure is safe and effective. The success rate, staff consultation, ease of intubation, patient and endoscopist satisfaction, and complications are comparable.

Paper No: 227.00

Sore throat complaints after elective surgery: cumulative incidence and risk factors

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Introduction: Symptoms of postoperative throat discomfort such as sore throat, hoarseness and dysphagia are common during anesthetic practice. Although sore throat complaints (STCs)are regarded by many authors as minor complications, they affect the patient's recovery and have been associated with patient's dissatisfaction (1; 2).

The incidence of STCs has been reported to be higher with endotracheal tube (ETT) than with laryngeal mask (LM) use (1). Data on the incidence of laryngo-pharyngeal morbidity vary widely in the literature and its analysis must consider the survey method used (3; 4).

Several studies explored risk factors for postoperative STCs and report type of airway device used, female gender, younger age, size and shape of endotracheal tube, use of lubricants, cuff pressure, relaxation with succinylcholine, long duration of intubation, smoking history or lung disease, presence of blood on the tube after anesthesia, presence of natural teeth and some types of surgical procedures as possible risk factors (1; 3; 5; 6).

Objectives: To determine cumulative incidence of STCs which occur with the insertion of LM and ETT during the first hour and 24 hours after elective surgery. In addition, to establish risk factors associated with its occurrence.

Methods: In a cohort study, a total of 451 patients scheduled for elective non-cardiac surgery were included consecutively for 6 months (ASA I-II-III, >18 years old) who underwent LM or ETT airway management for general anesthesia. Through a questionnaire with indirect questions the presence of sore throat, hoarseness, dysphagia and the composite endpoint STCs were assessed one and 24 hours after surgery. Marginal models were used to identify risk factors.

Results: We found an incidence of STCs of 26.8% and 13.5% at first and 24 postoperative hours respectively. At first hour, they were classified as sore throat (23.9%), hoarseness (6.7%) and dysphagia (6.4%). Each compound was not mutually exclusive. At 24 hours of follow up, incidence of STCs and its compounds decreases significantly but differently to ETT and LM. STCs were associated with female gender (OR=1. 53 95%CI 1. 00-2.37, p=0.05), ETT intubation (OR=4. 20 95%CI 2.19-8.04, p<0.01) and bloodstain on airway device at extubation (OR=2.00 95%CI 1. 18-3.36, p<0.01).

Conclusions: The incidence of STCs remains significant. There are differences in the pattern of reduction between ETT and LM over time and this study confirms risk factors for postoperative STCs like use of ETT, presence of blood during the airway device extraction and female gender.

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Paper No: 249.00

The validity of simulation for team training for patient safety in anaesthesia: an observational study comparing team interactions in the operating room and the simulated environment

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Introduction: Safe patient care requires a team-based approach (1) and simulation-based training has been embraced as an appropriate method to develop these teamwork skills (2). However, questions remain about the validity of simulation for training of clinical teams. While there is some support for the validity of anesthesia simulations based on observed activity patterns (3), most evidence relies on participant self-report. Simulations of operating room (OR)events aim to create an authentic experience for participants, where interactions between team members reflect normal patterns of behaviour. There is limited evidence to show that anesthetists' behavior in the simulator reflects their workplace behaviour, or that behaviours under routine conditions predict crisis behaviours.
Objectives: We compared individual anesthetist's patterns of team interactions across three settings: the OR; a routine simulation; and a crisis simulation. Methods We videotaped anesthetic teams in: 1) an OR; 2) a routine simulation modelled on cases and events in that OR; and 3) a simulated case with an intra-operative crisis. Post-simulation questionnaires sought ratings for realism of the different teamwork components, and their relative frequency in the simulator compared to the OR. For each anaesthetist in each setting, two pre-defined video segments were entered into Observer XT video-analysis software. Based on theoretical constructs of Crew Resource Management (4,5), we used a constant comparison technique (6) to develop a framework for coding team interactions, which was then completed by two researchers. Different types of interactions were measured as the proportion of all coded interactions by that anesthetist in each setting, and compared across the three settings, using paired t-test.
Results: Twenty anaesthetists were videoed in the two simulations, and 17 across all three settings, generating 114 video segments and 2501 coded interactions. Participants rated the different teamwork components as realistic / very realistic and occurring at similar frequencies in the simulations and OR. For the majority of coded interaction types we found no significant difference between their proportions for each anesthetist across the three contexts ($p > 0.05$). A subset of interactions types occurred in significantly different proportions in the three contexts. In particular, situational assessments and requests for information occurred more frequently in the crisis simulations than in both the routine simulation and the OR.
Conclusions: Our results suggest that functioning in a simulated environment does not significantly affect anesthetists' way of interacting with their team, supporting the validity of simulation for training and research in healthcare team interactions to improve patient safety.

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Paper No: 259.00

Unrecognized osteogenesis imperfecta syndrome: the strategies for general anesthesia maintenance and recovery

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Introduction: Osteogenesis Imperfecta (OI) is a hereditary syndrome that has four types of clinical appearence. Syndrome is characterized by one or more of clinical symptoms; like imperfect osteogenesis leading to fractures, defective dentination and blue sclera (1). Anesthetic management of a patient with OI syndrome includes intubation difficulties, positioning problems due to brittle bones and tendency to develop malignant hyperthermia. Inhalated general anesthetics and succinylcholine are the most important triggering agents for malignant hyperthermia (2).
Objective: To describe the general anesthesia maintenance and recovery of a patient with unrecognized OI syndrome.
Methods: Twenty years old woman, 37 weekly, painful pregnant had emergent cesarean section. She had no gynecological follow up during pregnancy. She had undergone a non-problematic cystoscopy operation previously. She had a bandage on her left foot, explaining that she had injured before. Her laboratory parameters were normal without any chronic disease. The patient was intubated after routine anesthesia monitorization and induction with propofol and succinylcholine. In the first examination of the pediatricians, the new born had a broken right humerus and blue scleras, so that he could be an OI syndrome. Regarding to malignant hyperthermia, the anesthesia machine was changed by another machine immediately, anesthesia was maintained

with totally intravenously agents, esophageal temperature was monitorized. After a deep questionnary with the relatives, it was learned that the patients' father, uncle and three cousins had OI syndrome. They thought that, mother was normal according to their family. The patient was extubated in the post operative intensive care unit. She had light blue color in her scleras that can hardly be seen. She had no pain on her neck or throat. There was a fracture on her bandaged left foot that could be seen on the plane roentgenogram. The orthopedists immobilized the fractured bone. Her hemodynamic parameters, CO2 levels on the arterial blood gases, potassium, creatine phosphokinase and lactat dehidrogenase levels were normal for two days. Her body temperature was under 37 ? C except on the 20th (37,5? C) and 33rd (37,8? C) hour. Ice packs were applied to reduce the temperature. The patient and her family was informed about the risks and the complications of OI syndrome.

Results: The patient was discharged from intensive care unit to gynecology clinic after 48 hours and discharged from the hospital at the 4th day without any complication.

Conclusion: Having a brief physical examination and anesthetic visit preoperatively is really important, even in emergent cases.

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Paper No: 283.00

Or efficiency following implementation of the safety checklist

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Introduction: In 2007, the WHO created a Surgical Safety Checklist (SSC) encompassing a simple set of surgical safety standards that can be used in any surgical setting. The SSC was piloted in eight hospitals globally between October 2007 and September 2008 with results demonstrating a decrease in inpatient death rate from 1. 5% before the checklist was introduced to 0.8% afterward (P=0.003). Inpatient complications occurred in 11. 0% of patients at baseline and in 7.0% after introduction of the checklist (P<0.001).[1]

Objectives: The purpose of this study was to introduce the Surgical Safety Checklist (SSC) into an ambulatory surgical facility and to determine if operating room efficiency was affected by its implementation.

Methods: After REB approval, data was collected on all surgical cases in an ambulatory surgical facility for a 3-month period (April –June 2009) before implementation of the SSC and in a 3-month period (April –June 2010) following implementation of the SSC. Efficiency was determined for the first patient of the day by comparing the OR entry time to the scheduled start time. For each subsequent case, the time between the patient exiting the room and the next patient entering the room was determined. Median and interquartile range was determined and data compared between the 2 time periods with a Mann-Whitney U test. The number of canceled cases because of time restraints was noted. Data was also collected in the operating room to determine compliance with each section of the SSC; Briefing, Time Out and Debriefing.

Results: Data on 443 patients before implementation and 478 patients after implementation were collated. Data was also subdivided to assess efficiency of the surgical specialties. Overall, there was a 4 minute longer turnover time after SSC implementation. Compliance with the SSC was 99.7%. There was no difference in the # of cancelled cases between time periods. Detailed data is found in Table 1.

Discussion: While there are a number of variables that cannot be accounted for in this study, including such things as availability of surgical suite attendants, nurses, physicians, institution of regional blocks and an approximate overall 10% increase in volume of cases, it is evident that despite nearly 100% compliance with the SSC, there has been no clinically important decline in efficiency.

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Paper No: 287.00

Hemodynamic and anesthetic management of patients undergoing transcatheter aortic valve implementation

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Introduction: The transcatheter aortic valve implementation (TAVI) is a novel, less invasive, treatment technique for patients

with symptomatic aortic stenosis with contraindications for open heart surgery. The goal of hemodynamic management during the procedure is to achieve hemodynamic stability with exact blood pressure control and use of rapid ventricular pacing (RVP). We describe the hemodynamic and anesthetic management of general anesthesia for the TAVI procedure, when the hemodynamic was being monitored by continuous cardiac output (cCO) and mixed venous oxygen saturation (SvO2) and depth of anesthesia by EEG-Spectral entropy.

Objectives: The aim of this study was to detect the cardiac failure prevalence during TAVI procedures, defined as a cardiac index (CI) under 2 l/min/m2 and SvO2 under 58% (1). The second objective was to examine how the spectral entropy values would react to the critical events during the procedure, especially to the rapid ventricular pacing.

Methods: The study was approved by the local ethic committee and all patients provided written informed consent. Continuous cardiac output and mixed venous oxymetry Vigilance® monitor was used for the hemodynamic monitoring. Anesthesia depth was monitored by the M- ENTROPY® Module of the S/5 Anesthesia Monitor (2). For the RVP, the pacing ball device was introduced through the right jugular vein and RVP at a frequency of 180/min was used during the insertion of the aortic valve stent. Total intravenous anesthesia (propofol, fentanil, cis-atracurium) was standardized and guided by Spectral entropy.

Results: Twenty patients with mean age of 79 years (range 68-87) and EuroSCORE 18 (range 5-46) were included in to the study. The mean aortic valve area before operation was 0.5 cm 2 /m 2 (range 0.2-0.8) and the mean AV peak gradient was 77 mmHg (range 55-129). The CI under 2 l/min/m2 (mean 1. 6; range 1. 3-1. 9) and SvO2 value under 58 % (mean 54; range 46-58) were detected in 60 % of patients (n=12). All of these patients received perioperative inotropic support and 90 % of patients also required norepinephrine infusion for vasoactive support. Spectral entropy values decreased significantly during RVP (44 vs. 25; p= 0.01).

Conclusion: A high incidence of cardiac failure and insufficient oxygen delivery requiring inotrope support was detected, suggesting that invasive hemodynamic monitoring via a pulmonary artery catheter, should be considered during those procedures.The spectral entropy values decreased significantly during the rapid ventricular pacing without any changes in the anesthesia management.

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Paper No: 289.00

An instrument to identify quality improvement goals and enhance patient care: the healthcare matrix

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Introduction: The traditional model of morbidity and mortality conference often focuses on unexpected adverse outcomes and seldom identifies systems-based issues and interventions for improving patient care. In 1999, the Accreditation Council for Graduate Medical Education adopted six core competencies, subsequently adopted by the American Board of Medical Subspecialties and The Joint Commission, that physicians-in-training must master to provide quality care. In 2001, the Institute of Medicine recommended six aims for improving the nation's health care system: safety, timeliness, effectiveness, efficiency, equity, and patient-centeredness. The Healthcare Matrix1 is a blueprint that links the six core competencies with the six aims for improvement. The purpose of this study was to introduce the Healthcare Matrix into a large University Hospital setting and to compare anesthesia provider preference for this matrix with that for the traditional model for morbidity and mortality conference.

Methods: We presented an introductory lecture describing the Healthcare Matrix to 60 anesthesia providers in our department, both physicians and CRNAs, followed by a case presentation utilizing the matrix. The anesthesia providers were then asked to complete a ten-question survey. Survey responses were summarized with descriptive statistics. We compared respondents' preferences for the two approaches using Fisher's Exact test.

Results: Participants' survey response rate was 52% (31/60). The majority of respondents (94%) believed that the Healthcare Matrix is an effective method for identifying the individual components of a multi-factorial problem. Twenty five (83%) of 30 respondents believed that the Healthcare Matrix generates goals for quality improvement. The Healthcare Matrix was significantly favored over the traditional approach (p=0.024).

Discussion: The majority of respondents in the study believed that the Healthcare Matrix would generate goals for quality improvement. In addition, the Healthcare matrix identifies problems in care-delivery systems that shift the focus away from the individual and addresses the multiple factors that may have contributed to an event.

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Paper No: 350.00

Training office personnel in the implementation of a comprehensive safety checklist for office-based anesthesia and surgery

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Introduction: In recent years, the economic pressures of medicine have incited a paradigm shift in health care delivery, such that surgical procedures are moving from the hospital to the office-based setting. [1] Recent studies found that a comprehensive checklist used in an interdisciplinary, team-based setting resulted in a reduction in surgical complications as well as cost savings. [2,3,4] Training office personnel is perhaps the most significant barrier to introducing such a checklist.
Objectives:
Deploy a comprehensive safety checklist in the outpatient setting
Train office personnel how to both use the checklist and customize it to the individual practice
Analyze the accuracy of office personnel in using the checklist
Determine the checklistâ€™s effect on the frequency and severity of adverse events
Methods: With focus-group input from office personnel, the checklist was customized to the individual practice and has already been implemented in an outpatient plastic surgery office. Data are being collected on how accurately the checklist is filled out as well as its effect on adverse events.
Results: Preliminary results from a retrospective chart review using the safety checklist demonstrate a clear need for a systematic way to ensure that necessary patient safety steps are taken pre-, peri-, and post-operatively. Data on personnel accuracy and adverse events from the prospective phase are forthcoming and will be available before the World Congress.
Conclusions: A comprehensive safety checklist can be implemented and customized to the individual practice with the assistance of office personnel. However, office personnel accuracy remains less clear, as does the checklistâ€™s impact on adverse events. Completion of the current, ongoing prospective phase of the study will allow one to quantify both these parameters.

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Paper No: 355.00

Lyophilised concentrates of coagulation factors in place of fresh frozen plasma- the philosophy of an isolated small regional hospital

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Introduction: The Ospidal da Engiadina Bassa (OEB) in Scuol is a small regional hospital in the easternmost area of Switzerland, providing primary health care in the fields of surgery, orthopedics, traumatology, internal medicine, anaesthesia, pain and emergency medicine, complementary medicine, intermediate care, gynaecology and obstetrics.
Objectives: The OEB is isolated from the tertiary trauma center in Chur by the Alps with high mountain passes and winding roads, which can be treacherous in winter due to foul weather.

Patient transport by helicopter (normally 20 minutes) is often unfeasible during the winter and at night time. Transportation time by road takes two hours.

The Engiadina Valley is a popular vacation destination for visitors enjoying active sports such as skiing, paragliding, (moto-) biking and climbing etc. We therefore see severely traumatized patients on a regular basis.

Our philosophy is to immediately stabilize polytrauma patients or those with massive bleeding due to internal disease before transport to the trauma center (in accordance with "damage control surgery" and "early coagulation resuscitation").

The goal is to save time by insuring the rapid availability of blood products, efficient stabilisation of coagulation, swift initiation of pain and shock therapy, effective temperature control and normalization of electrolytes and pH.
Methods: In 2008, we decided to abolish FFP and thrombocyte concentrates at our hospital, because of the costs of emergency delivery, storage and the delays caused by the thawing procedures for FFP.

We introduced dedicated coagulation factors and rFVIIa instead of thrombocyte concentrates.

We normalize coagulation by following an algorithm derived by the anaesthetic senior house officer:
1. EC (0 negative, BG compatible)

2. Tranexam-acid 15 mg / Kg KG
3. F XIII 15 mg / Kg KG
4. Fibrinogen Bolus 2 gr
5. Lyophilised concentrates of coagulation factors (PPSB) 20 IE / Kg KG

Expected hypothrombocythaemia:

6. Desmovasin 30 yg / Kg KG
7. rF VII a 90 yg / Kg KG

Results: We use rapidly available, efficient and predictable therapeutic agents which have a low incidence of side effects.

We were able to significantly reduce the time needed for preparation and application of the coagulation agents and could thus stabilize the polytraumatic or massive bleeding patient more rapidly ("early hemostatic resuscitation").
We reduced the time required to get these patients ready for transportation to the central hospital ("golden hour of shock").

We were able to minimize the number of erythrocyte concentrates needed for adequate substitution.

As an additional benefit, emergency patients on anticoagulation therapy could be readied for surgery more rapidly.
Conclusions: In small hospitals isolated from the tertiary trauma centers, with a potentially long and formidable transport, it is economically and medically sound to have an adequate supply of coagulation factors on hand.

The use of coagulation factors makes it possible to stabilize the coagulation of a massively bleeding patient and support his life before transportation to a tertiary care center for definite surgical therapy.

We believe that adherence to this algorithm it is an efficient to give polytrauma patients and patients with massive bleeding disorders a reasonable chance to survive transportation and their definitive life saving surgery.

In fact we treated one polytrauma (motocyclist) with this algorithm. In the tertiary trauma center she got the definitely surgical and medical care. In result she survived without neurological or hypoxic residuals, but loosing a leg because of the accidential mechanism.

Paper No: 356.00

Leadership support is critical to improve compliance with recommended departmental practice guidelines

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Introduction: Outcome measures are valuable in monitoring clinical practice recommendations (metrics) used to focus on patient satisfaction and optimize wellness.(1,2) Yet physician compliance with guidelines is difficult to implement.(3,4)

Objectives: We have been providing compliance rates for clinical practice recommendations (metrics) quarterly (every 3 months) to physicians for the past 4 years. In December a new Chair was appointed and over the next few months he provided leadership support by placing emphasis on compliance with departmental metrics, as part of annual performance evaluations. We chose the overall reports in the quarter after the annual performance evaluations were completed; and compared this to a similar time period (quarter) for the prior year.
Methods: We compared the metrics compliance rates from the same anesthesiologist's quarterly results.
The Metrics:
PONV-Compliance is defined as multimodal prophylactic treatment with anti-emetic agents for patients with multiple PONV risk factors.
Temperature and On-time Antibiotics Compliance were defined as per the SCIP/NSQIP protocols (2).
Results: The Table shows the overall data for all three metrics for each quarter. All showed highly significant improvement ($p<0.001$) in compliance with established departmental recommendations.
Conclusions: We have previously shown that an educational program and training with consistent report backs in a non threatening manner is important in the development in a quality improvement program for a large group of 46 anesthesiologists in our complex tertiary cancer center (3). However, leadership support is essential in developing consistently improved performance based on departmental metrics. The improvements were noted in recent hires as well as experienced practitioners. You can teach an old dog new tricks!

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Paper No: 371.00

Thoracic Paravertebral block in a patient with Amyotrophic Lateral Sclerosis

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Introduction-Objectives: Motor neuron disease (MND) is a serious and incurable form of progressive neurodegeneration. Amyotrophic lateral sclerosis (ALS) is the most common form affecting both the upper and lower motor neurons and accounts for approximately 60%-70% of all cases. There are two major concerns in the anesthetic management of patients with such a disease, prolongation of the effect of non-depolarizing muscle relaxants, and controversy about the use of a neuroaxial block. Until now the anesthetic management in such patients included general anesthesia and central regional blocks (especially epidural anesthesia). The use of peripheral nerve blocks has limited experience. Our team decides (after written consent of her husbant) to manage the patient by thoracic paravertebral block plus sedation and IV analgesics drugs insted of general anesthesia due to respiratory complications.
Method-Results: A 42-year-old woman, 37 Kg, suffering from ALS (diagnosed 5 years ago), with generalized muscle weakness, rigidity and atrophy, complications in swallowing and chewing, assist ventilation via a tracheostomy due to respiratory insufficiency, was scheduled for a gastrostomy. The patient was under treatment with riluzole, baclofen, miorel, citalopram, budezonide and ipratropium bromide monohydrate+salbutamol. The patient was administered omeprazole 40 mg plus ondasetron 4 mg and oxygen (FiO2=0,4) via the tracheostomy tube. With the patient in the lateral decubitus position, a paravertebral puncture was performed at Th6 – Th11 left paravertebral space using a 22 G short bevel needle with the method of fixed distance (1,5 cm advancement transverses process). We used Ropivacaine 0,75% 4ml for each segment, with a total amount of 25 ml. Intraoperatively we used slight sedation with Midazolam 2 mg, plus N2O/O2 (60/40). For visceral pain treatment we administered Paracetamol 600 mg, Parecoxib 40 mg, Tramadol 40 mg and Ketamine 10 mg IV. Saturation was 98-99% and the patient remained heamodynamicaly stable. The postoperative course was uneventful without pneumothorax, nerve damage and exacerbation of the neurological signs and symptoms of ALS.
Conclusions: Thoracic paravertebral injections produce multidermatomal ipsilateral somatic and sympathetic nerve block. From this case report we conclude that thoracic blocks can be used successfully in the anesthetic management of upper abdominal procedures in patients suffering from ALS.

Paper No: 390.00

Evaluation of perioperative complications at CHUK, Rwanda: A baseline survey prior to implementation of the WHO surgical Checklist

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Introduction: Intraoperative and postoperative complications continue to be a public health problem. According to the study conducted by WHO, the risk of complications is poorly characterized in many parts of the world, but studies in industrialized countries have shown a perioperative rate of death from inpatient surgery of 0.4 to 0.8% and a rate of major complications of 3 to 17% (1). These rates are likely to be much higher in developing countries, where incomes are lower. However, many data suggest that at least half of all those complications are preventable (2,3). This survey evaluated those incidents and complications and recommended the WHO Surgical Checklist use as an effective tool to decrease those complications.
Objective: To evaluate the complications related to surgery and anaesthesia prior to the implementation of the WHO surgical checklist at a National Referral Hospital (CHUK) in Rwanda. Methodology Design of study: Prospective analytic observational study. Setting: The survey was conducted in a University Teaching Hospital of Kigali, CHUK.
Methods: Data were collected during 3 months in operating room from 15th October to 15th January. We had in total 159 patients who arrived in operating rooms of CHUK. After the operation, the patients were followed during one week.
Results: During the 3-month period, we collected 159 patients and, among them, 158 were operated. Elective cases were 99(62.3%) and major operations were 86(54. 4%). GA was mostly provided to 104(65.4%), signed consent forms were 82(51. 6%) for surgery, while there were 70(44%) consents signed for anesthesia. Intraoperative incidents related to anesthesia were 29.5%: cardiovascular (85.1%) and respiratory (14. 9%). Low blood pressure was the most likely to occur with spinal anesthesia, 30% (P=.001). Overall postoperative complications were most likely related to emergency surgery with 38.3% complications rate, of which surgical site infection was the most noted complication related, 18.3 % (P=0.014). Only 49.4% of the patients were discharged early, versus 45.6% who were still in the hospital 7 days after surgery (P<0.001). There were 8 deaths (5.1%) and mostly associated with infection (P=0.01). In this group, there was a significant prolonged length of stay in the hospital (P<0.001).
Conclusion: Perioperative incidents and postoperative complications represent a challenge especially in developing countries. The implementation of WHO Surgical Checklist could be useful to prevent those complications.

