*British Journal of Anaesthesia* **108** (S2): ii184–ii214 (2012)
doi:10.1093/bja/aer484

BJA

# OBSTETRIC ANAESTHESIA

**Paper No: 9.00**

## Desflurane vs. Sevoflurane for cesarean section with 1 MAC. Neonatal effects

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**Introduction:** The obstetric population has a high incidence of awareness and recall during general anaesthesia for caesarean section. Desflurane, a volatile anesthetic agent with a low blood/gas solubility, has been thoroughly studied but its use (with 1 MAC) in obstetrics has not been adequately evaluated, the same occurs with Sevoflurane.
**Objectives:** This prospective study was undertaken to evaluate the neonatal effects of Desflurane versus Sevoflurane in elective cesarean delivery.
**Methods:** The study was performed from January 2010 to July 2010. Eighty healthy parturients ASA I, aged 22-37 at 38-41 weeks of pregnancy, were randomly allocated in two groups. The first group (group D) received 6% Desflurane and the second group (group S) 2% Sevoflurane, plus 50:50 O2/air mixture. All patients were in the supine position with a left tilt and preoxygenated. They all underwent a rapid sequence induction of anesthesia with Thiopental 5mg/Kg followed by Succinylcholine 1mg/kg for tracheal intubation. Anaesthesia was maintained immediately with a concentration of Desflurane 1 MAC (group D) and Sevoflurane 1 MAC (group S) with 50% O2 and 50% air. Induction delivery time (ID-time) was defined from induction of anaesthesia to umbilical cord clamping. Neonatal outcome was evaluated by vital signs, acid –base status, PO2, PCO2 at birth (blood from umbilical vein), and after 60 min from heel capillary blood, and Apgar score at 1′ and 5′ min. The patients were interviewed about intraoperative awareness 24 and 48 h after operation. Finally we measured the intraoperative satisfaction of surgeons and parturients. Statistical analysis was performed with SPSS software version 17.
**Results:** Patients in both groups developed transient hypertension and tachycardia during induction of anaesthesia (plus 20-24% from baseline) which returned to baseline values in approximately 5 min. Maternal blood loss did not differ significantly between the two groups and none of the patients developed intraoperative awareness (p=0,14, p=0,23). Mean ID-time was equal between groups (3,23+0,14 min group D vs. 3,51+0,32 min group S). Neonatal outcome was good in both groups. Mean values of PH, PO2 and PCO2 did not differ significantly between groups. More neonates (36/40) in the Desflurane group had transient increased cardiac pulses (up to 130 bits) versus the Sevoflurane group (12/40) ($P<0.05$). Satisfaction of surgeons and parturients was equal between groups.
**Conclusions:** The similarity of Acid-base variables, PO2, PCO2, Apgar score at 1′ & 5′ between groups indicates that both inhalational anaesthetic agents are safe for mother and newborn when administered at 1 MAC in elective cesareans sections.

**Paper No: 97.00**

## Observational study to assess postoperative pain management strategy in elective caesarean section patients

Samina Ismail, Khurrum Shahzad and Faraz Shafiq

**Background:** With the dramatic rise in the rate of caesarean deliveries in the last two decades (1-3), postoperative pain management of these patients has become a major medical and nursing challenge. Pain should be properly assessed and addressed in the postoperative period (4).
**Objective:** The aim of our study was to observe the pain management strategy used in our hospital for elective caesarean section patients. In our observations, we reviewed broad areas of outcome, such as effectiveness, safety and tolerability. Effectiveness was inferred from visual pain scores and satisfaction. Safety and tolerability was assessed by the occurrence of side effects.
**Material and method:** We reviewed all patients who underwent elective caesarean section from December 2008- May 2009. On the day of surgery data collected included patient's demographics, type of intra-operative anaesthesia and analgesia, postoperative pain orders. On the 1st postoperative day, anaesthesia team determined verbal pain score(VAS), any complications and patient satisfaction with pain management strategy.
**Results:** Total 263 patients were reviewed. Postoperative analgesia regime was started by obstetric team in 81% of patients and in 19% by anaesthesia team. The most common modality of pain management was intravenous opioid infusion (94%)of pethidine,tramadoland morphine with co-analgesia (99%) in the form of NSAIDs. The analysis of pain by verbal pain

scoring showed mild pain in 89% of patients, moderate pain in 9% of patients and severe pain in 0.8% of patients during resting stage. The Dynamic pain score was mild in 60%, moderate in 33% and severe in 6.8% of patients. Opinion regarding their pain management was satisfactory in 91.6% of patients, while 8.4% of patients were not satisfied with their pain management. Overall 9% of patients (n=24) complained of different complications. None of the complications were severe and responded to treatments.

**Discussion:** Although the postoperative pain management was adequate in terms of patients' safety, it was not effective according to the goal set by Joint Commission on Accreditation (5) of uniformly low pain score of no more than 3 out of 10 both at rest and with movement.

**Conclusion:** In order to reach the international proposed standard, we need to expand the coverage of acute pain service to develop a nurse based, anaesthesiologist supervised pain service for caesarean section patient. This service would assess and treat pain to a degree that facilitates function and quality of life.

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**Paper No: 98.00**

## Postoperative analgesia for caesarean section: comparison of patient controlled analgesia with continuous infusion using pethidine

Samina Ismail, Gauhar Afshan, Abdul Monem and Aliya Ahmed

**Introduction:** Management of postoperative pain after caesarean section (C/S) requires a balance between pain relief & undesirable side effects of drugs and technique. Various studies (1,2) using continuous opioid infusion could not identify ideal dose to provide adequate analgesia without supplemental bolus doses or side effects to maintain an adequate level of analgesia during rest and activity (3). PCA devices are now widely used in clinical practice, and are among the most recommended techniques for the control of moderate to severe postoperative pain (4). We hypothesized that PCA could result in lower pain scores, less side effects, more patient satisfaction and reduction in breakthrough pain requiring rescue analgesia.

**Objectives:** In order to improve conventional postoperative pain management after caesarean section, which in our hospital setting is continuous narcotic infusion, we compared it with patient controlled analgesia (PCA).

**Method:** 120 patients after written informed consent were enrolled in the study after an uneventful elective caesarean section under spinal anaesthesia. All patients at 120 minutes after institution of spinal anaesthesia received 0.5mg/kg bolus of pethidine. Depending upon the randomization by sealed envelope method, group P received PCIA with 0.15mg/kg bolus pethidine with 10-minute lockout & group C received continuous pethidine infusion at a rate of 0.15mg/kg /hr. All patients received tablet paracetomal 1 gram three times a day and diclofenac suppository 100mg twice a day during the study period.

**Results:** The verbal pain score, need for rescue analgesia, incidence of nausea and vomiting was significantly lower (p value $<0.001$) in PCA group as compared to continuous infusion group at 6, 12 and 24hrs in the postoperative period. Ninety eight percent of the patients were satisfied with pain management and wanted the same form of analgesia for future surgeries in the PCA group as compared to 70% ($p<0.001$) in Group C.

**Discussion:** PCA enables patient's participant in pain relief and usually results in improved analgesia (4). However these devices are expensive and material costs per patients are usually higher compared with conventional analgesia (5). In our study we observed better pain control, less need for rescue analgesia for breakthrough pain, less incidence of nausea and vomiting and greater patient satisfaction.

**Conclusion:** Since in our part of the world we do not have preservative free narcotic to use by intrathecal route, we as care giver can improve postoperative pain management by using PCA instead of continuous narcotic infusion in patients undergoing caesarean section.

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**Paper No: 99.00**

## Technique of anaesthesia for different grades of caesarean section: a cross sectional study

Samina Ismail, Faraz Shafiq and Aliya Malik

**Introduction:** Regional anaesthesia (RA) for caesarean section (CS) is the preferred option when balancing risks and benefits to the mother and her foetus. The Royal College of Anaesthetists audit guidelines suggest that 85% of emergency CS should be conducted under RA and the conversion to general anaesthesia (GA) should be less than 3 % for emergency, and less than 1% for elective surgery (1).
**Objective:** The percentage use of regional anaesthesia (RA) and failure rate of RA for different grades of caesarean section (CS) has become a marker of quality for obstetric anaesthesia service(2). The objective of our prospective observational study is to find out the technique of anaesthesia used in different grades of CS, reasons for choosing general anaesthesia (GA) and failure rate of RA in our hospital setting.
**Methods:** This prospective cross sectional study was carried in the obstetric unit of Aga Khan University Hospital from 1st January 2010 to 31st May 2011. The anaesthetist performing the procedure filled out the data collection proforma. Suggested Indicators were percentages of Grade 1-4 CS done under RA and GA, % of failed regional, % of failed regional in different grades of CS.
**Results:** Total of 407 patients having CS was reviewed for five months of study period. The technique chosen was GA in 49% (n=201) and RA in 51 % (n=206) of patients. There was no significant difference between the use of GA and RA for grade 2-4 CS with a slight increase margin of difference for grade1 CS (63% GA vs 37% RA). Another finding was a high rate (44%) of elective CS done under GA. Patient preference (45%) was the most common reason for choosing GA. Fourteen patients (6.7%) required conversion from regional technique to GA; eleven patients had grade 1-3 CS and three patients had grade 4 CS.
**Discussion:** Our rate of regional technique for CS ranges from 37 % -49% for grade 1-3 CS and 45% for elective Grade 4 CS, which is very low compared to the recommended international standard (1).
**Conclusion:** In order to meet the international standards for best practice, guidelines should be made in consultation with the obstetrician and nursing staff regarding use RA for different grades CS. Patient education regarding the use and benefits of RA needs to enforced.

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**Paper No: 124.00**

## Neonatal effects of bolus administration of ephedrine and phenylephrine during neuraxial anesthesia for emergency caesarean section: a retrospective study

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**Introduction:** Both ephedrine and phenylephrine are used as the pressor agent in caesarean section (CS) under neuraxial anesthesia. Ephedrine might be worse for neonatal acid-base balance. However, most of the researches have been investigated in elective CS and little is known in the emergency situation.
**Objectives:** The aim of this study is to investigate the effects of ephedrine and phenylephrine on the neonatal conditions during the emergency CS under neuraxial anesthesia.
**Methods:** We retrospectively studied the emergency cesarean deliveries under neuraxial anesthesia in the period from Jan 2009 to May 2011. Umbilical arterial pH, base excess, and Apgar score at 1 and 5 min were compared between the cases given ephedrine (group E) and phenylephrine (group P).
**Results:** There have been 277 emergency CS in this period. Of these we have 229 babies with the records. 111 babies (48%) were from the mother received no vasopressors, 7 babies (3%) were from those received both ephedrine and phenylephrine, 61 babies (27%) in group E, and 50 babies (22%) in group P. The mean dose of ephedrine used was 9.4+- 5.4 mg and of phenylephrine was 155.0+- 74.4 microg. Median umbilical arterial pH and base excess were 7.33 and -2.5 for group E, and 7.32 and -3.3 for group P. (P=0.11, P=0.33, respectively: group E versus group P) Apgar scores at 1 and 5min were 9 and 10 for all groups. (P=0.62, P=0.82, respectively: group E versus group P)
**Conclusions:** Umbilical arterial pH and base excess were similar between the study groups. Clinical neonatal outcome was also similar. Thus in emergency cesarean delivery, ephedrine and phenylephrine are both suitable, which is different from the situations of elective cesarean delivery and is consistent with other studies of high risk one. It is partly because ephedrine usage in our cases is relatively smaller than those of previous studies of low-risk caesarean delivery.

**Paper No: 166.00**

## Prevention of hypotension during cesarean section under spinal anesthesia: incremental administration of 0.2% bupivacaine

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**Introduction & Objectives:** Patients undergoing spinal anesthesia for cesarean section are at greater risk of supine hypotension than those not undergoing-cesarean section. In addition to aortocaval compression and the extent of sympathetic blockade produced by spinal anesthesia, the total amount of local anesthetic used may play a role in determining the magnitude of arterial hypotension. In this study, incidence and magnitude of hypotension during cesarean section under spinal anesthesia was determined by using incremental doses of 0.2% bupivacaine, totaling 6 mg.

**Methods:** Hyperbaric bupivacaine 0.5% solution (4 ml, 20 mg) was diluted with normal saline (6 ml) to produce 0.2%. Forty-three non-hypertensive patients undergoing cesarean section were studied. A combined spinal/epidural needle was inserted at the L3-L4 interspace with the patient lying on her right side. Bupivacaine solution (1 ml, 2 mg) was injected incrementally at intervals of 2 minutes to a total of 3 ml (6 mg). A blood pressure decrease of greater than 20% in baseline pressure or below 90 mmHg was treated with phenylephrine.

**Results:** The anesthetic level at proceeding to surgery was T5-T3. Only 3 of the 43 patients needed vasopressor treatment.

**Conclusions:** Despite left uterine displacement and intravascular volume expansion, as many as 50% of patients will still manifest significant hypotension. The reported dose of bupivacaine of spinal anesthesia for cesarean section is typically 12 to 15 mg. Although increasing the dose of spinal anesthetic increases block height, doses above 15 mg significantly increase the risk of complications.(1) This study shows that when 0.2% bupivacaine is given in incremental doses, 1 ml (2 mg) by 1 ml (2 mg), a total of 6 mg is sufficient to produce satisfactory anesthesia for cesarean section. This lower dose minimizes the incidence and magnitude of spinal anesthesia for cesarean section (only 3/43=7%). Prolonged surgery and postoperative pain can be controlled by the combined spinal/epidural anesthesia.

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**Paper No: 181.00**

## Maternal and neonatal outcome following caesarean section under spinal versus general anesthesia in kenyatta national hospital maternity theatre

Rosemary Mukunzi

**Introduction:** The risk of maternal death with caesarean section is four times that associated with all types of vaginal Birth. Poor maternal and neonatal outcome are more commonly associated with general anesthesia for c/s as compared to spinal anesthesia. This study compared the safety and the effectiveness of the two techniques for maternal and neonatal outcome for all the indications for caesarean section.

**Objective:** To determine the preferred technique of anesthesia in relation to the indications for caesarean section. To compare the effects of spinal anesthesia with those of general anesthesia on the maternal outcome of caesarean section. To compare the neonatal outcome with the effects of spinal anesthesia and general anesthesia. To determine, what type of anesthesia is more efficacious in order to minimize maternal and neonatal morbidity and mortality rates Methodology: A Prospective Observational Descriptive study carried out in KNH maternity theater. A total of 196 patients were recruited in this study and they all completed the study. Results In this study, of 196 patients, 43.9% c/s were performed under GA. The rest were under SA regardless of the indication for the c/s ($p=0.032$). From the data, SA was performed in 40.8%, whilst GA 59.2% in a group of patients with immediate indications for c/s. For patients who had urgent indications for c/s, SA was performed in 60.8% out of 102 cases.. Out of 35 elective cases, 24 cases were performed under SA and 11 cases under GA. Intra-operatively the commonest maternal side effect observed in the two groups was: Hypotension in the SA group ($p<0.001$). Hypotension in the SA group was 52cases (47.3%) and in the GA group, 12cases(14%). Neonatal outcome as per the stratified indications for c/s: There was higher neonatal Apgar score in the SA group. Significantly neonatal admissions to NBU in the time defined were associated with GA; there were 22 admissions of which 77.3% were due to respiratory distress. In SA 8 admissions were observed and respiratory distress accounted for 6 neonates out of 8 admissions. From this data analysis, it was observed that GA was highly associated with poor neonatal Apgar score and morbidity as compared to SA.

