

GERIATRIC ANAESTHESIA

Paper No: 110.00

A study of the rate of change in BIS values during the induction of anesthesia due to differences in propofol dosage and aging

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Background: There are many reports on delayed emergence from anesthesia in the elderly due to propofol, but there are few reports that have considered the differences due to age at the time of induction. In this report, we conducted a study of the time taken to reach a hypnotic state subsequent to propofol bolus administration, after dividing the cases by dosage and age.

Method: Taking as subjects 100 patients from ASA Evaluation I-II, we conducted a study on the Propofol dosage for anesthesia induction and BIS values. We measured the time (t50, seconds) until the BIS value reached 50 subsequent to Propofol administration, divided the subjects into four groups: those 70 years of age or older with Propofol dosages of 2 mg/kg (I-P2) and 1.5 mg/kg (I-P1.5), and those below 70 years of age with P dosages of 2 mg/kg (II-P2) and 1.5 mg/kg (II-P1.5), and we then performed a comparative study.

Results: In a comparison between I-P2 and II-P2, a significant difference ($p < 0.0001$) in t50, at 64.10 versus 51.11 seconds, was observed. Moreover, in a comparison between I-P1.5 and II-P1.5, t50 was 63.17 versus 54.18 seconds ($p = 0.2368$). For the correlation coefficient between age and BIS50, a significant correlation was observed at a P dosage of 2 mg/kg of 0.557 ($p < 0.0001$), but no significant correlation was observed at 1.5 mg/kg of 0.217 ($p = 0.3015$).

Conclusions: Regarding delays in the time for anesthesia induction due to propofol at an advanced age, we have already published with respect to the possibility of a drop in sensitivity to anesthetic drugs due to advancing age. In addition, from these results, the delay in the time for anesthesia induction at a Propofol dosage of 2 mg/kg is obvious, but at a Propofol dosage of 1.5 mg/kg, between the two groups, no significant difference was observed in t50. This is because a Propofol dosage of 1.5 mg/kg has a wide range of t50 values regardless of age, even with young subjects, many cases requiring time have been observed. From the above, at a Propofol dosage of 1.5 mg/kg, the dosage was found to be too small to obtain an adequate level of hypnosis for young subjects.

Paper No: 117.00

Comparison of the effect of prophylactic ephedrine, ringer's lactate and colloid applied during spinal anesthesia on hemodynamic parameters in geriatric patients

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Introduction: Hypotension is the most complication during spinal anesthesia. Efforts to prevent hypotension have been attempted like preloading with crystalloids, colloids or use of vasopressors. The role of volume preloading to prevent hemodynamic changes associated with spinal anesthesia in elderly patients has been recently questioned.

Objectives. We planned to investigate the effects of prophylactic ephedrine, Ringer's lactate and colloid applied during spinal anesthesia on hemodynamic parameters in geriatric patients.

Methods: After our study was approved by faculty ethics committee, 60 years old or older 75 patients meet ASA I-II groups, planned urogenital tract surgery, without contraindications for spinal anesthesia were included the study. Patients were divided into 3 groups. Group R received 1000 ml Ringer's lactate, Group C received 500 ml HES solution with pump 20 min before surgery. Group E received 1000 ml Ringer's lactate + 10 mg ephedrine (2 ml of volume) 20 min before surgery. Maintenance of patient was provided by Ringer's lactate for 5 ml/kg/h. The systolic blood pressure, diastolic blood pressure, mean arterial pressure, heart rate and peripheral oxygen saturation of patients were recorded at 5, 10, 15 and 20 min after start of pump infusion, before puncture and during operation. Based on the baseline values before fluid introduction, 30% of decrease in systolic blood pressure were considered as hypotension and hypotension was interfered by 5 mg IV ephedrine.

Results: The findings revealed that the hemodynamic changes occurred in all patients. In all of groups, systolic and diastolic blood pressure and mean arterial pressure were slightly increased before puncture and intraoperative 5 min. They were also significantly higher than control values ($p < 0.05$). But overall incidence of hypotension was lower with colloid group. Heart rates were nearly the same as the control values in Ringer's lactate, colloid and ephedrine groups.

Conclusions: We concluded that ephedrine, Ringer's lactate and colloid can be used safely in elderly population but

hemodynamic parameters were more stable in patients introduced colloid infusion.

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Paper No: 201.00

The effect of anesthesia on the outcome of Obturator Hernia surgery in super aged

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Introduction: Recently, there are many studies about the effect of anesthesia on the postoperative patients' outcome. But there are few studies which paid special attention to geriatric patients. (Objectives) We studied about the association between the technique of anesthesia and postoperative outcomes of very advanced age patients, retrospectively.

Methods: Sixteen patients scheduled for obturator hernia repair were assigned to two groups. Anesthesia was performed with General anesthesia only (group GA; n = 6) or Epidural anesthesia combined with general anesthesia (group EG; n = 10). We compared length of postoperative hospital stay (representative to short-term outcome), age, ASA-PS, surgery time, total fluid and transfusion intake, WBC count and Lactate immediately before surgery between the two groups.

Results: The mean length of postoperative hospital stay was significantly shorter in group EG (11.5 days: 50 percentile) than in group GA (39.5 days: 50 percentile). Mean age was very advanced: 87.5 years old (group GA), @86.5 years old (group EG), respectively. Other parameters expected to affect outcome did not show significant difference between two groups. Mann-Whitney analysis was performed and Statistical differences were considered significant if the P values was less than 0.05.

Conclusions: Obturator hernia is a rare disease, more common in older skinny female patients. Therefore there may be insufficient patient number to fulfill statistical

analysis. Results of this study suggest that epidural anesthesia may improve outcome of the geriatric patients.