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Paper No: 394.00

A simple technique to reduce severe desaturation in propofol-sedated patients during short upper gi endoscopy

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Introduction: Patients routinely receive nasal cannula (NC) O2 and IV sedation during upper GI endoscopy (EGD). Over-sedation and/or airway obstruction causes desaturation even during short EGD. A plastic sheet was shown to improve oxygenation in sedated patients by converting NC to face tent (FT) during lengthy EGD (1).
Objectives: We reviewed its effectiveness in preventing desaturation in propofol-sedated patients during short EGD.
Methods: Retrospective review of patients who underwent EGD, EUS, ERCP, EGD/Colonoscopy or PEG identified 2 groups. Group1 (NC, n=76) received NC O2. Group 2 (FT, n=263) received NC O2 and a clean plastic specimen bag covering eyes, nose and mouth(1-3). Patients received NC O2 (3-5 l/min) and IV propofol. Student t-test and Chi Square test were used for analysis. A p value <0.05 was considered as significant. (Mean¡ÀS.D.
Results: Among patients who underwent short EGD (¡Ü20 min), there were no differences in procedure duration (NC: 14¡À4 min; FT: 13¡À5), age (NC: 59¡À18 yrs; FT: 61¡À14), BMI (NC:27¡À5; FT:28¡À7), ASA Physical Status (ASA) (NC:2.2¡À0.7; FT:2.5¡À0.8), room air (RA) O2 Sat (97¡À2%) and propofol dosage (NC:236¡À83 mcg/kg/min; FT:242¡À108). There were significant differences in the highest O2 flow (NC: 5.8¡À2.2 l/min; FT: 5.0¡À1. 6), the lowest O2 Sat (NC: 87¡À13%; FT: 96¡À5%), severe desaturation (O2 Sat ¡Ü85%) (NC: 10/31; FT: 2/114) and bag-mask ventilation (NC: 4/31; FT: 1/114). Thirteen NC patients had severe desaturation (O2 Sat: 78¡À13%) and FT was then added. O2 Sat was improved to 92¡À6%, 95¡À4% and 98¡À3% at 5-min intervals. Among patients who underwent lengthy EGD (>20 min), there were no differences in duration (NC: 39¡À15 min; FT: 43¡À16), age (NC: 60¡À18 yrs; FT: 60¡À15), ASA (2.2¡À0.7), BMI (NC: 26¡À4; FT: 27¡À7), RA O2 Sat (98¡À2%), highest O2 flow (NC: 4. 9¡À2.2 l/min; FT: 4. 8¡À1. 3) and propofol dosage (NC: 184¡À67 mcg/kg/min; FT: 180¡À59). There were differences in lowest O2 Sat (NC: 91¡À84%; FT: 97¡À4%), severe desaturation (O2 Sat ¡Ü85%) (NC: 11/45; FT: 2/149) and mask-bag ventilation (NC: 6/45; FT: 1/149). FT had higher FiO2 (Short: 0.51¡À0.15; Lengthy: 0.48¡À0.12) than NC (0.35¡À0.16).
Discussion: Data show that this technique prevents severe desaturation and reduces assisted ventilation in deeply sedated patients during short and lengthy EGD.
Conclusion: This simple face tent takes a few seconds to prepare and increases FiO2 without raising O2 flow. It may improve patient safety at no cost. Although this face tent can be used as a rescue device, it should be used for pre-oxygenation even during short EGD.

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Paper No: 395.00

A simple technique to reduce severe desaturation and the need for assisted bag-mask ventilation in obese patients during cardioversion/AICD testing

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Introduction: Patients routinely receive O2 via nasal cannula (NC) and IV propofol during cardioversion/AICD testing. Over-sedation and/or airway obstruction may cause severe desaturation and require assisted bag-mask ventilation. Obese patients has increased risks of severe desaturation during sedation due to sleep apnea, decreased FRC and increased O2 consumption. A simple plastic sheet was shown to improve oxygenation in propofol-sedated patients by transforming NC to a face tent (FT) during upper GI endoscopy (1).
Objectives: We have used this technique in Cardiac Cath Lab and wish to confirm its effectiveness in preventing severe desaturation in obese patients during cardioversion/AICD testing.
Methods: Retrospective review of 171 patients who underwent cardioversion/AICD testing identified 2 groups. Group1 (NC, n=48) received NC O2. Group 2 (FT, n=123) received NC O2 and a clean plastic specimen bag covering the nose and mouth(1-3). Monitors included ECG, BP cuff and pulse oximetry. Patients received NC O2 (3-5 l/min or higher) and IV propofol. Data collected included age, weight, height, O2 Sat, bag-mask ventilation and the amount of propofol. Student t-test and Chi Square test were used for analysis. A p value <0.05 was considered as significant. (Mean¡ÀS.D.
Results: Among non-obese patients (BMI <30), there were no differences in age (NC:72¡À13 yrs; FT:67¡À14), BMI (NC:24. 3¡À3.5; FT:24. 4¡À3.3), ASA Physical Status (ASA) (all III), room air (RA) O2 Sat (NC:99¡À2%; FT:98¡À2%) and propofol dose (NC:1. 47¡À2.2 mg/kg; FT:1. 1¡À0.3). There were significant differences in NC O2 flow (NC:6.5¡À2.8 l/min;

FT:4. 6¡À1. 3), O2 Sat after 5 min with O2 (NC:99¡À1%; FT:100¡À1%), the lowest O2 Sat (NC:87¡À11%; FT:97¡À3%), severe desaturation (O2 Sat ¡Ü85%) (NC:10/29; FT:0/74) and assisted bag-mask ventilation (NC:8/29; FT:0/97). Among obese patients (BMI>30), there were no differences in age (NC:66¡À11 yrs; FT:64¡À11), BMI (NC:34. 7¡À4. 7; F_i[3]:37.1¡À6.2), ASA (all III), RA O2 Sat (98¡À2%) and propofol dose (NC:0.88¡À0.28 mg/kg; FT:0.77¡À0.31). There were significant differences in NC O2 flow (NC:8.1¡À2.4 l/min; FT:5.2¡À1. 9), O2 Sat after 5 min with O2 (NC:98¡À2%; TM:99¡À1%), the lowest O2 Sat (NC:83¡À11%; FT:94¡À8%), severe desaturation (O2 Sat ¡Ü85%) (NC:9/19; FT: 5/48) and assisted bag-mask ventilation (NC:10/19; FT:2/48).

Discussion: Data show that this technique improves oxygenation, prevents severe desaturation and reduces the need for assisted bag-mask ventilation in deeply sedated patients, especially obese patients, during cardioversion/AICD testing.

Conclusion: This face tent takes only a few seconds to prepare at no cost. It may have great impact on patient safety especially in obese patients and should be used for pre-oxygenation during cardioversion/AICD testing.

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1 *Anesth* **107**: A922, 2007;
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3 www.TSEMask.com

Paper No: 423.00

Low-flow anesthesia in obese patients: comparison between desflurane and sevoflurane

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Introduction: Desflurane is a rather new anesthetics with a very low blood-gas partition coefficient and low oil-gas partition coefficient. These should allow rapid wash-in and rapid emergence, even in obese patients. Because of its price and low potency, the low-flow technique is advised.

Objectives: This study was aimed to study the kinetic behaviors of desflurane compared with sevoflurane during high-flow wash-in, low-flow maintenance and early recovery profile in obese adult patients.

Methods: Forty unpremedicated obese adult patients (BMI 25-35) were enrolled to receive either desflurane or sevoflurane anesthesia. After induction of anesthesia, desflurane 4% or sevoflurane 1. 5% in a fresh gas flow of 6 L/min (N2O:O2=3:3) was administered via an absorber circuit After 10 minutes, the inflow was decreased to 1 L/min (N2O:O2=0.5:0.5) and desflurane or sevoflurane was then switched to 5% or 2% respectively, and maintained throughout the surgery. At the end of the procedure, the vaporizer was turned off and the inflow was back to 6 L/min of O2. Delivered concentration (FD), inspired concentration (FI) and end-tidal concentration (FA) of the anesthetics were measured and recorded from the start until extubation. The times from discontinuation of the anesthetics to eye opening on command and extubation were recorded.

Results: During high-flow wash-in, the FA/FI were comparable in both groups with the ratios of 0.89(0.05) vs 0.88(0.02) at minute 10. While in low-flow maintenance, the FI of both groups gradually increased with corresponding increases of FA. The FA at the end of the 1st hour was 4. 2(0.05) for desflurane and 1. 78(0.01) for sevoflurane. During the 1st hour of low flow, the FA/FI were not significantly different with the ratios of 0.91(0.03) vs 0.89(0.02) at minute 60 of low flow. When back to high flow of O2 at the end of surgery, desflurane was washed out faster than sevoflurane during the 1st minute with the FA/FAO of 0.35(0.05) vs 0.42(0.08) but not different afterwards. The recovery was faster in sevoflurane group with respect to the times to eye opening on command and extubation.

Conclusions: In unpremedicated obese adult patients, desflurane and sevoflurane provide comparably fast wash-in during the initial high-flow and the 1st hour of l L/min maintenance flow. However, desflurane has faster wash-out during the 1st minute and provides faster recovery. We recommend the FD of 5% for desflurane and 2% for sevoflurane during 1 L/min of maintenance flow as an economical and safe practice where the facilities are limited.

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Paper No: 425.00

Improving patient safety in PACU (postanesthetic care unit)

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Introduction: During the immediate postoperative, patients had decreased consciousness, temporo-spatial disorientation, and impaired mobility which involve a number of interventions in relation with the patient, the surrounding structure and the personnel that is designed to increase patient safety.

Objective: To analyze, using the methodology of FMEA, potential failure modes, their causes and corrective measures

that can be done to reduce or resolve them, and design a checklist specific in URPA.

Material and Method: The methodology used was FMEA methodology, organizing a multidisciplinary team consisting of 4 FE Anesthesiology and Reanimation, Block 7 DU Surgical Nursing, 2 and 1 Nursing TC Celador.

Data collection was performed using a flow chart or analysis of the process, understanding as input when surgery is complete and output the time the patient is discharged from PACU, and therefore from the surgery zone. This analysis includes all the steps you take each professional involved in the process, detecting possible malfunctions, their causes and effects.

The risk assessment was done by calculating Risk Priority Numbers (RPN) that allow to define the possible causes of failure of most to least important, so find out where we should pay more attention.

Results: The result of this analysis have been the detection of 19 potential failure modes.

F1. Anesthetist cannot be localized. F2. Incorrect handling of anticoagulant therapy F3. Patient misidentification F4. Inadequate locoregional technique F5. Inadequate postoperative assessment F6. Improper aseptic technique F7. Improper handling of high-risk medication F8. Poor transmission of information to patients and family F9. There is no room to receive the patient F10. Improper handling of biological samples F11. Improper Hydric Balance F12. Improper management of VMI and NIV F13. Inadequate patient reception F14. Malfunction of the apparatus / equipment F15. Incorrect administration of treatment (drugs, fluids and blood products) F16. Care and / or improper nursing techniques F17. Medical Record Loss F18. Readmission after discharge in the APPU APPU F19. Inappropriate Discharge from PACU

Conclusion: After analyzing the NPR and the evaluation of improvement actions is a clear need to take measurements to preserve the safety of patient care in PACU admission, remain the priority, and in descending order, those related with the use of medication, effective communication, custody and organization of the medical history. The implantation of one checklist specific for de URPA may be the solution.

Paper No: 426.00

Evaluation of efficacy of amikacin for attenuation of catheter related bladder discomfort in patients undergoing percutaneous nephrolithotmy: a prospective, randomized, double blind study

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Introduction: Bladder discomfort secondary to an indwelling urinary catheter is distressing, and it is not unusual to find patients catheterised under anaesthesia complaining of an urge to void in the postoperative period because of catheter related bladder discomfort (CRBD).

Objectives: Amikacin, a aminoglycoside antibiotic has been reported to significantly inhibit detrusor contraction in animal studies. The present study was undertaken to evaluate the efficacy of Amikacin in preventing CRBD in clinical setting.

Methods: 100 consecutive adult patients, ASA physical status I and II, either sex, undergoing elective percutaneous nephrolithotomy (PCNL) for renal and upper ureteric stones were randomly divided into 2 equal groups of 50 each to receive medications just before induction depending upon their group allocation. Group C (control): received Augmentin 1.2 gm and Levofloxacin 500 mg whereas Group A (Amikacin): received Augmentin 1.2 gm and Amikacin 10 mg/kg. Following induction of anesthesia patients were catheterised with a 16 Fr Foley catheter and balloon was inflated with 10 mL normal saline. In the post anaesthesia care unit CRBD was assessed at 0, 1, 6, 12 and 24 hrs after completion of surgery. Severity of bladder discomfort was graded as mild, moderate and severe.

Results: Amikacin reduced the incidence of CRBD to 44% (22/50) compared to 66% (33/50) observed in the control group ($P<0.05$). Amikacin also reduced the severity of CRBD (moderate) grade at 1 hr ($P<0.05$).

Conclusion: Amikacin (10 mg/kg) administered intravenously just before induction of anaesthesia significantly reduces the incidence and severity of CRBD in the post operative period.

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Paper No: 449.00

Changes in psychological mood and stress after daytime practice in residents

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Introduction: A short form of the Profile of Mood States (POMS) consists of thirty items which load on six different scales: tension-anxiety, depression-dejection, anger-hostility, vigor, fatigue, and confusion, thereby combining to achieve the mood disturbance score (MDS), an aggregate indicator of overall mood. On the other hand, salivary alpha amylase (SAA) levels have been suggested as a potential indirect marker for sympatho-adrenal-medullary activity and a predictor of plasma cathecholamine levels under a variety of stressful conditions.
Objectives: We examined how daytime anesthetic practice affects the residents in terms of psychological mood and stress.
Methods: Fourteen residents at our department were enrolled in this study. They usually took charge of 1 to 3 patients a day in the operating rooms. They received two measurements. One was the the mood meaured by POMS questionaires at 8:00 and 17:00, and the other was the stress assessed by SAA activity at 8:00, 12:00, and 17:00 using COCORO MeterTM (NIPRO Co, Osaka, Japan). Data were analyzed by paired t-test, or one-way analysis of varience, if appropriate. In all tests, a value of $p<0.05$ was considered statistically different.
Results: Among the six scales and the MDS, only fatigue demonstrated statistically significant differenes. Daytime anesthetic practice significantly increased the score of fatigue in the subjects. However, there were no significant differences in the hourly changes in SAA activity in the subjects.
Conclusions: In residents, daytime anesthetic practice increased fatigue while no particular sympathetic stress responsee were evoked.

Paper No: 454.00

Quality improvement and just culture: a comprehensive approach

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Introduction: Quality improvement (QI) is an aspect of patient safety based on evaluating cases and system issues. Historically, the morbidity and mortality conference has examined error with a focus on individual accountability. Recently, patient safety has focused on systems, recognizing that events often result from system weaknesses that leave the final action overly dependent on individual skill and decision-making, and open to human error resulting from inadequate information, distraction, or miscommunication. The goal of a "just culture" has been introduced, in which individuals and systems are accountable for failure to plan appropriately but not punished for unavoidable human error. We present a QI process which comprehensively evaluates events, close-calls, and systematic safety issues, and applies them to an educational program to advance the experience and knowledge of anesthesiology faculty, residents, and nurse anesthetists.
Objectives: 1) To advance the experience of individuals by sharing mishaps and discussing means of avoiding these situations in the future. 2) To identify potential or perceived safety concerns and address them.
Methods: Indicator cases are reported by anesthesia care teams, nurses, surgeons, or other departments. Cases are reviewed by a peer and presented to committee, and a standard of care determination is made along with the identification of opportunities for improvement in individual behavior or systems. Patient safety concerns not associated with a specific case are presented to a committee, who makes a determination regarding whether a change to departmental practice is necessary. Monthly, cases with teaching points and/or new policies along with relevant literature are presented and discussed with the entire department. Discussions are focused on issues and opportunities for improvement, and the facilitator is responsible for maintaining an atmosphere of respect and collegiality.
Results: Within our department, an openness to analyzing incidents and seeking improvement has developed, despite appropriate concern about legal issues. Although there is repetition of material due to the annual influx of new residents and staff, there is attention to areas in need of improvement and the benefit from learning from the mishaps of others. Several new policies and local guidelines have been developed which standardize care within the department and lend support to best practices over misplaced attempts at efficiency.
Conclusions: Creating a rigorous QI process alongside a just culture within a department is possible and beneficial. Our approach has much to offer departments who are working to develop a more productive and progressive system.

Paper No: 466.00

Survey of surgical personnel to enact the 'RACE-PASS' fire safety plan

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Introduction: Most hospitals rely upon the use of the RACE-PASS acronym to remind employees of actions to perform during a fire involving patient care areas. Many accrediting agencies, such as The Joint Commission, have adopted RACE-PASS as a performance measurement and have encouraged employee memorization.
Objective: To assess if surgical staff are capable of performing RACE-PASS actions or merely recite the steps.
Methods: Surgical personnel familiar with RACE-PASS were personally surveyed to assess ability to carry out the RACE-PASS plan. Questions addressed previous education

pertaining to OR fires, identification of the nearest fire extinguisher, medical gas supply cut off, and fire alarm pull stations.

Results: 118 Surveys were performed with the staff of 31 operating rooms and 2 procedure areas. The staff consisted of Surgeons (n=17), Surgical Technologists (n=17), Circulating Nurses (n=28), and Anesthesia Providers (n=56). Of the Surgeons, four (23.5%) stated they had formal education pertaining to OR Fires, one (5.9%) could locate the nearest fire extinguisher, two (11.8%) could locate the gas cut off, and two (11.8%) could locate the nearest pull station; of the Surgical Technologists, fourteen (82.4%) stated they had formal education pertaining to OR Fires, seven (41.2%) could locate the nearest fire extinguisher, nine (52.9%) could locate the gas cut off, and four (23.5%) could locate the nearest pull station; of the Circulating Nurses, twenty-six (92.9%) stated they had formal education pertaining to OR Fires, eight (28.6%) could locate the nearest fire extinguisher, seventeen (60.7%) could locate gas cut off, and three (10.7%) could locate the nearest pull station; and finally, of the Anesthesia Providers, twenty-six (46.4%) stated they had formal education pertaining to OR Fires, six (10.7%) could locate the nearest fire extinguisher, fourteen (25%) could locate gas cut off, and three (5.4%) could locate the nearest pull station.

Conclusions: The survey results suggest that a lack of knowledge pertaining to the location of life safety equipment such as fire extinguishers and fire alarm pull stations would impair the ability of OR personnel to activate an alarm or use a fire extinguisher during an actual fire. Use of RACE-PASS may be an effective tool if combined with education and orientation to life safety equipment needed to carry put the steps, but not as a stand alone tool. The survey also indicates that anesthesia providers do not participate in educational specific to OR fires to the extent of other surgical personnel.

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Paper No: 471.00

Comparison of sevoflurane volatile induction and maintenance anesthesia and propofol-fentanyl total intravenous anesthesia for mini-invasive biliary tract surgery

Pavel Daniljuk and Nikita Trembach

Introduction: Biliary disease, complicated by obstructive jaundice is a condition requiring emergency surgery. Liver failure occurs in these patients may adversely affect the anesthesia and recovery period.

Objectives: This study was designed to compare the efficacy and safety of propofol-fentanyl total intravenous anesthesia and sevoflurane volatile induction and maintenance anesthesia in patients during the minimally invasive surgical interventions on the biliary tract.

Methods: 139 ASA III patients with biliary tract pathology, complicated with obstructive jaundice undergoing drainage of the bile duct under ultrasound (duration 42 (34–53) minutes), were allocated randomly to receive propofol-fentanyl total intravenous anesthesia (TIVA group, 67 patients) or sevoflurane volatile induction and maintenance anesthesia (VIMA group, 72 patients). Average Child-Turcotte-Pugh score did not significantly differs between the groups and corresponded to the class B. Average MELD score was comparable between two groups ($13,4 \pm 3,35$ for TIVA group vs. $14,2 \pm 2,67$ for VIMA group). Were assessed: the time of loss of consciousness, time to intubation, time of recovery of consciousness, time to extubation, time to full orientation, adverse effects of anesthesia, postoperative pain (Numeric Rating Scale).

Results: Induction time, as well as time to intubation was 1.5 times less in propofol-fentanyl anesthesia (64 ± 12 sec vs. 92 ± 24 sec ($p<0,05$) and $4,2 \pm 0,32$ min vs. $6,5 \pm 0,51$ min ($p<0,05$)). Time of recovery of consciousness ($15,4 \pm 2,5$ vs. $8,6 \pm 1,2$ ($p<0,05$)), however, as well as the time of extubation ($16,8 \pm 3,1$ min vs. $9,3 \pm 1,8$ min ($p<0,05$)) and time to full orientation ($18,9 \pm 4,2$ min vs. $11,5 \pm 2,5$ min ($p<0,05$)) in TIVA group were almost two times higher. Involuntary movements were noted in 14 patients in TIVA group (21%) vs. 5 patients in VIMA group (11%). The incidence of PONV was 7% (5 cases) in the VIMA group and 4,5% (3 cases) in TIVA group. There were no significant differences between the groups in pain score ($2,3 \pm 1,4$ in TIVA group and $2,7 \pm 1,3$ in VIMA group) and in patient satisfaction with anesthesia (90% vs. 93%).

Conclusion: The method of sevoflurane volatile induction and maintenance anesthesia compared with propofol-fentanyl total intravenous anesthesia in patients with obstructive jaundice for mini-invasive biliary tract surgery provides a significantly earlier recovery from anesthesia with a comparable incidence of adverse effects.

Paper No: 481.00

Convulsions after Ropivacaine infusion 225 mg for Psoas Compartment Block

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Introduction: Ropivacaine is a safe long lasting local anesthetic using in peripheral nerve blocks techniques. Ropivacaine side effects such as convulsions have been reported after inadvertent intravascular injection or the administration of a large dose.

Objectives: We describe grand mal convulsions occurring after administration of ropivacaine 225 mg in a healthy, young patient undergoing surgical management for deep wound trauma in right knee.
Methods: A 24-yr-old male (ASA I, 73 kg, and 176 cm) scheduled for urgent repair of deep penetrating trauma of anterior-lateral aspect of right knee. He had white medical history and he didn't smoke tobacco or drink alcohol regularly. The laboratory examinations were unremarkable. In the operating theatre, monitoring of arterial pressure, ECG, and SpO2 was instituted, and venous access was secured. The patient placed in Sims position. After disinfection and local infiltration of the skin and subcutaneous tissues, an 8 cm, 20 G, short bevel insulated needle was introduced to psoas muscle to anesthetize the lumbal plexus (according to Xapdevila et al). With a current of 0,78 mA and minimum elicitation of quadriceps muscle contractions, after a negative aspiration test, 30 ml of Ropivacaine 0,75% was injected over 1 min in 3–4 ml increments with repeated negative aspiration. 39 seconds after Ropivacaine injection, the patient suddenly developed a grand mal convulsion, and became apnoeic with extreme salivation and unconscious. Lung ventilation by face mask with 100% oxygen was started and Midazolam 5 mg given IV plus 100 mg Pentothal. The seizures stopped after 20 seconds and regular spontaneous respiration returned. Due to stable cardiovascular system, and normal arterial gas blood analysis (PH=7.39, PO2=278 mmHg, PCO2=41 mmHg, BE=−7.2) we decided to continue the operation with the patient in spontaneous breathing via Venturi mask with FiO2=0,4. The surgery lasted 32 min, the patient remained in PACU for two hours without any problem. Neurological examination performed the day after surgery did not reveal any abnormality.
Conclusions. We hypothesized that an intravascular injection of local anesthetic in this high dose produced this unwanted phenomenon. Frequently aspiration for blood didn't secure the intravascular placement of the tip of the needle. The regional anesthesiologist must be aware of early signs and symptoms of CNS intoxication (in our case report there were not) such us metallic taste, tinnitus, dizziness, anxiety. The convulsions must be treated effectively with oxygen, lung ventilation, and IV administration of Benzodiazepines.

Paper No: 485.00

An investigaton of the influence of type of anaesthesia on the patency of upper limb arteriovenous fistulae at the Toronto General Hospital

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Introduction: The establishment and maintenance of long term vascular access for dialysis of patients with end stage renal disease is associated with significant morbidity and cost [1,2]. Upper limb Arteriovenous fistula (AVF) creation is the preferred method for long term vascular access [3]. However a significant number of these fistulae fail to develop enough to allow hemodialysis [4]. It has been suggested that the use of brachial plexus blocks during AVF creation may increase the likelihood of AVF maturation [5,6].
Objective: To determine if the use of a brachial plexus block during the creation of an AVF decreases the rate of failure of AVF maturation.
Methods: Data was collected retrospectively from all patients who had primary creation of an AVF at the Toronto General Hospital between January 2007 and December 2009. Data collected included: age, gender, American Society of Anesthesiologist (ASA) score, height, weight, body mass index, presence of diabetes mellitus or peripheral vascular disease, location of AVF, type of anaesthesia and rate of fistula maturity at 6 weeks and 3 months. Data were analyzed using STATA 12.
Results: A total of 207 patients underwent AVF creation during the study period. During these procedures 111 patients received local anaesthesia and sedation, 53 received a brachial plexus block and 43 received general anaesthesia. The demographic information of the patients receiving the different anaesthetic techniques was similar. At 6 weeks the AVF patency rates for patients which had local, general and regional anaesthesia were 66.7%, 67.4% and 50.9% respectively (p=0.071). At 3 months the patency rates were 69.4%, 66% and 67.4% respectively (p=0.848). On further multi-variant analysis the type of anaesthesia had no influence on AVF patency rates.
Conclusion: The use of a brachial plexus block during AVF creation did not decrease the rate of failure of maturation of the resulting fistulas.