**Discussion:** In this prospective descriptive, observational study; there was a fairly equal age distribution of patients in the two groups of anesthetic technique used. The mean age for both techniques was 28.09 years with a standard deviation of 5.4. Age did not correlate with the type of anesthesia for C/S. In the study, Our finding is in agreement with other studies that; hypotension is the most common adverse event when spinal anesthesia is used for caesarean

section. In our study, it¡s the absolute systolic pressure that was defined. We considered the lowest recordings in systolic BP of ¡Ü 90mmHg intra-operatively. Comparative studies have been done comparing the neonatal outcome for the two anesthetic techniques and our findings are in agreement with other international findings.

**Conclusions:** Spinal anesthesia and General anesthesia are both effective for c/s, but with significant differences in maternal and neonatal outcome.

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**Paper No: 192.00**

## Routine use of Remifentanil-PCA in labour in Switzerland combined with web based continuous quality control


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**Introduction:** Due to its profile of action the strong opioid Remifentanil qualifies as an ideal analgesic drug during labour. Applied as patient controlled analgesia (PCA) this method offers optimal safety and comfort for the parturient and child. Although frequently used in other countries, its routine use has only been established in a few hospitals in Switzerland yet.

**Objectives:** Our objectives were to establish and spread a standardized routine use of Remifentanil-PCA in labour in swiss hospitals. This includes a web based data collection of every application in order to ensure safety and quality control right from the beginning.

**Methods:** Initiated from Salem Hospital in Berne, a website was created to implement this method in Switzerland. The website contains a concise direction for professionals and a questionnaire, collecting a database for each application. This database comprises the course, the complications for mother and child as well as the satisfaction of all parties. In order to provide high safety we used fixed boli of 20 mcg and continuous pulse oxymetry. No additional analgesia were used.

**Results:** After implementation of the method for routine use in labour in 2008 more than 1000 women (>40% of all births in our hospital) delivered with the support of a Remifentanil-PCA. Five other hospitals started to participate in our data recording system. The safety for mother and child as well as the satisfaction of all parties were excellent. 95% of parturients and midwifes would choose this method again or recommend it for child birth.

**Conclusion:** Despite reassuring results large numbers are often needed to detect rare complications or side effects. With the registration of every application of all participating hospitals via this website (www.remipca.org) the datapool grows continuously in a short time. This allows constant adjustment of the procedure as well a quick feedback in case of adverse effects. The routine use of Remifentanil-PCA in labour is a safe method with excellent acceptance of parturients, midwifes, obstetricians and anaesthetists. With the help of the webbased data collection we offer a nationwide launch and regular audits which provides excellent quality management and safety especially valuable for hospitals with small obstetric departments.

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**Paper No: 200.00**

## Anaesthesia for caesarean section in morbidly obese parturients – a seven year retrospective audit


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**Introduction:** Morbidly obese parturients at the time of caesarean section, defined as those with a pre-delivery BMI of more than 45 kg.m-2, are believed to have a greater anaesthetic risk and associated with greater anaesthetic difficulties and problems.

**Objectives:** To determine anaesthetic choices and doses used in elective and emergency caesarean section, anaesthetic difficulties and problems during anaesthesia establishment and surgery, and anaesthetic and surgical complications over this seven year period.

**Methods:** A retrospective audit of anaesthesia for this group was done for seven years from June 2004 to May 2011, since the time we began data collection.

**Results:** A total of 54 anaesthetics in 48 parturients were given in this period. The majority were in Malay parturients (37, 68.5%), followed by Indian (10, 18.5%) and Chinese (7, 13.0%). Median weight was 118.0 kg, median BMI 48.26, median gravidity 3, median gestation 38.0 weeks, and mean age was 31.2 years. Antenatal medical and obstetric problems were present in 13 (24.1%) and 19 parturients (35.2%) respectively. The median number of previous caesarean sections was 1. 26 (48.1%) anaesthetics were given for elective surgery. The most common indication was previous caesarean section in 26 (48.1%) anaesthetics. Regional anaesthesia comprised 48 (88.9%) anaesthetics, of which 28 (51.9%) were single shot spinal anaesthesia. The regional anaesthetic procedure was successful in all despite requiring more than one attempt 37.5% of the time. Success of regional anaesthesia induction and success for surgery was 95.9% and 89.5% respectively. General anaesthesia conversion was required only thrice (5.6%). There was complicated regional anaesthetic placement in 11 (20.3%) anaesthetics. Doses for spinal, combined spinal-epidural and epidural top-up anaesthesia and block height obtained were similar to non-obese parturients. Epidural space from skin and length of epidural catheter left in-situ for epidural anaesthesia ranged from 6.0 to 9.0 cm and 3.5 to 6.0 cm respectively. General anaesthesia was uneventful in those that had general anaesthesia and general anaesthesia conversion. Only one parturient had backache following anaesthesia. Mean duration of surgery was 51.6 minutes and surgical complications were present in 7 (12.9%) parturients and both these were not related to seniority of the main surgeon. 7 (12.9%) parturients had longer hospital stay of 4-6 days. Neonatal complications unrelated to surgery were present in only two cases.
**Conclusions:** The majority are performed successfully under regional anaesthesia. Doses used are similar to non-obese parturients. Anaesthetic and surgical problems are also minimal.

**Paper No: 217.00**

## Ultrasound guided Transverses Abdominis Plane block – An underused option for postoperative analgesia after caesarean section.

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**Introduction:** Post operative pain is a major factor limiting mobilization and interferes with breast feeding and maternal infant bonding in patient who had caesarean section. Advances in ultrasound guided nerve blocks makes it possible to provide better quality of analgesia with fewer adverse effects.
**Objectives:** We hypothesized that if TAP blocks were effective then requirements of systemic analgesics would be significantly less in these patients with reduction in pain scores.
**Methods:** 40 patients undergoing Caesarean section with Pfannensteil incision under spinal anesthesia belonging to ASA I & II categories were randomized in two groups of 20 each after written informed consent. First group received ultrasound guided TAP block at the end of the procedure with 20ml 0.25% Bupivacaine on each side and the second group was kept as control. Both groups postoperatively received PCA Fentanyl at the rate of 0.3mcg/kg with lockout interval of 15min. All patients also received Inj. Diclofenac 75mg twice daily and Inj. Paracetamol 1gm thrice daily. PCA Fentanyl was continued 24hrs postoperatively and the patients were assessed at intervals of 4hrs for the next 24hrs. Patients were encouraged to use the PCA to keep their VAS scores less than 4. We looked at the analgesic requirement of both these groups, pain scores and adverse events. Fentanyl requirement was analysed in both the groups using Wilcoxon rank sum test.
**Results:** No significant difference was found in either group in terms of ASA status, age and weight. Fentanyl requirement and VAS score were analysed over five different at T1(0-4Hrs), T2(4-8hrs), T3(8-12hrs), T4(12-24hrs), T5(Total in 24 hrs).
Control Group TAP Group p Value T1 150+74.27 22.75+18.95 <0.0001 T2 131.25+44.86 32.5+20.55 <0.0001 T3 96.5+35.51 34.5+22.35 <0.0001 T4 169.75+69.71 54.75+45.98 <0.0001 T5 515.5+196.22 145.5+80.83 <0.0001 (Fentanyl dose in mcg – mean+SD) Average VAS scores for the patients in the control group was 2.1 and for those in the TAP group was 1.1. No complication were observed.
**Discussion:** TAP block as a part of multimodal pain management improves post operative analgesia in the first 24hrs(1,2) after caesarean section and this is essential for early ambulation, infant care and preventing postoperative morbidity(2). TAP block can be performed relatively easily and precisely using ultrasound as it allows observation of the needle passage through the tissues and allows us to visualize the spread of the injectate in the neurovascular plane(3). It also reduces the theoretical complications of a blind TAP block namely peritoneal and bowel perforation. In our patients who received USG guided TAP block the requirements of Fentanyl at each point of time was significantly less than the group which did not receive TAP block. These patients also had lower VAS score but the sample size was inadequate to establish significance.
**Conclusions:** USG guided TAP block is safe and an effective component of multimodal postoperative analgesia in patients undergoing Caesarean section. It significantly reduces the opioid requirement but larger studies are

required to show the reduction of opioid related side effects and reduction in VAS score.

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**Paper No: 304.00**

## Study of postoperative analgesia after the cervical cerclage


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**Introduction:** Cervical cerclage might be undergone for the cervical incompetence in pregnant women. Pain subsides within about 24 hours after surgery. However, abdominal pain and/or surgical pain may also strengthen the tension of uterus. With that in mind, suppression of the postoperative pain is reasonable procedure for these women. We compared the intensity of postoperative pain among three types of anesthesia methods.

**Method:** Anesthesia was performed following three ways. 1. Spinal anesthesia with local anesthetic. 2. Spinal anesthesia added morphine. 3. Combined spinal epidural anesthesia (CSE) followed by patient controlled epidural anesthesia (PCEA) with 0.1% ropivacaine. Postoperative pain intensity was inferred from consumption of analgesics and from the medical records. Side effects, especially nausea and vomiting were also examined.

**Results:** Between Jan 2009 and Jul 2011, forty-four pregnant women underwent for cervical cerclage. We examined these cases retrospectively on the medical records. Spinal anesthesia was performed for 15 pregnant women. One had no pain at all after the surgery. Three had severe pain and five had moderate pain. Six felt nausea and two women vomited once and several times. Six women were performed surgery under the spinal anesthesia added with small amount of morphine (0.2mg). All were not used additional analgesics after the surgery. But four women vomited several times and another one woman felt nausea for more than ten hours. CSE anesthesia was performed for 23 women. Eight women did not feel any pain after the surgery. Nine felt light pain, but were well controlled with using PCEA. Four felt severe pain and used other analgesics twice or more times. Two felt nausea but any person did not vomit.

**Conclusion:** In Japan, cervical cerclage were mainly performed under the spinal anesthesia. But many women felt severe post operative pain after spinal anesthesia. Addition of morphine to the spinal anesthesia was one of resolution for postoperative pain, but many were suffered from severe nausea and vomiting. Combined spinal epidural anesthesia is complicated procedure when compared with spinal anesthesia. However, considering the postoperative pain, patients who underwent the surgery under CSE may suffer less pain. In addition these patients often felt less nausea and vomiting. We concluded that CSE anesthesia followed by PCEA was the most comfortable method of postoperative analgesia for pregnant woman who had undergone cervical cerclage.

**Paper No: 332.00**

## Effect of Intrathecal Midazolam in the Severity of Pain in Cesarean Section: A Randomized Controlled Trial


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**Introduction:** The benzodiazepines are used primarily for anxiolysis, amnesia and sedation. However, recent investigations have shown that some forms of this group of drugs have also direct effect on pain.

**Objectives:** This study aims to determine the effect of Midazolam in reducing the severity of pain in women scheduled for elective cesarean section.

**Methods:** This was a prospective, randomized double blind, two group parallel study, conducted in Imam Reza hospital, an affiliate of Kermanshah University of Medical Sciences. Parturient women who met study inclusion criteria were consecutively assigned into either experimental (n=62) or control groups (n=62). Women in the experimental group received Bupivacaine (10 mg) plus Intrathecal Midazolam (2 mg) (BM) and those in the control group received Bupivacaine plus Normal saline (BNS). The study main outcome pain severity was measured by Verbal Numerical Rating Scale. The study protocol was approved by the ethic committee of Kermanshah University of Medical Sciences and patients signed consent forms. The preservative-free midazolam was approved for spinal use.

**Results:** In compare with the BNS group, mothers in the BM group reported significantly better relief in pain 15-min (p=0.006) and 120-min (p=0.007) after the surgery. There

were no statistically significant differences between the groups in regard to the intensity of pain 5, 30, 60, 240 min after the surgery. The average time until the first dose of additional analgesic, per mother's request, was 142/18 ± 55/19 min in the BM vs. 178/06 ± 77/33 min in the BNS group (p =<0.021).

**Conclusion:** Combination of Bupivacaine plus Intrathecal Midazolam was an effective anesthetic technique to provide improvement in pain. The onset of sedation was faster in the BM group compared with the BNS group. The duration of effective analgesia, and the time for regression of sensory analgesia was the same in both groups in our study. However, incidence of nausea and vomiting was higher in the experimental group.

**Paper No: 342.00**

## Tranexamic acid reduces blood loss in post-partum haemorrhage by reducing hyperfibrinolysis

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**Background:** Post-partum haemorrhage (PPH) is a leading cause of maternal death. Given the beneficial effects of tranexamic acid (TXA) in elective surgery and bleeding trauma, we hypothesized that TXA can reduce blood loss in PPH.

**Methods:** In this French randomized controlled trial, women with PPH>800mL following vaginal delivery were assigned to receive TXA (loading dose 4 g/1 hour, then infusion of 1g/hour over 6 hours), or not. At 4 time-points (T1=inclusion, T2=T1+30 min and T3=T1+2 hours, T4=T1+6 hours), the volume of blood loss, and the use of packed red blood cells (PRBC) and of colloids were recorded. Procoagulant treatments (fresh frozen plasma, platelets, fibrinogen) or invasive procedures could be used after T3, or at any time in case of intractable bleeding. Primary objective was to assess the efficacy of TXA in the reduction of blood loss. Secondary objectives were the effects of TXA on 1)bleeding duration, 2)anaemia, 3)transfusion requirement, 4)need for invasive procedures and 5)biological data.

**Results:** 144 women (72 TXA and 72 controls) fully completed the protocol. Blood loss between T1 and T4 was lower in the TXA group (median 173 [1st-3rd quartiles 59-377]mL) than in controls (221[105-564]mL, p=0.040). In the TXA group, bleeding duration was shorter, and progression to severe PPH and PRBC transfusion were less frequent than in controls (p<0.03). Invasive procedures were performed in 4 women in the TXA group and in 7 controls (p=NS). PPH stopped after only uterotonics and PRBC in 93% of women in the TXA group vs 79% of controls (p=0.016). Mild transient adverse manifestations (vomiting, blurred vision) occurred more often in the TXA group (p=0.002). The major biological effect was the drastic reduction of D Dimers in TXA group (p=0,002).

**Conclusion:** This study brings the first demonstration that TXA reduces blood loss and maternal morbidity in PPH. Adverse effects were mild and transient. A larger study should be performed to investigate whether TXA could reduce maternal morbidity worldwide.