Paper No: 205.00

Remifentanil as main anesthetic in cataract surgery

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Local anesthesia is currently used for many ophthalmic operations as it is associated with reduced morbidity and mortality when compared with general anesthesia. Unfortunately the concomitant administration of sedation may generate several problems such as confusion, disorientation and reduced cooperation which results in difficulties for the surgeon. Nevertheless because patients with cataract surgery tend to be old and may have serious co-morbidities such as Alzheimers disease, mental retardation or blindness in the other eye, general anesthesia may be needed in this subgroup of patients. So this study was designed to evaluate the hypnotic effect of remifentanil using cerebral state index in this group of patients. We also assessed whether significant implicit or explicit conceptual memory occurred in the period after emergence from anesthesia. Thirty six patients aged (60 to 82) participated in the study. The baseline BP, HR, and CSI were measured when the patients were stable before anesthesia. No patients received premed outside operation room. After injection of fentanyl 1 µg/kg/min, propofol 0.5-1mg/kg and lidocaine 1mg/kg and atracurium 0.5mg/kg LMA was inserted. Anesthesia was maintained with Remifentanil 0/1 µg/kg/min plus N2O/O2 50/50. Mean arterial pressure, heart rate and CSI were recorded every 3 min throughout remifentanil infusion. Two words like (red-green) were presented to the patient via headphone and the patients were asked to remember the two items postoperatively. No report of explicit or implicit memory was noted. Future work will be needed to address whether remifentanil only anesthesia has sedative or hypnotic effect besides cardiovascular stability and easy awakening.

Paper No: 412.00

Effects of bispectral index monitoring during anaesthesia on isoflurane consumption, hemodynamic variables and recovery profiles in elderly Pakistani patients

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Introduction: With the advancement in medical sciences the number of elderly patients requiring anesthetic intervention has increased. Age related limited physiological reserves and associated comorbidities in these patients require careful titration of anaesthetic agents. The use of Bispectral index (BIS) monitoring may be helpful for the titration of anaesthetic agents, thus maintaining haemodynamic and recovery profiles in elderly patients. The objectives of this study were to evaluate the effect of BIS monitoring on isoflurane consumption and hemodynamic variables of these patients during maintenance and recovery profiles at the end of anaesthesia. It was a Quasi experimental study conducted over a one year period at the main operating rooms of Aga Khan University Hospital Karachi.

Methods: A total 60 patients aged 60 years and above were enrolled in either standard practice (SP) or (BIS) group. In SP group the anaesthesia depth was maintained as in routine clinical practice taking into consideration the patients' haemodynamic variables, while in the BIS group by keeping BIS score between 45 and 55. Standardized anaesthesia care was provided to all the patients. Data including demographics, isoflurane consumption, hemodynamic variables and recovery profiles were recorded in both groups.

Results: The mean Isoflurane consumption was lower ($p = 0.001$) in BIS group. The time to eye opening, extubation and ready to shift was shorter ($p = 0.0001$) in BIS group. The patients in BIS group had higher Post anaesthesia recovery score ($p = 0.0001$) than the SP group.

Conclusion: The use of BIS in elderly Pakistani patients resulted in 40 % reduction of isoflurane usage. The patients having BIS monitoring awoke earlier and had better recovery profiles at the end of anaesthesia.

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Paper No: 424.00

Determinants of 30-day survival after emergency surgery in nonagenarians

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Introduction: Nonagenarians are the fastest growing segment of the population in many European countries, and they often need emergency surgery. Moreover, they are sometimes operated on in conditions where an elective procedure would be precluded. Yet little is known about the outcomes in terms of 30-day survival. As a result, we performed a descriptive observational study to determine the main factors associated with 30-day survival in nonagenarians undergoing emergency surgery.

Methods: We recruited all patients of 90 years and above who underwent emergency surgery in our tertiary care centre between July 2006 and 2011. The variables recorded included patient demographics, comorbidities, type of procedure, blood transfusion, postoperative complications, length of hospital stay, and mortality. We performed a univariate analysis using X2 to single out the factors that are associated with mortality. Then we used those variables to calculate Kaplan-Meier survival curves (KMsc). Finally, we performed a stepwise Cox regression analysis with those variables that were significant in KMsc.

Results: 135 patients were included. The overall 30-day mortality rate in the total population was 35.8%. The variables associated with a reduced 30-day survival, according to KMsc were preoperative neoplasm ($p = 0.001$), thrombectomies ($p = 0.031$), postoperative heart failure ($p = 0.0179$), pulmonary aspiration ($p = 0.001$), acute renal impairment ($p < 0.001$), stroke ($p = 0.05$), haemorrhage ($p = 0.012$), abdominal complications ($p = 0.001$), respiratory insufficiency ($p = 0.001$), and sepsis ($p < 0.001$). According to our Cox analysis, those factors that were independently associated

with a shorter survival were 1 preoperative comorbidity: cancer; and 4 postoperative complications: heart failure, pulmonary aspiration, acute renal impairment and stroke.

Conclusions: There was just one preoperative comorbidity and 4 postoperative complications that proved relevant independent predictors of a short perioperative survival. As a result, these outcomes point in the direction of other studies,¹ where immediate postoperative complications were demonstrated to be an independent predictor of perioperative survival, irrespective of the patients' preoperative risk. Hence, the need for prevention of postoperative complications.

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Paper No: 470.00

Comparison of sevoflurane volatile induction and maintenance anesthesia and propofol-fentanyl total intravenous anesthesia during laparoscopic surgery in elderly

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Introduction: Anesthesia in laparoscopic surgery in elderly patients is associated with the high risk of cardiovascular complications due to a combination of anesthetic drugs, the effects of mechanical ventilation, and existing cardiovascular disease. Ensuring hemodynamic stability is one of the highest priorities in these patients.