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Paper No: 509.00

A comparison of the influence of 2.7% sorbitol-0.54% mannitol and 5% glucose irrigating fluids on plasma serum physiology during hysteroscopic procedures

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Introduction: 2.7% sorbitol-0.54% mannitol has been selected as an alternative irrigating fluid during endoscopic surgery for its theoretical advantages. We compared the influence of 2.7% sorbitol-0.54% mannitol(Urosol, CJ pharma, Seoul, Korea) and 5% glucose as an irrigating solution for hysteroscipic myomectomy & polypectomy in the occurrence of associated complications.
Methods: Thirty patients scheduled for a hysteroscopic operation were included in a prospective randomized trial comparing 2.7% sorbitol-0.54% mannitol solution (Group S, n=15) and 5% glucose (Group G, n=15) as an irrigating fluid. We recorded the amount of the irrigating fluids, the amount of fluid intake, and the duration of the procedure. Serum sodium, chloride, potassium, glucose values, and serum osmolality were measured before (just after the induction, T1), during (when 2 L of irrigation fluid was infused, T2), and after (1 h after the end of the operation, T3) the hysteroscopic procedure.
Results: The mean volume of absorbed irrigating fluid was 185.0 ¡¾ 73.5 ml in Group G and 175.4 ¡¾ 50.5 ml in Group S. Transient hyperglycemia occurred in one patient of Group G. No differences were found in the intraoperative and postoperative levels of serum sodium, potassium, chloride, glucose and osmolality in both groups.
Conclusions: There was no clinical evidence of hyponatremic hypoosmolality in any of the patients. We found no difference between 2.7% sorbitol-0.54% mannitol and 5% glucose as an irrigating fluid for hysteroscopic procedures with mild to moderate irrigant absorption.

Paper No: 510.00

Intraocular Pressure Changes During Induction andIntubation : A Comparision of Sevoflurane and Desflurane

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Introduction: During ophthalmologic surgery, various intravenous anesthetic induction agents are used to prevent an intraocular pressure(IOP) increase. This study was designed to compare the effects of sevoflurane and desflurane on IOP in patients who were intubated.
Method: Thirty-two patients undergoing elective strabismus an entropion surgery, aged 6 to 15 years, were randomized to receive sevolfurane(Grout S, n=16) or Desflurane(Group D, n=16), IOP, mean arterial pressure(MAP), heart rate(HR), cardiac index(CI), stroke index(SI) were measured at the following time points: prior to induction(B); after the administration of the induction agents; before intubation(AI); and at 1, 3 and 5 mins after intubation(T1, T3 and T5).
Results: The IOP after induction(AI) were significantly lower than Base(B) in both groups. MAP at T1(1min after intubation) in Group S was significantly lower than Group D. HR at T1, T3 in Group S was significantly lower than Group D. CI & SI were not significantly differ between group.
Conclusion: Sevoflureane and Desflurane have no clinically significant effects on IOP, MAP, HR, CI or SI in children.

Paper No: 546.00

Non-technical skills in anesthesia providers in rwanda: an ethnography

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Introduction: Patient safety in the operating room can be jeopardized by poor team working and communication. Estimates are that 70 to 80% of anesthetic and surgical untoward events are caused by human factors.1 The Anaesthetists' Non-Technical Skills (ANTS) framework was developed to explore human factors and identify behavioural markers that influence safe practice of anesthesia.2 ANTS have been studied in European, Australian, and North American centres but there are no reports of use of this framework in developing countries.3
The operating room environment in developing countries is particularly stressful, with major clinical demands, few mentors, and scarce resources.4 In this setting, ANTS such as situational awareness, decision-making, task management and team working are especially important to prevent untoward events and improve peri-operative patient safety.

Objectives: The purpose of this qualitative study is to obtain a clear description and understanding of how ANTS are currently practiced by anesthesia providers at two tertiary care hospitals in Rwanda.
Methods: We used an ethnographic approach combining interviews and observations. Semi-structured interviews were conducted with eight non-Rwandan anesthesia providers with previous experience teaching in Rwanda. Observation of non-technical skills currently being practiced by Rwandan anesthesia providers was also undertaken. A hybrid discourse analysis approach was used to evaluate raw data from both interviews and observations. Data was coded in an iterative fashion, allowing emerging themes to inform subsequent interviews and analysis by identifying themes that emerged rather than trying to categorize behaviours according to the ANTS framework. Data collection is ongoing.
Results: Preliminary results identified three themes: situation awareness, cultural factors, and the challenges of working in a resource-poor setting, all of which have a direct impact on communication, which affects patient care. Lack of mentorship, combined with scarce resources, creates resignation to poor outcomes, which manifests as lack of recognition of clinically significant events and creates difficulty applying anesthesia theory to practice.
Anesthesia providers in Rwanda work in a culture in which formality, politeness and hierarchy are important. These influences may lead to a lack of assertiveness/discomfort with leadership, resulting in poor role definition.
Great potential for improvement has been recognized through the introduction of daily anaesthesia team meetings, which allows coordination and planning of team activities.
Conclusions: A complex relationship exists between factors influencing the safe provision of anesthesia in Rwanda. It is expected that designing a framework to address leadership and communication may lead to better team coordination and improved patient care.

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Paper No: 566.00

Hemodynamic monitoring during anesthesiological maintenance of neurosurgical operations of cranial-facial resections

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The choice of method of hemodynamic monitoring is very important during anesthesiological maintenance during cranial-facial resections,which are enduring, painful and always accompanied by massive hemorrhage. Whether to prefer invasive or non-invasive methods of monitoring to provide safety of the patient and get the most reliable data. Considering influence of a massive hemorrhage and deficiency of blood volume on a functional condition of cardiovascular system, along with the standard methods of monitoring we performed invasive monitoring of the central hemodynamic using PiCCOplus monitor at 18 ASA IY patients (16–76 y.o. with cranial-facial tumors (the 1-st group). All the patients had paraneoplastic syndrome and intoxication dew to their tumor, anaemia (Hb$<$80g/l), hypovolemia. We performed continuous monitoring of artherial blood pressure, cardiac index (CI), SV (Stroke Volume), GEDV (Global End-Diastolic Volume), dPmx, GPVRI (General Peripheral Vascular resistance Index), ITBVI (Intrathoracic blood volume index), ELWI (extra vascular lung water index), PVPI (pulmonary vascular permeability index) The continuous monitoring allowed us to influence operatively on a hemodynamic profile of the patient The application of monitor "PICCOplus" allowed us to carry out monitoring of an extra vascular lung water as sensitive criterion of adequacy of infusion therapy of massive hemorrhage. The volume of infusion during the period of thoracic-dorsal flap transplantation was 40 ml/kg? h: solutions of salts 10 ml/kg? h, solutions of hydroxyethyl starch 10 ml/kg? h, blood plasma 15 ml/kg? h, erythrocyte mass 5 ml/kg ? h. At 16 ASA IY patients (18–72 y.o. we used the non-invasive methods of registration ECG, HR, SpO2, MAP (Nihon Kohden), CI, index of contractility of a left ventricle, GPVRI («NICO Novametrix») The criteria of choice non-invasive method were the following:
-Operations without a thoracic-dorsal flap transplantation that significantly reduced hemorrhage caused by redistribution of a blood volume;
-The initial safe status of the patient (absence of expressed anemia, accompanying cardiovascular pathology);
-Possibility of catheterisation of the veins of the lower extremities together with vena cava superior (if d-dimer

<500 ng/ml). At comparison reliability and the clinical importance of invasive and non-invasive techniques of intraoperational hemodynamic monitoring in 2 groups of patients, it is possible to assert that both methods objectively demonstrate a condition of peripheric vascular tonus and left ventricle function. The invasive monitoring is recomended in operations with thoracic-dorsal flap transplantation because of a massive denervation and deficiency blood volume because of an external hemorrhage and redistribution of blood volume.

Paper No: 570.00

Peripheral versus central routes for central venous cannulation – a review of complications

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Introduction: Peripherally-inserted central catheters (PICC lines) are gradually replacing conventionally inserted tunnelled or non-tunnelled central venous catheters in many clinical settings. The increasing use of PICC lines has, however, raised clinical concerns. Despite lack of convincing scientific evidence PICC lines are often preferred to conventional central venous lines based on presumed cost and time benefits and fewer mechanical complications.
Objectives: We undertook a systematic review of comparative studies assessing complications of peripherally and centrally inserted central venous catheters in various patient categories.
Methods: Twelve studies, reporting 3116 PICC lines, 2193 non-tunnelled and 819 tunnelled or venous access port centrally inserted lines, were included. Nine studies compared PICCs with non-tunnelled central lines and five studies compared PICCs with tunnelled central lines or venous access ports. Study settings and definitions of clinical outcome were found to differ considerably between the studies, and only one study was randomised Furthermore, outcome data was not assessed blindly, and in five studies the numbers of PICC and centrally placed lines were highly unequal (ratio of two or more).
Results: Radiographic malpositioning of the catheter tip (as reported in five studies reflecting 432 peripherally and 641 centrally placed lines) occurred more often after PICC placement (9.3 % vs. 3.4 %; OR 3.76 [CI 1.75–8.07]; P=0.0007). Thrombophlebitis (seven studies based on 24 038 peripherally and 62 302 centrally placed line indwelling days) was reported more often with PICC lines (78 vs. 7.5 per 10 000 indwelling days; OR 5.82 [CI 2.37–14.2]; P=0.0001). Catheter dysfunction (six studies reflecting 18 199 peripherally and 58 972 centrally placed line indwelling days) occurred more often during PICC use (78 vs. 14 per 10 000 indwelling days; OR 6.02 [CI 1.10–32.9]; P=0.04). There was no difference in catheter-associated infection rate (nine studies reflecting 68 048 peripherally and 76 277 centrally placed line indwelling days) between PICC and central lines (22 vs. 17 per 10 000 indwelling days; OR 0.83 [CI 0.28–2.50]; P=0.74).
Conclusions: There are few comparative studies of complications associated with the use of peripherally vs. centrally placed lines, and all studies but one are at risk of selection bias due to non-randomised design. We found that the risks of tip malpositioning, thrombophlebitis and catheter dysfunction favour clinical use of centrally placed catheters instead of PICC lines, and that the two catheter types do not differ with respect to catheter-related infection rates.*
References *a modified version of the work already accepted for publication as an original article in Anaesthesia.

Paper No: 576.00

Universal introducer for placement of various types of laryngeal airways

Igor Idov and Pavel Rylov

Introduction: During introducing of the laryngeal airway entrance of cuff tip into true glottis should be avoided. The artificial airway should also not be placed opposite epiglottis or arytenoid cartilage. For this purpose the tip of duct cuff should be pressed to the posterior wall of the pharynx during introduction. Introduction of any laryngeal airway, except ProSeal, is performed with physician's hand. Under this condition hygiene of the patient's oral cavity is compromised; if inflatable cuff is bent, mucous membrane of oral cavity and stomatopharynx may be injured; it is difficult to control the position of inflatable cuff in a large stomatopharynx; there is a risk of physician's fingers injury during mask introducing; it could be difficult for an inexperienced anesthesiologist.
Objectives: Development of a universal introducer for placement of various types of laryngeal airways for general anesthesia during planned outpatient ophthalmic surgery.
Methods: A comparative estimation of supraglottic airways efficacy has been performed in ophthalmic patients during following operations: vitrectomy, scleral buckling, reconstructive operations on the anterior segment of the eye, squint surgery, evisceration, enucleation. Two types of disposable and reusable airways have been studied LMA-CLASSIC and LMA – Flexible. Two groups of patients, 20 persons in each have been formed. There were females/males: 73% / 27%, aged from 1 to 70 years.
Results: We have developed an original introducer for LMA-CLASSIC and LMA–Flexible airways. Holding introducer with attached laryngeal airway in one hand, the physician opens patient's mouth with the other hand, moving the lower jaw upwards and forward. When the mouth is opened, the inflatable cuff is placed into it, and then anesthesiologist moves the cuff in

one motion according to the anatomy of the hard palate and posterior wall of the laryngopharynx, using the introducer. Physical force should not be applied. Insertion of the airway into the hypopharyngeal space is performed until feeling of resistance. Before removing the introducer, the physician holds air tube slightly with the other hand, slightly forcing the mask down to prevent the inflatable cuff from coming out. At this step laryngeal airway takes the correct position, at this time tip of the cuff is located near the upper esophageal sphincter.

Conclusion: An universal introducer which enables introduction of laryngeal airways, guarantees correct position of airway in the laryngopharynx at first attempt, and excludes possibility of injury both to the patient and the physician has been developed and used in practice.

Paper No: 586.00

Incidence of bloodstream infection: prospective comparison of real-time ultrasound-guided catheterisation versus the landmark technique in short-term central venous catheters

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Introduction: The risk of catheter related bloodstream infection (CR-BSI) is clearly related to the conditions of insertion icu (1). The emergent ultrasound-guided technique offers advantages respect to the classical landmark technique: improves the success rate, reduces the number of attempts and the risk of arterial puncture, haematoma, haemothorax and pneumothorax (2). Unfortunately, this technique requires and additional equipment and manipulation.

Objectives: Our hypothesis is that ultrasound-guided technique doesn't increase the CR-BSI incidence in short-term central venous catherters (CVC).

Methods: A prospective non randomized study was conducted from May 2010 to May 2011 over all the central venous catheters (internal jugular, subclavian or femoral) inserted by the Anaesthesiology Department in surgical patients. The insertion technique was the standard according with the department protocols (3). The data recorded were: demographics of patients, eco-guided or landmark technique, anatomical place of insertion, theater or intensive care unit placement and CR-BSI incidence. The sample size was obtained from the CR-BSI incidence in a previous study in our centre (3) 365 and 170 patients for landmark and ultrasound-guided group respectively. For the statistical analysis a Fisher's exact test and Chi square was maid.

Results: A total of 546 catheters were included in the database. The landmark technique was the most frequent selected in 67.2% (n=367) of catheters vs 32.8% (n=179). In theatre were inserted 85.7% (n= 468) and 14.1% (n=77) in the Post-operative Intensive Care Unit. Cannulation of the internal jugular vein was chosen in 69.8%, the subclavian in 29.9% and femoral in 0.4%. The mean permanence time for the catheters was 6.6 days (SD 5.8). There were no significant differences in demographics, anatomical place of canulation, place of insertion (theatre or Intensive Care Unit) and days of permanence between the ultrasound-guided group and landmark method group. The incidence of CR-BSI was 1.3% (7 cases). There were no significant differences in the CR-BSI incidence between the ultrasound group (2 cases of 179) and the landmark group (5 cases of 367) ($p > 0.05$).

Conclusions: Ultrasound-guided technique does not increase CR-BRI risk in short-term CVC despite increased manipulation during placement. We strongly recommend the routine use of ultrasound for the central venous catheter placement in surgical and critical care patients because there is a significant reduction in mechanical complications (4)(5)(6)(2) without incidence over the infectious complications. Randomized and bigger studies would be necessary to establish security in the high risk infection catheters (long-term, parenteral nutrition, high manipulation).

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Paper No: 587.00

Total pancreatectomy and liver multiple metastases resection of a neuroendocrine tumor: anesthetic and surgical peri operative management

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Introduction: Neuroendocrine tumors are, slow-growing tumors, mainly localized in the gastrointestinal and pulmonary systems. Their diagnosis is suggested by the presence of specific hormones and only confirmed by histological andimmuno-histochemical studies. Primary pancreatic neuroendocrine (NE) tumors are usually functional and associated with syndrome of hormonal secretion and metastases. Pancreatic and liver surgeries for these tumors are challenging for anesthesia.
Objectives:

(1) To report a case of a 61 year old female with "carcinoid sindrome" due to a pancreatic neuroendocrine tumor.
(2) To critically review the diagnosis difficulties, the complex medical and surgical treatment, the anesthetic management and potential postoperative complications.

Methods: The patient was operated form a papailar thyroid tumor and had a insulin requiring diabetes. She presents glositis, epigastric pain, diarrhea and ulcerous hounds in legs since two years before the diagnosis. CT scan couldńt confirm the tumor at the beginning of the disease and MNR showed a pancreatic tumor with liver multiple metastasis. Serum hormones as cathecolamines, somatostatine and calcitonine were on normal range. Pre-operative biopsy was necessary to confirm the diagnosis of (NE) tumor. After Lutecium treatment that was not effective (confirmed with Octreotide Imaging Study). The patient went to surgery to a radical treatment of the disease. At that moment the patient present severe malnutrition. A total pancreatectomy with the surgical resection of 8 mayor metastases was performed. Alcoholization and radio frequency of other 22 metastases was performed with ultrasound guided. The surgery was Anesthetic technique was combined epidural and general anesthesia with local anesthetics and morphine was performed. Low PVC strategy was carefully managed because of the renal failure risk of this particular patient.
Results: The patient had a good inmediate postoperative outcome with hyperglycemic episodes that required insulin. The pain relief was excellent in the postoperative period and no respiratory restrictions were registry. A complication with the epidural catheter (respiratory depression) was presented possibly related to a mistake in drug administration. The problem was solved without squeal. Postoperative coagulopathy was transient and the catheter could be safety removed at the 4th postoperative day. Chylous ascites: Treated with total parenteral nutrition was a letal complication at 2 monts postoperative.
Conclusions: Neuroendocrine tumors are rare and diagnosis in usually delayed. Multidisciplinary treatment with oncologist and surgeons, as well as an adequate anesthetic management might improve surgical management and long term outcome of this patients.

Paper No: 589.00

Cricoid pressure is effective in occluding the esophageal entrance in anesthetized and paralyzed morbidly obese patients

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Introduction / Objectives: The current study was designed to assess the patency of the esophageal entrance during the application of cricoid pressure (CP) in anesthetized and paralyzed morbidly obese patients.
Methods: After IRB approval, written informed consent was obtained from 59 morbidly obese patients (BMI 40 - 70 Kg / m2), who were to undergo laparoscopic gastric bypass surgery. There were no contraindications to the use of the rapid sequence induction / intubation technique (RSII). After preoxygenation, RSII was performed and manual ventilation was avoided. CP was applied in all patients by the same anesthesiologist. Cricoid force was standardized by reproducing 40 N on a weighing scale. After complete relaxation and while CP was maintained, a second operator performed direct laryngoscopy using Glidescope® video laryngoscope. Orotracheal intubation was performed and mechanical ventilation was initiated. While CP was maintained, a lubricated gastric tube (GT; size 20 Fr) was advanced under direct vision to the entrance of the esophagus. A successful insertion was recorded as a patent esophagus (ineffective CP), whereas an unsuccessful insertion was recorded as a nonpatent esophagus (effective CP). The same procedure was then repeated using GT size 36 Fr. The view of the glottis and esophageal entrance was video-recorded. A third operator assessed the position of the esophageal entrance relative to the glottic opening during CP before and after GT insertion.
Results: During CP, it was not possible to insert either size GT into the esophagus of any patient. After release of CP, either size GT could be inserted freely into the esophagus. The esophagus was lateral to the glottis in 78% of patients (71% left; 7% right) before intubation. After intubation, it was lateral to the glottis in 81% of patients (78% left; 3% right), but did not change after GT placement.
Conclusions: The current study provides direct visual evidence that CP is effective in compressing the esophageal entrance in morbidly obese patients. The closure of the

lumen was further demonstrated by the inability to pass a GT into the esophagus. Our results in morbidly obese patients are in agreement with the findings of an MRI study in normal volunteers1 demonstrating that the position of the esophagus is irrelevant to the efficacy of CP.

Reference

1 Rice *et al. Anesth Analg* 2009; **109**: 1546–52

Paper No: 590.00

Efficacy of cricoid pressure in occluding the esophageal entrance in normal subjects: a glidescope® study

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Introduction / Objectives: This investigation was designed to assess the patency of the esophageal entrance during cricoid pressure (CP) in anesthetized, and paralyzed normal patients using the Glidescope® video laryngoscope (GVL).
Methods: After IRB approval, written informed consents were obtained from thirty patients (15 men and 15 women; ASA physical status 1 and 2) undergoing surgery requiring tracheal intubation. Following preoxygenation, anesthesia was induced with propofol, fentanyl and cisatracurium. Mask ventilation was initiated using FIO2>0.9 and CP was applied in all patients by the same anesthesiologist. Cricoid force was standardized by reproducing 40 N on a weighing scale prior to each application. Patients who required release of CP to allow mask ventilation were excluded. After adequate relaxation was obtained, a second operator performed laryngoscopy using GVL. A third operator, blinded as to whether CP was being applied, attempted to insert lubricated gastric tubes (GTs), size 20 and 36 Fr, applied sequentially, into the esophagus. A successful insertion was recorded as a patent esophagus (ineffective CP), and an unsuccessful insertion was recorded as nonpatent esophagus (effective CP). The view of the glottis and the esophageal entrance was video-recorded throughout the procedure. The position of the esophageal entrance relative to the glottic opening was assessed during CP before and after GT insertion.
Results: Manual ventilation was accomplished in all patients after placement of an oropharyngeal airway, while CP was applied and thus no patients were excluded from the study. Advancement of the GT into the esophageal entrance could not be accomplished during CP in any patient. Following release of CP, it was possible to introduce the GT with ease into the esophagus. The esophageal entrance was visualized left of the glottis in 60%, to the right in 10%, and in the middle posterior to the glottis in 30% of patients.
Conclusion: The current findings provide direct visual evidence that the esophageal entrance is completely compressed by CP. The closure of the lumen was further demonstrated by the inability to introduce a GT into the esophagus during CP. Our findings are in agreement with those of Rice et al. 1 obtained in volunteers using MRI, demonstrating that the position of the esophagus was irrelevant to the efficacy of the CP maneuver.

Reference

1 Rice et al. *Anesth Analg* 2009; **109**: 1546–52

Paper No: 595.00

The groote schuur emergency surgery triage system- a tool for improving patient care

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Introduction: Groote Schuur Hospital's emergency surgical service operates on more than 5000 cases per year. Lack of capacity in dealing with current patient loads has resulted in instances of adverse outcomes due to delays in patients' access to the emergency operating room (EOR). Reasons for this relate primarily to demand outstripping supply, although avoidable issues, such as a lack of timely pre-operative assessment by busy on-call anaesthesiologists and the prioritising of cases by time and date of booking, rather than patient condition, were important contributors.
Objectives: To introduce a method of triage for all booked emergency surgical cases and improve pre-operative assessment by the anaesthesiology team responsible for their care, the aim being to ensure that the sickest patients have prioritised access to EOR.
Methods: Policy guidelines for the triage of all emergency surgical cases were promulgated in July 2009 using the Groote Schuur Emergency Surgery Triage System (GSESTS) developed exclusively for this purpose.
The GSESTS is modelled on the Cape Triage Score[1] colour coded categorisations. Emergency surgical cases are triaged by the admitting surgeon using the GSESTS as a guide. Additionally, all emergency cases are evaluated by a dedicated Triage Resident Anaesthesiologist (TRA) to ensure that all patients are adequately optimised prior to arrival in the EOR. Patients' surgical, demographic and triage colour code data are displayed in real-time on an electronic monitor outside the EOR. Cases whose suggested time-to-EOR expires are re-triaged to the same, more acute or less acute colour code after re-assessment by the TRA and surgeon concerned. The key performance indicator measured is the percentage of cases done within the time period indicated by their initial triage code (time of booking to arrival in EOR) [2].
Results: 7703 emergency cases were booked and 6,310 completed through the EOR (at an average of 15 cases per 24 hours) over a period of 418 days. Relevant data is shown in the table below.
Suggested and actual performance indicators for each triage colour code are shown (in and out of parentheses

respectively) in the Key Performance Indicator column. No triage category met its expected targets.
Conclusion: The GSESTS tool has been embraced by all personnel involved in the care of emergency surgical patients. EOR capacity (personnel, operating time) will need to expand in order to meet and exceed key performance targets.

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Paper No: 647.00

Sugammadex as reversal agent in fast-track cardiovascular surgery

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Background and Goal of Study: Sugammadex revert neuromuscular blockade (NMB) by a mechanism that remains aside the complex physiology of the neuromuscular junction and body temperature. The hypothermia, use of some drugs such as magnesium, sevofluorane or renal failure due to hypoperfusion during cardiopulmonary bypass (CBP) make the neuromuscular blocking drugs (NMBD) elimination half life longer, with residual paralysis. The aim of the present study is to evaluate the outcome, useful and efficacy of sugammadex for fast-track extubation technique in the rocuronium-induced moderate blockade in cardiac surgery.
Methods: Consecutive patients undergoing elective cardiac surgery with CBP were enrolled. A moderately NMB (one or two responses of the TOF) was achieved with an infusion of rocuronium (0,1-0,2 mg/kg/h), using acceleromyography in the posterior tibial nerve to evaluate the level of blockade by means of Tof-Watch® and recording all the data "in silico" in a PC. At the end of surgery the NMB was reversed with Sugammadex 2 mg/kg. Rocuronium onset time, intubation conditions, surgery and CBP time, central and skin temperature, total rocuronium and sugammadex doses, time from start administration sugammadex to recovery a TOF >0.7, 0.8 and 0.9, and from sugammadex to extubation were measured. Data as mean (standard deviation).
Results: 6 patients, 4/2 (M/F), age 63 (12) years, weight 67 (14) kg, onset time 88 (27) sec, surgery time 244(39)min, CBP time 78 (47) min, Total rocuronium 89 (31) mg, sugammadex 139(34) mg. Recovery TOF $>0.7=94$ (33) sec, TOF $>0.8=119(37)$ sec, TOF $>0.9=144(55)$ sec, time from sugammadex to extubation 222 (132) min.
Conclusions. the use of NMBDs and neuromuscular monitoring is necessary in cardiac surgery. Sugammadex rapidly and effectively reversed moderate rocuronium-induced blockade in cardiac surgery. According to our scanty population results, the sugammadex security and efficacy can be useful when the "Fast Track" anaesthetic technique is carried out.