**Paper No: 343.00**

## ROTEM in obstetric: Near patient-test as predictor of post-partum hemorrhage

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Post partum hemorrhage (PPH) remains a major cause of maternal morbidity and mortality related to childbirth; Charbit and al (1) have shown decrease of fibrinogen to be an early predictor of the severity of PPH. We hypothesized that ROTEM¥ (pentapharm, Germany), a near-patient test of perioperative hemostasis, could detect hemostatic alterations in the early stage of PPH.

**Patients and methods:** PPH was defined as uterine bleeding>800 ml occuring at delivery, persisting after manual exploration of uterine cavity. No coagulant treatment was administered during the first two hours. A15 FIBTEM (FIBTEM amplitude at 15 min) and fibrinogen level (Clauss) were measured in 23 PPH women at the time of PPH diagnosis (T1) and two hours later (T2) and were compared with the values obtained one hour after normal delivery in 31 women without PPH.

**Results:**

A15 FIBTEM Fibrinogen (g/L) Control group n=31 23,8 ¡Ó 1,02 4,58 ¡Ó 0,19
PPH Group T1 (n=23) 20,2 ¡Ó 1,0* 4,2 ¡Ó 0,2
PPH Group T2 (n=23) 16,06 ¡Ó 1,13** 3,4 ¡Ó 0,2**
Mann-whitney haemorrhage group versus control; * p=0,01; ** p<0,001,

At T1, A15 FIBTEM was significantly different between patients who developped PPH and those who did not. At T2, A15 FIBTEM and fibrinogen were significantly reduced in the PPH group. We defined severe PPH according to our criterias (decrease of hemoblobin >4 g/dl, transfusions, hemostatic procedures). The T2 hemorrhage volum for the six severe PPH differed significantly compared to the 17 mild PPH (2066 ¡Ó 274 ml; 1267 ¡Ó 76 ml, p=0,003). Severe PPH

presented lower T2 A15 FIBTEM and lower T2 fibrinogen compared with mild PPH (p=0,02 and 0,01 respectively).
**Conclusion:** At the time of PPH diagnosis, A15 FIBTEM suggests a coagulopathy which is confirmed two hours later by a decrease of fibrinogen. A15 FIBTEM could be used to identify hemostatic abnormality presents at the time of PPH and may help to guide the management of severe PPH.

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**Paper No: 344.00**

## Post-partum haemorrhage induced hypofibrinogenemia and fibrinogen concentrates administration: observationnal data of the post-authorization study of Clottafact ® (LFB Les Ulis France)

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**Objectives:** Observationnal safety study of fibrinogen concentrate adminsitration in post-partum haemorrhahe (PPH) management in 12 French centers.
**Méthod:** Post authorization study of fibrinogen concentrate Clottafact® (LFB les Ulis France). Out of 150 cases of acquired hypofibrinogenemia collected over 6 Months, 59 were related to PPH. Safety and clinical practice as well as biological data were collected at 4 times: Inclusion=H0, H1, H24, H72. Each observation was validated by an expert committee.
**Résults:** Safety was good to excellent for all cases. PPH was qualified as severe in 59% of the cases (median bleeding : 2230 ml [450-8000]) and 5 CGUA [0-24] Packed Red Blood Cell were given to 47 (75%). The median dose of clottafact used was 3g [1.5-4.5]. Clinically efficicency was qualified as mild (n=3), good (n=36) and excellent and related to the treatment (n=4). However Most of the PPH were treated simultaneously regarding PPH management guidelines with uterotonics (n=22) or embolization-surgical ligature (n=40) or other procoagulant drugs as tranexamic acid (n=14), fresh frozen plasma (n=37), platelets (n=20) or rVIIa factor (n=8). Biological data showed a correction of fibrinogen plasma level from initial value at H0 :1.7+0.8 [1 à 2] g/l to 2.1+0.8 g/l at H1. The fibrinogen plasma level at H24 (3.7+1.3 g/l) and at H72 (5+2 g/l) were correlated to the total dose administrered (p= 0.04 p= 0.01).
**Discussion Conclusion:** The decrease of fibrinogen is a known predictor of PPH severity(1). However the efficacy of fibrinogen concentrates administration is poorly documented by clinical cases (2) or substudies (3). This observational study present a cohort of 59 PPH managed according to French guidelines and receiveing simultaneously a median dose of 3g fibrinogen concentrates Clottafact®. Safety and biological correction of hypofibrinogenemia are observed. These results support the need of a randomised double blind study to evaluate the contribution to the PPH associated coagulopathy's treatment.

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**Paper No: 345.00**

## Point-of-care prothrombin time testing as an early predictor of severe post partum hemorrhage

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Post partum hemorrhage is a major source of maternal morbidity and is poorly predictable. The demonstration of a relationship between fibrinogen decrease and outcome suggests that a near testing of coagulation might improve prediction of outcome. The aim of our study was to test the reliability of the point-of-care prothrombin time testing compared with laboratory results in post-partum and to evaluate its role in prediction of severe post partum hemorrhage (PPH). After local ethic committee approval and informed consent, 95 patients (62 without PPH and 33 with PPH) patients were enrolled for one blood sample 30 minutes after delivery or at the beginning of immediate post-partum haemorrhage before use of any uterotonics (T1). POC prothrombin time was measured by CoaguChek XS Plus (Roche Diagnostics, Germany). POC-prothrombin time (PT) and prothrombin time ratio (PT ratio) were compared with central laboratory values and with fibrinogen concentrations. The volume of blood loss was recorded at T2 (T2= T1+2hours). The severity of the PPH was defined according to the outcome of the first 24 hours. POC and laboratory PT and PT ratio were correlated (r=0.95 and 0.71 respectively; p<0.0001) and Bland and Altman mean bias and accuracy respectively of 1.17 and

4.97 for PT and 0 and 0.2 for PT ratio. POC-PT ratio was related with fibrinogen concentration (r=-0.4; p<0.001) and with blood loss at T2 (r=0.5; p<0.0001). Among women with PPH, POC-PT ratio was significantly increased in severe ones (0.9[09-1] vs 1[1-1.2]) p=0.05). Considering the occurrence of severe PPH, the area under the ROC curve was 0.81 (IC95% [0.68-093]; p<0.0001) for POC PT ratio values. The cutoff value for POC PT ratio of 1.15 had the best prediction specificity (100%). These ?ndings suggest that a simple POC measurement could contribute to anticipate the risk of severe bleeding in PPH.

**Paper No: 346.00**

## Impact of perinatal care network on post-partum hemorrhage–related morbidity

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Background and goal of study Post-partum haemorrhage (PPH) remains the leading cause of maternal morbidity and mortality in France and worldwide. PPH can occur in any parturient. Perinatal care network is defined as a practioners' and women's hospitals' association organizing mother and child management around the birth period. The goal of our medical practice improvement program (MPIP) was to standardize the management of PPH in every women hospital of the network according to the French guidelines (1). The aim of the study was to measure the impact of the MPIP on the maternal morbidity due to PPH (2). Materials and methods The MPIP realized a synthesis and the edition of the management guidelines, the critical care chart and the educational material of the training team in common between the 11 low risk women's hospitals. Midwives, paramedics and medical doctors were trained to evaluate the practice comparing the results obtained in 2006 after MPIP to 2004 before MPIP. Collected data were the delay and the protocol of management and their impact on the maternal morbidity due to PPH.

**Results:** Out of 20 619 deliveries 259 PPH were detected in 2006 vs 189 out of 21 373. No hysterectomy or death related to PPH occurred. Thirteen parturients vs 16 were transferred to the obstetrics ICU. Transfer delay was significantly shorter. None of these 13 parturients had haemorrhagic shock vs 5 in 2004. Transfusion was performed in two vs 5, procoagulant complementary treatment to 4 vs 9 and uterine arteries embolization in 2/13 vs 7/16 parturients. Quite all the parturients (12/13) transferred in 2006 were discharged from obstetrics ICU after 12 hours vs 11/16 in 2004.

**Discussion Conclusion:** Despite the limited number of cases, it can be observed a trend to a better detection of HPP and to a better and more rapid management of PPH in the primary care units. This better primary management could explain the reduction of transfusion, procoagulant treatment and embolization needed in the tertiary care leading to quicker discharge from obstetrics ICU and less maternal morbidity. Improving the obstetrics care at the nearest of the patient could be the new challenge for maternal risk management as suspected in ICM and FIGO joint guidelines (3) and in the 6 French perinatal networks preliminary analysis (4). The perinatal care network Medical Practice Improvement Program leading to an initial aggressive management of PPH could avoid the evolution to severe maternal morbidity.

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**Paper No: 347.00**

## Preeclampsia as a risk factor for Postnatal Pulmonary Embolism

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**Objective:** Pulmonary embolism (PE) remains the cause of 10% of maternal mortality in France. Out of a 10 years survey of thrombo-embolic events in a French tertiary care obstetric unit in a population of 44 198 pregnancies preventively managed according national and international guidelines, risk factors for post-partum pulmonary embolism were identified.

**Study design:** In this 1999-2009 register-based observational study, Deep Vein Thrombosis (DVT) and EP were analyzed in order to assess the thromboprophylaxis protocol: Each pregnant woman was checked for her familial and personal thrombosis risk factors. In the high risk group, LMWH were prescribed ante and postnatally whereas only postnatally in the moderate risk group (1,2). Pulmonary embolism was clinically detected and confirmed by angioscanner.

**Résults:** Out of a population of 44198 deliveries, 1353 preeclampsia and 1284 patients with thrombotic risk factors, 108 thromboembolic events were noted. (0.244% [95% CI 0.198-0.290]): DVT (n=67) and PE (n=41). Out of the 49 DVT and 29 antenatal EP, none occurred in high risk patients under adequate LMWH, except for 4 out of the 16 patients

with AT deficiency. Postnatal PE occured in 12 patients (0.027% [95% CI 0.012-0.043]). Six of them occurred in pre-eclamptic patients (0.443% [95% CI 0.16-0.96]). The relative risk of PE in preeclampsia was 31.67 [95% CI 10.23-98.06]). Associated risk factors of PE in preeclampsia were caesarean section (CS)(n=4), older age and multiparity (n=3), obesity (n=1) and thrombophilia (n=1). The 4 EP after CS occurred under low dose LMWH.

**Discussion and Conclusion:** Preeclampsia is a known thrombosis risk factor (3,4), probably induced by the hypercoagulable state. The risk of pulmonary embolism after preeclampsia appears to be more than ten times higher than after a normal delivery following a normal pregnancy in our population. Non-adapted doses of LMWH did not prevent PE in these patients. Biological efficacy of LMWH and/or thrombin generation monitoring may be useful in these patients to guide the clinicians.

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**Paper No: 354.00**

## Spinal anesthesia for cesarean section. Comparative study between ropivacaine/fentanyl and bupivacaine/fentanyl

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**Introduction:** Ropivacaine is along-acting, local anesthetic, less cardioneurotoxic than bupivacaine, with similar duration of action. Compared to bupivacaine, ropivacaine, at equipotent doses, provide effective spinal anesthesia with shorter duration of motor block.

**Objective:** To evaluate the latency and duration of the sensitive (T6) and motor block, hemodynamic variables and adverse effects in patients receiving spinal anesthesia for cesarean section, comparing 75% isobaric ropivacaine 15 mg plus fentanyl 25 ug/ml and 0.5% hyperbaric bupivacaine 10mg plus fentanyl 25 ug/ml intrathecally.

**Methods:** Ethics Committee approved, prospective, aleatorized, simple blind study.

**Patients:** 40 full-term women without analgesia in course, ASA I and II, elective or urgency (not emergency) cesarean section under spinal anesthesia. After informed consent, patients were randomly allocated to receive intrathecally: 75% isobaric ropivacaine 15 mg plus fentanyl 25 ug/ml (group RF), or 0.5% hyperbaric bupivacaine 10mg plus fentanyl 25 ug/ml (group BF). Sensitive blockage was evaluated by the pinprick and Hollmen tests, and the motor block by the Bromage scale. Maternal side effects were also recorded.

**Monitoring:** Heart rate, systolic and diastolic arterial pressure, recorded every 2 min up to min 20. When blood pressure decreased 20% from the baseline value, patients received IV ephedrine (5 mg) boluses. Data is presented as mean $\pm$ standard deviation or as percentages when appropriate. Comparisons between groups were performed by using the Mann-Whitney U-test, the Pearson $\div 2$ test or the Irwin-Fisher test. The significance level was set at 0.05.

**Results:** There were no statistical differences in demographic data between groups: Age, weight, height, number of previous cesarean deliveries, percentage of scheduled surgeries, percentage of ASA I patients, and surgical procedure duration (min.) RF: $39.4 \pm 8.1$, BF: $35.3 \pm 6.6$; $p=0.07$. Anesthesia was satisfactory in all patients. Latency to T6 level (min.) was lower in RF ($2.5 \pm 0.5$, BF: $3.8 \pm 1$; $p<0.001$). Maximal sensory block: 85% T4/15% T5 in both groups, $p=0.67$. Sensorial block duration (min) RF: $155.8 \pm 21.2$, BF: $159.5 \pm 20.8$; $p=0.56$. Motor blockade was complete in all patients, duration up to Bromage I (min.): RF: $105 \pm 19.8$, BF: $116.5 \pm 9.6$; $p=0.08$. Lower frequency of hypotension in Group RF 3/20, BF: 9/20; $p=0.04$, with similar ephedrine requirements: 5 to 10 mg, $p=0.54$. No patient required atropine. Incidence of pruritus: RF 6/20; BF 8/20; $p=0.51$, with a case of nausea in the BF group. No local or systemic toxicity was observed.

**Conclusions:** Treatments offered comparable sensitive and motor blockage. Clinical advantages of ropivacaine/fentanyl result from the shorter latency and lower incidence of hypotension.

**Paper No: 369.00**

## Anaesthesia for Cesarean section in a patient with overlap syndrome: a case report

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**Introduction:** Primary biliary cirrhosis is rare during pregnancy. There are few case reports in the literature that describe primary biliray cirrhosis in pregnancy that either first presented during pregnancy or was diagnosed prior to pregnancy. We describe a 45-years-old para 1 patient who was diagnosed with an overlap syndrome of autoimmune hepatitis and primary biliary cirrhosis.