Objectives: This study was designed to compare the efficacy and safety of propofol-fentanyl total intravenous anesthesia and sevoflurane volatile induction and maintenance anesthesia laparoscopic surgery in elderly patients

Methods: 89 ASA III patients with acute cholecystitis undergoing laparoscopic cholecystectomy were randomly assigned to either propofol-fentanyl total intravenous anesthesia (TIVA group (45 patients)) or sevoflurane volatile induction and maintenance anesthesia (VIMA group (44 patients)). Average score on the Lee index was comparable in both groups and corresponded to moderate risk of developing cardiovascular complications. Comorbidity was presented with coronary heart disease, hypertension, or a combination thereof. Intraoperative parameters, complications, recovery, patient satisfaction, and cost were compared between both groups.

Results: Hypotension during the anesthesia requiring support with phenylephrine was recorded in 26 (57,7%) patients in TIVA group and in 9 (20,4%) patients in VIMA group (MAP reduction was 38% vs. 12%, ($p < 0.05$)). Most episodes of hypotension were observed in the induction period. At

other times, no significant difference in hemodynamic parameters were noted. Induction time, as well as time to intubation was 1,3 times less in propofol anesthesia. Time of recovery of consciousness, time of extubation and time to full orientation were comparable between two groups. The incidence of PONV was 22,2% in TIVA group and 25% in VIMA group. The difference in the overall patient satisfaction scores between both studied groups was not statistically significant (93,3% in TIVA group vs. 93,1% in VIMA group). The cost of the VIMA was 1,4 times lower ($p < 0,05$) than that the TIVA. All patients were discharged after 48 hours without any serious cardiovascular events.

Conclusion: The method of volatile induction and maintenance anesthesia compared with propofol-fentanyl total intravenous anesthesia in patients at high risk of cardiovascular complications provides a more slowly but more stable hemodynamics in the stage of induction of anesthesia and tracheal intubation, with a comparable incidence of adverse effects. VIMA was associated with lower cost than TIVA.

Paper No: 484.00

Does low-dose intrathecal morphine cause postoperative hypotension in patients undergoing hip replacement?

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Introduction: Intrathecal morphine provides effective postoperative analgesia in patients undergoing hip replacement (1). At our institution, orthopedic surgeons have complained about severe cases of hypotension after hip arthroplasty in patients receiving intrathecal morphine. This adverse effect has not been described in a recent metanalysis (2).

Objectives: The aims of this study were to 1) Determine the association between intrathecal morphine and postoperative hypotension in patients undergoing hip arthroplasty, 2) Assess the influence of intrathecal morphine dose on postoperative hypotension and 3) To assess the quality of analgesia at 24 hours post surgery in patients with and without intrathecal morphine.

Methods: After institutional approval, we retrospectively reviewed the medical records of all (220) patients that underwent hip replacement during the years 2009 and 2010. Criteria for hypotension were: 1) Systolic pressure 30% below the one registered in the preoperative consultation, 2) Need for evaluation by the resident in the surgical ward, 3) Any systolic pressure below 80 mmHg. The occurrence of postoperative hypotension was compared in patients with and without intrathecal morphine using survival analysis.

The follow-up started immediately after leaving the operating room until 36 hours post-surgery.

Results: The median age was 70 years old, 67% were women, 70% ASA physical status II, 83.5% received spinal anesthesia. The median dose of intrathecal morphine was 100 µg (range 35–150 µg). 156 patients (72%) received intrathecal morphine and 62 (28%) did not. Both groups were comparable in terms of sex, age, ASA status, arterial hypertension prevalence and intraoperative transfusion requirements, however intraoperative fluid administration was significantly greater in the intrathecal Morphine group. The rate of postoperative hypotension was similar between these two groups (Logrank test $p = 0.179$). The only risk factor for postoperative hypotension was age (in decades): Hazard ratio = 1.32; 95%CI = 1.05–1.67; $p = 0.016$. The intrathecal dose of Morphine was not related to the occurrence of hypotension (logrank $p = 0.706$). The intrathecal Morphine group had significantly lower VAS score (Median = 0) than the patients without Morphine (VAS score median = 2) $p = 0.017$.

Conclusions: Age was the only risk factor for postoperative hypotension in patients undergoing hip arthroplasty; the older the patient, the greater the risk of hypotension.

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Paper No: 512.00

The Incidence of Desaturation in Patients Undergoing Total Knee Arthroplasty During Anesthesia: A Comparison of General Anesthesia Combined with Epidural Anesthesia and General Anesthesia Alone

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Introduction: Desaturation often occurs during general anesthesia for total knee arthroplasty, because these surgical patients are more likely to be elderly and obese, as well as suffer from pulmonary embolism after the deflation of a tourniquet (1–3). While, there are conflicting results whether combined epidural anesthesia improves or worsens arterial oxygenation during general anesthesia (4–6).

Objectives: To confirm the beneficial effect of epidural anesthesia upon oxygenation, we compared the incidence of desaturation between general anesthesia with and without epidural anesthesia in spontaneously breathing patients undergoing total knee arthroplasty.