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Paper No: 653.00

Adherence to Strict Guidelines Eliminates Respiratory Complications in Obstructive Sleep Apnea Patients

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Introduction: The high incidence of respiratory complications in the perioperative management of patients undergoing correction of obstructive sleep apnea (OSA) is a major concern for anesthesiologists.1 In a quality management study in our institution, we found an incidence of 3.9% (5 out of 139 patients) between 1997 and 1999.2 In 2000, specific guidelines were adopted, which decreased the complication rate to 0.54% over a 7 year-period between 2000 and 2007 (11 out of 2,037 patients). 2
Objectives: This follow-up study was conducted to determine whether stricter guidelines could result in further reduction in respiratory complications.
Methods: After IRB approval for conversion of quality management data to research purposes, we compiled the respiratory complications in patients undergoing surgery for OSA for the last two years (2008 & 2009) while utilizing guidelines adopted in 2000 and implementing additional guidelines. The guidelines adopted from 2000 were: placing the patient in a ramped position before intubation, awake fiberoptic intubation in some patients, having various intubation devices available, control of blood pressure and heart rate before and after extubation, selective use of nasopharyngeal airways, following strict extubation criteria, extubation over an airway exchange catheter in select patients, extubation in semi-sitting position, and reinstitution of CPAP in the PACU whenever possible. The new guidelines were: more frequent use of awake fiberoptic intubation, liberal use of doxapram hydrochloride (1-2 mg/kg) before extubation, closer supervision of the resident staff, and tracheal extubation only in the presence of supervising faculty.

Results: In 789 patients, there were no respiratory complications during intubation or in the intraoperative period. Airway obstruction occurred in three patients (0.38%) soon after tracheal extubation; in one of these patients, negative pressure pulmonary edema with severe hypoxemia developed. All three patients required reintubation and ventilatory support, but were successfully extubated within 1-3 hours. Examination of these three cases revealed that our new guidelines were not completely followed; two extubations occurred in the absence of supervising faculty and one extubation occurred because of a miscommunication between the faculty and the resident.
Conclusions: Implementation and adherence to strict guidelines eliminated complications related to intubation and intraoperative management in patients undergoing surgery for correction of OSA. It is also possible that adherence to strict guidelines would eliminate postextubation airway obstruction as well.

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Paper No: 654.00

Anaesthetic "preflight" checklist

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Introduction: There is an ever increasing emphasis being placed on the reporting and prevention of Healthcare Incidents. The introduction of the WHO Surgical Site Checklist has proved its worth world wide in lives saved. In the UK, development of an Anaesthetic e-form (2009) in conjunction with the National Patient Safety Agency (NPSA), Royal College of Anaesthetists and Association of Anaesthetists Great Britain and Ireland has highlighted incidents in the area of Anaesthesia. Their pilot study reported the type of incidents most frequently reported were: medical device/ equipment (26%), respiratory problem (13%) and medication (12%).
An extract from a WHO press release dated 14 January 2009 states "Checklist helps reduce surgical complications, deaths" - "These findings have implications beyond surgery, suggesting that checklists could increase the safety and reliability of care in numerous medical fields," Dr Gawande said. "The checklists must be short, extremely simple, and carefully tested in the real world. But in specialties ranging from cardiac care to paediatric care, they could become as essential in daily medicine as the stethoscope."
Objectives: With the above in mind the Authors have designed an Anaesthetic checklist to be used in conjunction with the WHO form offering a simple structured approach to anaesthetic safety just prior to Induction.
Methods: All Anaesthetic requirements were identified through literature search and expert opinion. Initially two versions of the checklist were developed, one being a pictorial flow chart and the other a more traditional list. Over two periods of three months each were used in every day practice to assess their usefulness.
Results: By opinion, in practice the list format proved to be more useful. Being a tick list also had the advantage that other members of the anaesthetic teams could tell at a glance if everything was checked and ready promoting better team working.
Discussion: The aim of this project was to produce a simple tool to aid the Anaesthetist and anaesthetic support worker in ensuring that all the required equipment, airway adjuncts and medications were ready and available prior to Induction. Thomassen et al (3) demonstrated the usefulness of a checklist in such a clinical environment. Following the introduction of the Anaesthetic Pre-flight Checklist empirical evidence from users give an indication of improved patient safety
Conclusions: Having developed a good working tool it is hoped to move from a purely empirical approach and undertake a more rigorous statistical study on the introduction of this checklist

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Paper No: 701.00

Self-positioning, induction of anaesthesia and placement of a laryngeal mask in the prone position before spine surgery

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Introduction: Traditionally anaesthesia to surgery performed in the prone position is induced with the patient in the supine position. The patient is then moved to the prone position. This method is time consuming, labor intensive and may postoperatively have a relative high incidence of pain from the muscles or joints or peripheral neuropathy.
Objectives: To test the hypothesis that self-positioning in the prone position followed by induction of anaesthesia and placement of a laryngeal mask would be a superior way (faster, fewer complications) to anaesthetize these patients,

Methods: A randomized study comprising patients scheduled for spine surgery (estimated to be <2 hours) was carried out. A total of 140 patients were randomized into two groups. In group LM the patients positioned themselves in the prone position, whereafter anaesthestia was induced and a Laryngeal mask (Proseal®) was placed. In group T anaesthesia was induced and the patient was intubated in the supine position whereafter the patient was placed in the prone position. In both groups the anaesthesia was induced with propofol and remifentanil in standardized doses and muscular relaxation was obtained by rocuronium.
Results: The 2 groups were comparable as regards age, sex and BMI and time of surgery. Four patients were excluded (in group T one patient who had to be intubated with a videolaryngoscope, in group LM one patient who had to be operated again for a haematoma and two patients in whom it was impossible to obtain a tight laryngeal mask). The time from start of induction to the patient was ready for surgery was 6 min faster in the LM group than in the T group ($p<0.01$) and the total time from arrival to the surgical theater to the patient was ready to go to the recovery room was 109 min and 133 min (median values), in the 2 groups respectively ($p=0.013$). The time spent in the recovery room was identical for the two groups. Although not statistically significant there was a strong tendency towards fewer complications in the LM group (sore throat, hoarseness, pain from muscles and joints, paraesthesia).
Conclusions: Induction of anaesthesia and placement of a laryngeal mask with the patient positioned in the prone position reduces the induction - to - incision time and the time spent in the operating theater. The self-positioning allows the patient to settle in a comfortable position, which probably reduces complications related to the placement on the operating table.

Paper No: 721.00

Developing a pediatric pain community of practice among seven hospitals in northeastern thailand

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Objectives: Pain is recognized as a global health problem by the World Health Organization, causing enormous human, economic, and social burden. Children are a vulnerable population, and are even more at risk in under-resourced environments. Pain affects children's immediate health and causes longterm disability and suffering. We describe development of a community of practice among seven Thai hospitals to establish basic knowledge and consistent care standards.
Methods: Action research methodology using Kitson's knowledge translation "PARIHS" framework (evidence, context, facilitation), incorporated a network of nurse facilitators, online discussion board, educational resources, workshops, and administrative support. Knowledge translation involves Thai and Canadian trainees and faculty. Social network analysis will inform the KT process and identify knowledge seekers, knowledge brokers, and knowledge donors. Exit interviews and surveys will identify changes in knowledge, attitudes, and practice.
Results: Baseline data highlighted undertreatment of children's pain and barriers to practice change. During the first 2.5 years of the project, all 7 hospitals established pediatric pain management policies, organized internal workshops for health professionals, and regularly assess and record children's pain in the patient chart. Several are extending assessment to adult units. Five hospitals have developed guidelines or protocols and have regular audits/quality management. Increased frequency of pain reporting by professionals, parents, and patients has been documented. Physicians show greater awareness of children's pain and pain treatment orders have improved to match standards of care. Parents express greater satisfaction with pain management and report improved communication with the healthcare staff. Individual hospitals and nursing units have developed innovative local techniques to improve pain care.
Conclusions: This program has resulted in the application of existing knowledge to changing practice, and serves as an evaluation of the PARIHS framework and a sustainable model for knowledge generation by and translation to clinicians in developing and developed countries.

Paper No: 728.00

Displacement of orotracheal tube after pneumoperitoneum in patients undergoing bariatric surgery

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Introduction: Laparoscopic bariatric surgery is considered a relatively safe method for the treatment of refractory obesity; nevertheless risks still remain. This procedure is performed under general anesthesia and orotracheal intubation. It also requires pneumoperitoneum that promotes an increase in the intraabdominal pressure. Pneumoperitoneum may cause cephalad displacement of the diaphragm and carina and move the endotracheal tube (ETT) to a bronchial mainstem. Endobronchial intubation in morbidly obese patients may cause serious complications and must be prevented.
Objectives: The aim of this study was to investigate the extent of displacement of the ETT produced by changes in intraabdominal pressure in obese patients undergoing laparoscopic bariatric surgery.
Methods: After obtain written consent, 22 adult patients submitted to bariatric surgery were enrolled in the study. Patients

with abnormal tracheal anatomy or impaired pulmonary auscultation were excluded. After orotracheal intubation according to institutiońs routine and positioning of patients in 30° head up position, adequate ventilation of both hemithoraxes was confirmed by chest auscultation. Fiberbronchoscopy was used to check for unintentional endobronchial intubation and to estimate ETT tip-Carina distance. Procedures were repeated after pneumoperitoneum of 15 mmHg. Paired-samples t test was used to compare distances.
Results: Mean Body Mass Index was 38,7 ± 4,7 kg.m-2. There were no cases of endobronchial intubation. Mean deep of orotracheal tube (in relation to superior dental arch) was 21,8 ± 0,7 cm. There was a significant reduction in ETT tip-Carina distance from 2.8 ± 0.7 cm before pneumoperitoneum to 2,4 ± 0,7 cm after pneumoperitoneum ($p<0,001$). Mean difference was -0,4 ± 0,5 cm (Confidence Interval 95%: -0,2 to -0,7 cm); minimum 0,1 cm and maximum -2,2 cm. Conclusions There were significant changes in ETT tip-Carina distance after pneumoperitoneum insufflation. We recommend repetition of chest auscultation after pneumoperitoneum and check constantly for signs of endobronchial intubation in obese patients undergoing laparoscopic bariatric surgery.

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Paper No: 746.00

The Utility of the Upper Lip Bite Test for Safe Tracheal Intubation Training of Novice Residents

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Introduction: The upper lip bite test (ULBT) is the method to predict difficult laryngoscopy easily and rapidly. So far, there are few data investigating the benefit of applying this method to endotracheal intubation training of novice residents.
Objectives: To evaluate whether the ULBT score contributes to the safety of tracheal intubation training of novice residents in our institute.
Methods: Thirty-five cases undergoing elective surgery assigned to the novice residents, who receive two-months-training program of our anaesthesia department, were evaluated with the ULBT preoperatively. Whether each resident succeeded in endotracheal intubation was recorded, respectively.
Results: As the first-month-grader, no resident experienced successful intubation on the cases of two or more of ULBT score. In the second month, residents could facilitate tracheal intubation successfully in all the cases of ULBT=1 (success rate was 100%) and in the considerable cases of ULBT=2 (success rate was 72.7%). However, the success rate remained low in the cases of ULBT=3 (success rate was 25.0%).
Conclusions: The present results may indicate that the cases of ULBT=1 are suitable to uneventful training of endotracheal intubation for the second-month-grader residents. Therefore, we concluded that the ULBT score might be useful for establishing safe tracheal intubation training of novice residents.

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Paper No: 774.00

Chemical meningitis after sub arachnoid block for elective lower segment caesarian section

Surendra Singh

A 28 yr 2nd gravida with 38+ week pregnancy came to the hospital for management. She showed foetal macrosomia with a floating head. A Caesarian section was planned. After 06 hr of fasting she was posted for a lower segment Caesarian section. After a surgical scrub the operator wore gown and gloves. Patient's lower back was prepared with povidone-iodine solution and using all aseptic precautions a subarachnoid block was instituted with 12 mg of bupivacaine and 25 mcg of fentanyl using a 25 swg Quinke type spinal needle in the L3-L4 interspace in the 1st attempt. The surgery was uneventful and a 4 kg female baby was delivered. The mother developed a persistent headache from the immediate post-operative period which was non responsive to opioids or NSAIDs. Despite prophylactic management of PDPH the headache intensity increased and the patient became restless. CSF biochemistry and cytology showed increased proteins (115 mg/dL and high WBC count (250/mm3) with normal glucose. CSF film after Gram and AFB staining did not reveal any organism. Her anti-nuclear antibody was negative. Culture of CSF for 48 hr did not show growth of microorganisms. A neurology consultation was sought. A CT scan revealed generalized cerebral oedema. On the basis of biochemical and haematological markers and a negative CSF culture a diagnosis of chemical meningitis was made. The patient was managed conservatively. She was discharged from the hospital on the 10th post-operative day. One month follow up showed that she had recovered fully without any neurological deficit.
Outcome: Though our aseptic precautions were adequate, a proper and thorough wiping of a wide area of the back after part preparation and a change of sterile gloves after

prep have been included in our standard operating procedures for attempting a sub-arachnoid block.

Paper No: 783.00

Nice and warm: did nice guidance on peri-operative hypothermia make any difference?

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Introduction: National Institute for Clinical Excellence (NICE) released guidance on inadvertent perioperative hypothermia in April 2008.
Objectives: To find out whether our hospital complied with NICE guidance and improved patient safety
Methods: In 2008 we did an audit before the implementation of NICE guidance in our hospital followed by an annual audit in 2009 and 2010. We audited 100 consecutive patients in September of each year. Results:Audit done in 2008 showed poor compliance. We developed local implementation programme and subsequent audit in 2009 showed significant improvement in practice. Sustained education and having separate Pre-Operative Preparation Area (POPPA) further improved compliance in 2010.
Audit Results: 2008 2009 2010 Temperature recorded within 2 hours before arrival to theatre 54 84 86 Patient came in with at least one sheet and two blankets or a duvet 32 52 84 Temp. checked before induction of anaesthesia 10 79 92 Is the operation expected to last longer than 30 minutes? 92 86 78 Intra-op 1. Bair hugger used 82 88 85 2. warmed IV fluids used 31 51 44 Temp. monitored during the operation 11 77 92 Temperature at the end of operation 11 77 92 Recovery Patient transferred to recovery with at least one sheet and two blankets or a duvet 22 66 89 Temp. on entry to recovery 92 96 99 Bair hugger used in recovery 21 11 9 Warmed IV fluids used in recovery 0 0 0 Temp. on discharge from recovery 40 75 80.
Conclusions: Hypothermia can result in delayed recovery, impaired wound healing, increased morbidity, costs and reduced theatre efficiency. We used simple, inexpensive device ClinitrendTM, which allows continuous non invasive measurement of temperature throughout the perioperative period. This increased the compliance with monitoring. In 2010 we developed Pre-operative preparation Area (POPPA) in the theatre complex where we stocked up blankets and duvets and patients were provided with above if needed. There was also trend towards moving minor & intermediate procedures to elective day case centre. Staff awareness, training and distribution of audit results year on year also helped in improving the compliance.

Reference

1 www.nice.org.uk/CG065

Paper No: 791.00

Duration and Severity of Delirium are Independent Predictors for Postoperative Cognitive Dysfunction

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Introduction: Especially elderly patients experience after general anaesthesia changes in mental function, namely postoperative delirium (POD) and postoperative cognitive dysfunction (POCD). These complications are associated with increased morbidity and mortality, functional decline, increased use of health care services and associated costs [1-3]. The aim of this prospective study was to investigate whether these entities of postoperative cognitive decline are associated with each other or not.
Methods: After approval by the local institutional review board and obtaining informed consent, patients aged $\geq$60 years with MMSE $\geq$ 24 undergoing elective non-cardiac surgery in general anaesthesia underwent preoperatively computer-based cognitive tests (CANTAB test battery). Screening of POD was performed twice daily until hospital discharge by using DSM –IV criteria and Nu-DESC screening scores. Thereafter, on postoperative day 7 and 90 all patients were cognitively tested again. Statistics: Chi-square test, Mann-Whitney U-test, logistic regression analysis.
Results: Table 1 shows the incidences of POD and POCD of the 1175 patients that have been tested in this study. Univariable analysis demonstrated a significant correlation between POD in the recovery room and POD on the ward ($p < 0.001$*), as well as between POD (day 0-7) and POCD on postoperative day 7 ($p=0.015$) and 90 ($p=0.016$), respectively (fig1). After adjusting for age, ASA physical status, MMSE, use of benzodiazepines preoperatively, duration and site of surgery as well as preoperative fasting, duration of delirium was an independent predictor for developing POCD on postoperative day 7 (1.189, 95% CI 1.04-1.36; $p=0.011$) and 90 (1.205, 95% CI 1.01-1.44; $p=0.041$); fig.2), respectively. Additionally, the severity of POD was found to be an independent predictor for POCD on postoperative day 7 (1.475, 95% CI 1.11-1.96; p=0,007) and 90 (1.792, 95% CI 1.14-2.81; $p=0.011$; fig 3).
Conclusion: Our results show that both duration and severity of delirium are independently associated with postoperative cognitive dysfunction.

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Paper No: 800.00

Tracheal intubation without muscle relaxants for elective surgery requiring general anesthesia: our experience

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Recent advances in drugs and acquisitions, and anesthesia equipment has led anesthesiologists to acquire and refine tecniques for tracheal intubation in patient safety and the practice of anesthesia. New opioids and short-acting hypnotic drugs have facilitated this process, where muscle relaxants are contraindicated or are not needed for surgical procedures or other.In this regard, in our unit of anesthesia we have adopted a tecnique for tracheal intubation without muscle relaxants, with the aim of teaching both medical personnel and paramedics, in addition to the standard techniques. Selected 120 patients belonging to ASA I-III and Mallampati class I or II, undergoing surgical procedures in general surgery, urology,orthopedics and ofthalmology were evaluated for tracheal intubation without muscle relaxants after a careful preoperative anesthetic assessment. All patients monitored for vital signs and preoxygenated in the operating room and premedicated with atropine, ranitidine, dexamethasone and paracetamol i.v. After 2-3 minutes administration of sufentanil (0.15mcg/kg), the patient was encouraged to breath with oxygen spontaneously for about 7-8 minutes. Later, vital signs monitoring and administration of propofol in bolus (2.5mg/kg) and mask ventilation for about 30-60 seconds, followed by laryngoscopy and endotracheal intubation with aid of laryngoscope Mac Coy or glidescope. Evaluated Scheller intubation scoring criteria for various airway conditions and responses (mask ventilation, jaw mobility, exposure, cord position, movement and cough and with or without additional drugs given) and also were recorded values of Sato2, blood pressure and heart rate before induction, after induction and after intubation. To our experience excellent intubation conditions were obtained in 70% of patients and good intubation conditions in 25% of patients and inadequate conditions in 5% of patients.There were no significant haemodynamic alterations comparing to traditional techniques. We conclude that tracheal intubation is possible without muscle relaxants with the method described above as other methods published in literature. Tracheal intubation without muscle relaxants should not substitute standard tecniques and methods of intubation but can be a goog tool for patient safety and management of anesthesia practice where muscle relaxants are contraindicated or associated with undesirable side effects or not needed for certain surgical procedures and can included in the teaching methods for medical personnel and paramedics.

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Paper No: 809.00

Safe working environment in imri ot (intra-operative magnetic resonance imaging operating theatre) – it must be achieved

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Introduction: The superiority of iMRI has led to safer, cost effective neurosurgery. Advantages include neuro-navigational accuracy by compensating for brain shift and intra-operative monitoring of extent of tumor excision. Our institution's iMRI OT incorporates a 1.5 Tesla MRI with a rotating surgical table (see photo). Despite safety protocols to ensure staff and patient safety within the hostile MRI environment, incidents still occurred.
Objectives: Documenting incidents, especially safety breaches in iMRI OT and learning from these.
Methods: After IRB approval, this prospective non-anonymous observational study was started in February 2009 till April 2010. Neuroanaesthetists in iMRI OT recorded any incident that happened or could potentially result in adverse outcome relating to safety and functioning of iMRI OT. Patient / anaesthetic details, event description and

consequences were documented for subsequent analysis and follow up. The data was analyzed using Microsoft Excel spreadsheet.

Results: 166 iMRI OT cases were done in study period. 35 incidents were reported. 14 incidents (40%) resulted from human errors and were avoidable.

Equipment problems Number Anaesthetic monitors and machine malfunction e.g. non invasive blood pressure, temperature probe, pulse oximetry probe 9 MRI scanner (unable to load films, MRI computer system failure) problems 4 Operating table (trolley hit 'door open' button during MRI scanning, unable to adjust table height), operating microscope malfunctioning 4.

Equipment errors resulted in 7 instances of delayed or cancelled operations and 1 operation was transferred to a conventional theatre.

Human errors Number Failure to complete checklist resulting in:

- RFID tag (patient identity) brought into iMRI OT 5
- Undetected auditory implant 1

  Safety pin attached to nasal airway, metal strip on facemask brought into iMRI OT 1
  Safety checklist not done 1
- Cortical stimulation wire and nerve stimulator not removed 1 Handphone brought in by staff 1 New staff assigned without prior training 2 Others e.g. syringe pump wrongly programmed 2

These errors were picked up on time, with patients unharmed.

Patient Factors Number Severe hypotension 2 Cardiac arrest 1 Further patient workup required 1

These incidents were unavoidable and operations cancelled.

Conclusions: Ongoing incident-reporting helps with quality control. Majority of the unsafe incidents resulted from lack of oversight. The inconvenience due to equipment errors can be minimized with more stringent checks / maintenance. No incident, however minor is tolerated in the hostile iMRI environment. Our institution strives for zero-tolerance through training and utmost vigilance.

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Paper No: 822.00

Bilateral pneumothoraces and thyroid storm in undiagnosed 'graves' disease following posterior fusion scoliosis repair

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Introduction: Association of Graves'disease and scoliosis is rare. Bilateral pneumothoraces is a rare complication of posterior approach scoliosis repair. Thyroid storm is a life-threatening complication of untreated or partially treated Graves'. It rarely occurs as the first presentation of Graves'. Stress is a known precipitant.

Objectives and Methods: Case report documenting occurrence of bilateral pneumothoraces and thyroid storm in undiagnosed Graves' disease following scoliosis surgery. MEDLINE search using the words thyroid storm, Graves' disease bilateral pneumothoraces and scoliosis repair.

Results: A 14 year old girl with progressive idiopathic scoliosis underwent posterior spinal fusion with pedicle screws. At the end of surgery she developed bilateral tension pnuemothoraces, which were promptly drained. In the first 24 hours she also developed thyroid storm diagnosed clinically and biochemically.On the pre-operative anaesthetic assessment she had had a slight resting tachycardia with no thyroid symptoms and signs or cardiac pathology. She was treated successfully and discharged from the hospital.

Discussion: Pneumothorax, particularly bilateral pneumothorces, as a complication of posterior approach scoliosis repair with pedicle screws is very rare; only one case report was found in the literature. This patient's thin body habitus was probably a contributing factor. The combined stresses of surgery and tension pneumothoraces precipitated the thyroid storm in a patient with untreated Graves's disease. The resting tachycardia diagnosed on the preoperative anaesthetic examination was the only sign of hyperthyroidism, in an otherwise healthy patient. In light of the rare occurrence of Graves' disease in adolescents`(incidence 3/1000), it was reasonable to proceed with the surgery.

Conclusions: Bilateral pneumothoraces following posterior pedicle screw scoliosis repair though rare can occur. Chest X-rays should be done early in the post-operative period to avoid life threatening pneumothoraces. A resting tachycardia, even in the absence of thyroid symptomatology should prompt thorough evaluation of a cause in patients undergoing major electivesurgery.