**Objectives:** To Describe the presentation and anaesthesia for Cesarean Section in a patient with an overlap syndrome

**Methods (case presentation):** A 45 years old para1 patient presented to the antenatal clinic at 32 weeks gestation

with increased pruritis, nausea and lower limb oedema. Her past medical history included cholycystectomy and a diagnosis of an overlap syndrome 18 months ago based on a positive antimitochondria antibody (AMA) and liver biopsy she has been started on ursodeoxycholic acid 250 mg three times daily and was under regular follow up by the hepatologist. She remained stable throughout pregnancy up to this presentation where she was found to have pancytopaenia due to hypersplenism. Her Hb, WBC, and platelets were 7.8g/dl, 3.4, and 60 respectively. Her liver function tests revealed a raised bilirubin (119) with a mildly deranged liver enzymes, albumin 22 and INR 1.54. Abdominal USS revealed liver cirrhosis, hepatosplenomegaly with dilated splenic vain but no ascites. In addition, there were decreased fetal movement. Initially she was managed conservatively with piriton, albumin replacement, vitamin K, RCC and platelet transfusion. Her ursodeoxycholic acid dose was increased to 500mg three times daily. 2 weeks after admission a repeat abdominal USS revealed absent diastolic flow and therefore decision for cesarean section was made. As she remained coagulopathic a decision was made for a general anaesthetic with rapid sequence induction after antacid prophylaxis and transfusion with RCC, FFP, and platelets. The surgery was uneventful and a live baby girl was delivered weighing 1.96kg with an Apgar score of 7 and 8. The patient was kept in high dependency unit for 48 hours post-operatively where she made full recovered. She eventually was discharged from the hospital one week later after improvement in pruritis, LFTs, and coagulation with follow up by the hepatologist.
**Conclusion:** Patients with overlap syndrome rarely present during pregnancy and therefore experience in dealing with them may be limited. General anaesthesia is more common for these patients as they are often coagulopathic. However GA carries many risks including clinical decompensation in patients with cirrhosis and this has to be monitored and managed appropriately.

**Paper No: 387.00**

## Effective dose of oxytocin in caesarean delivery

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**Introduction:** Patients undergoing caesarean delivery are at increased risk of obstetric haemorrhage. Uterine atony has been shown to be most common aetiology (30%) for post partum haemorrhage (PPH) in patients undergoing caesarean delivery. Use of uterotonic agents decreases the incidence of PPH by approximately 40% when compared with placebo. Oxytocin is the most frequently used uterotonic agent because of less side- effects compared with all other available agents. Despite widespread use, there are limited data to guide optimal oxytocin dosing for patients undergoing elective caesarean delivery for achieving adequate uterine tone with minimal side effects. Objectives Tthe study was conducted to evaluate three doses of oxytocin required to produce adequate uterine tone in primigravidas undergoing elective caesarean delivery.
**Methods:** This randomized double blind study was conducted in ninety primigravidas undergoing elective caesarean delivery under spinal anaesthesia. All patients received intravenous bolus of either 0.5, 1, or 2 IU oxytocin followed by infusion of 10 IU hr-1. Uterine tone was assessed by a blinded obstetrician using a five-point scale, where 1=atonic, 2=partial but inadequate contraction, 3=adequate contraction, 4=well contracted and 5=very well contracted at 2, 3, 6, and 9 min after oxytocin administration. The effect of oxytocin doses was analysed. Oxytocin related side-effects were recorded. All the data was compiled and analysed statistically using Analysis of Variance (ANOVA) test for haematocrit, need for additional uterotonic agents and the amount of blood loss. Chi-square test was used to analyse heart rate, non invasive blood pressure and the side effects of oxytocin. A p value of $<0.05$ considered significant, $<0.01$ considered highly significant and $>0.05$ was taken non significant.
**Results:** There were no significant differences in the prevalence of adequate uterine tone among the study groups at 2 min (86%, 90% and 93% for, 0.5, 1 and 2 IU oxytocin, respectively($p>0.05$). The estimated blood loss & difference in preoperative and postoperative haematocrit values were also non significant($p>0.05$). No hypotension and tachycardia was observed in any group at any time. The prevalence of nausea and vomiting was significantly higher after 2 IU oxytocin vs 0.5 IU at 1 min (13% vs 3%; $p<0.05$%).
**Conclusion:** Small bolus doses of oxytocin (0.5-2 IU) result in adequate uterine tone in primigravida women undergoing elective caesarean delivery with minimal effects on haemodynamic parameters. However use of 2 IU oxytocin is associated with more incidence of nausea and vomiting.

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**Paper No: 418.00**

## Hemodynamic effects of a right lumbar–pelvic wedge during spinal anesthesia for cesarean section

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**Background:** Aortocaval compression is a major cause of maternal hypotension. A randomized controlled trial was designed to determine the effectiveness of a mechanical intervention using a right lumbar–pelvic wedge in preventing hypotension after spinal anesthesia for cesarean delivery.
**Methods:** Eighty healthy women undergoing elective cesarean section were randomly allocated immediately after spinal blockade to either a lumbar–pelvic wedge positioned under the right posterior–superior iliac crest (Wedge group, n=40) or the complete supine position (Supine group, n=40). Hemodynamic values, vasopressor consumption and adverse effects were collected during the surgical procedure. Hypotension was defined as a reduction in systolic blood pressure of 25% from baseline. Patient allocation, management and data collection were performed by a single unblinded anesthetist.
**Results:** There was no difference in the incidence of hypotension between the two groups (42.5% vs. 50%, P=0.51). During the first 5 min, blood pressure decreased less in the Wedge group. There were significant differences in median [interquartile range] vasopressor requirements between the Wedge group and the Supine group (1 [0–2] vs. 3 [1–4] mg, P<0.01) and in nausea during the procedure (6 vs. 22 patients, P<0.01).
**Conclusion:** In our study population the use of right lumbar–pelvic wedge was not effective in reducing the incidence of hypotension during spinal anesthesia for cesarean section. Patients in whom the wedge was used had higher systolic blood pressure values during the first 5 min of anesthesia and fewer episodes of nausea. The risk of hypotension remains substantial.

**Paper No: 457.00**

## Systemic versus intrathecal morphine on postoperative analgesia in Caesarea. Randomized Trial study in two centers from Cordoba, Argentina

Roberto Guillermo Santiago

**Introduction:** Postoperative analgesia in cesarean section, relegated to consideration by the anesthesiologist, is not a standard practice. The low-dose intrathecal morphine is an effective analgesic method, which records in Argentina didn't know. This research was developed compared with systemic regulated administration.
**Objectives:** Demonstrate that low-dose intrathecal morphine offers better quality analgesia with minimal adverse reactions.
**Materials and Methods:** Experimental randomized double-blind trial whit ASA 1 and 2 patients under spinal anesthesia, MIT Group: 0.5% hyperbaric bupivacaine 10 mg plus 100 mcg intrathecal morphine; MEV Group: 0.5% hyperbaric bupivacaine 10 mg plus intravenous morphine regulated. We evaluated analgesics parameters, adverse reactions and fetal well-being up to 24 hours. We used Student T-test unpaired, U Mann-Whitney test, chi-square, setting an alpha error of 0.05 and a power of 80%.
**Results:** Recruited 263 patients, Groups: MEV: 133 patients and MIT: 130 patients, found similar anthropometric characteristics, surgical and anesthesia times, hemodynamic variables and fetal wellbeing. We didn't record respiratory depression or sedation. MIT VNS (Verbal Numeric Scale) median and range()was lower at time 0 hs. 0(0) vs. MEV 0(6) p:0.002; 3hs. MIT 0(9) vs. MEV 1(10) p:0.000; 6hs. MIT 0(9) vs. MEV 1(10) p: 0.000; 9 hs. MIT 0(7) vs. MEV 1(8) p: 0.000; 12 hs. MIT 0(8) vs MEV 0(9) p: 0.000; 24hs. MIT 0(8) vs. MEV 0(10) p: 0.032. At MIT group found lower rescue morphine dose 0.72 mg. DS 1.75 p: 0.000, Relative Risk Reduction of VNS>3: 0.65 IC95 (0.475-0.778) p <0.001 and NNT of 3.2 with greater maternal satisfaction MIT 67% vs. MEV 52% p= 0.006. MIT itching occurred in 23% but only 9.1% required treatment versus 0.8% in MEV p= 0.000. MIT nausea and vomiting developed in 13.08%, but the 7.08% required treatment, while MEV presented in 7.5% p=0.075.
**Discussion:** Intrathecal morphine demonstrated superior quality analgesia at the expense of an increase in adverse reactions, which were mostly mild and tolerable, as expressed in the greater maternal satisfaction in this group. Significantly, there was no increased sedation or respiratory depression. These findings are similar to the literature. Both techniques were safe for the baby, which is related to morphine and its pharmacokinetics.
**Conclusions:** The results of this study give the low-dose intrathecal morphine (mini-dose) higher quality analgesia with acceptable side effects, making it a recommended technique.

**Keywords:** Intrathecal morphine; Systemic morphine; Caesarea; Postoperative analgesia; Adverse Reactions

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**Paper No: 491.00**

## Supplementary oxygen during elective caesarean section under spinal anaesthesia

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**Introduction:** During spinal anaesthesia for Caesarean section (CS), there are reductions in maternal peak expiratory flow rate, forced vital capacity, and forced expiratory volume.[1] Oxygen supplementation is commonly provided, even though maternal oxygen saturation is well maintained despite these respiratory changes. The benefit of oxygen supplementation is controversial, as increase in markers of free radical activity had been shown in the neonates born to mothers breathing oxygen enriched air [2].
**Objectives:** This prospective randomized double-blinded study was carried out to compare the effects of oxygen supplementation on neonatal outcome (Apgar scores at 1 minute and 5 minutes, umbilical artery and vein pH) in elective CS under spinal anaesthesia. The neonatal outcomes in patients with prolonged skin incision-delivery (I-D) and uterine incision-delivery (U-D) intervals were also compared with those of their counterparts.
**Methods:** Eighty two ASA I or II patients scheduled for elective CS under spinal anaesthesia were recruited. Following subarachnoid blocks using standard protocol, they were randomized into Group A (n=40) breathing room air, and Group B (n=42) breathing 6 L/min of oxygen via Hudson mask. Maternal haemodynamic parameters and oxygen saturation were closely monitored. Patients in Group A who developed SpO2<97% would be given oxygen supplementation and excluded from the study. The times of skin incision, uterine incision and delivery were recorded. Apgar scores at 1 minute and 5 minute were assessed by paediatric medical officer or staff nurse blinded to the patient's group allocation. Blood samples from umbilical artery and umbilical vein were collected and analyzed.
**Results:** No statistically significant differences were observed in maternal oxygen saturation, Apgar scores, as well as umbilical artery and vein pH between the two groups. The patients were sub-divided into short (< 10 minutes) and long (>10 minutes) I-D intervals, as well as short (<3 minutes) and long (>3 minutes) U-D intervals. No significant differences in umbilical artery and vein pH were observed in these sub-groups.
**Conclusions:** In patients undergoing elective CS and in the absence of fetal compromise, no differences in maternal oxygenation and neonatal outcome could be demonstrated whether or not oxygen supplementation was administered intraoperatively.

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**Paper No: 500.00**

## Uterotonic efficacy of oxytocin 2.5 versus 10 units during caesarean section at mulago hospital: a double blinded placebo controlled randomised clinical trial

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**Introduction:** Oxytocin is routinely administered during Caesarean section Delivery (C/S) to initiate and maintain adequate uterine tone (UT) and reduce blood loss after placenta delivery. Oxytocin is however associated with unwanted effects namely; tachycardia, hypotension, ECG changes, chest pain, nausea and vomiting. The magnitudes of these changes are dose dependant. In Uganda, 10 units of Oxytocin is still being used, yet smaller doses have been shown to be effective at achieving adequate uterine tone and reducing blood loss with fewer side effects.
**Objective:** To determine whether 2.5 I.U of Oxytocin gives adequate uterine tone and is safe as compared to 10 I.U of Oxytocin following caesarean section delivery at Mulago hospital.
**Methods:** After obtaining institutional approval, 380 Mothers undergoing both emergency and elective caesarean section delivery(C/S) in obstetric theatres of Mulago hospital that fit the inclusion criteria were randomized to receive either 2.5 units or 10 units of Oxytocin after clamping of the umbilical cord. The primary outcome was adequacy of uterine tone (UT). Others were heart rate (HR), BP, Blood Loss, as well as requirement of additional uterotonics.
**Results:** 94.71% had adequate Uterine tone in 2.5 unit group compared 88.89% in the 10 unit group at 2 minutes. There was no statistically significant difference in requirement for additional uterotonics in both groups (p- value 0.119),blood loss, frequency of vomiting (p=0.653), nausea (p=0.398), haemodynamic changes and chest pain (p=0.738) between the two treatment groups.
**Conclusion:** 2.5 I.U of Oxytocin gives adequate uterine tone and is safe when compared to 10 IU of Oxytocin following caesarean section delivery at Mulago hospital.

Recommendation: The routine use of 10 IU of oxytocin during both elective and emergency caesarean section delivery should be revised since adequate uterine tone can be achieved with 2.5 units

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**Paper No: 541.00**

## Gestational trophoblastic disease: a review of the anesthetic management of 181 clinical cases of molar pregnancy


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**Introduction:** Molar pregnancy is associated with significant morbidity (1,2). The anesthetic management is predominantly expert opinion based.

**Objectives:** To (i) ascertain the number of cases of molar pregnancies surgically managed at the 3 major academic hospitals of the University of Witwatersrand, South Africa from 1 January 2007 to 31 March 2011, (ii) describe their anesthetic management, (iii) determine the associated complications.

**Methods:** A retrospective record review following approval from the University research ethics committee. Data captured included demographic factors, clinical presentation, investigations, anesthetic management, complications and hospital stay. The cases were divided into 2 groups. Group I:$<$20 weeks uterus size and Group II:$>$20 weeks uterus size.

**Results:** One hundred and eighty case records were retrieved of the 200 cases managed during the study period. The mean age was 27.7 $\pm$7.4 years. There were 143 and 38 cases in Group I and Group II respectively. In Group I the incidence of biochemical and clinical hyperthyroidism was 19.6% (23/ 117) and 7.7% (9/117) respectively. Blood transfusion was indicated in 15.1% (21/139). 1.04% (2/142) had sepsis. General anesthesia (GA) was administered in 92.3%(127/143) of cases. 35% (45/127) of the GA cases had a definitive airway (endotracheal tube) secured. 84.4%(38/45) of these were performed under a rapid sequence induction (RSI). 64.6% of the GA cases had supraglottic airways placed. 7.7% (11/143) of cases had neuraxial anesthesia. The complication rate was 14%. Three cases required high care and 1 case required intensive care post operation. In Group II the incidence of biochemical and clinical hyperthyroidism was 38.2%(13/34) and 23.5% (8/34) respectively. Blood transfusion was indicated in 40.5%(15/37). 78.9% (n=38) had a GA. 41.7% (15/36) of the GA cases had a definitive airway secured. 38.9% of these were performed under a RSI. 38.9% (14/36) of the GA cases had supraglottic airways placed. 18.4% (6/38) cases had neuraxial anesthesia with 2 having sedation. The complication rate was 31.6%. Four cases required high care and 1 case required intensive care post operation. The mean hospital stay was 4.7$\pm$7.4days and 4.8$\pm$3.8days for Groups I and II respectively.

**Conclusion:** The occurrence of anemia and hyperthyroidism is high in this patient group. The associated complications are substantial. Research Agenda: Anesthetic management for molar gestations needs to be standardized.