Methods: After obtaining IRB approval and informed consent, 338 patients, aged 65–89 yr (a mean of 75.5 yr), undergoing total knee arthroplasty under general anesthesia with or without epidural anesthesia were enrolled in this study. The patients receiving general anesthesia alone for surgery had the following reasons; patient refusal, cutaneous disorders at the insertion site, and preoperative impaired coagulation status. In these patients ($n = 125$) after general anesthesia induction with fentanyl 1–2 µg/kg, propofol 1.5–2 mg/kg and 5% sevoflurane, a laryngeal mask airway was inserted, and anesthesia was maintained with 1% sevoflurane and 50% N₂O in oxygen, along with intermittent injection of fentanyl 0.5–1 µg/kg. In the remaining patients ($n = 213$) 2% lidocaine 3–7 mL was injected intermittently through the epidural catheter at L2/L3, while general anesthesia was induced similarly and was maintained with 1% sevoflurane and 50% N₂O in oxygen without supplemental fentanyl after insertion of a laryngeal mask airway. Several minutes after anesthesia induction, spontaneous breathing resumed in all patients. Hemodynamic and respiratory variables were recorded at 1–5 minute intervals. Ephedrine 5–10 mg, nicardipine 0.5–1 mg, atropine 0.3–0.5 mg or landiolol 20–80 µg/kg/min were given as rescue drugs for the treatment of hypotension, hypertension, bradycardia or tachycardia, respectively. Desaturation was defined as SpO₂ (measured by a pulse oximeter) of less than 95% for >5 min during general anesthesia. Data were analyzed by analysis of variance, Scheffé's F test or a chi-square test for comparisons between groups or within each group, with $P < 0.05$ being significant.

Results: There were no differences in any baseline data between groups. The incidence of desaturation was significantly lower ($P < 0.001$) in patients receiving epidural anesthesia (9 patients of 213 patients; 4.2%) than patients receiving general anesthesia alone (37 patients of 125 patients; 29.6%).

Conclusion: The combined use of epidural anesthesia with general anesthesia decreased the intraoperative occurrence of desaturation in spontaneously breathing patients undergoing total knee arthroplasty.

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Paper No: 655.00**Delirium during cataract surgery with monitored anesthesia care**

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Introduction: Delirium is an altered state of consciousness with different manifestations, most common being disorientation, agitation and overactivity. Previous studies investigated postoperative delirium in patients who had cataract surgery under general anesthesia or under a block with or without monitored anesthesia care (MAC), but none focused on the intraoperative period.^{1,2} Because of improved surgical techniques, most cataract surgeries are currently performed with topical anesthesia and MAC. During the critical periods of surgery, delirium with sudden movements can result in serious consequences.

Objectives: Objectives of the current study were to determine the incidence of delirium, to identify the preoperative risk factors, and to examine the intraoperative use of drugs that may contribute to the delirium in patients undergoing cataract surgery.

Methods: After IRB approval, we prospectively analyzed specially designed anesthetic records of 1233 patients who had undergone cataract surgeries during a one-year period (from February 2010 until January 2011). Restlessness, sudden movements and incoherence were considered indicative of delirium.

Results: The incidence of delirium was 4.62% (57/1233), and the mean duration of delirium in those 57 patients was 10.7 minutes. There were no differences between the delirious and non-delirious patients with respect to age or gender. However, a higher percentage of patients with delirium compared with those without delirium (11.3% vs. 2.9%, respectively) had a history of senile dementia, Alzheimer's disease, bipolar disorder or depression. Patients with delirium received higher doses of midazolam and fentanyl than patients without delirium. In patients who had delirium, even small doses of propofol worsened the condition.

Conclusions: We identified certain neurological impairments as preoperative risk factors, whereas the use of high doses of sedative and opioid drugs as intraoperative risk factors in patients who developed delirium. Based on our findings, we suggest that prior to surgery, the patient and the family should be carefully questioned regarding the patient's neurologic function and, if a significant impairment is identified, general anesthesia should be considered. For those patients who are having surgery under MAC, sedatives and/or opioids should be given in smaller doses and titrated to effect, and whenever possible should be limited to one

drug. Also, once delirium is detected, propofol should be avoided.

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Paper No: 771.00**The association between difficult mask ventilation and neck circumference in the elderly during anaesthesia**

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Introduction: The elderly are a vulnerable group prone to develop complications such as hypoxia from difficult mask ventilation during anaesthesia. The relationship between the neck circumference and severity of obstructive sleep apnea has been demonstrated in previous studies.

Objectives: To determine the association between difficult mask ventilation and neck circumference in the elderly after induction of anaesthesia

Methods: After approved from the institutional ethical committee, the study was conducted in 282 elderly patients (age < 65 years) undergoing general anaesthesia for elective surgeries. All data including neck circumference, thyromental distance, Mallampati score, mandible protrusion test and body mass index, history of snoring and presence or absence of teeth were recorded prior to induction of anaesthesia. The mask ventilation was performed by experience anaesthesiologists unaware of the recorded data. Preplanned analysis of the collected data was conducted by using SPSS, version 12. The univariable and multivariable (multiple logistic regression) analyses were performed. A $p < 0.05$ was considered to be statistically significant.

Results: Difficult mask ventilation occurred in 38 patients (13.5%) and was significantly associated with neck circumference, body mass index, edentulous, negative mandible protrusion test and history of snoring ($p < 0.05$, multiple logistic regression analysis). From the ROC curve, the sensitivity and specificity of the neck circumference > 37 cm. in predicting difficult mask ventilation were 84.2 and 91.8%, respectively. After controlling for sex, BMI, edentulous, history of snoring, negative mandible protrusion test, there was an association between the risk of difficult mask ventilation and neck circumference > 37 cm. with the Odds ratio (95% CI) of 17.5 (3.1, 99.8). **Conclusions:** Neck circumference could be one of the independent variables associated with the increased risk of difficult mask ventilation in the elderly

undergoing anaesthesia. Further utility study regarding this measurable variable should be considered.