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Paper No: 834.00

Evidence-based perioperative drug therapy: getting evidence into policy & practice

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Background: Decision-making in the perioperative setting is high-stakes and fast-paced. Evidence synthesis needs to be "fit for purpose" and achievable at this pace of decision-making. For new drugs, uncertainty remains whether the added benefits outweigh the risks and costs. Unbiased evidence is needed to answer: Can it work? Does it work? Is it worth it? The Know4Go Framework closes the loop between evidence and appropriate action by making explicit in one place the benefit/risk, costs, SLEEPERs (social, legal, environmental, ethical, political, entrepreneurial, research, and stickiness/ reversibility factors), and opportunity cost (4Go), to explicitly inform it should be a "go" or a "no-go" decision.
Objectives: This study is to create timely and contextualized evidence-based reviews for high-stakes perioperative drug therapies. It translates evidence to definitive decisions using the Know4Go Framework to make explicit the benefit/risk, cost, SLEEPERs, and forgone opportunities (4Go). Develop supporting tools, training, and capacity. Evaluate the clinical and economic impact. Methods: With institutional support, this program identified High Stakes Drugs for systematic review and/or meta-analysis based on likely clinical, economic, risk impact. Form multidisciplinary groups to collaborate in the evidence interpretation and synthesis. Identify the relevant clinical evidence for the four domains in the Know4Go Framework: 1) to contextualize the benefit/risk, calculate benefit index based on local patient characteristics and number likely to be helped or harmed (NNTB), 2) Contextualize the local cost implications, estimate local budget impact, 3) Perform SLEEPERs Assessment (radial plot), 4) Make the Informed Decision with the "decision ball" plot on the trade-off table (benefit index vs budget impact).
Results: Using Know4Go, we have advised on more than $6m worth of drug therapies at local institution (Table 1 and figure 1). It reversed the trend from rising drug costs in the 2 years pre- to a steep decline post-implementation. The projected savings due from Know4Go is $1.1 million Conclusions: Know4Go provided a transparent process for translating evidence to definitive clinical decision-making. It improved transparency, collaboration, knowledge translation, and reduced confusion between contrary evidence and opinions. Know4Go had an important local economic impact, saving 2-3-fold more dollars than it cost to fund the program.

Paper No: 876.00

No-cost TSE "MASK" prevents severe desaturation in elderly patients under deep propofol sedation during upper gi endoscopy

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Introduction: Patients undergoing upper GI endoscopy (EGD) routinely receive IV sedation and O2 via nasal cannula (NC). NC becomes ineffective in delivering O2 when the mouth is kept open by a bite-block. Deep sedation or airway obstruction may cause severe O2 desaturation, especially in elderly patients with cardiopulmonary diseases. A plastic sheet has been shown to improve oxygenation by transforming NC to a technically simple and effective face tent (TSE "Mask") in propofol-sedated patients during EGD in a prospective study (1).
Objectives: This technique has been used in the Endoscopy Suite. We examined its effectiveness in improving oxygenation and preventing severe desaturation in elderly patients during EGD.
Methods: Retrospective review of elderly patients ($>$70 years old) who underwent EGD, EUS, PEG or ERCP identified 2 groups. Group 1 (NC, n=13) received only NC O2. Group 2 (TM, n=51) received NC O2 and a TSE "Mask" using a clean clear plastic specimen bag to cover patient's eyes, nose and mouth(1-3). Patients received NC O2 (3-5 l/min or higher as needed) and only IV propofol. Student t-test and Chi Square test were used for analysis. A p value <0.05 was considered as significant. (Mean $\pm$ S.D).
Results: There were no differences in age (NC: 81 $\pm$ 6 years; TM: 79 $\pm$ 6), BMI (NC: 25.5 $\pm$ 5.8 kg/m2; TM: 26.0 $\pm$ 4.5), ASA Physical Status (NC: 2.6 $\pm$ 0.7; TM: 2.7 $\pm$ 0.7), room air (RA) O2 Sat (NC: 97 $\pm$ 3%; TM: 97 $\pm$ 2%), propofol dose (147 $\pm$ 65

mcg/kg/min; TM: 160 ± 61), duration (NC: 43 ± 22 min; TM: 41 ± 21) and the highest NC O2 flow (NC: 5.6 ± 2.7 l/min; TM: 4.9 ± 1.2). There were significant differences in FiO2 (NC: 0.25 ± 0.06; TM: 0.50 ± 0.12), O2 Sat after 5 min pre-oxygenation (NC: 99 ± 1%; TM: 100 ± 1%), the lowest O2 Sat (NC: 92 ± 8%; TM: 97 ± 4%), severe desaturation (O2 Sat <85%) (NC: 4/13; TM: 1/51) and bag-mask ventilation (NC: 1/13; TM: 0/51). In 4 NC patients, NC was converted to TSE "Mask" due to severe desaturation (O2 Sat: 82 ± 3%). Their O2 Sat was improved to 86 ± 4%, 92 ± 4% and 96 ± 3% at 5 min intervals.

Discussion: These data show that pre-oxygenation with TSE "Mask" prior to deep propofol sedation for EGD improves oxygenation, prevents severe desaturation and reduces the need for assisted bag-mask ventilation in elderly patients. It increases O2 delivery without raising NC O2 flow. Conclusion: This face tent takes only a few seconds to prepare at no cost and may improve patient safety. It also reduces procedure interruptions and should be routinely used for pre-oxygenation prior to sedation during EGD.

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Paper No: 880.00

Is the lack of formal training in anaesthetic practice a factor in drug and communication errors?

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Introduction: Medical errors are a global health care issue. In anaesthesia drug errors and those relating to communication are among the top five patient safety problems reported. Specifically in anaesthetics mistakes may be more serious than those of doctors in other specialities.

Objectives: But how does training prepare the anaesthetist and work towards minimising this potential problem? We sought to find out if UK anaesthetic trainees were exposed to any form of training regarding how to minimise errors in anaesthetic practice. We choose to focus on medication errors encountered in everyday practice. We specifically looked at communication during handover, given that this relies on clear communication for transfer of complex information regarding patient care.

Method: We conducted a survey of all London anaesthetic trainees to establish what formal training they had received at any stage in their career. The survey was sent to encompass all anaesthetic trainees within the London Deanery.

Results: We found that 70% of trainees had received no formal training in drug preparation, safe administration of drugs, labelling or drug dilution. Amongst these trainees, 73% had already had a drug related error and 60% felt that they would have liked to receive training. With regards to communication, 100% of trainee had received no formal training on how to handover effectively. Notably, 50% of trainees have already encountered a serious incident relating to patient safety secondary to poor communication within their career. No departmental policy was in effect within 80% of anaesthetic departments and therefore 90% of handovers occurring without a minimum data set.

Conclusions: It is evident that errors in anaesthetic practice are frequent and are not being tackled by the current UK training practices. At present in the UK, the Royal College Of Anaesthetists training curriculum does not formally include a training module on standards of effective communication or the safe administration of drugs. We propose that an effective solution would be to introduce a patient safety module into the UK training curriculum.

Paper No: 883.00

ESIFOE, an anesthesia syndrome to be unveiled in Buenos Aires

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Introduction: Gastrointestinal endoscopy and patients' requests for general anesthesia have resulted in a new anesthesia syndrome: ESIFOE, Empty Stomach on Induction, Full stomach On Eduction.

Objectives: Establish ESIFOE as an anesthesia syndrome. Methods: Clinical observation and electronic literature review.

Results: This syndrome was first observed in two elective cases. The first was a hypertensive, 25 year old patient, who after an acute pancreatitis developed a large pancreatic pseudocyst. He insisted on general anesthesia for his procedure. The second case was a systemic lupus erythematosus, end-stage renal disease (ESRD), hypertensive patient, suffering from chronic pancreatitis, who developed a large pancreatic pseudocyst. This patient, too, demanded general anesthesia for her endoscopic procedure. Both patients received general endotracheal anesthesia with propofol for induction and a mixture of propofol and remifentanil for maintenance. The 25 year old patient was paralyzed with rocuronium and the ESRD patient with cisatracurium during induction and maintenance. The interventional procedures were ultrasound guided cyst gastrostomy with placement of double tail stents into the cyst cavity for both subjects. The gastroenterologists in both cases noted that a large amount of fluid entered the stomach from the pseudocyst cavitiy. Although the gastroenterologists emptied the stomach cavities as much as possible, in our first patient the fluid flowed freely from the stomach into the mouth even after the gastroscope had been withdrawn. The endotracheal tubes were only removed after the patients'

paralysis had been completely reversed with neostigmine and glycopyrrolate, and the subjects were totally awake, thus assuring airway protection. Both patients had an uncomplicated postoperative period. A literature review through Google and Pubmed failed to encounter any description of this proposed syndrome.

Discussion: The risks of general anesthesia in patients with full stomachs are well known. In our elective, empty stomach cases, the risks appeared during eduction. The placement of draining stents –from the cystic cavity into the stomach– caused the stomach to continue filling even after the removal of the suctioning gastroscope. Thus, we were extubating patients whose stomachs were empty on induction but full at eduction, and so their airways had to be preserved. These important findings constitute a new group of related events, a syndrome, depicted by the acronym ESIFOE.

Conclusion: ESIFOE is a new anesthesia syndrome that involves: empty stomach on induction, full stomach on eduction. It will be unveiled in Buenos Aires.

Paper No: 885.00

Perioperative predictors of in-hospital mortality in patients undergoing aortic valve replacement

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Introduction: Aortic valve replacement (AVR) is the most common cardiac valve operation1-2. Nevertheless, evidence for predictors of mortality in AVR appears scant.

Objective: The study aim was to identify perioperative predictors of in-hospital mortality in patients undergoing AVR.

Methods: After obtaining approval from the Research and Ethics committee on the use of the perioperative database, we studied consecutive adult patients having undergone an AVR between January 2004 and May 2009. We collected demographic, hemodynamic, and other perioperative data until hospital discharge. The exclusion criteria were AVR combined to mitral valve surgery, Bentall or aortic surgery, Ross or Ross-Konno procedure, Homograft valve and tricuspid valve surgery. T-test and Chi-square or Fisher exact test were used to compare continuous and categorical variables to identify predictors of mortality with alpha=0.05.

Results: A total of 190 patients were included. The mean age was 71 $\pm$ 11 years old with 59% male. The in-hospital mortality rate was 7.9%. On univariable analysis, preoperative NYHA functional class (III - IV vs I - II, p=0.017), perioperative myocardial infarction (p=0.001), left ventricular (LV) systolic dysfunction (p<0.001), oliguric acute renal failure (p=0.012), need for reintubation (p=0.001) and sepsis (p=0.018) were associated with mortality. However, only preoperative congestive heart failure (CHF) (odds ratio [OR]: 0.085; 95% confidence interval [CI]: 0.012 - 0.611; p=0.014), perioperative LV systolic dysfunction (OR: 0.001; 95%CI: 0.005-0.235; p=0.001) and need for reintubation (OR: 0.117; 95%CI: 0.15-1.02; p=0.04) remained as independent predictors after multivariate analysis.

Conclusion: Preoperative CHF, perioperative LV systolic dysfunction, as well as the need to reinitiate mechanical ventilation appear as strong predictors of in-hospital mortality among patients undergoing AVR.

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Paper No: 896.00

An Analysis of an Acute Pain Service Database

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Introduction: Pain is under-recognized and under treated. In the postoperative period up to 75% of patients have reported moderate to severe pain. It was often thought that even if pain was not good for the patient, at least it did no harm. It is now recognized that under treatment of severe acute pain can have a major harmful physiological and psychological effects on all organ systems. More recently, there have been significant improvements of acute pain. This is largely due to the introduction of new techniques for the delivery of analgesic drugs, such as patient-controlled analgesia and epidural analgesia, and the formation of an acute pain service team, involving a dedicated team of health care providers. A database for the acute pain service of Hamilton Health Sciences was created in 2002, which cares for patients in 3 locations viz. Hamilton General, Henderson, and McMaster University Medical Center. At present there are 26 000 patients entered into the database, with 8216 enrolled at McMaster. For the purpose of this audit, I will only review the McMaster data. The Acute Pain Service team, on a daily basis at McMaster, comprises of 1 Pain Nurses and an anesthesiologist. They visit each patient enrolled into the pain service daily, and make suggestions regarding pain management. In addition, information is collected and entered into the database by the pain nurse. There are 143 variables in the database, including demographic data, type of pain therapy, adequacy of analgesia and side effects.

Research Questions: A priori questions were:

(1) Pain scores at rest and with activity
(2) Complication rates
(3) What are the predictors for uncontrolled pain?

(4) What are the risk factors for critical incidents?
(5) What are the predictors for side effects?

Statistical Analysis: Analysis was conducted using SPSS 16.0.
Results: 7713 patients were included for analysis. The main pain modality was PCA 70% and epidurals in 29%. The mean pain score (VAS 10) was 1.3 at rest and 3.0 with activity. Incidence of side effects was 26.9% with nausea, vomiting and pruritis comprising the largest percentage. Factors predicting 'uncontrolled' pain include ASA 1 and 2, surgery of the thorax, upper abdomen, spine surgery and patients on PCA. Factors influencing critical incidents include emergency surgery, and ASA 1 and 2 patients.
Conclusion: This is a comprehensive database with information collected prospectively and large numbers of patients enrolled. Predictive factors elucidated, have influenced the management of patients by the Acute Pain Service and encouraged education sessions with the ward nursing staff at McMaster University Medical Center.

Paper No: 903.00

State of patient's hydration before elective surgeries in general anesthesia (correlation of guidelines and clinical practice)

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Introduction: Good hydration state has a positive influence on hemodynamic stability 1 and thus on the course of general anesthesia. Positive effect of hydration on cognitive function in postoperative course is proven 2. This is important mainly with seniors. Hydration has hereby direct influence on patient́s safety during hospitalization. Last intake of 200ml of clear fluid is recommended 2 hours before anesthesia 3,4,5. These recommendations have been incorporated into the Masaryk Hospital guidelines in recent years. Medical staff has been instructed on these guidelines repeatedly.
Objectives: To perform investigation in the Masaryk Hospital clinical practice in order to map hydration state of the patients undergoing elective surgeries in general anesthesia. To identify deviations from the guidelines and analyze their causes.
Methods: On weekdays in a randomly chosen week (in winter 2010) all adult patients undergoing general anesthesia (n=192) due to elective surgical procedure were asked: 1) whether they had been educated, 2) when they drank for the last time and 3) whether they were thirsty. Time of the questioning was recorded to determine the interval of oral hydration restriction and correlate it with thirst signaling insufficient hydration. None of the patients had any health problem preventing him from following given recommendation.
Results: Recorded interval of hydration restriction in 192 respondents (90 men and 102 women) was in the range 2 – 18 hours (less than 6 hours 23%, 6 – 12hours 41%, more than 12 hours 36%). Instruction on drinking regime had received 174 patients, only 18 had not. Approximately two thirds of the patients reported thirst. The sense of thirst increased with the length of fluid restriction and was more distinct with patients older than 70 years old.
Conclusions: The results have shown that significant proportion of the patients is not in a satisfactory hydration condition before elective surgery even though they are formally well educated and the medical staff has apparent knowledge of the issue.
Individual cases were analyzed and most frequent causes were found. They are primarily bad time management when the planned time of the surgery is changed with no influence on a hydration management. Patients often choose from the mixed information they get e.g. from the family, general practitioner, in the hospital the one he or she prefers (he doesńt drink because of fear of wetting himself...) and doesńt discuss the problem any further.
Our findings are challenge to improve hydration care in the Masaryk Hospital (we have reinforced our inspectiton acitivities in the year 2011). They also might inspire other medical institutions to perform their own investigations in this field.

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Paper No: 953.00

A study to determine whether carbon polymer warming blankets can reduce the incidence of inadvertent peri-operative hypothermia (iph) during day-case surgery

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Introduction: The prevention of inadvertent perioperative hypothermia (IPH) has recently become acknowledged as

an important means of improving patient care and clinical outcome (1).

Studies have shown that the forced-air warming is an effective means of preventing IPH during major surgery (2). However, they are single use and therefore can be costly in both environmental and financial terms.

Recent advances in medical technology have led to the development of novel patient-warming devices, such as electric carbon polymer blankets. Small studies suggest that they possess similar effectiveness to forced-air warming and with the added advantage that they are non-disposable and potentially cheaper.

Objectives: The primary aim of this study was to assess the effectiveness of the HotDog patient warming system, a carbon polymer warming blanket, in reducing IPH in Daycase surgical patients.

Methods: This study was a prospective, randomized, controlled trial. The study was powered to show a 50% reduction in the incidence of IPH requiring 35 patients in each arm. It was an observational study and was conducted in a single institution. Each participant gave written consent pre-operatively. In the intervention arm, the warming blanket was applied on entry to the operating-room and removed at the end of the operation. The control arm received standard treatment for these procedures (no active warming).

Results: We present an interim analysis of 40 patients: 20 in the intervention arm and 20 controls. The average operating time was 37 minutes. 93% of participants were normothermic pre-induction and all patients had a temperature $\geq$36 degC post-induction (3). 50% of patients were randomly allocated to the HotDog group. At knife to skin 5% HotDog and 9% non-intervention were hypothermic. At the end of the operation only 10% of patients in the intervention group were hypothermic and 22.5% in the non-intervention group. 23% of these remained hypothermic until discharge from PACU i.e. 7.5% of all patients in the trial. Unexpectedly, of the patients discharged from PACU hypothermic (lowest 35.6degC) 80% were in the HotDog intervention group.

Conclusions: There is a significant incidence of IPH among patients undergoing short surgical procedures. The HotDog carbon polymer blanket appears to be effective at reducing its incidence intraoperatively but, paradoxically, its use seems to increase its incidence in the PACU. We would therefore recommend that patients undergoing short operations are warmed not just intraoperatively but through into the PACU until discharge to the ward.

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Paper No: 957.00

Postoperative Bladder Catheterization after General Surgery: Which Anesthesia Technique is Better, Spinal or General Anesthesia?

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Introduction: It is believed that postoperative bladder catheterization after spinal anesthesia is more common than after general anesthesia. There is no literature supporting this 'feeling' among anesthesiologists. We performed a study comparing the incidence of postoperative bladder catheterization after general and spinal anesthesia in general surgical patients.

Objective: To determine the difference in incidence of postoperative bladder catheterization after spinal or general anesthesia in general surgical patients in which both anesthesia techniques could be used. The threshold for bladder catheterization was set at a fixed bladder volume of 500 ml.

Methods: Observational controlled trial conducted in 909 surgical patients in a teaching hospital in the Netherlands. Patients were operated under general or spinal anesthesia without an indwelling urinary catheter. The decision which anesthesia technique was used (spinal or general anesthesia) was made by the patient at the preanesthesia assessment clinic. All postoperative bladder volumes were measured by ultrasound. Postoperative bladder catheterization happened when the bladder volume measurement exceeded the threshold of 500 ml and spontaneous voiding was impossible. The primary endpoint was the incidence of postoperative bladder catheterization. Secondary endpoints were the influence of gender and type of surgery.

Results: The overall incidence of catheterization was 11.8% (107/909 patients). The incidence of catheterization after spinal anesthesia was 24.4% (70/287) and after general anesthesia 5.9% (37/622). The incidence in male patients was 14.4% (56/401) and in female patients was 9.6% (49/508). The incidence of catheterization was the highest after hernial groin repair under spinal anesthesia (55% (15/27)).

Conclusion: The chance to be catheterized after spinal anesthesia is about 4 times higher than after general anesthesia. Male patients are more often catheterized than female patients. The highest risk for postoperative bladder catheterization is after hernial groin repair surgery in male patients under spinal anesthesia. Anesthesiologists may use this result in deciding which anesthesia technique to choose for if both anesthesia techniques – general or spinal - are applicable.

Paper No: 966.00

Intraoperative oesophageal doppler during emergency abdominal surgery

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Introduction: Most of the classical devices of monitoring for diagnosis and assessment of hypovolemia, as the Swan-Ganz catheter or central venous catheter are bloody, nonexempt of complications and, in some cases, of questioned benefit. Occult hypovolemia leading to poor organ perfusion is thought to be a major factor in determining postoperative morbidity after major surgery. Hypovolemia will be even more severe in most emergency cases, so intravenous fluid resuscitation is a vital part of care for the sick laparotomy patient. Minimally invasive devices have been emerging over the past few years as an effective alternative to classic monitoring tools. The best characterized in terms of outcome studies is oesophageal Doppler flowmetry.
Objective: To assess the efficacy of the oesophageal Doppler in the decrease of perioperative complications in patients undergoing emergency abdominal surgery.
Methods: A total of 250 patients undergoing emergency abdominal surgery were recruited into a blind prospective randomized controlled trial. Patients were allocated to conventional haemodynamic management or to an algorithm guided by oesophageal Doppler. The control group received perioperative fluid at the discretion of the anaesthetist, whereas the protocol group received additional solutions boluses based on Doppler assessment.
Results: Groups were similar with respect to demographics, surgical procedures, and baseline hemodynamic variables. Patients in the protocol group were given a significantly greater volume of intravenous crystalloid than control group (mean 2657 vs 1944 ml, P=0.00, Mann–Whitney U-test). The complications in protocol/control groups respectively were: Cardiovascular (32/61, p =0,00 Chi- square), respiratory (36/58, p =004 Chi-square), infection of injury (4/15, p =0,009 Chi-square) and renal insufficiency (8/21, p= 0,01 Chi-square). Duration of hospital stay in the protocol group was 8.18 days vs 10.88 days for control group (p=0,00 Mann-Whitney U Test). Duration of intensive care unit stay in the protocol group was 1.12 days vs 1.69 days for control group (p=0,00 Mann-Whitney U Test).
Discussion: Several studies have shown that accurate prediction of hemodynamic status by clinical assessment alone only occurs in half the cases. Blood pressure and heart rate may thus underestimate fluid requeriments during anesthesia. Patients in the protocol group were given a greater volume of i.v. crystalloid solution using oesophageal Doppler.
Conclusion: For patients undergoing emergency abdominal surgery the intraoperative oesophageal Doppler monitoring leads to a shorter hospital and intensive care unit stay and decreased major postoperative complications.

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Paper No: 978.00

Preoperative testing for minimal risk patients undergoing elective surgery was inconsistent with the institution guideline

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Introduction: Few preanesthetic investigation are considered necessary for no underlying disease patients (ASA I) undergoing elective surgery. The institutional guideline for testing has been established to facilitate appropriate requests and to minimize the costs.
Objectives: The primary objective of this study was to determine compliance of preoperative investigation guideline for ASA I patients undergoing elective surgery. Secondary objectives included: to identify common inappropriate investigations among age groups and to estimate unnecessary expenditure.
Methods: All ASA I patients, aged 18-65 underwent elective surgery over a one year period (June 2010- May 2011) were identified. One hundred and twenty five medical records of each month were randomly selected. Indicated tests were recommended according to patients' age groups: a complete blood count (CBC) for aged 18-45, a CBC, chest radiograph, electrocardiography for aged 46-60, and a CBC, chest radiograph, electrocardiography, electrolytes, blood glucose, blood urea nitrogen (BUN) and creatinine (Cr) for aged 61-65. Compliance laboratory test was defined as the laboratory testing followed the institutional guideline whereas non-compliance laboratory testing was classified for either over- or under-investigations.
Results: The medical records of 1,496 patients underwent elective orthopedics, gynecology, eye, ear nose throat and general surgery were reviewed. There were 948 (63.4%)

patients aged 18-45, 499 (33.4%) patients aged 46-60 and 49 (3.2%) patients aged 61-65. Complied preoperative testing was performed only 12.1% (95% CI, 10.5- 13.9). Over-investigations tended to be performed in younger patients. BUN and Cr were the two most commons over-investigation (n=975), followed by electrolytes (n=893) and chest radiograph (n=759). Under-investigations could not alter surgical schedules in the study patients. Overall, over-investigation preoperative investigation accounted for about 18,000$ during the study period.

Discussion: Preoperative testing for ASA I patients is rarely important. Normal results did not affect neither perioperative morbidity nor mortality. In contrast, abnormal test which may detect in 5% of healthy patients may cause psychological and financial burden and unnecessary rescheduling of surgery. Many preoperative guidelines recommend few tests in this group of patient. However, non-compliance tests have been reported in many studies. Our report was also demonstrated over-investigations were very common. There was only 12.1% followed the institution guideline. The situation caused huge unnecessary expenditure.

Conclusion: The utilization of the preoperative guideline should be more emphasized in order to decrease unnecessary tests and financial burden.

Paper No: 979.00

Retrograde topicalization of the supraglottis by translaryngeal injection of lidocaine timed with forceful exhalation

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Introduction: The primary requirement for successful awake fibreoptic intubation is the effective topicalization of the airway.1 In cases of supraglottic tumours which impede local anaesthetic from reaching the larynx, adequate airway topicalization cannot be achieved.

Objectives: We present a case of a patient with a large supraglottic carcinoma which obstructed the glottic opening, thus preventing topicalization from above the vocal cords. We describe a novel technique to topicalize the supraglottic area by retrograde injection of local anaesthetic through a translaryngeal catheter, timed with the patient's forceful exhalation.