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**Paper No: 556.00**

## Pain after cesarean section - a significant clinical problem?


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**Introduction:** Pain is an often-underestimated negative outcome after cesarean section (CS). Several randomized controlled trials investigated different analgesic regimens after CS. Unfortunately, however, RCTs rarely do present the typical course in acute postsurgical pain of patients with co-morbidities or chronic preoperative pain conditions and other typical RCTs exclusion criteria. In this study the relevance of acute pain after CS is analyzed.
**Methods:** We compared pain intensities after CS with post-operative pain intensities of patients after 179 different operative procedures including all common surgical procedures in all surgical fields. Patients were investigated on the first postoperative day using a validated 15-item questionnaire. In addition, important anesthesiological, surgical, and pain therapy-related variables were recorded. These data were collected in surgical departments of 105 hospitals within the framework of the German QUIPS project (Quality Improvement in Postoperative Pain Therapy, www.quips-project.de).
**Results:** We compared the quality of postoperative pain therapy of 824 patients after CS from 35 different hospitals with that of patients after 179 different operative procedures (n=49699). The worst pain intensity during the first 24 hours after CS was 6.2 (SD 2.3) on a numeric rating scale (NRS 0-10). Pain after CS ranked no. 6 compared with all 179 procedures. The intensity of pain during movement was NRS 5.2 (SD 2.2) and ranked 8th position. 19.3% of the patients had received a patient-controlled intravenous analgesia (PCIA). Pain ratings were not significantly lower in the PCIA group. The question if patients would have liked to have additional analgesics during the last 24 hours was answered in the affirmative by 14.2% of the patients (62nd position) (all 179 operative procedures 12.4%, range 0%-33.3%). The overall satisfaction with pain therapy was rated as NRS 12.4 (SD 2.5) on a NRS from 0 to 15.
**Conclusions:** Our data analysis suggests that CS is one of the most painful surgical procedures necessitating the attention of the whole medical team. Patients' satisfaction with regard to pain management has to be improved. We did not examine the multiple causes of the severity of post-CS pain. The data clearly show that neither PCA, systemic analgesics nor peridural analgesia have been employed optimally for postoperative care in CS patients. Interestingly, patients with a PCIA device did not have lower pain ratings. This my be due to underutilizing. The well-known risk factors 'younger age' and 'female gender' may contribute to the high pain ranking. Apart from surgical factors the reason for severe pain after CS could be due to the lack of knowledge of the health personal or a mother's conflict with breastfeeding.

**Paper No: 569.00**

## Maternal position during caesarean section for preventing maternal hypotension: a survey of our practice

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**Background:** Many anaesthesiologists believe that adjusting the position of the woman during caesarean section may improve the outcome for both the mother and baby. The theory behind this is based on beliefs that tilting the table laterally may prevent aortocaval compression. The common recommendation is a 15° lateral tilt. Other practitioners believe that there is no difference and that tilting the table makes the surgery more difficult. The aim of this study was to record the angle of table tilt used in our institution during elective Caeserean section in non complicated, singleton pregnancies.
**Methods:** The measurements were randomly distributed in time to avoid a change in practice. One anaesthesiologist of our team initiated spinal anaesthesia (8-10 mg bupivacaine+ 5 μg sufentanil+100 μg morphine) and gave routine prophylactic treatment of hypotension in use in our institution (500 mL of lactated Ringer's solution+ephedrine 3 mg/mL+phénylephrine 50 μg/mL. Vasopressors were administered by an infusion pump at a rate of 20 to 50 ml/h to maintain arterial pressure>80% baseline measurements). A second anaesthesiologist, not involved in anaesthesia, recorded the blood pressure, needs for vasopressors and recorded the angle of tilt. The angle was measured with an iPhone application (Clinometer®). Results are expressed as mean ± S.D.
**Results:** fifty two women were enrolled in this study. Age was 32 ± 5 yr, weight 71 ± 12 kg and height 161 ± 7 cm. Twenty patients received 8 mg of bupivacaine, 6 received 9 mg and 26 received 10 mg. The mean volume of vasopressors administered before delivery was 12 ± 4 mL. The mean angle of table tilt was 6.2 ± 4.3°. The angle was<5° in 26 patients, ranged from 6 to 10° in 16 patients, from 11° to 12° in 7 patients and was between 13°-15° in only 3 patients. No significant correlation was found between the dose of vasopressors needed and the angle of table tilt.
**Conclusion:** Recommendation for 15° tilt during Caesarean section is of little use in our institution. This survey is in accordance with recent Cochrane Library Review who concluded that tilting the patient has no proven effect on maternal hemodynamic (1).

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**Paper No: 571.00**

## Mallampati score during pregnancy

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A previous study demonstrated that airway edema can increase during the course of pregnancy resulting in an increased Mallampati score (1). Recently, a study showed that labor and delivery are associated with further airway changes compared with prelabor (2). Acoustic reflectometry showed that these changes were accompanied in changes in oral and pharyngeal volumes. The aim of this study was to evaluate intrapartum changes in MS in pregnant patients.

**Methods:** After obtaining IRB and written informed consent, we studied airway changes in 24 healthy pregnant women who were admitted to the labor and delivery suite. Initial airway examination was graded during the 32-34th week of pregnancy (T1) according to the Samsoon modification of the Mallampati classification (SMM). The SMM was further measured before 4 cm of cervical dilation (T2), at the end of the second stage of labor (T3) and 12-24h after delivery (T4). Airway photographs were obtained using a Canon® camera with parturient in the sitting position. A senior anesthesiologist, who was blinded to the origin of the photographs, analyzed and graded the airway into four classes. Parturient characteristics and fluids administered during labor were recorded. Data were analyzed by using a Chi-square test. Results are presented in table 1 (number patients). Mean age (SD) was $29 \pm 4$ yr and weight $74 \pm 10$ kg. Volume of fluids administered during labor was $554 \pm 341$ mL. Cervical dilation was $3 \pm 0.7$ cm at T2 and $9.3 \pm 0.8$ cm at T3. There was a significant increase in SMM between T1 and labor ($P < 0.02$) but there were no further significant changes during labor and delivery.

**Conclusion:** Our finding showed that Mallampati score increases at the end of pregnancy but no further changes were noted during labor. This is in contrast with the study of Kodali et al. (2) who observed a change in SMM during labor. The most likely explanation for this difference seems to lie in different amounts of fluid given during labor (554 versus 2500 mL in Kodali study). A low fluid regimen policy might provide better Mallampati scores during labor probably by reducing neck edema.

| | | |
|---|---|---|
| SMM | 12 | 34 |
| T1222 | 0 | 0 |
| T21 | 2102 | 0 |
| T36 | 126 | 0 |
| T48 | 115 | 0 |

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**Paper No: 573.00**

## Neck ultrasonography and mallampati scores in pregnant patients

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Although many factors contribute to potential difficulties when intubating parturients, whether or not the maternal airway is more difficult anatomically continues to be debatable. A previous study demonstrated that airway edema can increase during the course of pregnancy and resulted in an increase in Mallampati score (MS) (1). Acoustic reflectometry showed that these changes were accompanied in changes in oral and pharyngeal volumes (2). Ultrasonography has been evaluated for airway management in children but has never been used in obstetric (3). The aim of this study was to evaluate intrapartum changes in MS and in neck structures by ultrasound in pregnant patients.

**Methods:** After getting IRB and written informed consent, neck sonographic evaluation (Sonosite MicroMax, Sonosite, Bothell, WA, with a linear 5–10 MHz probe) was carried out on 24 pregnant patients. Initial airway examination was graded at admission in the labor room (T1) according to the Samsoon modification of the Mallampati classification (SMM: grade 1-4). The MS was further measured at the end of the second stage of labor (T2) and 12-24h after delivery (T3). Ultrasonographic measurements (USM) were performed at the same time. Three distances were measured: skin-vocal cords (SVC), skin-thyroid isthm (STI) and skin-tongue base (STB). Parturient characteristics and fluids administered during labor were recorded. Data were analyzed by using a ANOVA test.

**Results:** Mean age (SD) was $29 \pm 4$ yr and weight $74 \pm 10$ kg. Volume of fluids administered during labor was $554 \pm 341$ mL. Cervical dilation was $3 \pm 0.7$ cm at T1 and $9.3 \pm 0.8$ cm at T2. Labor and delivery have no significant effect on MS and on sonographic measurements (table 1).

Table 1

| | T1 | T2 | T3 |
|---|---|---|---|
| STB (mm) | $1,77 \pm 0,68$ | $1,80 \pm 0,60$ | $1,89 \pm 0,79$ |
| SVC (mm) | $1,07 \pm 0,34$ | $1,09 \pm 0,43$ | $1,06 \pm 0,34$ |
| STI (mm) | $1,09 \pm 0,34$ | $1,07 \pm 0,36$ | $0,99 \pm 0,24$ |
| MS 1-2 (n) | 22 | 18 | 19 |
| MS 3-4 (n) | 2 | 6 | 5 |

**Conclusion:** Our finding showed that Mallampati scores and USM did not change during labor. This is in contrast with the study of Kodali et al. (2) who observed a change in MS during labor. The difference between the 2 studies in the total amount of fluid given during labor seems to lie the most likely explanation for our finding (554 versus 2500 mL in Kodali study). A low fluid regimen policy might reduce neck edema. Ultrasonography warrants further evaluation as an adjunct to assessing the anatomy of the airway in pregnant women.

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**Paper No: 613.00**

## Comparison of intrathecal labor analgesia using clinical doses of ropivacaine and levobupivacaine

DuckHwan Choi, EunHee Kim and KyungMi Kim

**Introduction:** Intrathecal labor analgesia using newer local anesthetics such as ropivacaine or levobupivacaine becomes more popular due to their virtues of safety and less motor weakness.
**Objectives:** To clarify efficacy differences of the clinical intrathecal doses of ropivacaine and levobupivacaine.
**Methods:** Sixty full-term parturients randomly received 3 mg of intrathecal ropivacaine or levobupivacaine mixed with 20 mcg of fentanyl in their early active labor (30 patients in each group), a part of combined spinal-epidural technique. The associated block parameters, such as pain scores, duration of analgesia, and level of motor weakness, were investigated and compared between two groups. The primary and secondary outcomes were duration of analgesia and incidence of complete analgesia, respectively.
**Results:** Intrathecal ropivacaine offered shorter analgesia (P=0.02) with lower (sensory height P=0.007) and it also showed lower incidence of complete analgesia (P=0.026) than levobupivacaine. However, motor weakness on lower extremities was comparable in both groups, but significantly weak anal squeezing was noticed in the levobupivacaine group (P=0.03).
**Conclusiona:** Ropivacaine and levobupivacaine, 3 mg intrathecally administered with fentanyl, were both effective in early labor analgesia. Levobupivacaine was more effective in analgesic potency, but accompanied by a little motor weakness.

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**Paper No: 665.00**

## The quality of CPR deteriorates during transport in simulated maternal arrests

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**Introduction:** The American Heart Association recommends delivery within 5 minutes during an ongoing maternal cardiac arrest (1,2). Many clinicians may transport arrested patients to the operating room in order to perform a perimortem cesarean delivery. The study objectives were to compare the quality of cardiopulmonary resuscitation (CPR) rendered by teams during transport versus while stationary.
**Methods:** We randomized 26 teams composed of two staff (obstetricians, nurses, or anesthesiologists) to perform CPR during transport or while stationary. We used a mannequin (Laerdal Skills Reporter) designed to measure compressions (rate, depth) and ventilations (rate, volume). Participants practiced on the mannequin to perfect these skills prior to the drill. Each drill was comprised of three phases: 4 min while stationary, 2 min randomized to either remaining stationary or to transport, and 4 min while stationary. Transport involved pushing the gurney with the manikin from the labor room to the operating room. The primary outcome was percent of correctly delivered compressions (based on correct hand placement, depth>1.5 inches, correct body position of the provider and proper release). Secondary outcomes included several compression variables (rate, interruptions, technique) and ventilation variables (tidal volume, percent delivered correctly).
**Results:** The percent of compressions rendered correctly was 32% in the transport group and 93% in the stationary group (P<0.001). The median (IQR) compression rates were 124 (110-140) and 123 (115-132) per minute in the transport and stationary group respectively (P=0.703). Median (IQR) tidal volume was 270 (166-430) ml in the transport group and 390 (232-513) ml in the stationary group (P=0.031). The percent of ventilations rendered correctly was 0% in the transport group and 8% in the stationary group (P=0.048).

**Conclusion:** The quality of compressions and ventilations decreased significantly during transport during simulated obstetric cardiac arrest. Correct ventilations based on flow rate and adequate (> 500 ml) volumes were challenging for both groups perhaps because mask ventilation is more technical, and the compliance of the mannequin was poor. Our data suggests that in the event of a maternal arrest, transport negatively impacts the quality of resuscitation. Previously we showed that transport significantly delays perimortem cesarean delivery. The current findings further strengthen recommendations that perimortem cesarean delivery should be performed at the site of arrest.

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**Paper No: 689.00**

## Anaesthetic management of a parturient with mediastinal mass for caesarean section

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**Introduction:** Patients with mediastinal masses are at risk for cardiopulmonary complications, particularly under general anaesthesia. The narrowed airway and obstruction to the great vessels in the neck and thorax pose particular dangers in the management of airway and the cardiovascular system.
**Case Report:** A 24 year old primigravida at 34 weeks gestation was admitted to our Medical Centre with anterior cervical mass and shortness of breath. She was referred to the anaesthesiologist and planned for urgent Caesarean section. Magnetic resonance imaging (MRI) examination revealed a soft tissue mass with intrathoracic extension from the neck to the level of trachea and carina, with evidence of airway compression. The patient was admitted to the Intensive Care Unit (ICU) one day prior to surgery. Her condition was stable with oxygen supplementation via nasal cannula at 3 L/min, and she was nursed propped up in bed.
We opted for low-dose sequential combined spinal-epidural (CSE) anaesthesia as we considered it to be the safest anaesthetic technique. The otorhinolaryngologists were on standby at the operating theatre in case emergency airway management became necessary. The CSE block was performed at L3-4 with the patient in the sitting position. Intrathecal injection consisted of 1.2 ml of 0.5% hyperbaric bupivacaine (6 mg) and 15 μg fentanyl. A rapid bolus of 7 ml of saline was injected via the epidural needle as per epidural volume expansion technique. The epidural catheter was inserted to a depth of 5 cm in the epidural space and secured in place. The patient was placed supine with 15o left lateral tilt and 30o head elevation. Sensory loss to pinprick at T4 was achieved. Surgery was allowed to commence. The patient required an epidural top up with 2% lignocaine 5 ml during peritoneal incision. After 15 minutes a baby with Apgar score 8/9 was delivered, and a slow intravenous bolus of oxytocin 5 units was administered. Intraoperatively, her haemodynamic and respiratory parameters remained stable throughout.
Multimodal postoperative analgesia was provided using rectal diclofenac, epidural infusion of 0.1% levobupivacaine with 2 μg/ml fentanyl, and oral etoricoxib on resumption of oral intake. Epidural morphine was not used to avoid the remote possibility of respiratory depression. The patient was observed overnight in the ICU and discharged well to the Medical High Dependency Ward the next morning for further management.
**Conclusion:** Low-dose sequential CSE, with epidural volume expansion, was successfully employed in a parturient with mediastinal mass for Caesarean section.

