Title: Conversion of Epidural Labour Analgesia to Epidural Surgical Anesthesia for Intrapartum Caesarean Delivery

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INTRODUCTION: One of the advantages of epidural labour analgesia (ELA) is its ease of conversion to epidural surgical anesthesia (ESA) to facilitate intrapartum cesarean delivery (C-D), thereby avoiding general anesthesia (GA). Successful conversion (92-94%) has been previously reported in several small series (1-3) which were all under powered to identify significant risk factors for failed conversion or management strategies to improve overall conversion rates. The purpose of this investigation was to determine risk factors for inadequate ESA and compare subspecialist obstetric anesthesiologists (OB) and generalist anesthesiologists (GEN) anesthetic management of inadequate ESA for intrapartum C-D.

METHODS: Following IRB approval health records of women with ELA requiring C-D over a 3 year period (April 01, 2001 and March 31, 2004) were reviewed. All women had ELA initiated and maintained (PCEA +/- CEI) with 0.08 % Ropivacaine + 2 mcg/ml Fentanyl (4). Inadequate ESA was defined as an unsuccessful conversion of ELA without catheter manipulation or no attempted conversion to ESA. A comparison of the management of the inadequate ESA between the OB (N=2) and the GEN (N=34) anesthesiologists was undertaken. Data was analyzed using unpaired T-test, Chi Square, Fisher's Exact Probability Test and analysis of variance where appropriate with a $P < 0.05$ considered significant.

RESULTS: 899 health records were identified with 4 excluded (2 continuous spinal analgesia; 2 emergency C-D) with 866% (775/895) ELA successfully converted to effective ESA for C-D. There were no statistically significant differences in the demographic profile nor the time from the placement of ELA to C-D between successful conversions vs inadequate ESA. The mean anesthesiologist-administered "top ups" per parturient was significantly higher in inadequate ESA (0.98 ± 0.12) vs successful ESA (0.50 ± 0.96) ($P < 0.00001$). With inadequate ESA, OB withdrew the catheter back (~1 cm) followed by additional LA significantly more frequently than GEN (58.3% (21/36) vs 5.9% (5/84) respectively; $P < 0.0001$), resulting in successful conversion to effective ESA in 85.7% (18/21) OB and 8.0% (4/5) GEN ($P = \text{NS}$). This resulted in an overall successful conversion rate of 89.1% (797/895) GA was administered by significantly more GEN 42.9% (36/84) compared to OB 8.3% (3/36) ($P < 0.05$), with GEN not attempting Spinal Anesthesia prior to inducing GA in 75% (27/36) of women with inadequate ESA compared to 0% (0/3) OB ($P < 0.05$). The ability to intubate was documented in 94.9% (37/39) with difficult intubation reported in 10.8% (4/37).

DISCUSSION: Successful conversion of ELA to ESA for intrapartum C-D occurred in >85% of cases. Unsuccessful ESA was associated with pre-existing inadequate ELA. Withdrawing the epidural catheter ~1 cm followed by additional LA is effective in converting >80% of previously inadequate ESA to effective ESA, thereby avoiding GA for intrapartum C-D.

REFERENCES: 1. IJOA 11:8-14, 2002; 2. IJOA 9:3-6, 2000; 3. Brit J Obstet Gynaecol 97:420-4, 1990; 4. Anesth Analg 90:138-49, 2000