Methods: A 72-year-old female with a supraglottic carcinoma presented for tumour debulking. She had a 6-month history of progressive hoarseness and dysphagia. CT scan showed a large exophytic right supraglottic mass measuring 2.6 x 3.2 x 2.8 cm. This extensive tumour involved the right aryepiglottic fold, extended across the midline, and invaded the laryngeal surface of the epiglottis. In preparation for awake orotracheal fibreoptic intubation, topicalization was performed by spraying the oral, pharyngeal and laryngeal mucosae with nebulized 4% lidocaine, followed by the "spray- as- you- go" technique through the bronchoscope. Because the supraglottic mass impeded access to the glottic area, adequate intubating conditions could not be obtained. Furthermore, as both cornua of the hyoid bones were invaded by tumour, bilateral superior laryngeal nerve blocks2 could not be performed. A 20 gauge angiocatheter connected to a 5 ml syringe filled with 4% lidocaine was inserted through the cricothyroid membrane and its intraluminal position confirmed by aspiration of air.3 To achieve anaesthesia below the glottis, the catheter was directed away from the vocal cords and 3 ml of lidocaine were injected at end of exhalation. To achieve retrograde topicalization of the supraglottis, the catheter was then redirected towards the vocal cords. Injection of 4 ml of lidocaine was timed with the patient's forceful exhalation to entrain lidocaine upwards across the vocal cords to the supraglottic area.

Results: This retrograde flow of lidocaine across the vocal cords was reminiscent of a geyser's eruption, spraying lidocaine from below to reach the supraglottic area. After waiting 5 minutes for the local anaesthetic to take effect, adequate topicalization was achieved and optimal intubation conditions allowed successful intubation. Surgery proceeded uneventfully. The patient was discharged home the following day in good condition.

Conclusions: This relatively simple technique for airway topicalization transformed an impossible awake intubation into a successful one and spared the patient the need for an awake tracheostomy.

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Paper No: 1008.0

A risky complication of monitored anesthesia care

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Introduction: Conscious sedation under monitored anesthesia care is used over a wide range of operations. However, the most common side effects include respiratory depression

and apnea.1) Recently, we experienced tracheal aspiration of a small surgical sponge under conscious sedation using the total intravenous anesthesia(TIVA) technique.
Objectives & Methods: A 68 year old woman was admitted for surgery to address nasolacrimal duct obstruction. We infused propofol and remifentanil through Orchestra TM. Her BIS values were maintained around 80. She breathed spontaneously and responded properly. After 30 minutes. She intermittently stopped snore, and took a slow deep breath. 45 minutes later, she suddenly became apneic despite our stimuli. Even though we lifted her chin, her saturation decreased to 75% after one deep breath and her BIS value fell to 60. Operation was discontinued, started mask ventilation with 100% O2. Her saturation increased rapidly to 95%, and the BIS value returned 80. Intubation was performed because the patient was unresponsive. A lost sponge was noticed, but it might be swallowed rather than aspirated because of maintaining stable vital signs and 100% oxygen saturation.
Results: At the end the operation, we evaluated the chest X-ray, Finally we found that the radio-opaque thread dangling from the sponge was placed in the midline of the trachea. Since she had already extubated, removal of foreign material by fiberoptic bronchoscopy was planned. As soon as the patient started to inhale the cold nebulized drug, she coughed violently and the sponge emerged.
Conclusion: Choice of anesthetic agents does not appear to be significant.2) Anesthesiologists need attention to maintaining adequate sedation levels to prevent adverse events. Also, surgeons need to ensure the surgical materials cautiously.

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Paper No: 1039.0

Perianaesthetic dental injury in children - Beware the unknown

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Introduction: Current literature emphasises dental injury associated with anaesthesia in the adult population. There is a paucity of literature in the paediatric population. Dental injury is one of the most common adverse events and serious morbidity can result from aspiration of an avulsed tooth. This risk is increased in the paediatric population with a high incidence of loose and easily dislodged primary teeth.
Objectives: To study the incidence, outcomes and risk factors for perianaesthetic dental injury following 80,811 anaesthetics from 2000 to June 2011. A review of the effectiveness of existing measures will allow recommendations, to prevent this recurrent problem, to be made.
Methods: A retrospective search of our departmental audit database for incidents of dental injury was conducted. Analysis of the adverse events from case notes and audit forms filled by anaesthetists at the time of care was done.
Results: Our Incidence of dental injury is 42 out of 80,811 anaesthetics (0.05%).64% of patients with dental injury were intubated and 92% had a Grade 1 larynx. In 24 patients with a negative or inaccurate dental history, 6 patients required radiographs to detect missing avulsed teeth not found clinically. Of these 6, ingestion of teeth occurred in 2. In a patient, the avulsed tooth was only noted when he coughed it out upon emergence. Of the 12 patients with subluxed or luxated teeth, 5 were detected in recovery. Of these 5 patients, 1 required reimplantation of his permanent tooth and another required tooth removal. In 16 patients with an accurate dental history, all 12 with subluxations or luxations were detected intraoperatively. In 2 patients, the missing teeth were found at the end of surgery and removed. 2 patients required radiographs of which ingestion of the tooth was found in 1.
Conclusion: Our Incidence of dental injury of 0.05 % is comparable to that in adults. In our pilot survey of 239 children aged 5 to 12 years, the incidence of loose teeth or gaps is 28%. Our current measures of having a dental diagram in the anaesthetic chart, multiple levels of dental screening and education have contributed to the incidence. Our recommendations include precise identification of loose teeth and gaps, examination of dentition and better communication. Early knowledge of a missing tooth will minimise aspiration risks, irradiation and patient anxiety. It is imperative that we are aware of the perils that lurk.

Paper No: 1049.0

Anaesthetic emergencies preparedness in a paediatric anaesthetic department

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Introduction: Anaesthetic emergencies constitute a small but significant cause of morbidity and mortality in the paediatric population. In order to achieve successful outcome in these challenging situations, a coordinated team response with appropriate knowledge, including location of emergency drugs and equipments, and skills are essential.
Objectives: This study aims to assess the preparedness for anaesthetic emergencies in a paediatric anaesthetic department in a teaching hospital, in two main areas:

(1) To identify the immediate availability of the relevant emergency drugs and equipment in all areas where paediatric anaesthesia is delivered
(2) To assess the awareness and knowledge of staff on the relevant emergency drugs and equipment, and their location

Methods: The study examined the preparedness of five anaesthetic emergency situations: -Malignant hyperpyrexia crisis (MH)-Anaphylaxis-Difficult airway-Severe local anaesthetic toxicity-Paediatric cardiac arrest
It was performed in two parallel parts:

(1) Using a proforma, the author visited each paediatric anaesthetic area and directly assessed the availability of relevant emergency drugs and equipment
(2) The author conducted face-to-face interview with anaesthetic and nursing staff using a pre-written questionnaire

Results: Paediatric anaesthesia, both elective and non-elective, is provided in 6 locations, including 3 isolated locations at the endoscopy suite, dental outpatient department and magnetic resonance imaging suite. In all locations, there were provision of emergency drugs and equipment for anaphylaxis and cardiac arrest. However, only 2 locations had dedicated paediatric cardiac arrest trolley. Treatment for MH is immediately available in 4 locations and only 2 locations stocked Intralipid 20% for severe local anaesthetic toxicity. Difficult airway equipment is available in 3 locations. The author interviewed 25 staff, including 6 consultant paediatric anaesthetists, 7 paediatric anaesthetic trainees, 4 theatre nursing staff and 8 operating department practitioners (OPDs). Majority of anaesthetic trainees (60–80%) did not know the location of the relevant emergency drugs and equipment. None of the nursing staff was aware of the immediate management of MH. Consultant paediatric anaesthetists and ODPs are most knowledgeable about the location of emergency drugs and equipment (67-100%).
Conclusions: This study reiterates that anaesthesia is provided in the diverse and often disparate environments. It identifies important areas for improvement, in particular the involvement of theatre nursing staff as part of the team in anaesthetic emergencies. Multidisciplinary simulation training in anaesthetic emergencies may be beneficial for better patient safety.

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Paper No: 1050.0

Evaluation of trans-dermal nicotine patch for attenuation of venous cannulation pain

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Introduction: Venous cannulation pain, the first painful experience by the patient in the operation room is often discomforting and stressful for both patients and health care professionals. Various pharmacological and non-pharmacological measures have been tried to minimize venous cannulation pain with variable success.
Objective: The present study was planned to evaluate the efficacy of trans-dermal nicotine patch for attenuating venous cannulation pain.
Methods: Sixty adults (16–60 yrs), ASA physical status I and II, of either sex, undergoing laparoscopic cholecystectomy, were included in this prospective, randomized, double blind and placebo controlled clinical study. Patients were divided into 2 groups of 30 each. Control group: received placebo patch; Nicotine group: received trans-dermal nicotine patch. The patches were applied at the proposed venous cannulation site 1 hr prior to cannulation with 20 G IV cannula; venous cannulation pain was assessed on a visual analogue scale (VAS) of 0–100 mm (0=no pain, 100=worst possible pain). Data were analyzed using student's T test, chi square test, Mann Whitney U test and Fisher's exact test. $P<0.05$ was considered significant.
Results: The incidence of venous cannulation pain in the nicotine group (63%) was significantly lower as compared to the control group (100%; $P<0.01$). Severity of venous cannulation pain [median VAS (inter-quartile range)] was also significantly reduced in the nicotine group 20 (30) as compared to the control group 50 (30) ($P<0.001$). Incidence of side effects were similar among the groups ($P>0.05$).
Conclusion: Application of trans-dermal nicotine patch at the venous cannulation site 1 h before venous cannulation decreases both the incidence and severity of venous cannulation pain.

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Paper No: 1063.0

Intravenous clonidine improves glycemic control in type-2 diabetic patients undergoing laparoscopic cholecystectomy

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Perioperative stress is due to a variety of factors including surgery, anxiety, anaesthesia induced stress, perioperative pain, postoperative nausea and vomiting, shivering, hyperglycemia, infection etc. Catacholamines are the most important mediator of acute stress leading to glycogenolysis, gluconeogenesis, lipolysis, ketogenesis and perioperative

insulin resistance leading to hyperglycemia. It is logical to assume that by decreasing the stress response a better perioperative outcome is anticipated. Perioperative hemodynamic parameters and blood glucose levels may be surrogate markers of stress.

Clonidine which is alpha 2 agonist has several properties which may be helpful. The major pharmacological effects of clonidine involve changes in blood pressure and heart rate. The effect of clonidine in the perioperative period on the blood glucose level is still not clear as some studies propose a better glycemic control due to blunting of catecholamine surge. On the other hand others suggest that clonidine leads to decreased insulin secretion leading to hyperglycemia.

The aim of study is evaluate the efficacy of IV clonidine on blood glucose level of type-2 diabetic patients undergoing laparoscopic cholecystectomy, and also secondary parameters like safety of clonidine in the study group and its efficacy on postoperative nausea and vomiting.

After obtaining Ethics Committee approval and informed consent of patients a prospective, randomized double blind, placebo controlled study was conducted on ASA I & II 100 adult patients(18-60years) of either sex undergoing elective laparoscopic cholecystectomy. Patients were divided in two groups with group I receiving IV clonidine 3 mg/kg in normal saline was infused over 15 minutes and Group II receiving a placebo in similar manner. Insulin (short acting huminsulin, regular monocomponent) therapy was started just before induction of anesthesia @1.25 U/hr and supplement insulin given according to blood glucose levels (BGL). Capillary concentration of glucose was measured every 30 minutes during surgery.

Demographic data were recorded. BGL before induction of anesthesia, antidiabetic treatment (diet alone, oral hypoglycaemic agent, insulin therapy). Systolic blood pressure (SBP) and mean blood pressure(MBP),heart rate(HR) meausured before adminstring the drug and every 15 minutes after administration of the drug. Any side effect in the form of hypotension and bradycardia were noted and those were excluded from the study.

The conclusion of the study is that sympatholytic effects of clonidine may be utilized to decrease the excursion in blood glucose levels and thereby decreasing intraoperative insulin requirements during laparoscopic cholecystectomy in the type2 diabetic patients. Clonidine also attenuates the hemodynamic response to intubation and pneumoperitoneum.

Paper No: 1078.0

Evaluation of haemodynamic and electrolyte changes in patients undergoing liposuction with two types of fluid therapy

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Introduction: Liposuction is one of the most frequently performed aesthetic procedures The 'tumescent technique' of liposuction involves subcutaneous infiltration of large volume of saline containing lignocaine and epinephrine. The extent to which this subcutaneous infiltrate gets absorbed into the intravascular and interstitial compartments is not known. The fluid shifts during large volume liposuction may have a potential for haemodynamic and electrolyte disturbances. Use of colloids in place of crystalloids reduces the volume of intravenous fluids while maintaining haemodynamics. However, their use has not been explored in patients undergoing tumescent liposuction. This study was undertaken to compare saline with hydroxyethylstarch 6% (130/0.4) [HES] for intra-operative fluid resuscitation in patients undergoing large volume liposuction.

Objective: To compare haemodynamics and serum electrolytes using intravenous normal saline versus HES during large volume liposuction.

Methods: After approval from the hospital ethics committee and patients' informed consent, a prospective, randomized study was conducted on 50, ASA grade II and III adult patients scheduled to undergo large volume liposuction under general anaesthesia. Patients with coagulopathy, cardiovascular or renal disease were excluded.

Patients were allocated using computer generated randomization tables to two groups of 25 patients each, to receive either 0.9% normal saline (Group A) or HES (Group B) as the intravenous fluids. Intraoperative fluids for Group A were calculated using 'Rohrich Formula' keeping intravenous fluid plus infiltrate to aspirate ratio of 1.2. For group B, one-third the calculated intravenous volume was infused as HES. Statistical analysis was done using SPSS 17.0.

Results: The demographic profile was comparable in both groups ($p>0.05$).The infiltrate volume was $6.84+/-2.17$ liters in group A and $6.59+/-1.42$ liters in group B ($p=0.635$). The total aspirate volume was $8.23+/-2.46$ liters in group A and $8.22+/-2.77$ liters in group B ($p=0.983$). The total I.V. fluid infused in group A was $2.93+/-1.37$ liters and $1.09+/-0.7$ liters in group B ($P<0.001$). There was no difference in the intraoperative and postoperative haemodynamics (pulse rate, blood pressure and central venous pressure) in both the groups ($p>0.05$). The average postoperative sodium level in group A was 139.22 mmol/l compared to 137.48 mmol/l in group B ($p=0.065$). There was no difference in the postoperative potassium level in both the groups, 4.04 mmol/l in group A compared to 4 mmol/l in group B ($p=0.456$).

Conclusion: Low volumes of hydroxyethylstarch 6% (130/0.4) are equally efficacious as normal saline for large volume liposuction. It may be beneficial in patients at risk of cardiac compromise.

Answers to Reviewers Comments
1. Authors did not receive any financial support from the manufacturers of HES.
2. As incorporated in the methodology, patients with coagulopathy were excluded. With an average 1 liter infusion of hydroxyethylstarch 6% (130/0.4) derangement in coagulation profile is not expected. Therefore coagulation profile was not monitored postoperatively.
3. With tumescent technique there is decreased blood loss due to vasoconstriction and therefore the perioperative bleeding is minimal.

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Paper No: 1081.0

Correlates of Unanticipated Difficult Intubation Using a Large National Anesthesia Registry

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Introduction: In 2005, the Anesthesia Business Group (ABG) created a national registry of clinically-enhanced administrative data for the purpose of performance benchmarking of clinical quality outcomes. This investigation describes the methodology used to analyze cases from three large anesthesia groups (SMG, PMC & AMG) participating in the ABG registry from 2007 - 2010. For this analysis, unanticipated difficult intubation was selected as a clinical outcome1.
Methods: 182,028 cases were identified from the three groups mentioned above. Some 399 cases of unanticipated difficult intubation were identified. Unanticipated difficult intubation was defined as greater than 2 attempts by the staff anesthesiologist. Predictors include age, gender, American Society of Anesthesiologists physical status (ASAPS) classification, and Current Procedural Terminology2 (CPT®) code at the time of surgery. CPT® codes were grouped into six broad anatomic categories that included head and neck, thoracic, abdominal, pelvis, extremities, and spine for the purposes of this analysis. 113,899 comparison cases with the same CPT® codes as the unanticipated difficult intubation were used for the analysis. Multiple logistic regression analysis was used to identify significant predictors of unanticipated difficult intubation.
Results: After adjusting for age, those with unanticipated difficult intubation were more likely to be male [Odds Ratio (OR)=1.58, 95% Confidence Interval (CI)=1.29, 1.93]. Risk of unanticipated difficult intubation increased in a near-linear fashion with increasing ASAPS classification.
ASAPS Classification Odds Ratio 95% CI Demographic data and physical status classification can help identify patients with potential unanticipated difficult airway. This analysis shows the power of a large national database to identify significant differences in clinical quality outcomes.

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Paper No: 1082.0

Comparison of the Efficacy of Dexmedetomidine and Esmolol in the Treatment of Increased Hemodynamic Response during the Recovery Period

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Introduction: Hemodynamic response during endotracheal extubation is a serious complication. It can be harmful especially in patients who have certain type of surgeries (intracranial, intraocular). All efforts should be shown in order to attenuate hemodynamic response during extubation.
Objective: The aim of our study was to compare effectiveness of esmolol and dexmedetomidine in the treatment of increased hemodynamic response during anesthesia recovery period.
Methods: Sixty ASA I-II patients whom scheduled for elective surgery with endotracheal intubation were randomized at the end of surgery according to their hemodynamic parameters that were increased 20% of their baseline values in order to receive 1 mg/kg esmolol (group E, n=30) or 0.5 μg/kg dexmedetomidine (group D, n=30). Before induction (C), before study drug (T1) and at 1st, 3rd, 5th and 10th min after the study drug administration (T2, T3, T4, T5), before extubation (T6), and just after extubation (T7), at 1st, 3rd, 5th, 10th, and 15th min after extubation

(T8,T9,T10,T11,T12) heart rate(HR), systolic blood pressure(SBP), diastolic blood pressure(DBP), mean blood pressure(MBP), peripheral oxygen saturation (SpO2), end tidal carbon dioxide (ETCO2) values were recorded. Extubation time and recovery time were recorded. The time until the need of analgesic (VAS>4) was recorded. Cognitive functions were evaluated by 'short orientation memory concentration test (SMOCT)' at 20th and 50th min.

Results: After giving the study drugs, HR reductions at all periods were significant in group D (T2-T10: $p<0.001$, T11:$p=0.001$, T12:$p=0.006$). In group D SBP was high at 3rd min after drug ($p<0.001$), and SBP were lower in all periods before and after extubation (T6-T10: $p<0.001$, T11:$p=0.02$, T12:$p=0.04$). In group D, DBP was higher at 1st min after drug ($p=0.001$), DBP were lower at 10th min after drug and before extubation ($p=0.045$, $p=0.001$). In group D MBP 3rd min after drug was higher ($p=0.019$) and MBP were lower at all other periods (T4-T10:$p<0.001$, T11:$p=0.001$, T12:$p=0.03$). SpO2 in group D was higher at all periods after drug ($p=0.001$, $p=0.003$, $p=0.002$, $p=0.007$, $p=0,001$, $p=0.001$, $p=0.002$, $p=0.001$). In group D ETCO2 values at 5th and 10th min after drug were higher ($p=0.44$, $p=0.49$). The time until the need of analgesic and recovery period were longer in dexmedetomidine group ($p<0.001$).

Discussion and Conclusion: Although both esmolol and dexmedetomidine attenuated the hemodynamic response during recovery period, dexmedetomidine was more effective in hemodynamic stabilization and time until the need of analgesic was longer. Dexmedetomidine was an agent that could be chosen for the attenuation of hemodynamic response during the extubation period. Esmolol provided faster recovery time. We believe that in order to get more effective attenuation of hemodynamic response, dosage studies with esmolol are needed.

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Paper No: 1087.0

Intraoperative cardiac arrest and mortality in trauma: a study over 14 years from a Brazilian teaching hospital

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Introduction: Trauma plays an important role in public health. Hence, efforts must aim at their prevention and care of the victims1.

Objectives: This survey evaluated the incidence, causes and outcome of intraoperative cardiac arrests as consequence of trauma in a Brazilian tertiary general teaching hospital over 14 years.

Methods: After obtaining approval from Medical Ethics Committee, this retrospective survey analyzed all reported intraoperative cardiac arrests in 90,909 consecutive anesthetics from January 1996 to December 2009. Data was collected from an anesthesia database, and medical and anesthesia records. Data collected from intraoperative cardiac arrest due to trauma included patient characteristics, surgical procedures (elective, urgent or emergency), ASA physical status classification, anesthesia provider information, surgical areas and traumás cause, and cardiac arrest and mortality rates. The Tukey test for multiple comparisons and X2 test were used for statistical analysis. $P<0.05$ was considered statistically significant.

Results: Fifty-eight cardiac arrests (6.4:10,000 anesthetics) and 47 deaths (5.2:10,000 anesthetics) were found in patients with trauma, corresponding respectively to 21.6% and 26% of the total number of cardiac arrests (269) and deaths (181) obtained in the study. Patients with major risk for cardiac arrest and mortality in trauma were: young (18 – 35 years) male patients (4.5:1 compared with female), ASA IV or poorer physical status, in emergency surgery and under general anesthesia for multiclinical, gastroenterological, thoracic, neurosurgery or orthopedic surgery ($P<0.05$). Hemorrhage was the major cause of cardiac arrest and mortality. Considering all causes of intraoperative cardiac arrest and deaths, trauma was the second cause of cardiac arrest and the first cause of mortality. The most important causes of intraoperative cardiac arrest in trauma were motor vehicle crashes (55.2%), penetrating trauma with stab wounds (12.1%) or gunshot wounds (8.6%), running over (8.6%), and beating (6.9%).

Conclusions: The study showed higher intraoperative cardiac arrest and death rates in patients with trauma. Patients with risk of cardiac arrest and mortality are young males with severe underlying condition and under emergency surgery. The most important causes of trauma are motor vehicle crashes and violence.

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Paper No: 1096.0

Tracheobrochopathia osteochondroplastica causing unexpected difficulty in tracheal intubation

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Introduction: Tracheobrochopathia osteochondroplastica is a rare benign dysplasia of the tracheas and large bronchi,

characterized by calcifying cartilaginous outgrowths in to the tracheal lumen. It is often asymptomatic and may be undiagnosed. We report this disorder in a female patient with an unusual symptom which caused difficulty in tracheal intubation.

Case Presentation: A 54-year-old woman was presented for a pelviscopic salpingo-oorphrectomy due to left ovarian cyst with general anesthesia. She had no specific respiratory symptoms. On the day of surgery anesthesia was induced with propofol and muscle relaxation was achieved with rocuronium. On the laryngoscopy, the larynx was easily visualized, but when a size 7.5 cuffed tracheal tube was passed through the cords subglottic resistance was occurred. As there was no tracheal air leakage, it was decided to proceed with surgery. During the surgery fiberoptic brochoscopy was performed through the tracheal tube. There were superficial nodular lesions, which spread down the trachea to the carina and into the main bronchi. The operation was performed without any problems and the postoperative period was unremarkable. Two days after the operation the patient was referred to the respiratory physician. The bronchoscopy was performed. The findings showed prominent protrusion with narrowing of the tracheal lumen and main bronchi. The bronchoscopic diagnosis was tracheobrochopathia osteochondroplasica.

Conclusion: Anesthetic considerations for tracheobrochopathia osteochondroplasica are similar to tracheal stenosis. When the disorder is suspected difficult intubation should be anticipated.

