Title: Efficacy of the Addition of Intrathecal Fentanyl to Spinal Anesthesia for Uterine Exteriorization during Caesarean Delivery

Authors: Albie J Malan MBChB*, David C. Campbell MD, MSC, FRCPC*; Jocelyn Martel FRCSC, FACOG#; Sandy Biem FRCSC, FACOG#

Affiliation: Departments of Anesthesia* and Obstetrics and Gynecology#
Royal University Hospital, College of Medicine, University of Saskatchewan,
103 Hospital Drive, Saskatoon, SK, S7N 0W8

INTRODUCTION: One of the most uncomfortable times during cesarean delivery (C-D), under spinal anesthesia (SA), occurs with uterine exteriorization, often predicated by the requirement for improved surgical exposure due to a lateral tear of the uterine incision. Although the addition of intrathecal (IT) fentanyl has been associated with improved SA for routine C-D (1), only 3 studies specifically report its impact on exteriorization. Unfortunately, these studies either lacked sufficient power (2), administered IV fentanyl to the control group (3) or did not report sample size (4) to definitively determine the effect of IT fentanyl. The purpose of this prospective, double-blind, RCT was to determine the effect of the addition of IT fentanyl on maternal response to uterine exteriorization during C-D under SA.

METHODS: Following IRB approval and informed written consent, 40 women scheduled to undergo SA for elective C-D were randomized to receive either **Fent** (N=20): 1.4 ml 0.75% hyperbaric bupivacaine, 150 mcg (0.3 ml) preservative-free (PF) morphine plus 10 mcg (0.2 ml) of Fentanyl or **NS** (N=20): 1.4 ml 0.75% hyperbaric bupivacaine, 150 mcg (0.3 ml) PF morphine plus 0.2 ml of 0.9% saline. VAS (0-100 mm) for Pain (VASP) was assessed Preoperatively, at Incision, Uterine Exteriorization, Uterine Replacement and PARR. Nausea, vomiting, pruritus, RR and SpO₂ were simultaneously evaluated. Neonatal APGAR's and cord ABG's were assessed. VAS (0-100 mm) maternal satisfaction was recorded in PARR. Any supplementary intraoperative analgesia was limited to IV fentanyl. Data analysis included 2-tailed unpaired T-Test, Chi Square and Fisher's Exact Probability Test with P<0.05 considered significant.

RESULTS: There were no statistical differences in demographics, neonatal birth weight, APGAR's, cord pH <7.2, time between SA and exteriorization, and pruritus (**NS**: 5% (1/20); **Fent**: 15% (3/20)). VASP scores were 0/100 in both groups at Pre-op, Incision and PARR. No IV Fentanyl was administered. VASP was significantly higher in the **NS** group at Exteriorization (**NS**: 14.5 ± 13.3 vs **Fent**: 0 ± 0 , P<0.001) and Replacement (**NS**: 16.7 ± 16.7 vs **Fent**: 0 ± 0 , P<0.001). Nausea was reported by 30% (6/20) at Exteriorization and 65% (13/20) at Replacement and Vomiting 5% (1/20) at Exteriorization and 30% (6/20) at Replacement in **NS** compared to 0% (0/20) for both outcomes at each uterine manipulation in **Fent** (P<0.01). Maternal satisfaction was significantly higher in **Fent**: 99.1 ± 2.8 vs **NS**: 93.6 ± 6.7 (P<0.003).

DISCUSSION: The results of this investigation indicate that uterine exteriorization and replacement during C-D are both associated with significant nausea, vomiting and discomfort all of which are eliminated by the addition of 10 mcg of IT fentanyl to SA, with no adverse maternal or neonatal effects.

REFERENCES: 1. Anesthesiology 91:1919-27, 1999; 2. Acta Anaesth Scand 41:332-8, 1997; 3. Anesth Analg 95:209-13, 2002; 4. Anesth Analg 78:918-20, 1994