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Paper No: 790.00

Anesthesia of patients over age 90: a 9-year hospital based review

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Introduction: There is a continuous increase in the proportion of elderly patients undergoing surgical procedures. The incidence of serious adverse events in the perioperative period was significantly higher among elderly patients. In many studies, older age is a significant predictor of perioperative morbidity and mortality¹. But the perioperative risk has been reduced due to progress in the field of surgical techniques and anesthesia safety, and the number of elderly patients who are undergoing surgery is growing from year to year. Objectives: the aim of this study was to retrospectively review our own experience with anesthesia of patient over age 90.

Methods: A consecutive series of 309 patients over age 90 underwent surgery between January 2002 and December 2010 at our hospital, were retrospectively reviewed. To fit lines which show trends over time we applied a linear regression model.

Results: The patients were predominantly female (M:F 119:190). 135 surgeries were done under general anesthesia, and 36 surgeries were done under regional anesthesia, 138 surgeries were done under local anesthesia. There was significant increase in the annual surgery (slope = 2.8, $p = 0.008$) and surgery under general anesthesia (slope = 1.6, $p = 0.036$). The most common surgery department was orthopedics and the second most common surgery department was ophthalmology.

Conclusions: Over the past nine years the absolute number of surgery of patient over age 90 showed a tendency to increase.

Reference

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Paper No: 845.00

Is postoperative cognitive dysfunction a risk factor for dementia?

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Introduction: Postoperative cognitive dysfunction (POCD) is a common complication among the elderly following major surgery (1). An association between POCD and the development of dementia has been suspected (2).

Objective: To assess if POCD was a risk factor for the occurrence of dementia.

Methods: Danish patients enrolled between November 1994 and October 2000 in the two International Studies of Postoperative Cognitive Dysfunction (ISPOCD 1 & 2) were followed until July 1st 2011. Cognitive performance was assessed at three time points: preoperatively, at one week and at three months after surgery using a neuropsychological test battery. A patient was considered to have POCD if the Z-score of the difference with the preoperative cognitive assessment, using the mean and standard deviation from a non-surgery control group, was larger than 2, as previously described (1). The time of (first) occurrence of dementia after surgery was assessed using the National Patient Register and the Psychiatric Central Research Register. Recorded dementia diagnoses (ICD-8 and ICD-10) were: Alzheimer's disease, vascular dementia, frontotemporal dementia, or dementia without specification. The risk of dementia according to POCD was assessed in Cox regression models.

Results: 701 patients with a median age of 67 years were followed for a median of 11.1 (IQR 5.2–12.6) years. POCD was found in 118 (19.7%) and 57 (9.8%) after one week and three months, respectively. Only 32 patients developed dementia during follow-up. The hazard ratio (95% CI) for any dementia diagnoses in patients with POCD at one week and POCD at three months after surgery compared to patients without POCD was 1.13 (0.47 – 2.71); $P = 0.78$ and 1.53 (0.52 – 4.55); $P = 0.44$, respectively.

Conclusion: POCD was not associated with a significant increase in the dementia incidence.

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Paper No: 857.00**Preoperative risk factor associated with postoperative delirium after trauma and orthopedic surgery**

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Introduction: Post-operative delirium (POD) is an adverse event usually associated with age, and its incidence was reported between 19 and 60% in orthopedic surgery. Identifying risk factors and initiating early treatment could reduce its incidence 1.

Objectives: To determine the incidence of POD in Post Anesthesia Care Unit (PACU) after major trauma and orthopedic surgery and identify associated pre-operative risk factors in a tertiary university hospital.

Methods: We designed a prospective, observational study including consenting patients scheduled to stay in PACU overnight (>12hs) between April and August of 2011. Inclusion criteria were total or partial hip or knee replacement and hip fracture reduction. Emergency interventions were excluded. Delirium was diagnosed by the Confusion Assessment Method (CAM)3 and/or using data from medical record. Anova was employed for quantitative variables and Chi-2 for qualitative variables. $p < 0,05$ was considered significant.

Results: 115 consecutive patients were analyzed. 30 (26%) were submitted to hip fracture reduction, 27(23,5%) to total hip replacement, 54 (46,9%) to total knee replacement, 4(3,5%) to partial knee replacement. 23 patients (20%) presented at least one episode of POD, with a higher incidence of POD in patients operated for hip fracture (OR = 7,38; $p < 0,001$). Patients who presented an episode of POD were older (POD: 85,8; \pm 5,8 yrs; No POD: 72,2; \pm 12 yrs; $p < 0,001$), were more subjects to previous cognitive impairment (CI) (2/92 (2,1%) patients with no CI presented POD vs. 4/19 (21%) patients with CI; OR = 9.47; $p = 0.003$). POD was more frequent in patients with ASA score ≥ 3 (6/69 (8,7%) ASA 1-2 patients presented POD vs. 17/23 (73,9%) ASA 3-4 patients; OR = 8,5; $p < 0.001$), depression (OR = 3,55; $p = 0,014$), chronic renal failure (OR = 19,6; $p < 0,001$) and diabetes (OR = 3,2; $p = 0,02$). Visual impairment was associated to POD (OR = 2,7) even though difference was no statistically significant ($p = 0,07$). Preoperative hospital stay was higher in patients with POD (POD: 82; \pm 90,8 hrs; No POD: 28,2; \pm 40 hrs; $p = 0.001$). Hip fracture reduction (OR = 4,78; $p = 0,015$) and chronic renal failure (OR = 14,3; $p = 0,012$) were identified as independent risk factors of POD in a multivariate analysis.

