Title: POSTOPERATIVE ANALGESIA AFTER INTRATHECAL FENTANYL-LIDOCAINE FOR POSTPARTUM TUBAL LIGATION SURGERY

Authors: WJ Durkan, M.D., CH Leicht, M.D., DH Evans, M.D.
Affiliation: Anes. Dept., Naval Hospital, San Diego, CA 92134

Introduction: Intrathecal morphine has been in increasing use as a supplement to the local anesthetic during spinal anesthesia for abdominal surgery. Unfortunately, this technique is associated with a high incidence of side effects due to rostral spread in the cerebrospinal fluid[1]. Fentanyl possesses high lipid solubility which should limit its rostral spread, thus providing a more segmental effect and less side effects[2]. Spinal anesthesia is a popular technique for postpartum tubal ligation, which is an operation of short duration associated with moderate postoperative pain. Intrathecal fentanyl would seem an ideal supplement to a lidocaine spinal for this procedure[3]. The study was performed to compare the side effects and duration of analgesia after fentanyl-lidocaine versus lidocaine administered intrathecally for postpartum tubal ligation.
Methods: Forty healthy parturients scheduled for postpartum tubal ligation under spinal were evaluated. Group 1 patients (20) were randomly selected to receive 5% lidocaine (75mg + 0.5ml NS) as their anesthetic, the remaining twenty patients, group 2, received 5% lidocaine plus fentanyl (75mg + 25mcg fentanyl). Patients were prehydrated with at least 500ml of Lactated Ringer's solution. After the surgery, patients were moved to the recovery room where return of motor and sensory function was monitored. Subsequently, patients could receive analgesia in the form of oxycodone one pill every three hours, if desired, for relief of pain from the surgical site. Patients were monitored for known side effects of intrathecal opioids: pruritus, nausea or vomiting, somnolence, or hypopnea. Demographic data, duration of analgesia, degree of analgesia, pruritus, and nausea at two hour intervals for eight hours and at twenty four hours, and total 24 hour postoperative analgesic requirement were compared. The Student's t-test and chi-square analysis were utilized with a p-value ≤ 0.05 considered statistically significant.
Results: The data suggest that there is a significant difference between the two groups with respect to the duration of pain relief and degree of pain relief (pain score at 2 and 4 hours postoperatively). Mean duration of analgesia was 320 ± 372 and 641 ± 518 in groups 1 and 2, respectively (min, mean ± SD). Furthermore, mean pain scale level was 4.20 ± 3.66 vs 0.85 ± 1.39 at 2 hours and 4.55 ± 2.78 vs 2.35 ± 2.08 at 4 hours for group 1 vs 2, respectively (mean ± SD). Pain scale levels at 6, 8, and 24 hours were not significantly different. The incidence of pruritus and nausea were similar between the two groups. Additionally, there was a significant increase in analgesic consumption in group 1 vs group 2 (14.52 ± 10.32 vs 7.05 ± 7.81). Resolution of sensory and motor blockade was not different and no patient was noted to have depressed respiratory effort or urinary retention.
Discussion: Postpartum tubal ligation is an operation of short duration (about 30 minutes) associated with moderate postoperative pain requiring treatment for a relatively short duration (about 6 hours). Malinow evaluated a lower fentanyl dose, 10 mcg, to supplement a lidocaine spinal anesthetic for tubal ligation surgery[3]. His data showed less time to first narcotic in the patients receiving fentanyl vs placebo (234 vs 268 min). Epinephrine added to the spinal increased the time to first narcotic but at the cost of significantly prolonging the duration of the block (zero pain scale). Chabal found that the dose 25 mcg of intrathecal fentanyl strongly depresses the nociceptive lower extremity flexion reflex, and that these changes parallel the subject's report of pain[2]. By supplementing the lidocaine spinal with 25 mcg of fentanyl, we obtained excellent postoperative pain relief of appropriate duration in light of the relatively short period of pain occurring after tubal ligation surgery without increased side effects or prolonged block.
References: 1) Cousins MJ, Mather LE: Anesthesiology 61: 276-310, 1984; 2) Chabal C, et al: Anesthesiology 70: 226-229, 1989; 3) Malinow AM, et al: Anesthesiology 71: A704, 1989

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TITLE: LOW DOSE ALFENTANIL VS. FENTANYL WITH BUPIVACAINE FOR CONTINUOUS EPIDURAL INFUSION FOR LABOR

AUTHORS: N. Ray, MD, S. Datta, MD, M.D. Johnson, MD, A.M. Bader, MD
AFFILIATION: Dept Anesthesia, Brigham & Women's Hospital, Harvard Medical School, Boston, MA 02115

Introduction: The addition of fentanyl (F) to bupivacaine (B) for continuous infusion epidurals in labor has been reported to synergistically increase analgesia and allow the use of a less concentrated local anesthetic solution.[1] Alfentanil (A) has also been reported to give satisfactory analgesia for labor when combined with bupivacaine.[2] This study was designed to compare the analgesia obtained with low dose alfentanil with bupivacaine vs. the commonly used fentanyl and bupivacaine mixture.
Methods: With institutional human studies committee approval, written informed consent was obtained from 46 ASA I laboring women. Epidural analgesia was induced with 0.25% B to achieve a T10 sensory level (12-15 ml). In a randomized double-blind fashion, patients were then assigned to receive a continuous infusion with 0.125% B containing either 5 μg/ml of A or 2 μg/ml of F at an infusion rate of 10 ml/hr. VAS measurements (0-10), sensory level (pinprick), motor block (Bromage's criteria), vital signs, and side effects (nausea, pruritus) were recorded hourly. Continuous FHR monitoring was utilized. Inadequate analgesia was treated with bolus administration of 5 ml of 0.25% B. At delivery, the presence or absence of perineal analgesia was determined by pinprick. 3% 2-chloroprocaine was used as a perineal dose for the patients with inadequate perineal anesthesia for episiotomy or forceps delivery. Early neonatal neurobehavior scale (ENNS) assessment of the newborn was performed in 15 babies within 12 hours of delivery. Patients delivered in under 3 hours were excluded from the study. Statistical analysis was performed using chi square analysis with continuity correction. A p value of less than 0.05 was significant.
Results: Forty-six patients were entered into the study and six were excluded resulting in 20 patients in the A group and 20 patients in the F group. The important parameters are shown in the table.

	Group A (N=20)	Group F (N=20)	p value
VAS score 3 or greater	3	12	<0.05
Bolus doses more than 1	0	4	NS
Sensory level > T8	10	2	<0.05
Perineal analgesia	17	7	<0.05
Apgar score <7			
1 min	0	0	NS
5 min	0	0	NS

ENNS measurements revealed no significant differences.

Discussion: Alfentanil 5μg/ml with 0.125% bupivacaine 10 ml/hr is associated with better pain relief, a higher level of sensory anesthesia, and superior perineal analgesia when compared to fentanyl 2 μg/ml with 0.125% of bupivacaine (10 ml/hr). The low pKa and lower lipid solubility of alfentanil might be associated with higher concentrations of the agent in the spinal cord.
References:
(1). Vella et al. Anaesthesia 40:741, 1985
(2). Carp et al. Anesthesiology 69:A681, 1988