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**Paper No: 719.00**

## What is the real anesthesic cost for a Cesarian section in a Province hospital from CHILE

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**Introduction:** Nowadays costs have become important in administration of hospitals in all the country. Selfadministration is new for province public hospitals.
**Objectives:** calculate the real anesthesis cost for a C section Last year our maternaty had 668 C-sections.
**Materials and Methods:** a prospective study for 50 C-section done starting from June 15 year 2011 was done. All C-section were included; elective and emergency. Participants were the three anesthesiologist that work in this hospital. Costs were done for all variable anesthesia supplies and drugs for each individual case.
**Results:** THE AVERAGE COST for the fifty cases was equivalent to 12 US dollars
**Discusion:** FIFTY PERCENT of the anestesic cost is only by the hyperbaric .75 buvivacaine and the spinal trocar.

**Conclusions:** costs for C-section anesthesia change depending of the number of bupivacaine vial and number of spinal trocar. It is posible to improve anesthesia cost administration for the maternity.

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**Paper No: 720.00**

## Anesthesia in pregnant myasthenic

Idoris Cordero

**Introduction:** Myasthenia gravis (MG) is an autoimmune disease characterized by circulating antibodies of the type of immunoglobulin G (IgG), which interact with cholinergic receptors and interfere with the mechanism of neuromuscular transmission.
**Objectives:** To describe the behavior of pregnant women perioperative with myasthenia gravis. Features of pregnancy: The course of MG during pregnancy is unpredictable. The worsening picture can occur between the first and third quarter. When a myasthenic, are pregnant should consult your obstetrician and inform your base doctor as soon as is confirmed. In these patients, premature birth is common. Anticholinesterases can cause uterine contractions. Stress implies increased myasthenic crisis. The occurrence of preeclampsia associated MG is uncommon, but when occurs can be catastrophic for both mother and fetus.
**Perioperative Practice:** These patients may present greater interference in labor and the postpartum period, so it requires a real team.
**Anesthetic Considerations:** Monitoring should be complete including neuromuscular function. It attaches great importance to the mode of delivery, but it is widely accepted that the myasthenic they should perform elective caesarean section and only when there are obstetric reasons only. Some prefer regional anesthesia (epidural), but others prefer general anesthesia.
**Medical Treatment:** The anticholinesterases, are the treatment of choice, as well as steroids and immunosuppressive drugs. Plasmapheresis is deprecated. Hyperimmune globulin intravenous (Intacglobin) has been used successfully. Should not be given magnesium sulfate.
**Considerations:** Breastfeeding your child for a myasthenic woman is always possible to take into account the severity of symptoms.
**Peculiarities of the newborn:** Some newborns may have neonatal myasthenia, temporary condition of general weakness in the newborn whose mother has MG. Its incidence ranges from 12 to 20 % and not all children of the same mother, presented a neonatal MG.
**Conclusions:** Myasthenia gravis is associated with increased complications. There is an increased risk of preterm labor, premature rupture of membranes, the greater potential of interventions and perinatal morbidity and mortality, so that the conduct of anesthesia should be accurate to prevent morbidity and mortality from this cause.

**Paper No: 788.00**

## Labor epidural analgesia in an operated patient of syringomyelia with arnold chiari type 1 malformation: a rare case report

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**Introduction:** Arnold Chiari1 malformation consists of elongation of the cerebellar tonsils with their displacement below the foramen magnum. Syringomyelia is an associated cystic formation in the spinal cord due to disturbed mechanism of cerebrospinal fluid flow, resulting in a degenerative neuropathy. In a labouring woman this condition poses concern because of the potential risk of neurological deterioration as a result of the physiological changes and the interventions during labour and delivery.
Epidural analgesia could be beneficial in abolishing pain and thereby the increase in intracranial pressure but at the same time the procedure in itself could aggravate the neurological symptoms. We report the successful management of a normal vaginal delivery under epidural analgesia in a woman with a surgically corrected Arnold Chiari type 1 malformation with syringomyelia and scoliosis. Case Report 26 year old primiparous woman presented in early labour. She had undergone a therapeutic subdural shunt surgery for AC1 malformation with cervicothoracic (up to T11) syringomyelia six years previously. She had minimal residual neurological symptoms like reduced sensation to pain and temperature from T12-L2 and occasional paresthesia of upper limbs. The symptoms were more pronounced on the right side but no aggravation during the pregnancy. She had an associated thoracic scoliosis and right upper limb atrophy. X-ray was done post delivery showing scoliosis with intra thecal shunt at thoracic vertebra level. Upon request from the patient for pain relief Epidural analgesia was planned after detailed discussion with the neurologist and obstetrician. Epidural catheter was placed in. L-3-4.....level under aseptic precautions. Analgesia was initiated with a titrated bolus dose of 10 ml of 0.0625% bupivacaine +50 μg fentanyl and was continued until delivery with 6ml /hour of 0.125% bupivacaine +2 μ/ml fentanyl. She had an uneventful vacuum assisted vaginal delivery. The patient was reviewed 2 weeks latter by the neurologist with a MRI spine and a detailed examination revealed the same neurological findings before going for the labour epidural. MRI: shows right syringo-hydromyelia along the cervical and upper dorsal spinal cord.

**Discussion:** Syringomyelia is a rare progressive degenerative neuropathy characterised by cystic formation within the spinal cord with accumulation of cerebrospinal fluid that can impinge on nerve fibres resulting in neurological manifestations. The congenital form commonly is associated with Arnold-Chiari 1 malformation and occurs in the cervicothoracic level.

The preferred mode of delivery and anaesthesia in a parturient with syringomyelia is controversial. The prime concern is avoidance of straining and thus fluctuation in the intracranial pressure during the labour and delivery. Only few reports of successful vaginal delivery under epidural analgesia are present.

The major concerns during epidural anaesthesia in such patients are: 1) Further neurological deterioration 2) Technical difficulties especially due to the presence of spine abnormalities like scoliosis 3) Increased risk of dural puncture 4) Abnormalities of autonomic nervous system can cause exaggerated cardiovascular instability 5) Unpredictability of the level of sensory blockade.

**Conclusion:** The use of Epidural analgesia for parturient with Neurological conditions like Arnold chiari malformation with syringomyelia is controversial; we would like to highlight that a meticulously done low dose epidural analgesia is still an option considering the benefits in such patients.

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**Paper No: 797.00**

## Risk factors for massive hemorrhage during cesarean section in patients with placenta previa


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**Introduction:** Placenta previa (PP) is one of the major causes of massive obstetric hemorrhage. Well known risk factors for bleeding in PP are old age, previous cesarean section (CS), increased BMI, increased neonatal weight, complete previa and especially the presence of placental accrete. In addition, it has been reported that general anesthesia (GA) is an independent risk factor for massive bleeding (MB) in PP patients. Objectives The purpose of this study was to elucidate the risk factors contributing to the incidence of MB in PP patients. We also investigated the factors associated with the choice of anesthetic method.

**Methods:** We retrospectively reviewed all women with PP who underwent CS during September 2006 to August 2011 at Kyushu University Hospital. The following factors were extracted from medical records: age, BMI, gestation, number of previous CS, emergency or elective, the anesthetic technique used (GA/RA) and the estimated blood loss (EBL) during surgery. Ultrasound findings within a week before CS were available in most patients; type of PP (marginal/complete), placental location (anterior/posterior) and the presence of placental accrete were also included in the analysis. Multivariate logistic regression was performed to determine independent risk factors for MB (¡Ý2500ml) and to investigate factors associated with the choice of anesthetic method. For statistical tests, $P<0.05$ was considered significant.

**Results:** Among 109 patients, median EBL was 1,340ml (range 270?11,348). There were 16 cases of MB. Emergency surgery (OR; 3.8, 95%CI; 1.1?13.0) and anterior placental location (OR; 4.2, 1.2?15.3) were found to be independent risk factors for MB. Overall, regional anesthesia was employed for most cases, 89% (97/109). Two of these women were later converted to GA because of the excessive hemorrhage. Anesthesiologists employed GA when a patient had a history of CS (OR; 7.1, 1.1?43.8) and in case of emergency (OR; 14.9, 2.1?108.5). Median EBL during surgery with RA and GA were 1,292ml (270?10,800) and 2,795 ml (429?11,348), respectively ($P<0.05$).

**Conclusions:** Emergency surgery and location of placenta are risk factors for MB during CS in cases of PP regardless of whether placental accrete is present. Anesthesiologists seemed to choose GA depending on a history of CS, which was associated with MB well. Additional information of sonographic exam on the placental position before the uterine incision may help anesthesiologists to develop a strategy to manage patients with PP.

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## Paper No: 804.00

## Quality assessement of the practice of obstetrical anaesthesia at muhima district hospital

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**Objectives:** The quality of anesthesia is a main determinant of maternal and neonatal outcomes in obstetrics (1). We set out to describe the quality of obstetrical anesthesia at Muhima district hospital in Rwanda and its possible effects on maternal outcomes.
**Methods:** This was a prospective observational study of consecutive caesarean sections performed at Muhima District Hospital in Kigali, Rwanda over a period of 4-months, from February 1st to May 31st, 2009. Muhima is a single-specialty hospital dedicated to obstetrics and gynecology. The data was collected from a 6 category-item survey questionnaire: admission parameters, labor progress record, anesthesia record, postoperative record, discharge criteria and neonatal status. The data were analyzed with descriptive and inferential statistics and regression analysis at the 95% confidence level.
**Results:** Data from 602 consecutive patients were analyzed. According to the admitting physicians's classification, 17.4% were emergent, 2.2 % urgent, 74.1% semi-urgent and 6.3% were scheduled. Preanesthetic assessment was not done in 95% of patients. Thirteen patients (2.2%) had general anesthesia as the primary anesthetic, 11 of whom (84%) were not intubated. The decision to delivery Interval (DDI) was consistently greather than 30 minutes in all groups. Mothers in the urgent group had a higher frequency of complications and were more likely to receive general anesthesia. Their DDIs were the shortest among the groups. There was a high incidence of failed spinals (7.2%) all of which were converted to general anesthesia without intubation. Post-operative analgesia consisted solely of diclofenac. Overall mortality for caesarean sections was 500/100,000.
**Conclusion:** Our findings point to substandard anesthetic management of caesarean sections (2). Namely, the absence of pre-anesthetic evaluation (3), prolonged DDI (4), a predominance of general anesthesia without a protected airway (3), and a high incidence of failed regional anesthesia. The most alarming finding is that of a maternal mortality of 500/100,000 compared with 2/million in the United States (1), a differential of 2,500 times. The latter is far greater than that for combined modes of delivery of 100-200 times (5). Further studies are needed to explore the causes of such a high differential.

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## Paper No: 825.00

## Anaesthetic Management for Successive Spinal Cord Surgeries During Pregnancy and Postpartum

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**Objectives:** Treatment strategy of spinal cord lesions requires consideration of multiple factors including location of the spinal cord compression, presence of spinal deformity, speed of neurologic decline, stage of pregnancy and potential risks to the foetus. Since the anaesthetic management of these patients according to stage of pregnancy is important, we present the anaesthetic management of a parturient with spinal tumour.
**Case Report:** A 25- year old woman, gravida 1, para 0, at 28 weeks? gestation with a 4-day history of bilateral lower limb weakness and altered sensation was admitted to our institution. Emergency magnetic resonance imaging (MRI) of the dorsal spine was requested. The MRI results revealed a lesion at the entire of T8-9 thoracic vertebra with involvement of the posterior elements, osseous extension into the extradural space and paravertebral soft tissue. She was urgently admitted to the neurosurgery department to undergo laminectomy and decompression by the 303 weeks of her gestation. After invasive blood pressure, peripheral oxygen saturation and fetal heart rate (FHR) monitorization, anaesthesia was induced using propofol, rocuronium bromide followed by total intravenous anaesthesia with propofol and remifentanil. During the operation, haemodynamics, central venous pressure, peripheral oxygen saturation, acid base status and FHR were stable. After skin incision; total laminectomy of T8-T9, posterior decompression and subtotal excision of the lesion were performed. Following extubation, she was taken to post anaesthesia care unit

and then obstetric ward. Two weeks after her operation, at 32 weeks? gestation, she underwent caesarean section under general anaesthesia. Four weeks later, the patient was electively prepared for a total neurosurgical excision of the lesion.

**Conclusion:** The etiopathogenesis, clinical and radiological features, and treatment modalities of an uncommon cause of thoracic spinal cord compression associated with pregnancy were addressed in this case report. Physiologic changes during pregnancy may lead to acute spinal cord compression due to tumour growth and expansion. Failure to recognize the lesion and delayed treatment can lead to potentially serious complications. We believe that our anaesthetic management allows us to perform this surgical procedure with maximal maternal and fetal safety.

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**Paper No: 854.00**

## Loss of resistance to air versus saline technique in epidural anesthesia for labor: a randomized, prospective study

Genaro Maggi, Nicolas Brogly, Renato Schiraldi, Laura Puertas and Emilia Guasch

**Introduction:** Loss to air technique in epidural analgesia for labor is a controversial approach due to increased rates of failures and complications, when compared to loss to saline technique (1-3). In this randomized, prospective study we compared the efficacy and the rate of complications employing the two techniques.

**Materials and Methods:** After obtaining Ethical Committee approval and written consent from patients, 400 parturient were allocated, using sealed envelopes, to receive epidural analgesia either using the loss to air (group 1) or the loss to saline (group 2) technique. Level of efficacy of the analgesia was monitored after 30 minutes and during expulsion of the fetus by an appropriate scale ranking 0-3 (0=no pain; 3=total failure of analgesia). 24 hours after delivery, pain in the site of epidural puncture and maternal satisfaction were evaluated, using a 0-10 scale. There were 177 patients in each group, considering a difference of 20% in the block efficacy (á=0,05, â=0,1). ANOVA was employed for parametric data and Chi-2 for non-parametric data. A p value<0,05 was considered significant.

**Results:** 11 patients in each group were excluded from the study for protocol violation. No difference in analgesia efficacy was reported at 30 minutes (1,03+0,65 in group 1 vs. 1,03+0,66 in group 2; p=1,00), nor during fetus expulsion (0,72+0,71 vs. 0,69+0,63; p=0,67). Complications during technique were reported in 38 patients in group 1 (20,6%) vs. 39 patients in group 2 (21,1%; p=0,50). Dural puncture was recorded in 2 patients in group 1. During labor, lateralization of analgesia was reported in 26 patients in group 1 (13,7%) vs. 16 patients in group 2 (8,5%; p=0,08). Inefficacy of analgesia needing a new epidural puncture was reported in 16 patients in group 1 (8,5%) vs. 7 patients in group 2 (3,7%; p=0,03). 24 hours after delivery, 84 patients in group 1 (44,4%) referred pain in the site of the epidural puncture, vs. 65 patients in group 2 (34,4%; p=0,02). On the other hand, there was no difference between groups about maternal satisfaction (8,35+2,66 vs. 8,58+2,68; p=0,42).