Conclusion: Elderly patients with long preoperative hospital stay, ASA < 2 , operated for hip fracture, with cognitive impairment and depression, diabetes mellitus and chronic renal failure are likely to suffer from POD. Trying to equilibrate

and treat these risk factors might permit to decrease POD incidence and therefore morbi-mortality and health cost.

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Paper No: 973.00**Maxilofacial commando surgery in older patients**

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Introduction: Intraoral cancer is the sixth cause of cancer in the world. The main risk factors are nicotine, alcoholism, and immunologic disturbances. The “Commando Surgery” involves the removal of the lower jaw bone, the floor of the mouth, usually part of the tongue, the front part of the neck and the lymph nodes contained in these structures.

Objectives: To review the anesthesia management and complications in commando surgery in elders patients.

Material and Methods. Bibliography search in Pubmed, OVID, using maxillofacial-anesthesia-comorbidity/ anesthetic management in older patient, since 2005 to present.

Results: Adequate perioperative anesthesiological management, interrelated the surgery's requirement and physiologic changes, time under general anesthesia, and achieve a multidisciplinary medical team are connect with a lower complication rate.

Discussion:

- (1) Probability of the difficult airway due to tumors size, position, and /or invasion also preoperative radiotherapy treatment.
- (2) Standard monitoring and additional invasive monitors.
- (3) Longer surgery's required prophylactic with low molecular weight Heparine to avoid deep venous thrombosis.
- (4) Not allow the core temperature to go lower more than 0,5 to 1°C to basal line.
- (5) Avoid the low blood volume with hypothermia because its can developed peripheral vasoconstriction.
- (6) Must optimize the flap's blood flow with: Hyperdynamic circulation, appropriate fluidotherapy, and normothermia maintenance, also moderate haemodilution to maintain Hto. 30-35 %
- (7) Adequate measuring fluids whether for the surgery's complexity and for the age of the patients.

- (8) To manage the optimal surgical field without bleeding although allowed an adequate perfusion to the flap.
- (9) Controlled Hypotension can be used in some patients and in a specific time in the surgery.
- (10) Older patients have neuronal changes in central and peripheral level such as baroreceptors, plexual nervous, and conduction system heart. Moreover, have changes in their body composition like as fat and muscle mass percentage it has an influence on the distribution and elimination of the anesthetic drugs.

Conclusion. The anesthesiologist has to assess and treat the pre-existing medical disorders in the perioperative period with a possible optimization of the therapy of the co morbidities the intra and postoperative management in these high risk patients and surgery. Time under general anesthesia showed a statistically significant relationship with complication rate and hospital length of stay in multivariate analyses. Patient's age alone is not a prognostic indicator of surgical outcome for major head and neck procedures. Consequently, prevention of complications should focus on optimizing pre-operative co morbid conditions.

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Paper No: 976.00

A single centre study of outcomes from fractured neck of femur – a 5 year audit

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Purpose of study. Fractured neck of femur (FNOF) is associated with significant morbidity and mortality. Only limited data is available regarding intraoperative events for those that go on to have surgical fixation of the fracture.^{1,2} The aim of this audit was to review surgical and anaesthetic interventions and their potential impact on time in the operating theatre and mortality.

Methods: Formal ethics committee approval was not deemed necessary as it was part of an approved Quality

Assurance activity. 1428 entries of single event of unilateral fracture of the neck of femur, between 2004 and 2009, were identified in the hospital database. A randomised sample of 709 was taken. Patient records (electronic and paper) for each patient in the latter group were then obtained and extensively reviewed. Demographic, service and outcome data for those that met the inclusion criteria were recorded in an Excel 2003 database. Statistical analysis was carried out using SAS 9.1 software.

Results: More than three quarters of patients had an ASA score of 3 or greater and 90% were 70 or older. 97% went on to have surgery to repair the fracture, with 35% and 74% operated within 24 and 48 hours respectively. Fixation with a dynamic hip screw was associated with the highest mortality rate of 16% at 12 months, whereas hemiarthroplasty was associated with the highest 30-day mortality rate of 5%. Almost 60% of operations involved general anaesthesia. Addition of peripheral nerve blockade to the general anaesthetic was associated with an increase in mortality from 2% to 4% at 30 days and from 7% to 11% at one year. Median time in the operating theatre was 120 min. There was no difference in median theatre time between general anaesthesia alone and general anaesthesia+ peripheral nerve blockade (110 min). However the median time increased to 160 min in cases where both subarachnoid and general anaesthesia techniques were utilised. The mortality rate was 11% at 30 days and 32% at 12 months for the group overall, this decreased for those who received surgery, to 9% and 30% respectively.

Conclusions: Patients presenting for FNOF are high risk, are often delayed and have extended times in the operating theatre. Operative and anaesthetic techniques contribute directly to the latter. The procedure is associated with a high immediate and delayed mortality rate, which may be related to time in the operating theatre as well as the surgical and anaesthetic choices.

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Paper No: 1170.0

Audit of patients undergoing cemented hemiarthroplasty for neck of fracture femur

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An audit previously undertaken at Medway Maritime Hospital revealed overall mortality in cemented hemiarthroplasty at

11% vs a 15% mortality for uncemented hemiarthroplasty. It was noted that there was an increased incidence of peri-operative deaths following cemented hemiarthroplasty in our sick fracture neck of femur (# NOF) patients. There is currently very minimal evidence available on mortality of cemented procedures in sick # NOF patients

Objectives: To find out the patient characteristics and any pre-operative factors which can influence the mortality in this group of patients ii.To find out the mortality rate iii.To compare mortality rates of uncemented hemiarthroplasty from previous audits iv.To establish any relationship between cementing and other causes of mortality (eg-comorbidities)

Methods: Prospectively audited 28 patients undergoing cemented hemiarthroplasty. Data was collected by anaesthetists doing the theatre list which includes demographics, comorbidities, surgical variables and patient variables on a pre-designed proforma.