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Paper No: 1132.0

Anesthesia Management in Intracranial Juvenile Nasopharyngeal Angiofibroma

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Juvenile nasopharyngeal angiofibromas are rare, benign but aggressive tumors for which surgical resection is the treatment of choice. Tumor resection can be accompanied by significant blood loss and postoperative morbidity. Despite the advances in radiological imaging, embolisation of vascular supply and endoscopic resection, these tumors continue to be a challenge and require multidisciplinary management. The tumors though superficially similar in terms of high vascularity, proximity to neurovascular structures as well as difficult anatomical location require differing anaesthetic management depending on the tumor type and location. A 18 year old boy was referred to our center with a 6 month history of progressive nasal obstruction and repetitive episodes of epistaxis moderate in severity. Biopsy under anesthesia confirmed the diagnosis of angiofibroma. The patient was for invasive tumor underwent preoperative radiotherapy & chemotherapy. In physical examination, we found Chemosis and proptosis in the left side and tumor in the left maxillary sinus that progressive to mouth. Cranial nerves (I,II, IX,X) function were abnormal and other finding examination was Uvula dislocated to left side. A CT scan and an MRI scan were performed demonstrating a mass with extension to frontal lobe, nasal, oral cavity and paranasal sinus and into the sphenoid and were involved the sinuses. The day before surgery, the patient underwent angiography with embolization of feeding vessels from the distal external carotid system. The patient candidate for craniotomy. The evaluation of possible difficult intubation or ventilation was performed, and revealed a Mallampati grade 2, opening mouth and thyromental distance was normal. Despite a history of tumor, possible airway involvement by angiofibroma, made decided to awake intubation. Patient is placed in head up position to improve venous drainage, reduce the blood loss and clear surgical field. Patient is placed in head up position to improve venous drainage, reduce the blood loss and clear surgical field Premedication consisted of fentanyl 50 μg and 1 mg (IV) midazolam, and lidocaine 1% 2ml into the tracheal tube, bicoronal hyoid 2 ml, hard palate and Uvula lidocaine spray administrated, then the patient underwent laryngoscopy and Cormack grade 2 viewed and intubated with No. 7 tube. The anesthesias induction was made with intravenous Thiopental 5 mg/kg and atracurium 0.2 mg/kg. Monitoring included invasive arterial monitoring, central venous pressure, ECG, temperature, urine output and SPO2. The anesthesia was maintained with profofol 100 μg/kg/min, remifentanyl 0.1 μg/kg/min. After the end of surgery removed to ICU underwent mechanical ventilation and intubated. The patient was sedated with propofol 50 mg/hr, fentanyl 50 μg. Propofol continued for 2 days in ICU, Finally, regard to contious and respiratory condition extubated. With nasopharyngeal angiofibroma, it is better to proceed with awake fiberoptic intubation in the sedate. The presence or suspicion of airway difficulty mandates awake direct or fiberoptic laryngoscopy. Various airway management techniques should be well known to the anesthesiologists handling cancer patients. Besides the routine monitoring, invasive monitoring like arterial blood pressure and central venous pressure monitoring may be required major surgery with anticipated blood loss or because of the to associated co morbid disease. Urinary catheterization and temperature monitoring is essential.

Paper No: 1134.0

Anesthesia in endoscopic and microscopic (hybrid) transsphenoidal surgery for a pituitary adenoma in cushing's disease- a case report

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Cushing's disease is a multi-etiologic clinical situation, resulting in several features like obesity, hyperglycemia, hypertension, proximal muscle weakness, skin thinning, buffalo hump, and purple striae. In perioperative period the anesthesiologist must deal with difficult ventilation and intubation, hemodynamic disturbances, volume overload and hypokalemia, glucose intolerance and diabetes, maintaining the blood cortisol level and preventing the glucocorticoid deficiency. This disease is quite rare and its features make these patients very difficult to the anesthesiologist.

A morbidly obese 7-year-old male (Height 115 cm, weight 60 kg, body mass index 45.5 kg/m2, ASA II) presented with a recent history of weight gain and the development of diabetes mellitus, which was managed with diet and oral hypoglycemic drugs. Physical examination revealed the typical physical features of Cushing's disease. So that, was consulted by an endocrinologist and diagnosis of Cushing's disease confirmed by the endocrinologist. He underwent a dynamic MRI showed a pituitary microadenoma (size 3 mm), central in the gland. Clinical assessment, chest x-ray and electrolytes findings were normal. Preoperative hypertension (172/85 mm Hg) was treated with metoprolol, whereas hyperglycemia (196 mg/dl) with insulin regimen. Complete airway obstruction, sleep apnea problems were not been reported. There was, however, paroxysmal nocturnal dyspnea. The evaluation of possible difficult intubation or ventilation was performed, and revealed a Mallampati grade 2, opening mouth 2.5 finger width. The thyromental distance was normal. After 8 h of fasting, Premedication consisted of fentanyl 120 μg and 1.2 mg (IV) midazolam. In the operating room after peripheral venous cannula was inserted, right radial artery and right internal jugular vein were cannulated. The anaesthesia induction was made with intravenous, Thiopental 300 mg titrated, Succinylcholine 60 mg, then tracheal intubation performed with No. 5.5 tube and atracurium 18 mg IV was administrated. Monitoring included invasive arterial monitoring, central venous pressure, ECG, temperature, urine output, end-Tidal carbon dioxide, and blood cortisol and sugar levels and electrolytes. The anaesthesia was maintained with profofol 60 mg/h infusions, O2/N2O 3 L/ min, and atracurium 5 mg PRN. The patient undergo transsphenoidal adenomectomy. The patient was transferred to ICU and extubated after surgery with no anaesthetic complications. We conclude that Cushing's disease presents a challenge to the anesthesiologist. We must deal with the volume overload, hyperglycemia, hypokalemia, difficult airway and ventilation. Especially, we consider in the patients anaesthesia hemodynamic stability, maintenance of cerebral oxygenation, and provision of conditions to facilitate surgical exposure, prevention of intraoperative complications and rapid emergence to facilitate early neurological assessment.

Paper No: 1135.0

Anaesthetic Management of a Case of Osteogenesis Imperfecta

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Osteogenesis Imperfecta is a fibro-osseous disorder of the collagen tissue that leads to defects in skeletal growth and causes short stature. Osteogenesis Imperfecta poses various anesthetic challenges, which include difficult intubation, problems with positioning and a tendency to develop malignant hyperthermia, coagulopathy and cardiovascular abnormalities. Our patient was a 6-year-old boy with height of 119 cm and body weight of 25 kg, who had multiple fractures since he was 7 months old and was diagnosed with Osteogenesis Imperfecta genetically diagnosed as type I according to the Sillence classification. He had a history of frequent long bone fractures even after infancy. He was scheduled for tibial osteotomy. The patient reported no previous medical history other than this condition and was hospitalization for treatment. On airway assessment, he had no maxillofacial deformity, scoliosis and macroglossia, but revealed a Mallampati grade 2. The extension and flexion of the neck, thyromental distance, and upper lip-biting test were normal.

Premedication consisted of fentanyl 25 μg and midazolam 0.5 mg (IV)then Thiopental 125 mg and atracurium 10 mg were administrated under direct laryngoscopy. Intubation was performed with tracheal tube 5.5 NO. The anaesthesia was maintained with profofol 15 ml/h and O2/N2O 3L/ min. Monitoring included invasive arterial monitoring, ECG, SPO2, temperature and urine output. The patient was extubated after surgery and awakened with no anaesthetic complications. In conclusion, we like to emphasize the need for a detailed pre-operative evaluation and preparation for anaesthesia. In a patient with osteogenesis imperfecta, special attention is required to rule out associated cardiovascular abnormalities, bleeding disorders and difficult airways before undergoing anesthesia. Gentle care is also essential during the positioning and the transfer of these patients. A

successful outcome was ensured by careful history taking and examination as well as gentle care and the application of basic principles in managing the patient.

Paper No: 1140.0

Review of the current situation of the nomenclature and presentation of the ampoules and serums in Argentina

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Introduction: Nowadays, there are common errors in the anesthetic practice regarding medication identification contained in ampoules and serums. Some countries in the world have laws that regulate drugs´production, as well as their pharmaceutical presentations. In Argentina, such regulation has not been approved yet, which makes the existence of a unified criterion for drug nomenclature and presentation difficult.
Objective: Identify the current situation of the public hospital (GCBA and Buenos Aires province) in respect of those most common errors of the anesthetic practice related to the confusion of ampoules and serums due to the similar presentations.
Methods and Materials: Multicentric, descriptive cross-sectional study, applied to the target population (residents of GCBA hospitals and of the Bs. As province [R]) as a census and an intentional consecutive sampling (staff physicians of the same hospitals [S]) through a multiple choice questionnaire. The information obtained are treated with the chi-square test for proportions comparison, considering significant a $p<0.05$.
Results: From the 189 surveyed people, 133 are residents (of a total of 164) and 47 are anesthesiologists. The average of performed anesthesia per week is of 19+/−6.8 (S=19+/− 7.2; R=14+/−6.6). 70% declared the current presentation of ampoules and serums to be confusing in order to identify the drug correctly, 80% took a drug by error believing that it was another one, and from these, 74 % referred to repeat the error at least once a month. 34 % discovered the error after the administration of the drug, with a side-effects incidence of 8.9% (S=4% vs R=11% p=0.19). Even though S subgroup confuse more frequently the presentation of drugs than R subgroup (96% vs. 74% p=0.0017), there were no significant differences when injecting the drug (S=45% vs R=31% p=0.08). The association which produced more confusion is certain commercial ratios of dextamethasone/metoclopramide followed by mannitol / physiologic solution.
Conclusions: Nowadays, where there is no regulation of ampoules and serums production, the re-checkup of the drugs to use is particularly important to decrease the probabilities of making an error in the confusing presentations. Beyond the actions aimed at the safety and quality of the surgical patient enforced by the AAARBA and FAAAAR, the approval of the Bill N°16.643 that refers to the general rules of Good Practices of Manufacturing for Drug Manufacturers, Importers/Exporters created by the ANMAT [National Administration of Foods, Drugs and Medical Technology] is necessary.

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Paper No: 1142.0

Technical failure checkup in the anesthesia machine: lessons learned from the anesthesiology department of Ramos Mejia General Hospital

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Introduction: The risk involved for the patient of potential failure in the anesthesia equipment together with an inappropriate training of the professionals, led instructors of the Department to include in the residency training, practical simulation test of failure in the pre-anesthetic checkup.
Objectives: To assess the influence of an educational intervention to reduce the incidence of errors in the pre-anesthetic checkup.
Methods: Quasi-experimental study before-after the educational intervention on safety. Pre-intervention-Stage: scenarios based on simulation were created to measure the performance of 25 professionals while doing the prior checkup of the anesthetic equipment before the entry of the first patient to the OR. Recognition and control of 6 pre-established failures was found in Drager-Fabius machines, chosen according a frequency and gravity criterion potential to the patient. An external observer performed a subjective assessment of pre-anesthetic checkup process integrity. Intervention-Stage: It consisted of four lessons about security and safety. Post-intervention-Stage: The same scenario correspondent to the first stage was re assessed, post

intervention. For the comparison of the occurrence proportions the Fisheŕs Exact Text was used.

Results: Pre-intervention Stage: 100% participants verified 71% of the items from the checklist of the ASA. The most predominant lack of control was that there was no verification of the vaporizer (ignored by 60%). The second was the verification of the electric connection (52%). Finally, the third was the ventilatoŕs configuration (48%). Post-intervention Stage: 100% participants checked 92% of the items from the ASA. The least assessed failure was the verification of the vaporizer (40% ignored this checkup). The second was the verification of the ventilatoŕs parameters (32%); however, in the subjective comprehensive assessment, it was observed that the proportion of the participants who performed the verification was higher (92% vs. 68%) but in post induction stage, so it did not appear as checked in the assessment files. The third item, less verified, was the electric connection (24%). The p values for the proportions differences of the three most predominant failures were: 1) No checkup of the vaporizer: p=0.173; 2) No checkup of the electric connection: p=0.048; 3) No ventilatoŕs checkup: p=0.267. However, the global checkup of the items from the checklist of the ASA improved significantly post intervention (p=0.0012).

Conclusions: The failure checkup of the anesthetic equipment is still a pending matter, being the latent-error a potential danger for the patient́s safety. The educational interventions must be continuous.

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Paper No: 1153.0

The availability of core anaesthetic guidelines: fact or fiction?

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Introduction: National collegiate guidance recommends that a set of core guidelines should be displayed or immediately available in all locations where anaesthesia is delivered. The management of malignant hyperthermia, anaphylaxis, severe local anaesthetic toxicity, peri-arrest arrhythmias, failed intubation and ventilation drills and anaesthetic machine checklists fall within this remit (1).

Objectives: To determine the availability of core anaesthetic guidelines at sites of anaesthesia within a UK teaching hospital. To evaluate anaesthetists' expectations of guideline availability and confidence at working without immediate access to guidelines.

Methods: An audit was undertaken to ascertain the presence of up-to-date anaesthetic guidelines within the proximity of every anaesthetic machine throughout a London teaching hospital (n=77). A two-page questionnaire was subsequently distributed to anaesthetists working within this institution (n=50).

Results: Guidelines were unavailable in 48% of locations. 15.5%, 40.4% and 2.5% of anaesthetic machines, were found to have up to two, four and six guidelines available, respectively. The commonest guideline was anaphylaxis management (40.3%), followed by malignant hyperthermia (36.8%), peri-arrest arrhythmias (33.8%), anaesthetic machine check (32.5%), failed intubation and ventilation (28.6%) and local anaesthetic toxicity (13.2%). 16.9% of guidelines found were up-to-date. 22% of locations were remote sites.

Most anaesthetists expected to find guidelines for anaesthetic machine checks (98%), anaphylaxis (96%), failed intubation and ventilation drills (96%), malignant hyperthermia (88%), local anaesthetic toxicity (72%) and peri-arrest protocols (68%), on the anaesthetic machine or displayed within eyesight of an anaesthetic. 86% of respondents were 'somewhat confident' at managing emergencies without immediate access to guidelines. 48% correctly described the initial dose of adrenaline in anaphylaxis management, compared to 30% for dantrolene and 26% for intralipid. Only 30% and 34% of respondents could identify the nearest location of intralipid and dantrolene in comparison to 70% for difficult airway trolleys.

Conclusions: Cognitive aids, such as guidelines, are widely used within many high risk industries and recommended during simulation training (2). Our findings suggest that anaesthetists have come to rely heavily upon these tools and expect to utilise them during emergent care. However, if the availability and integrity of such aids are fiction, as seen here, rather than fact, this discrepancy can compromise patient care. This audit suggests the need for a responsible designated lead within each department to ensure that guidelines are continuously monitored and updated, and the development of innovative methods to display guidelines and the location of emergency drug and equipment.

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Paper No: 1165.0

Intraperitoneal nebulization prevents central temperature drop during laparoscopic surgery

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Introduction: Slight hypothermia (central temperature 33-36Â°C) may produce cardiac, respiratory, immunologic and coagulation complications after laparoscopic surgery1. Animal studies using microvibration-based nebulization device (Aeroneb ProÂ® system, Aerogen, Galway, Ireland) suggested that cold nebulization prevents loss of central temperature produced by CO2 pneumoperitoneum2. However, the effect of cold nebulization on central temperature was not previously tested during surgery in humans.
Objectives: This retrospective analysis was designed to evaluate the effects of cold nebulization with a microvibration-based nebulization device on central temperature after laparoscopic surgery.
Methods: Data of four randomized, controlled, double blinded clinical trials were analyzed. In the studies ARHSG 01-2008 (Gynecological surgery) and ARHSG 02-2008 (Cholecystectomy) patients received nebulization of Ropivacaine 30 mg, instillation of Ropivacaine 100 mg or no treatment. In the study ARHSG 01-2010 (Cholecystectomy) patients received nebulization of Ropivacaine 50, 100 or 150 mg. In the study ARHSG 02-2010 (Ovarian cyst) patients received nebulization of Ropivacaine 150 mg or instillation of Ropivacaine 150 mg. Ropivacaine was nebulized using the Aeroneb ProÂ® system (Aerogen Galway, Ireland) through the umbilical port during surgery. All patients received a standard anesthesia and post-operative analgesia protocols. Operating room temperature was set at 21Â°C and patients were kept warm using forced warm-air device and warmed intravenous solutions. Temperature (primary end-point) was measured continuously during surgery using an esophageal probe. The variation of central temperature, the proportion of patients with a temperature drop between 0.5-1Â°C and the proportion of patients developing slight (33-36Â°C) hypothermia were compared in patients receiving peritoneal nebulization (nebulization group) with those receiving instillation or no treatment (control group).
Results: This analysis included 308 patients, 212 in the nebulization group and 96 in the control group. Intraoperative variation of central temperature was lower in patients in nebulization group (-0.2 Â± 0.4Â°C) compared with patients in the control group (-0.4 Â± 0.4Â°C) ($p<0.05$). When surgery length more than 60 minutes the proportion of patients with a temperature drop between 0.5-1Â°C was lower in nebulization group (23%) compared to control group (36%) ($p<0.05$). When surgery length was more than 60 minutes the proportion of patients developing slight hypothermia was significantly lower in nebulization group (20%) compared with control group (40%) ($p<0.01$).
Conclusions: Cold nebulization reduced intraoperative variation of central temperature. When surgery lasts more than 60 minutes, cold nebulization prevents slight hypothermia in adult patients undergoing laparoscopic surgery.

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Paper No: 1167.0

Which is the better anesthesia technique to undergo to a Double Balloon Endoscopy in patients with severe multiple diseases?

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HUFFavaloro

Introduction: A double balloon endoscope (DBE) can be inserted into deeper portions of the small intestine via both oral and anal approaches, and allows observation as well as treatment of small intestinal diseases.
Objectives: To demonstrate that DBE examination can be safely performed in general anesthesia with intubation and that this method is the option in patients (pts) with severe multiple morbidities.
Material and Methods: A retrospective evaluation of general anesthesia with intubation in pts with severe multiple morbidities undergoing DBE was performed at Servicio de Gastroenterología, Hospital Universitario Fundación Favaloro. Pts were grouped on gender, age, physical state, indication, endoscopic finding, DBE related complication and examination duration. Regarding anesthesia records included the duration of anesthesia, the quantities of medications used and complications.
Results: Data obtained from 45 DBE performed in 32 pts from April 2009 to July 2011 were analyzed (15 antegrade, 4 retrograde and 13 both). The indications included gastrointestinal bleeding, anaemia, malabsorption and suspected inflamatory bowel disease. 14 (43.75%) were female and 18 (56.25%) male. Middle age was 65.4 (SD 28.88). The ASA score were ASA II 1 pt (3.1%), ASA III 15 pts (46.88%) and ASA IV 16 pts (50%). Most of the pts were intubated (96.87%). The middle examination time was 112.9 minutes (SD

45-240). 27 pts (84.10%) had endoscopic findings and endoscopic therapeutics were performance in 20 (62.5%) of them. Complication related to anesthesia was observed in 1 pt (3.1%) and related to the DBE 1 pt (3.1%). The complications were desaturation post extubation need orthopnea and supply of O2 mask and intestinal perforation, respectively, in different patients.

Discussion: In our experience we found the most important advantage of general anesthesia with intubation over other methods was the advantage of ensuring stable airways, which makes it easy to counter act frequent complications. Turn is essential to ensure not to increase the possibility of complacations given the condition of patients, often with significant morbid antecedents.

Conclusions: DBE needs sufficient hypnosis and relajation technique, because the examination is uncomfortable and lengthy so we recommend this procedure in terms of anesthesia suitable for development. At this moment the general anesthesia with intubation is the best option in our consideration.

Paper No: 1185.0

"Is there a doctor on board?"-What to do in case of a medical emergency during mid-flight?

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Introduction: Providing emergency medical care when you're miles above the earth is any physician's nightmare. In-flight medical emergencies occur as frequently as 1:11,000 passengers(1,2). Most common medical problems include cardiac, neurological, gastro-intestinal, traumatic and respiratory problems(2). Physicians may be reluctant to assist due to fear of liability, lack of medical treatment options and unfamiliarity with the drugs/equipment on board.

Objectives: To inform physicians about the stress of air travel, the most common medical problems on board and the medico-legal aspects of providing medical care during flights.

Methods: A Pubmed literature search: 'emergencies', 'in-flight', 'management' and 'liability'.

Results: Tabel 1 shows the in-flight medical emergencies with possible solutions(1-4). Category Problem Solution Passenger-Cabin environment - Oxygen, hydration

- Lack of space - In-flight movement compression stockings
- Dehydration - Hydration, warm blankets
- Pre-existing - Medical clearance/ doctor's conditions note, alarm bracelet
- Pregnancy - No flying after 36 weeks of gestation
- Recent surgery - Physician pre-flight screening
- Scuba diving - Don't fly within 12-24 hours of diving
- Forgotten/lost - Adjusting medication medication or intake schedules, medication medication in within reach check-in luggage
- Injured/sick - Notify flight attendant, patient postpone flying
- Illicit drug or - Airline carrier protocol alcohol abuse Physician
- Language barriers - Use interpreter
- Few diagnostic tools - Cardiac monitoring (AED)
- Inexperience with - Contact ground-based emergency care medical support
- Fear of liability - Documentation, obtain patient consent whenever possible
- Inexperienced cabin crew
- Limited examination facilities
- Unfamiliarity with equipment
- Intoxicated patients
- Airline carrier
- In-flight medical - Contact ground-based emergency medical support, flight diversion

The range of equipment and drugs on board vary substantially among airlines. The US Federal Aviation Administration (FAA) requires commercial aircraft weighing more than 3,400kg with minimal one flight attendant to carry an emergency medical kit with specified contents, e.g. aspirin, antihistamine, atropine, dextrose 50%, epinephrine, inhaled broncho-dilatator, lidocaine, nitroglycerine, non-narcotic analgesics, saline solution. Physicians are protected from liability in the US, Canada and the UK by Good Samaritan legislation(3,4). European nations obligate physicians to provide medical assistance when it is requested by the cabin crew(2).

Conclusion: Medical emergencies on board aircrafts inevitably will happen. Anaesthesiologists can be extremely important during in-flight emergencies. They should be aware of the legal protections offered and the equipment/drugs on board. We plea for a universal emergency kit.

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Paper No: 1191.0

Usefulness of stress echocardiography in perioperative evaluation of patients scheduled for non-cardiac surgery: a review

Gonzalo Valencia, Gabriel Canale, Ramiro Barolo, Pablo Gorosito and Diego García Picasso

Introduction: The need for assessment of the risk for developing cardiovascular events in patients scheduled for non-cardiac surgery (PSFNCS) is undeniable. In many cases it is not enough to rely on the patients clinical features, and stress tests must be used in order to detect ischaemia. Stress Echocardiography (SE) rises as a useful tool, joining exercise testing (ET) and single-photon emission computed tomography (SPECT).
Objectives: To assess the usefulness of SE in PSFNCS, compared to that of ET and SPECT.
Methods and Materials: We conducted a throughout search in Medline and Ovid databases. Our keywords were "stress echocardiography", "perioperative evaluation" and "non-cardiac surgery". We took into account reviews, meta-analysis, and RCTs published between 2000 and 2011. We included in our work 6 selected articles.
Results and Discussion: Exercise is the prototype of ischaemic stress. However, many patients requiring a stress test cańt exercise, can exercise submaximally, or have an uninterpretable ECG[1]. Besides, with pharmacological stress testing factors such as hyperventilation, excessive chest wall movement and myocardial hypercontraction (which make echocardiographical assesment difficult and therefore reduce diagnostic accuracy) are avoided.[2] SE with either dobutamine or dypiridamole shows similar accuracy and sensibility. The choice of one test over the other will depend on patient characteristics, availability and physiciańs preferences.[3] Nevertheless, SE should be used as a first-line technique only when ET is uninterpretable (like in left bundle-branch block, or pacing).[4] The less informative and/or interpretable ET is, the higher is the level of appropriateness to SE [5]. On the other hand, it must be aknowledged that SE is recommended for high-risk patients with a previous history of coronary artery disease (CAD) sheduled for high-risk surgical procedures. The test is not recommended in low-to-medium-risk patients [6]. One of the tests with which SE has been compared to, is SPECT. According to many authors, SE should be chosen instead of SPECT, because of its lower costs and lack of radiation (SPECT radiation burden equals that of up to 1300 chest x-rays). [1]
Conclusions: SE's diagnostic and pronostic accuracy is similar to that of SPECT, at a lower cost, with no enviromental impact and avoiding exposure to radiation. Stress testing with SE is useful in patients for whom ET is not, and should only be used in that setting. Finally, we remark that SE is useful for high surgical risk patients, with known CAD.

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Paper No: 1207.0

Effect of Hydroxyethyl Starch 6% (130/0.4) which is a Colloid Solution on Blood Glucose

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Introduction: Hydroxyethyl Starch (HES) 6% (130/0.4) solutions are widely used in clinical practice. This solution has quite long half-life and most of HES particles were held by reticuloendothelial system. It was catabolized by sucrose-isomaltase complex.1 These features of HES solutions could influence the blood glucose level.
Objective: We aimed to investigate the effect of HES 6% (130/0.4) solution on blood glucose level in patients who received a standard type of anesthesia and surgery.
Methods: After Ethics Committee approval and informed consent sixty non-diabetic patients (age 18-75, ASA I-II) scheduled for elective surgery under spinal anesthesia were included in this study. Patients were randomly divided into two groups: Group HES and Group S. Thirty min before spinal anesthesia, fluid infusion was administered to the patients for preloading according to study groups. The patients received 500 ml (HES) 6% (130/0.4) solution in group HES and 1000 ml 0.9% NaCl solution in group S. Capillary blood sugar measurements using a regularly calibrated standard blood sugar measurement instrument were done before infusion of the fluids (T1), immediately after the infusion (T2), 45 min, 6 h and 12 h after the infusion (T3, T4, T5). Mean blood pressure(MBP), heart rate(HR) and peripheric oxygen saturation (SpO2) were recorded at mentioned measurement periods. Spinal anesthesia using 25G Quincke spinal needle and 12.5 mg 0.5% hyperbaric bupivacaine was applied to all prehydrated patients at the left lateral position, through L3-4 or L4-5 intervertebral spaces. The duration of anesthesia and surgery, and complications were recorded.
Results: ASA classification, gender, age, duration of surgery and anesthesia were not significant between the groups ($p>0.05$). Blood sugar levels were higher in group HES at all measurement times($p<0.001$, $p<0.01$, $p<0.001$, $p<0.01$, respectively) but in group S it was only higher 6 h after infusion ($p<0.05$) compared to the values before

infusion. At 6th h after infusion, there was a significant difference in blood glucose level between the groups ($p<0.001$).
Discussion and Conclusion: This study showed that blood sugar levels were higher in patients who have infusion of 500 ml (HES) 6% (130/0.4) solution. Infusion of HES 6% (130/0.4) solution altered blood sugar levels of the patients. Six h after HES 6% (130/0.4) infusion, blood sugar was at the highest level. These findings could be carefully taken into consideration in patients whose blood sugar level measuremet is important.