**Conclusions:** In the present study, epidural puncture technique didn't seem to compromise analgesia efficacy or to induce more complications. However, when loss of resistance to air technique was employed, lateralization of the analgesic block and re-puncture were more frequent. Moreover, this technique was associated to an increased rate of pain in the site of the epidural puncture, although maternal satisfaction was not impaired.

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**Paper No: 898.00**

## Needs assessment to achieve Millennium Development Goal 5 defined by staff at Mbarara University Hospital Uganda

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**Introduction:** The aim of MDG5 is to reduce the 1990 maternal mortality ratio (MMR) by three-quarters in 2015 (1). Maternal deaths are largely avoidable with appropriate antenatal and peripartum care. Interventions to reduce maternal deaths are well described, but there has been limited progress in sub-Saharan Africa in recent years (2). The Uganda Ministry of Health reported a MMR of 430 per 100 000 live births in 2008, equivalent to 1 in 25 lifetime risk of maternal death (3).

Quality improvement methods may be effective in low-income settings (4,5). A preliminary needs assessment

involving key stakeholders is required and may point to factors than can be generalized to similar settings.

**Objectives:** To perform structured interviews to ascertain opinions of healthcare workers regarding provision of obstetric care in a regional referral hospital, changes required and barriers to improvement.

**Methods:** Structured interviews were conducted with obstetricians, anaesthetists, clinical officers, and midwives at Mbarara Regional Referral Hospital, Uganda during one week in June 2010. Ethics approval was obtained. Open questions were asked and answers were not prompted. An independent anaesthetist reviewed interview transcripts for recurring themes.

**Results:** Interviews were conducted with nine members of staff, each lasting between 20-40 minutes. Representatives of all grades of anaesthetist, obstetrician and midwife were interviewed. Three recurring themes emerged:

(1) Lack of nursing staff (9/9 interviewees) "In the daytime there are enough staff, but at night we have only two nurses for up to 90 patients" Senior midwife "There have been patients who have deteriorated and no one knew." Obstetric intern.
(2) Lack of material resources (7/9 interviewees) "When the budget runs out we have to send patient relatives out to buy sutures, cannulae, giving sets " Obstetric consultant "We could not operate for a whole month because we didn't have gloves or oxygen" Obstetric consultant
(3) Lack of training courses (6/9 interviewees) "We have not received any training in how to recognize a critically ill mother. I would like us to have this instead of finding them when they are too ill to save" Obstetric intern

**Conclusions:** These interviews have identified factors that need to be addressed to improve maternal outcomes in this setting – support for nursing staff, particularly at night, improved resources, and improved training, particularly in recognition of the critically ill mother. They reflect findings previously identified in this setting (6) and will be used to direct a quality improvement programme in the hospital.

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**Paper No: 900.00**

## Anaesthesia for Caesarean Section in Palestine


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**Introduction:** Spinal anaesthesia is now considered the method of choice for both urgent and elective Caesarean section 1 The use of general anesthesia has fallen dramatically in the past few decades and accounts for only 5% of Caesarean sections in the United States2. In our hospital, the Al-Makassed Islamic Charitable hospital, a teaching and tertiary referral hospital for Palestine, the proportions are almost completely reversed. This reflects practice in the other Palestinian hospitals of the West Bank.

**Objectives:** The aim of this study was to review anesthesia practice for Caesarean section in the Makassed hospital. We sought to establish the data for the incidence of general anaesthesia and spinal or epidural anaesthesia for Caesarean section in 2010. In addition we sought an explanation for this incidence. And finally we wanted to know whether there were reasons to change the contemporary practice of anaesthesia for Caesarean section in Palestine.

**Methods:** This is a retrospective observational study. We reviewed the files of all patients who underwent Caesarean delivery in the period from 1st of Jan - 31st Dec 2010 at the Al-Makassed hospital. Both Emergency and Elective cases were included. We recorded the following: age and parity of the mother, type of anaesthesia given, indication for the caesarean, 1-minute and 5-minutes APGAR scores of the baby, regional block proceduralist. SPSS software was used to analyze the data.

**Results:** In 2010 we found that there were 647 cases of Caesarean deliveries out of 2764 total deliveries 23.4 %. Of the caesareans: 50.5% were emergency cases and 49.5% were elective cases. Of the emergency cases: 78 % given general anaesthesia, 16.5% were spinal, 3.4% epidural and 2.1%failed spinal converted to general anaesthesia. Whereas for the elective cases : 71.6% given general anaesthesia, 24.4% spinal, 0.6% epidural, 3.1% failed spinal, 0.3% combined spinal epidural. Totally 2.6% of the spinal anaesthesia failed and were converted to GA. There were no other significant complications attributed to spinal anaesthesia. There was no incidence of airway difficulty or aspiration following general anaesthesia. There is single case who

died 3 hours post ceasarean with a clinical diagnosis of massive Pulmonary embolism.

**Conclusions:** Although our numbers are relatively small, general anaesthesia appears to be safe in our hands. Any change in obstetric anaesthesia practice in Palestine would have to confront deeply held historical Obstetric beliefs and well entrenched cultural traditions in our patient population. With maternal mortality associated with general anaesthesia at 6.5 per million and that of regional anaesthesia at 3.8 per million in the US2, would a change in practice make any significant difference to anaesthetic morbidity and mortality in Palestine? What are the implications for other low and middle income countries in "Anaesthetic transition"?

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**Paper No: 930.00**

## Relationship between the administration of preincisional intravenous fentanyl in patients under cesarean section with epidural anesthesia and the apgar score of newborns. hospital nacional Daniel A. Carrión – 2011

Freddy Espinoza

**Introduction:** Although the sedoanalgesia is used in the operating room to relieve the stress of the patient undergoing surgery under regional anesthesia, many anesthesiologists are reluctant to use it in cesarean section by fear of the potential effects that drugs can have on the fetus.(1) Even though there is evidence that fentanyl is safe in pregnant women when it is used for labor analgesia, studies are inconclusive when it is used as an adjunct to cesarean section under regional anesthesia (2).

**Objectives:** Determine if exists relationship between the preincisional intravenous fentanyl administered to patients under cesarean section with epidural anesthesia and the Apgar scores of newborns.

**Material and methods:** Observational, analytical, prospective and longitudinal study in pregnant women undergoing cesarean section at Hospital Nacional Daniel A. Carrión in 2011. 64 patients were included, 32 receiving, at the judgment of the responsible anesthesiologist, intravenous fentanyl before surgical incision (GF) and 32 who did not receive any sedoanalgesia (GC). We recorded the Apgar score of the newborn at one minute and 5 minutes. For the analysis of the data was used the Mann Whitney test.

**Results:** The dose of fentanyl administered was $1.48 \pm 0.04$ ?g.kg-1. There was no statistically significant difference between groups in the Apgar score at one minute (GF 8.81 [8-9], GC 8.81 [7-9], $p=0.886$) or 5 minutes (8.97 GF [8-9], GC 9.6 [9 - 10], $p=0.085$).

**Discussion:** The possibility of side effects of fentanyl on the product is in relation to the amount that crosses the placental barrier and reaches the fetal circulation, with an estimated minimal plasma concentration to produce respiratory depression in the neonate of about 2 ng.m-1.(3,4) Experimental and clinical evidence indicate that very little amount passes from mother to fetus and that the relationship between maternal and fetal plasma levels is greater than 2.5.(5-7) Although maternal plasma concentration was not measured in this study allowing calculation the fetal concentration, studies using fentanyl macrodosis for major surgery in neonates showed that it requires 25 to 50 ?g.kg-1 to achieve plasma concentrations of 3.8 ng.ml-1.(8) It could be argued that the dose of 1.48 ?g.kg-1 used in this study as sedoanalgesia would be insufficient to reach toxic levels for the newborn.

**Conclusions:** We found no evidence that fentanyl intravenous at doses of 1.48 mg.kg-1 administered before the surgical incision in cesarean section have deleterious effects on the newborn.

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**Paper No: 998.00**

## Development of a 'lay mews' for patient attendants in the obstetric wards in Mbarara Regional Referral Hospital Uganda

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**Introduction:** Common causes of maternal death are haemorrhage, sepsis, eclampsia and obstructed labour. Maternal collapse usually precedes cardiac arrest and outcomes are improved by recognising the sick mother (1). The Modified Early Warning Score (MEWS) has been validated as a predictor of mortality (2,3,4). The eighth report of the UK Confidential Enquiries into Maternal Deaths recommended routine use of an obstetric MEWS to help in the recognition, treatment and referral of women who have developed or are developing critical illness (5).

Uganda has shown slow progress towards achieving MDG 5, in common with many countries in sub-Saharan Africa. There are around 8,000 deliveries pa at Mbarara University Hospital, and in 2009 there were >50 maternal deaths. A needs assessment identified a severe shortage of nursing staff on the wards as one of the factors to be addressed. At night, two nurses look after labour, antenatal and postnatal wards, making it difficult to undertake routine observations to identify deteriorating patients. However, every patient receives basic care from an attendant, usually a family member, who may be an underutilized resource.

**Objectives:** To develop an objective tool for use by patient attendants to alert nurses to a deteriorating patient requiring formal assessment.

**Methods:** Consensus views of five UK consultant obstetric anaesthetists identified key warning signs relating to the deteriorating mother. An obstetrician and six senior midwives in Mbarara were interviewed to assess the feasibility of a 'lay MEWS'. The educational background of patients was assessed. Patient attendants in Mbarara were interviewed to assess their understanding (data collection on-going).

**Results:** Consensus views identified five key warning signs:

- Bleeding
- Fast breathing
- Behaving strangely or having a fit
- Headache
- Patient feeling cold

One in four patients in Mbarara are peasant farmers, there is a low rate of literacy, and a written instruction chart was not deemed feasible. A pictorial chart was developed and translated into local languages, Lugandan and Runyankol. The final lay MEWS is shown (Figure).

**Conclusions:** In Mbarara University Hospital Obstetrics Department, the patient attendant may be an underutilized resource and may compensate for nursing shortages. Based on expert advice and consensus, we have devised a pictorial chart with local language translation as a novel and feasible method for training attendants to identify five clinical signs of deterioration. This chart may have wider applications in other resource-limited settings. Impact on patient outcomes in Mbarara will be assessed after implementation.

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**Paper No: 1012.0**

## Post cesarean section pain in the west bank

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**Introduction:** In December 2007, the Center for Disease Control and Prevention (CDC) reported that caesarean section (CS) rate in the developed world varied between 33.3% in Italy and 12.9% in the Netherlands (1). In Rafidia Surgical Hospital in Nablus, the CS rate was about 11% in the 1970s and increased to 14% in the 1990s. During the Al Aqsa uprising in 2000- 2004 this percentage remained the same until the incursion of Nablus city in 2002, after which the CS rate increased to 21%. The explanation for this sudden change was that parturients at term demanded cesarean delivery because they were very concerned about inevitable delays at check points in the West Bank.

**Objectives:** The main objective of this study was to evaluate several factors influencing the intensity of postoperative pain in women undergoing CS. These factors included family issues, nursing staff behaviours, length of procedure, socioeconomic status of the patients, anti-natal care, previous experience of surgical pain and post-operative complications.

**Methods:** This study was conducted during the period from February –March 2011 and carried out in 3 government hospitals in the cities of Nablus, Jenin and Ramallah. A patient questionnaire was generated and a survey was conducted, using face to face interviews and additional information was obtained from the patients' files.

**Results:** Three hundred and twenty eight women undergoing general anesthesia for CS agreed to participate in this

prospective, multicenter, survey. Patients were interviewed pre-operatively on the day of surgery and informed consent was obtained at that time. The questionnaire was completed 8 hours following CS by each patient when patients had fully recovered from general anesthesia. The response rate was 93%. The data were completely collected during the hospital stay. Pain intensity following CS was significantly influenced by the following variables: patient education, previous CS, duration of surgery, type of sutures used, nurses' attitude towards pain, method of expressing pain, ambulation post CS and complications directly related to CS. (Probability values equal to or less than 0.05 were considered significant.)
**Conclusions:** A number of factors influence the intensity of post-operative pain following CS. Most of these factors cannot be easily controlled and involve patient factors, environmental issues and health care providers. Education of patients, nurses and physicians about the concepts of acute pain management would be an important first step towards improving pain control following CS. The most effective way to address the educational issues raised would be to introduce a team approach to the management of postoperative pain.

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**Paper No: 1024.0**

## Effectiveness of intra-operative ondansetron in reducing post-operative intrathecal morphine-induced pruritus in patients undergoing caesarean section

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**Introduction:** The addition of preservative-free morphine to intrathecally injected local anaesthetics during spinal anaesthesia provides prolonged and effective analgesia following caesarean section thus enabling patients to be mobilized earlier. Nevertheless, up to 80% of patients experience pruritus due to the intrathecal opioids which is believed to have a direct irritation effect on neuraxial serotonin type 3 receptors. Ondansetron, a specific 5-hydroxytryptamine-3 (5-HT3) receptor antagonist may have a role in reducing or abolishing this disturbing symptom of itchiness.
**Objectives:** This prospective, randomized, double-blinded, placebo-controlled clinical study evaluated the effectiveness of 4 mg intravenous ondansetron in reducing the incidence and severity of 0.15 mg intrathecal morphine-induced pruritus in patients undergoing caesarean section.
**Methods:** Sixty two ASA I or II patients, aged 18 years and above who met the criteria were randomized into two groups. All parturients received an intrathecal injection of 0.5% heavy bupivacaine 1.6 - 2.0 ml, fentanyl 25 μg and preservative-free morphine 0.15 mg. Immediately after the delivery of the baby, Group A patients received 4 mg of intravenous ondansetron while Group B patients were given 2 mls of normal saline injection. Pruritus rating (none, mild, moderate or severe) was done at the recovery room, 6 hours, 12 hours and 24 hours postoperatively.
**Results:** The incidence of pruritus at the recovery room, 6 hours, 12 hours and 24 hours postoperatively for Group A (ondansetron group) was 64.5%, 72.4%, 41.9% and 29.0% and Group B (placebo group) 37.8%, 67.7%, 45.2% and 25.8% respectively. Although the incidence of pruritus was higher in the ondansetron group in the recovery room and at 6 hours postoperatively, it was not statistically significant. The incidence of pruritus was highest at 6 hours postoperatively. None of the patients had severe pruritus that required rescue medication at all intervals.
**Conclusions:** This study showed that intra-operative 4 mg intravenous ondansetron was not effective in reducing the incidence and severity of 0.15 mg intrathecal morphine-induced pruritus in patients undergoing caesarean section.