Results: All patients were operated within 48 hours from time of admission. The overall 30 day mortality is 7.14% which is increased to 22% in patients with 3 or more than 3 comorbidities (i.e. mortality of 14.5% in patients with 3 comorbidities and 50% in patients with more than 3 comorbidities) The preoperative abnormalities noted were

- (1) FBC (23%)
- (2) U&E(62.5%)
- (3) Spo2 (28%)
- (4) EKG (50%) of patients. Common techniques of Anaesthesia includes GA+Nerve block (45%), Spinal+/- sedation (39.28%). The intraoperative problems include Hypotension (42%) with an average blood loss of 300 ml during operation. The common post-operative complications include UTI(21%), Low Spo2 (10.7%), Pneumonia (7.14%) and Low Haemoglobin (21%). The post operative Haemoglobin dropped by 19.8% and Urea and creatinine were raised by 5.41% and (3.77%) respectively when compared to preoperative values.

Conclusions.

- Our audit findings showed no increased mortality in stable patients correlate with current available evidence.
- However it did show an increased mortality in patients with 3 or more comorbidities. This needs further evaluation and we need to wait till further literature or evidence is available for routine use .Until then, the use of cementing in patients with 3 or more comorbidities needs a cautious approach on a case to case basis. A comprehensive assessment of risks versus benefits of the surgical procedure needs to be done by Consultant surgeon and Consultant Anaesthetist together until further evidence available.
- The preoperative care should be aimed to correct or reduce the above said perioperative complications
- Implement NICE Guideline 124(June 2011):The management of hip fracture in adults

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Paper No: 1212.0

A patient with restrictive cardiomyopathy scheduled for peritoneal dialysis catheter placement

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Introduction: Restrictive cardiomyopathy is a disease of the myocardium that results in an altered diastolic function with impaired ventricular filling. These hemodynamic changes are of special importance in a patient under general anesthesia and positive pressure ventilation. We present the case of a patient diagnosed with restrictive cardiomyopathy who came to the operating room for a peritoneal dialysis catheter placement.

Case description. The patient was a 64 year old male, former smoker, with a history of hypertension, gout, chronic atrial fibrillation, chronic kidney failure, and restrictive cardiomyopathy diagnosed twenty years ago, with multiple hospitalizations for decompensated heart failure in the last year. His medication included oral anticoagulants, diuretics, allopurinol and carvedilol. On Doppler echocardiography he had severely dilated atria, severe tricuspid regurgitation, pulmonary hypertension, and severe mitral regurgitation, dilated right ventricle with systolic dysfunction. He had refractory ascites of approximately 12 litres. Before induction of anesthesia, a large bore intravenous line was started, the right radial artery was cannulated, and baseline ionogram and arterial blood gases were obtained. Anesthesia was induced with fentanyl 250 mcg, propofol 50 mg, and atracurium 50 mg. The trachea was intubated with a number 8 cuffed orotracheal tube and a central line was placed for central venous pressure monitoring. After induction and connection to mechanical ventilation, the patient developed a sustained episode of hypotension with little response to vasopressors and good response to volume expansion and Trendelenburg position. A noradrenaline infusion was started at 0.2 mcg. kg-1.min-1 with good response. After the procedure, extubation was attempted. The PaO2/FiO2 ratio was 150 in the supine Trendelenburg position. A Fowler position was attempted to aid his ventilation but with hemodynamic impairment that made extubation impossible. He was

transferred to the intensive care unit where he was extubated eight hours later. Three days later he was discharged.

Discussion. This case depicts the profound hemodynamic changes that general anesthesia and positive pressure ventilation impose on a restrictive heart. The acute vasodilation that occurs with anesthetics combined with the diminished venous return due to ascites and positive pressure ventilation determine a dramatic decrease in preload that negatively affects cardiac output. This case also shows the ventilation/perfusion mismatches that normally occur in anesthetized paralyzed patients in the supine position and how they can be magnified by changes in abdominal pressure that can alter the usual course of a planned extubation.

Paper No: 1259.0

Aortic valve replacement in octogenarian patients

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Introduction: As a result of increased life expectancy, elderly patients over 80 years of age undergo surgery, making necessary comorbidity assessment, type of surgery and anesthetic technique in this population.

Objective: The aim of this work was to analyze the results of aortic valve replacement due to severe aortic stenosis in octogenarian patients.

Material and methods. One hundred and fifteen octogenarian patients, 64 of which had diagnosis of pure severe aortic stenosis, were retrospectively analyzed in the period comprised between February 2005 and November 2010, using the cardiac surgery data base. Aortic valve replacement was performed at 28-30° C, with antegrade/ retrograde cold blood cardioplegia for myocardial protection and invasive intraoperative monitoring. The anesthetic technique was as follows: combination of previously tritrated benzodiazepines, propofol and fentanyl citrate in anesthesia induction, and non-depolarizing muscle relaxants, and maintenance with 1% isoflurane, remifentanyl 0.1 to 0.2 µg/kg/min. During extracorporeal circulation, propofol (0.04 to 0.06 mg/kg/min) was added to remifentanyl, discontinuing inhalatory anesthesia. Preoperative, intraoperative and postoperative variables were analyzed. Data are expressed as mean ± SD.