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Paper No: 1219.0

Brachial plexus nerve block with blind techniques: a retrospective study

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Introduction: Regional anesthetic techniques have been driven by the popularization of methods used for locating peripheral nerves, particularly by ultrasound. These techniques provide high accuracy and significantly increase the safety of the procedures. However, the equipment is still considered expensive and impractical, often seen as superfluous, limiting its availability, especially in hospitals with limited financial resources.
Objectives: To evaluate the experience of our service, which does not yet have an imaging method and only recently standardized the supply of insulated needles in brachial plexus nerve block with blind techniques.
Methods: In this retrospective observational study we analyzed 112 reports of anesthesia of patients undergoing blind techniques for brachial plexus block in our hospital over a period of two years (2009-2010), by three different evaluators, to determine by consensus, the failure indices, combined anesthesia and successful anesthesia. The inclusion criterion was anesthesia for brachial plexus block. The exclusion criteria were: brachial plexus anesthesia combined with general anesthesia, the use of neurostimulation for the location of peripheral nerve associated with use of any block of the territory innervated by branches of brachial plexus anesthesia or by any other technique.
Results: The exclusion criteria were withdrawn from study 18 cases of brachial plexus blocking combined with general anesthesia before and 02 cases that used electrical stimulation to locate the peripheral nerve. Of the remaining 92 cases, 38 (41.30%) had satisfactory for blocking this type of surgery alone or accompanied by intravenous sedation. In 54 cases (58.70%) totally failed or part of the brachial plexus block with the need for other anesthetic techniques to allow for surgery.
Conclusion: This study shows the reality of a service with a small number of brachial plexus blocks without propaedeutic options in place for the localization of the nerves. The comparison with literature data suggests that the use of electrical stimulation and ultrasound can be even more relevant in hospitals with a low numbers of blocks increasing the accuracy of regional techniques, reducing the chance of iatrogenic diseases, improving the quality of patient care and decreasing costs directly related to anesthesia.

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Paper No: 1239.0

The effects of preanesthetic, different two single-doses dexmedetomidine on the onset time of rocuronium

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Introduction: Dexmedetomidine, a highly selective ?2-agonist, has been used in the perioperative period and in intensive care because of its sedative, analgesic, and anaesthetic-sparing and haemodynamic-stabilising effects (1). However, the effect of dexmedetomidine on the action of non-depolarizing neuromuscular blocking drugs has not been extensively studied (2).
Objectives: We evaluated that the effect of different two doses of dexmedetomidine given before induction on onset of rocuronium-induced neuromuscular block.
Methods: After obtaining Ethics Committee's approval and written informed consents, 75 ASA I-II patients were randomly divided into 3 groups ($n=25$ for each): the first group received dexmedetomidine 0.5 μg/kg (Group D1), the second group received dexmedetomidine 1 μg/kg (Group D2), and the third group received physiologic saline (Group S) before induction of anesthesia. Rocuronium 0.6 mg/kg was administered during propofol/fentanyl induction. Anesthesia was maintained sevoflurane/nitrous oxide. The neuromuscular block was monitored by electromyography.
Results: Both dexmedetomidine 0.5 μg/kg and 1 μg/kg decreased onset time (77.8?19.3 in group D1, 83.9?33.9 in group D2 vs 108.7?35.8 in group S, $p<0.01$, $p<0.01$,

respectively), but increased recovery index (26.7?14.6 in group D1, 30.7?14.7 in group D2 vs 16.9?8.9 in group S, $p<0.01$ and $p<0.001$, respectively). The clinical duration was longer in the group D2 than the group S (60.1?12.0 vs 49.8?16.6, $p<0.05$).

Discussion and Conclusions: The administration of preanesthetic, both dexmedetomidine 0.5 μg/kg and 1 μg/kg before propofol /fentanyl induction was shown to improve the intubating conditions provided by rocuronium 0.6 mg/kg and to decrease its onset time but to prolong clinical duration.

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Paper No: 1253.0

Surgical site infections in head and neck surgery – role of anesthesiologist

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Introduction: The surgical site infection (SSI) is the most common complication in head and neck surgery (HNS) and its incidence ranges from 10 to 45%. The patient who develops SSI has a higher rate of mortality and morbidity, with prolonged hospitalization, delayed healing, poor cosmetic results, delay the start of radiotherapy and has 60% more likely to be in ICU and being re-hospitalized(1)(3).

Objectives: We did a literature review with the aim of identifying risk factors, preventive measures to optimize the anaesthetic approach and proper management of antibiotic therapy in HNS.

Methods: The PubMed was searched for relevant papers.

Results: SSI is the most frequent and most feared complication of HNS(2). In scientific literature we identified several risk factors for SSI in HNS, but they vary from study to study and there is no clear definition of risk groups. As major risk factors were identified: malnutrition, smoking, chemotherapy, stage 3/4 disease, lymph node invasion, long hospitalization, tracheotomy, surgical contamination, flap reconstruction and surgery more than 9 hours. There are just general guidelines for prevention of SSI; those who have level of evidence IA are: using immune-modulating nutrition support, treating infections, and maintain normothermia; and those with level of evidence IB are: intraoperative glucose levels between 80-120mg/dl, stop smoking at least 30 days before surgery and protect all wounds with sterile think. The prophylactic antibiotic (PA) regimen should be decided by the institution based on the most common microorganisms, that are usually E.coli, coagulase negative St., non hemolytic Str. and St. aureus(2). Cefazolin, clindamycin and gentamicin usually are a good choice. The PA therapy should be ideally administered 30-60 minutes before incision and maintained for 24 hours.

Conclusion: The anaesthesiologist can take some preventive measures to help decrease the incidence of SSI in HNS: during the pre-anaesthetic consultation should encourage the patient to stop smoking; in the perioperative period should supervise the administration of PA at the right time, maintain normoglycemia and normothermia. We should try to optimize the anaesthetic and surgical approach in order to minimize the incidence of SSI in HNS.

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Paper No: 1260.0

Prophylactic use of tranexamic acid and e-aminocaproic acid in heart surgery

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Introduction: Prophylactic pharmacological treatment of intraoperative bleeding in heart surgery with extracorporeal circulation has been changed to tranexamic acid since antifibrinolytic therapy with Aprotinin has been withdrawn from the market.

Objective: The purpose of this study was to compare the efficacy of medium Tranexamic acid (TA) and å-Aminocaproic acid (EACA) dosages in the prophylaxis of excessive bleeding in heart surgery.

Material and Methods: Perioperative data of 163 consecutive patients undergoing cardiac surgery with cardiopulmonary bypass were retrospectively reviewed from February 2011 to July 2011. TA (n=79) received a bolus of 20 mg/kg following anesthetic induction, 20 mg/k g in the pump priming and a continuous infusion of 5 mg/kg/h during 5 h. EACA (n=84) received a bolus of 70 mg/kg and a continuous infusion of 30 mg/kg/h and is continued postoperatively until 2 controls without bleeding. Preoperative, intraoperative and postoperative variables were comparable between the prophylactic hemostasis groups. Student t test, and chi-squared test were used as appropriate.

Results: There was a similar distribution of type of surgery in both groups. Six patients had undergone preoperative surgery: 5 patients (6.3%) in TA and 1 patient (1.1%) in

EACA (NS). The 24-hour postoperative bleeding was not statistically different between TA and EACA (473 ± 414 ml vs 436 ± 250 ml). Postoperative allogeneic blood transfusion requirements were lower in TA than in EACA: 29 patients (36.7%) vs. 49 patients (58.3%) ($p<0.01$). Hypovolemic shock which developed in 13 patients was significantly greater in EACA: 11 patients (13%) vs. 2 patients (2.5%) in TA ($p<0.02$). Cardiogenic shock with preserved ventricular function occurred in 7 patients: 6 patients (7.1%) in EACA vs. 1 patient (1.3%) in TA (NS). Intraaortic balloon pump counterpulsation was performed in 12 patients: 3 patients (3.6%) in EACA vs. 9 patients (11.4%) in TA (NS). Re-do surgery for bleeding was necessary in 5 patients: 3.6 % (3 pts) in EACA vs. 2.5 % (2 patients) in TA (NS). Zeizures occurred in 3 patients (3.8%), all in TA (NS) and stroke in 5 patients: 1.2% (1 pt) in EACA vs. 5% (4 pts) in TA (NS). Intrahospital mortality occurred in 4 patients (3 of which were very high risk patients), all in TA (5%) ($p<0.05$).

Conclusion: TA and EACA are equally efficient in prophylactic control of bleeding with lower postoperative allogenic blood requirements in TA. Future randomized studies are needed to analyze death incidence with TA.

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Paper No: 1261.0

Transcatheter aortic valve implantation

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Introduction: In high surgical risk patients with severe aortic stenosis, biotechnological development allows transcatheter aortic valve implantation (TAVI) improving survival and quality of life.

Objective: The aim of this study was to describe preliminary TAVI results in patients with severe aortic stenosis excluded from surgery due to their high risk condition.

Material and Methods: Preopreative, intraoperative and post-operative variables in 33 patients with aortic stenosis undergoing TAVI were analyzed from March 2009 to July 2011 using the hospital data base prospectively collected. Procedure: All patients received general anesthesia without premedication, receiving induction with propofol with previous titration and optional fentanyl (50 μg), maintaining with remifentanyl (0.1 to 0.2 μg /kg/min), proprofol (0.04 mg/kg/min). Non-depolarizing muscle relaxant was optional. Preload and arterial pressure vasopressors were optimized before and during valvuloplasty or TAVI. Peripheral venous accesses were prepared for volume expansion and endovenous anesthesia administration and a radial catheter for invasive arterial monitoring. Two central venous accesses (jugular and femoral) were used for transient pacemaker and Swan Ganz catheter implantation. In all cases, angio-fluoro and transesophageal echocardiography were used for valve implantation guidance, except in one patient with previous esophageal stenosis. Valve implantation was done by retrograde approach in all cases (29 transfemoral and 1 subclavian), and direct valve implantation was used in 22 cases.

Results: Mean age 79.5 ± 7.95 years (61 – 92); Logistic Euroscore: 19.5 ± 14; Symptoms: Angor: 6 (18.1%); Dyspnea: 32 (97%); Syncope: 4 (12.1%); Atrial fibrillation: 6 (18.1%); Diabetes: 9 (27,2%); Dyslipidemia 18 (54.5%); Arterial hypertension 26 p (78,7%); History of heart failure 6 (18,1%), functional class: III-IV 20 (62%); Previous myocardial revascularization surgery 6 (18%); Chronic renal failure 7 (21,2%). Preoperative Doppler evaluation: peak gradient: 77.7 ± 21.5; mean gradient: 48.4 ± 11.56); left ventricular ejection fraction 52 ± 12,45%. TAVI successful implantation was achieved in all cases. Complications: Pacemaker implantation 9 (29,7%). 30-day mortality: 3.3% (1 patient intraprocedure due to mechanical dissociation) and intrahospital stay: 7.5 days ± 12.

Conclusions: TAVI was feasible and safe in this high risk population. All patients tolerated well anesthesia and blood pressure control was the most difficult part for the anesthesiologist.

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Paper No: 1263.0

Intraoperative hemodynamic predictors in the surgical treatment of the chronic thromboembolic pulmonary hypertension

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Introduction: Patients with chronic thromboembolic pulmonary hypertension (CTEPH) are characterized by right ventricular (RV) dilation and severe systolic dysfunction, partly expressed as increased stroke work due to elevated afterload.

Objective: To determine the immediate impact of pulmonary endarterectomy (PE) on RV, stroke work index (RVSWI) and its correlation with other preoperative hemodynamic parameters.

Material and Methods: Between 11/1992 and 8/2010, 41 consecutive patients (23 male, 56%) underwent PE alone or combined with other surgical procedures. Mean age was 45 ± 13 years. Preoperative NYHA Functional Class (FC) was III-IV (90%). Pre and postoperative hemodynamic variables were analyzed in the operating room (OR) and changes were assesed with the "t" test for paired samples. The relationship between RVSWI Improvement (IMP) due to PE (IMP=RVSWIpre – RVSWIpost) and preoperative parameters

were analysed to determine the best preoperative estimation of the surgical outcome.
Results: After PE, a significant decrease ($p<0.01$) was observed in PAPm (57 ± 17 vs. 31 ± 11 mmHg), total pulmonary vascular resistance (TPVR) (1207 ± 405 vs. 447 ± 231 dyne-s/cm5) and RVSWI (18.5 ± 9.0 vs 10.5 ± 4.6 gr-m/m2). The linear adjust between IMP and mean preoperative pulmonary arterial pressure (PAPmpre) resulted in a linear correlation coefficient equal to R=0.75, between IMP and preoperative cardiac index (CIpre) in R=0.74, and between IMP and preoperative RVSWI (RVSWIpre) in R=0.91 (all with $p<0.01$). The comparison among correlation coefficients gave statistically significant differences ($p<0.005$ after Z transformation, $\div 2=11.04$). The correlation coefficient between IMP and RVSWIpre also had the lower standard error of the estimate, with a value of 4.64 gm-m/m2 in compared with 7.32 for PAPmpre and 7.50 for CIpre.
Conclusion: RVSWI is a reliable intraoperative marker of RV performance, and its improvement (IMP) due to PE is better estimated through RVSWIpre, even though PAPmpre and CIpre can be used with the same purpose due to their acceptable correlation coefficients.

Paper No: 1266.0

Prediction of mortality after infective endocarditis surgery: comparison of five scoring systems

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Introduction: The risk assessment for surgically treated infective endocarditis is complex. A new simplified risk scoring system (SRSS) developed by the STS (Society of Thoracic Surgeons) has been validated for estimate the risk of death in patients operated for infective endocarditis (1). The purpose of this study is to compare the predictive value of in-hospital mortality after cardiac surgery for infective endocarditis using the additive EuroSCORE, Logistic EuroSCORE, Logistic System 97, Ontario Province Risk (OPR) and SRSS. Materiel and methods : This retrospective study. We included patients who underwent surgery for infective endocarditis during the period 1 January 2000 to 31 December 2010.The additive EuroSCORE, logistic EuroSCORE, logistic System 97 (2), OPR (3) and SRSS were calculated. Statistical Analysis: The assessment of the association of scores with mortality was made by the Mann-Whitney. The performance of scores with an association with mortality been studied by the discriminating power (AUC ROC).
Results: Forty patients were included. We analyzed 41 episodes of infective endocarditis operated. The Mortality was 19%. The median of the logistic system 97 and SRSS were significantly lower in survivors than the deads, respectively [6.2 (interquartile range: 2.8 to 14) vs 27.8 (17.2 to 48.1), p=0.01] and [25 (16-33) vs. 35 (26-51), p=0.02]. The additive EuroSCORE Logisitic EuroSCORE the OPR and the score were not associated with mortality ($p> 0.05$). The area under the ROC curve was 0.87 for the logistic score System 97 and 0.76 for the SRSS. There was no significant difference between the AUC of ROC curves of logistic System 97 and SRSS (p=0.48). The ROC curve has shown that threshold 16, the logistic predicted mortality System 97 with a sensitivity (Se) of 86% and specificity (Sp) of 79% with an odds ratio of 21 (confidence interval [2.2 to 208.84]). The threshold score 24 for the SRSS had best couple "Se-Sp" with a 100% Se and Sp of 48.5%.
Discussion: Logistic System 97 and SRSS were used to predict hospital mortality in our study. The prognostic scores can help the selection of patients for surgery, management of hospital resources and comparison of studies in infective endocarditis.

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Paper No: 1273.0

Protocol for Anesthesia to Bariatric surgery: the outecome of 915 cases

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Introduction: In recent years the surgical treatment of Morbid obesity (MO) has been increasing membership in the scientific community. MO brings many pathophysiology systemic changes, so these patients will benefit from a multidisciplinary assessment. In 2003 and with the development of a Centre for Bariatric Surgery at the Hospital São Sebastião, it was created a multidisciplinary perioperative team for the obese patients. In this context the Anesthesiology Department developed a protocol approach for the patient with MO, which has been strictly applied in an attempt to reduce morbidity and mortality of these patients.
Description: We analyzed a data base of 915 patients. All passed by the preoperative appointment for stratification of cardiovascular, respiratory and metabolic risk. In this consultation was also evaluated the airway and programmed handling of ventilation in postoperative setting (noninvasive and invasive ventilation). Based on this data set, an

anesthetic protocol was developed through perioperative period in order to reduce the major complications of this particular group of patients.
Results: Mean age (years): 39 (18-67);Sex: Male-767,Female-184; Weight(Kg):115,3 (77-203); IMC(Kg/m2): 45,84 (34-75); ASA classification: II-522, III-338, IV-55; Mean neck circumference: 42 cm (+ ou −12; Difficult airway criteria-292. Type of procedure: Gastric bypass-91%, Adjustable gastric band-6% Gastrectomy-band-3%. Intubation resolved with laringoscopy-728; Intubation resolved with videolaringoscopy (GlidescopeTM)-187; Residual curarization-5;BIPAP/VNI in recovery area-430; Invasive ventilation in Intensive area on postoperative period-7; Pulmonary atelectasy postoperative-6; Early surgical morbidity (Anastomotic dehiscence, intra-abdominal abscess, fistula)-59; Severe late surgical morbidity(Anastomotic stenosis, occlusion)-25; Overall mortality-4; Mortality related to anesthesia-0.
Conclusion: We conclude that the comprehensive assessment, risk stratification and the existence of a specific anesthetic regimen appears to contribute to a low morbidity and mortality related with perioperative anesthesia care in Bariatric Surgery.

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Case study series of post-anesthesia eye injury

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Introduction: In surgical and anesthetic procedures, the anesthesiologist stands out as an instrument for injury prevention. The eye complaints are not unusual, though often undervalued, impairing not only physical and functional to patients, such as economic and legal charges to responsible, so prevention becomes critical.
Objectives: To describe the epidemiological characteristics of patients, the main types of eye injuries, considering the use of eye protection, and identify possible risk factors inherent in surgery and anesthetic that can be correlated.
Methods: The cases of eye complaints were selected quality indicators of patients at a private hospital in São Paulo from January 2007 to December 2010. Data were tabulated and analyzed frequencies against the total sample.
Results: During 39,431 surgical procedures were performed, with nine reported cases, ie, an incidence of 2.3: 10,000. Six male and three females, age 58.9 ± 19.5 years. Classified as ASA I (33.3%), ASA II (55.6%) and ASA III (11.1%). A surgery was urgent and 8, electives. Intravenous general anesthesia was used in 4 cases, 4 cases and balanced in a case of use of regional block associated with general anesthesia. Five (55.6%) patients were placed in the supine position, one (11.1%) in the lithotomy position, two (22.2%) in the prone position and one (11.1%) in lateral. All patients were given eye and occlusion in 5 cases added lubricating eye. Of ocular signs and symptoms, all had red eye, 55.6% (5 / 9), pain / burning eyes, 11.2% (1 / 9), visual impairment, 11.2% (1 / 9) ocular discharge and 11.2% (ninth), photophobia. Four patients were followed by ophthalmology, and diagnoses relevant to exposure keratitis and corneal scarification, there was no period in case of permanent injury.
Conclusions: Understanding the risk factors and characteristics that predispose the occurrence of eye injury during surgery is of paramount importance for prevention strategies are developed. Despite an apparently low incidence of such complications, the potential for serious and permanent injury, such as retinal ischemia, among others, justify the care and active search for quality services in anesthesia. Although our study ratifies the literature data, There are few guidelines that serve as reference to guide the eye protection practices taking into account the differences between positioning, surgical time, patient's physical status, among other aspects, therefore, a vast field of research.

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Paper No: 1289.0

Vocal cord paralysis and tracheal stenosis - anaesthetic approach for pulmonary lobectomy

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Introduction: Bilateral vocal cord paralysis is currently an infrequent complication of thyroid surgery(1). Its consequences range from dysphonia, hoarseness, stridor, dyspnea and respiratory failure requiring tracheostomy.
Objectives: We report the anaesthetic approach and complications of right upper pulmonary lobectomy performed in a patient with unilateral vocal cord paralysis post-thyroidectomy and tracheal stenosis post-tracheostomy.
Methods: Female patient, 36 years old, physical status ASA II was submitted to pulmonary lobectomy. She was premedicated with midazolam and hydrocortisone. General anaesthesia was induced with propofol, fentanil and rocuronium and the patient was intubated with a left double lumen endotracheal tube 35Fr. The correct position of the tube was confirmed with bronchofibroscopy. Anaesthesia was

maintained with sevoflurane, fentanil and rocuronium. After surgery an epidural cateter 20G was inserted at level T7-T8 for postoperative analgesia.

Results: The anaesthetic induction and maintenance had no complications. Laryngoscopy was classified as grade 1 (Cormack Lehane) and there was no difficulty in the insertion and advancement of the endotracheal tube. The patient was extubated after reversal of neuromuscular block, with effective analgesia and no respiratory distress. During emergency and after extubation the patient developed bronchospasm and laryngospasm that required re-intubation with a cuffed endotracheal tube 7,5mm. After a few minutes there was a reversal of symptoms. The patient was transferred to the intensive care unit and extubated 4 days later.

Conclusion: The patient had bilateral vocal cord paralysis caused by total thyroidectomy procedure, so she was then tracheostomized during 1 year. Then she underwent surgery that gave her the mobility of one of the cords. However, she developed permanent hoarseness and stridor related with episodes of stress. Now she has stenosis of the trachea in about 1cm, as a consequence of the tracheostomy, as showed by bronchofibroscopy. In spite of these alterations it was possible the introduction of a 35Fr double-lumen endotracheal tube without any difficulty. Although an induction and maintenance without complications, the endotracheal tube was probably the cause of the laringo and bronchospasm after the extubation, a detail that could not be avoided. In this case its extremely important a proper assessment of the airway, preparation of material for possible difficult intubation and intensive care unit available for the patient.

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Paper No: 1297.0

A Program to Teach Moderate Sedation in the Gastrointestinal Endoscopy Suite

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Background: Gastrointestinal endoscopists currently perform an average of 12 esophagogastroduodenoscopies and 22 colonoscopies per week in the United States.1 The use of moderate sedation during endoscopic procedures has improved the overall quality of the examination,2 increased both patient and physician satisfaction 3 and has, with few exceptions, become standard practice. Credentials required to perform moderate sedation vary among institutions, but published guidelines require providers to obtain training in the pharmacology of the agents commonly used, the ability to recognize complications associated with sedation, and advanced life support skills.4 Despite this, significant morbidity and mortality still exist related to sedation practices.5 Here we describe a simulation-based training program designed to train non-anesthesiologists in the administration of moderate sedation.

Methods: The project was supported by the Veteran's Affairs' National Center for Patient Safety in the US. We designed a program that incorporates clinical information relevant to moderate sedation practice but also emphasizes deliberate practice of technical skills (monitoring, airway support maneuvers, etc. as well as teamwork, leadership and communication. The program utilizes the "Moderate Sedation Toolkit for Non-Anesthesiologists", an educational tool produced by our group that has been published elsewhere.6

Description: The program includes:

(1) Didactic sessions designed to highlight core and target-audience derived moderate sedation topics

(a) The Moderate Sedation Toolkit for Non-Anesthesiologists is provided to trainees for review prior to the date of training

(b) A one hour-long session is conducted for GI nurses and physicians; the session will include identification and management of high-risk patients with emphasis on capnographic monitoring and dosage and titration of sedative-analgesics

(1) High-fidelity manikin in situ simulation sessions that will allow participants to integrate and apply learned moderate sedation concepts in the context of nurse / physician teams. Sessions will include four 20 minutes simulation scenarios followed by a video-assisted debrief.

(2) Effective teamwork, communication, and leadership skills are taught as part of the course.

(3) Program evaluation methods to measure effectiveness of the teaching program Summary We describe a moderate sedation training program for nurse/ physician teams providing moderate sedation in a GI endoscopy unit at a tertiary teaching hospital. The program utilizes a previously published educational toolkit in conjunction with in-situ high fidelity simulation. Non-technical skills are thought and evaluated as part of the program.

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