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**Paper No: 1044.0**

## Introducing monitoring of vital signs and the WHO checklist at Mbarara University teaching hospital, Uganda: an observational study

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**Introduction:** Maternal mortality remains high in sub-Saharan Africa, and many countries are not on track to achieve UN Millennium Development Goal 5 by 2015 (1). Mbarara University Teaching Hospital undertakes approximately 8000 deliveries per annum (28% caesarean section rate, MMR 500:100 000 births). Common causes of maternal death are haemorrhage, sepsis, eclampsia and obstructed labour. Early recognition of abnormal vital signs and the use of a surgical checklist have been identified as potential ways to improve outcomes (2,3).
**Objectives:** The key objectives of this study were to introduce routine monitoring of vital signs and the WHO surgical safety checklist for mothers undergoing caesarean section.
**Methods:** Ethical approval was obtained. A baseline audit in August 2010 measured the percentage of mothers with vital signs recorded pre- and postoperatively. A visiting anaesthetist coordinated training from September 2010 to January 2011. Changes were introduced into practice using PDSA cycles (plan-do-study-act) to improve target outcomes. Lack of equipment was identified as a barrier and 4 mobile monitors were introduced with training targeted at admission triage. A MEOWS chart and checklist were formally launched in January 2011. Data was collected by weekly chart review by trained data abstractors. Results were plotted as percentages on weekly run-charts and presented at monthly obstetric meetings.
**Results:** Data was obtained for 86 caesarean sections in the baseline audit and 964 caesarean sections January - June 2011 (83% emergencies). Preoperative and postoperative blood pressure was recorded in 2/86 (2.3%) and 1/86 (1%) of patients at baseline. Preoperative blood pressure was recorded in 100% patients at the end of the study period, a sustained change in practice. Postoperative observations improved although the effect was not as marked. The use of the checklist continued but was not sustained after the visiting anaesthetist left. Retained surgical swabs were detected on two occasions as a result of using the checklist. There were 9 maternal deaths from 1st January to 30th June (36 deaths in 2010).
**Conclusions:** We have shown that in resource limited settings it is possible to improve basic care processes such as routine blood pressure monitoring through local leadership, training and introduction of suitable equipment. Regular audits help change practice and improve patient care. Improvements in the uptake of the checklist were not sustained, despite demonstration of utility. Introducing the WHO checklist is a complex process in any setting and requires local champions and multidisciplinary team involvement to identify local barriers (4).

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**Paper No: 1052.0**

## Anaphylaxis shock probably induced by Seprafilm (sodium hyaluronate-based bioresorbable membrane)

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**Introduction:** Seprafilm bioresorbable membrane has been approved for use in any open abdominal or pelvic surgery to prevent post operative peritoneal adhesions. We experienced anaphylaxis shock probably induced by seprafilm in the caesarean section.
**Case:** Patient was 29 year-old female and scheduled for repeat caesarian section. Her pregnant term was 37months and she was suffered from severe atopic dermatitis for over 20 years. Brown pigmentation was recognized on her all extremities and back skin. For the first caesarean section, seprafilm was not used during operation. Anesthesia was maintained mainly by spinal anesthesia and propofol was started for sedation shortly after the baby delivery. Circulatory condition was checked every 5minite under spontaneous respiration and her circulatory and respiratory conditions were steadily maintained. But at the time of skin suturing, her respiratory rate was increased and she moved her upper extremities. Her pulse rate was increased to 140/minute and blood pressure was depressed to 50mmHg. Amniotic fluid embolism was first suspected, but arterial blood analysis showed no respiratory distress data, PaO2 395mmHg and PaCO2 30mmHg. Blood bleeding into abdominal space was also suspected, but echo examination revealed no bleeding around the uterus. Latex catheter was removed from the bladder for Latex anaphylaxis, but no recovery was noticed. Her peripheral blood examination showed concentrated blood, Hb increased from preoperative 10g/dl to 14.5g/dl. Dramatic circulatory recovery was obtained by the administration of adrenalin 0.05mg and Hydrocortizone 500mg.

**Discussion:** Amniotic fluid anaphylaxis was also the possible cause for this patient. But the time of the occurrence of the shock was the key point. Shock occurrence time was just after the application of seprafilm.
**Conclusion:** Widely and commonly used seprafilm can be the cause of anaphylaxis shock.

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**Paper No: 1088.0**

## Incidence of difficult & failed intubations during obstetric general anaesthesia in a tertiary referral centre

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**Objective:** To determine the incidence of difficult and failed intubation during general anaesthesia (GA) for cesarean sections (CS) & pregnancy-related surgery in a tertiary teaching institution.
**Methods:** With IRB approval, data on cesarean deliveries & pregnancy-related surgery performed over 8years from 1 Jan 2004- 31 Dec 2011 were extracted from departmental audit, critical incident database and clinical notes. We determined total number of deliveries, cesarean, GA rates and reviewed charts of all patients with difficult ( ? Grade 3 larynx) or failed intubation (failure to intubate the trachea), recording parturient demographics, indications for elective/emergency CS, and for GA, and details of airway management (preoperative airway assessment, anaesthetist seniority, adherence to failed intubation protocol, airway adjuncts used, airway complications).
**Results:** This study took place in our country's largest and busiest tertiary maternity teaching centre which delivers approx.> 12,000 babies annually. Final results will contain additional 6mths data until 31 Dec 2011. Preliminary data(1 jan 2004- 31 July 2011) is presented: 93,401 deliveries occurred; 26,584 via cesarean section (average CS rate of 30%). Of these, 10.4% were performed under general anesthesia. There were 2772 rapid sequence GAs for cesarean deliveries and 5065 obstetric GAs (for CS and non-CS) administered over 7.5years. 14 difficult intubations (grade ? 3 larynx) occurred in the GA -CS series=1:198 incidence. 50% cases were emergency CS after hours. There were 6 failed intubations=1:462 incidence. 6 unanticipated and 7 anticipated difficult airways were identified on preoperative assessment. 8 of 14 cases were obese (BMI>30). Only 2 patients had severe preeclampsia. All 14 difficult intubations were handled by anaesthetic consultants or specialist registrars. The failed intubation protocol was followed in all 14 cases, commonest adjuncts used were bougie and McCoy laryngoscope. Five cases were rescued with a LMA Proseal, one patient was awoken, and spinal performed. There was no pulmonary aspiration, maternal awareness, or dental damage. Minor airway complications: 6 transient desaturation, 2 sorethroat, 1 fibreoptic bronchoscopic suction with post-op ICU monitoring overnight.
**Conclusion:** We found a difficult intubation incidence of 1:198 and failed intubation 1:462. We attribute this low incidence of 1:462 to the round-the -clock specialist staffing of our busy obstetric anaesthesia unit, familiarity with GA with adequate opportunities for training in obstetric intubations and low maternal morbidity due to the use of the Proseal LMA, the availability of videolaryngoscopy, and ongoing multidisciplinary simulation training in high risk obstetric scenarios and failed intubation drills.

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**Paper No: 1128.0**

## Influence of enoxaparine on serum endotoxin concen-tration in puerpera after abdominal delivery

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**Introduction:** Increase of endotoxin concentration was noticed in patients with severe pre-eclampsia, massive hemorrhage, sepsis, small pelvis inflammatory diseases [1-4]. Low-molecular weight heparins (LMWH) are direct anticoagulants, but also they have anti-inflammatory and endothelial-protective properties [5,6].
**Objectives:** Determination of serum endotoxin level in puerperas with risk fac-tors of thrombotic complications after abdominal delivery.

| | Day 1 | Day 3 | Day 5 |
|---|---|---|---|
| Study, n=38 | 88,4 ± 7,34 | 133,4 ± 9,76 | 179,6 ± 15,23 |
| Control, n=26 | 87 ± 7,65 | 135,4 ± 9,91 | 209,8 ± 19,73 |

* * p<0,05

**Methods:** After Ethic Committee approval and obtaining of informed consent, 72 patients after abdominal delivery were included in randomized prospective trial. All patients were randomized into two groups (randomization was performed according to the day of the week). Study group included 38 women, who obtained daily natrium enoxaparine 40 mg subcutaneously, started 12 hrs after delivery during 3 days. Control group included 34 patients after abdominal delivery. Inclusion criteria: presence of one or several risk factors (arterial hypertension, combination of hereditary thrombophylia gene mutation, varix veins, diabetes mellitus, BMI>25, age>35 years). Exclusion criteria: different inflammation diseases during III trimester, preeclampsia, blood loss during delivery>1000 ml, administration of LMWH before or 24 hours after delivery, contraindications for use of LMWH. Groups were comparable by age, gestational age, indications to delivery, BMI, concomitant diseases, obstetric history. Duration of cesarean section was 54,3 ± 4,21 and 53,2 ± 3,75 min, respectively, blood loss – 894,8 ± 76,78 and 877,9 ± 69,92 ml in study and control group respectively. Before intervention all patients obtained prophylactic antibiotic dose. Eight women were excluded from the study due to demand in LMWH and/or antibacterial treatment after delivery. Studies of endotoxin serum level were performed on days 1, 3 and 5 after deli-very with use of HbtLAL method (quantitative analysis of endotoxin level in culture media). Limit of assay sensitivity – 1, 4 pg/ml, range of measurable concentrations - 1 - 1000,0 pg/ml.

**Results:** Endotoxin levels 3 days after delivery in both groups were increased in both groups. On 5th post-op day there was marked increase of endotoxin level in the control group in comparison with the study group (see table).

Group, n Endotoxin level, EU/ml × 10-3

**Conclusions:** 1. In presence of thrombotic complications risk factors in patients after abdominal delivery endotoxin levels are elevating from 3 day after delivery. 2. Use of enoxaparine after abdominal delivery in patients with thrombotic complications risk factors led to statistically confident decrease of serum endotoxine on the 5th day after delivery.

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**Paper No: 1158.0**

## Early Epidural Labour Analgesia: Does It Increase the Chances of Operative Delivery?


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Epidural analgesia is commonly employed for labour analgesia. Epidural analgesia has been shown to cause prolong labour and increase in the incidence of operative delivery.1 Recent observations have not shown any such association.2 Conventionally epidural labour analgesia is administered during the active phase of labour when cervical dilatation (CD) is 4cms. Administration of epidural analgesia early in labour (CD ? 2cms) provides good analgesia but its effect on the progress of labour is not widely studied. Early labour analgesia may, increase the duration of labour, and may increase the risk of operative delivery, increase the risk of oxytocin, malposition of foetus and foetal bradycardia due to maternal hypotension. We compared the efficacy of early (?2cm cervical dilatation with >50% effacement) versus late (>2cm cervical dilatation with >50% effacement) epidural analgesia in labouring women and its relation to duration of labour and mode of delivery.

**Methods:** 120 term nulliparous primigravidae were administered epidural analgesia randomly either early (CD ? 2cms) or late (CD>2cms). Patients with medical and obstetric contraindications for vaginal delivery were excluded. A bolus of 8 ml of 0.25 % bupivacaine followed by Infusion of 8 ml per hr of 0.125 % bupivacaine with fentanyl (2.5 μg/ml) per hour was given till delivery. Parameters studied were Intensity of labour Pain, as assessed by visual analogue scale (VAS), hemodyanmics (such as blood pressure, pulse rate and oxygen saturation) degree of sensory level and motor block (Bromage scale), was assessed every 30min. Further progress of labour, mode

of delivery (spontaneous/instrumental/caeserian), APGAR scores and side-effects of epidural analgesia, if any, were monitored and noted every two hours. If pain relief was inadequate (VAS>4) 2 ml of additional bolus infusion was given. Data was analyzed by using ANOVA, Student's t-test and Chi-square test or Fischer's exact test.

**Results:** Patients in the early epidural group had pain relief throughout the course of labour where as patients who received epidural analgesia later in labour experienced pain for a variable period of time prior to receiving epidural analgesia. There were no significant changes in the hemodynamics between the two groups. The total duration of labour was not prolonged in early epidural group as compared to the late epidural group ($476.1 \pm 46$ minutes vs $471.4 \pm 62.5$ minutes) ($p=0.726$). The timing of epidural analgesia did not affect the mode of delivery ($p=0.428$). Incidence of Caesarean section was similar (13/60 in early group vs 14/60 in late epidural group). Maternal satisfaction was better with early epidural (76.7% vs 65%) which however was not statistically significant. There was no significant difference between the APGAR scores at 1 min and 5 min (Scores 8 Vs9). Side effects such as nausea, vomiting, motor block were minimal and similar between the groups. 1 patient in early epidural group had motor block and 2 patients in late epidural group had vomiting.

**Conclusion:** We could conclude that early epidural placement provides pain relief throughout the course of labour without prolonging the duration or increasing the chances of operative delivery and side effects.

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**Paper No: 1264.0**

## Postpartum plasma exchange for a severe pregnancy related microangiopathy

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**Introduction:** The differential diagnoses of life-threatening microangiopathic disorders in a postpartum female includes severe preeclampsia-eclampsia, hemolysis, elevated liver function tests, low platelets syndrome (HELLP) and thrombotic thrombocytopenic purpura (TTP). There is a considerable overlapping in the clinical and laboratory findings between these conditions, and hence an exact diagnosis may not always be possible.1 We present the case of a woman in the postpartum period, showing signs and symptoms of a severe microangiopathy, refractory to the supportive therapy she underwent, and that the hemolysis was resolved through plasma exchange therapy (PET).

**Clinical Case:** A healthy 20 year old, primigravida (25 weeks gestation) wad admitted to the emergency service for headache and generalized edema. Upon physical examination, blood pressure was 143/89mmHg, and edema on the extremities. Analytically: Anemia (9.9 g/dl), thrombocytopenia (10.000/mm3), elevated liver enzymes (LDH: 3026, Total Bilirubin: 1.28mg/dL) and proteinuria ++++. For suspicion of severe HELLP syndrome, 4 pool platelets were administered and the patient was submitted to a cesarean section, without complications. The patient was transferred to the Post Anesthesia Care Unit, but due to worsening of clinical symptoms had to be transferred to the Surgical Intensive Care Unit, 24 hours after the cesarean section. At this time the patient underwent an antihypertensive triple treatment (Captopril, Indapamide and Nifedipine), Dexamethasone 5 mg every 6 hours, the dose being progressively increased to 20 mg every 6 hours, fluid and blood component therapy to correct anemia, low platelets and low urinary output. Due to the persistence of the severe microangiopathy, with worsening indicators of hemolysis, indication is given to being PET on the 7th day, revealing improvement of the analytical parameters from the first session. The patient held a total of nine sessions. The patient was discharged on the 19th day with: Hb:10.6g/dl, platelets:248000/mm3, total bilirubin:0.20, LDH:678, without proteinuria.

**Discussion:** The HELLP syndrome is usually associated with hypertension and proteinuria and differential diagnoses includes TTP and differentiation between the two is sometimes difficult, as occurred in the clinical case shown above. Also, the patient did not respond according to expectancy for 72 hours. In spite of this, we decided to advance with a PET and the patient responded effectively, with resolution of hemolysis and reversal of organ dysfunction.

**Conclusion** The distinction between HELLP and TTP may not always be possible. The PET should be considered in persistent, life-threatening microangiopathy that is refractory to conservative measures.

## Reference

1 *Indian J Critical Care Med* 2011; **15**: 126–9