Results: Patient age was 82 ± 2 years (80-87). Sixty two percent of the patients were female (40 pts). Eighty four percent of the patients (56 pts) had a history of arterial hypertension, 51% (34 pts) dyslipidemia, 33% (22 pts) history of smoking, 15% (10 pts) chronic renal failure, 24% (16 pts) congestive heart failure, 6% (4 pts) diabetes. Fifty percent of the patients (33 pts) in functional class II and 32% (21 pts) in class III. Operative risk assessment by

Parsonnet score was 11.3 ± 2.3 and by logistic Euroscore 10 ± 5. Eighty three percent of the patients (55 pts) underwent elective surgery and 17% (11 pts) urgent surgery. Pumping time was 97 ± 30 min, aortic cross-clamping time: 72.3 ± 16.2 min, units of transfusion were: red blood cells (3.1 ± 2.6), plasma (1.4 ± 2.1) and platelets (3 ± 6.1). Postoperative complications: 84.8% of the patients required short term, 6.1% long term (>24 h) and 6.1% very long term (>72 h) mechanical ventilation and 10% (7 pts) intraaortic balloon pump counterpulsation. Fifty six percent of the patients (37 pts) had atrial fibrillation, 39% (26 pts) low blood volume syndrome, 23% (15 pts) acute renal failure, 17% (11 pts) atrioventricular block, 6% (4 pts) complete left bundle branch block, 4% (3 pts) stroke, 3% (2 pt) perioperative myocardial infarction, 3% (2 pt) reexploration surgery for excessive bleeding, 12% (8 pts) developed sepsis and 1% (1 pt) received definitive myocardial pacemaker. Cardiovascular intensive care stay was 4.4 ± 7 days and hospital stay 10.1 ± 8.1 days. Hospital and 30-day mortality were 7.5% and 6%, respectively.

Conclusion: Aortic valve replacement surgery can be performed with good outcome in octogenarian patients.

Paper No: 1300.0

Lower educational level is a possible risk factor for postoperative cognitive dysfunction after surgery under general anesthesia

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Introduction: Elderly patients with postoperative cognitive dysfunction (POCD) have an increased risk of mortality, especially after major surgery¹. High educational level is regarded as a protective factor for developing dementia, especially Alzheimer's disease², but little is known about educational level in the development of POCD.

Objective: This study aims evaluating the influence of the level of education in the incidence of POCD in elderly patients undergoing surgery under general anesthesia.

Methods: Seventy one patients older than 60 years old undergoing surgery under general anesthesia were evaluated before surgery and on 7th postoperative (P.O.) day by TICS (Telephone Interview for Cognitive- Standardized, instrument that assesses by telephone the skills of spatial and temporal orientation and memory, requiring only the ability to verbal understanding). Low educational level (LEL) was defined as 4 or less years of formal education and high educational level (HEL) was defined as 8 or more years of formal education. Statistical analysis was performed

with SPSS 17.0, using nonparametric analysis of ordinal data with repeated measurements. P values inferior to 0,05 were considered significant.

Results: HEL and LEL groups presented different TICS values since preoperative period ($P = 0.032$). For comparison between pre and postoperative period, the HEL group presented TICS values of 29.8 ± 5.9 before surgery and 29.0 ± 7.3 at 7th P.O. and for LEL group the TICS values were 17.6 ± 3.1 and 16.7 ± 2.6 , respectively, without difference between groups ($P = 0.07$).

Conclusions: The differences in the TICS values observed since the preoperative period are normal for the educational levels evaluated. Although the decreasing of mean TICS value of the LEL group (5.11%) was greater than the HEL group (2.68%), the sample size analyzed wasn't enough to prove that low educational level is a risk factor for POCD.

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Paper No: 1312.0

Outcomes in 615 Spinal Stenosis Patients Treated With Epidural Steroids

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Introduction: Spinal stenosis is common in geriatric patients, resulting in pain and disability. The treatment options for spinal stenosis include medications, epidural steroid injections, and spinal surgery. Due to age and co-morbidities, epidural steroid injections may be preferred to surgery. Despite the widespread adoption of treating spinal stenosis with epidural steroid injections, the therapy remains largely based on small reviews.

Objective: The aim of this study was to answer the question: Are epidural steroid injections effective in relieving the pain and disability associated with spinal stenosis?

Methods: The study design was a retrospective case review with follow-up survey. Patient inclusion consisted of all patients treated for lumbar spinal stenosis in the pain clinic over 8 years. The follow-up survey was a questionnaire regarding perceived efficacy, increased function, and avoidance of surgery.

Results: There were 1,336 patients who had epidural steroid injections for spinal stenosis at Mayo Clinic Arizona between January 1997 and March 2005. There were 604 (45%) patients who returned the questionnaires.

The duration between injection and the survey ranged from 2 months to 8 years (mean 2.4 years). 380 (51%) respondents were women. 465/594 (78%) responders had received more than one injection. 64% felt the injections were effective in controlling pain. 62% felt that the injections increased their ability to perform activities of daily living. 48% were able to participate in activities that they could not have done without receiving the injections. The injections did not have an effect on patient's perception of the need for spinal surgery.

Conclusion: Reports of epidural steroids in managing symptoms of spinal stenosis are not clear. Snyder(1) felt epidural steroids were of no benefit. Fukusaki(2) found epidural steroids not to be helpful in managing symptoms of neurogenic claudication.

Delpert(3) found epidural steroids to be helpful in pain management in 140 patients with spinal stenosis. Abdi(4) et al showed epidural steroids showed good evidence for short term benefit and limited evidence for long term benefit. Ciocon(5) found epidural steroids to be beneficial in their group of 30 patients with symptomatic spinal stenosis. However, only Delpert had large numbers of subjects.

Our study shows epidural steroids to be useful in managing patients with spinal stenosis. However, the injections did not change ultimate decisions regarding surgery.

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