

Title: BUTORPHANOL VERSUS FENTANYL AND FENTANYL+MIDAZOLAM FOR AMBULATORY PATIENTS HAVING REGIONAL ANESTHESIA: A DOUBLE-BLINDED RANDOMIZED STUDY

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Butorphanol (B) is an effective sedative analgesic with less potential for significant respiratory depression than fentanyl (F) and midazolam (M). Also, B, not being a controlled substance, is more convenient to use than either F or M.¹ Whether B is preferable to F ± M in ambulatory patients undergoing regional anesthesia is unclear, mandating comparisons of efficacies and toxicities of these agents.

We conducted a double-blinded, randomized, IRB approved study that included 72 ASA I-III ambulatory patients, aged 19-65. Baseline testing included cardiorespiratory (BP, HR, RR, Vi, Ve, ETCO₂, and SpO₂) and psychometric (linear analog scores [LAS] for anxiety, pain and sedation; Trieger dot) variables. Subjects were given a preop dose of either B (20 ug/kg), F (1 ug/kg), or F + M (20 ug/kg). Five min later, all treatments had increased sedation but none decreased anxiety (p<0.05; table). Intraop, additional doses were titrated to patient comfort. Anxiety scores were lower with F+M than with B or F (p=0.06); B and F+M produced more sedation than F (p<0.05). Postoperative tests (Trieger dot; LAS sedation) showed more impairment with B than F or F+M; F+M produced the least sedation (p= 0.07). There were no appreciable differences in pain scores or cardiorespiratory variables among treatment groups. The incidence of at least one minor untoward effect (nausea, pruritis, dizziness, sweating, or emesis) was

similar among groups (B=72%, F=79%, F+M=82%), but more dizziness and sweating occurred with B than with F or F+M (p<0.05).

In conclusion, all treatments increased sedation, but none decreased preoperative anxiety. Intraop, B and F+M produced more sedation than F, but F+M was the most anxiolytic. B produced the most sedation postop. Mean differences among treatment groups, however, were small and toxic profiles were similar. Thus, B may be an alternative to F ± M for patients having regional anesthesia for ambulatory surgery.

Reference 1. Acute Care 12 (suppl. 1): 2-7, 1988

PSYCHOMETRIC TESTS¹

		B	F	F+M
ANXIETY (LAS) ²	Preop	1.9	2.3	1.4
	Postinj	2.3	1.4	1.8
	Intraop	2.1	1.3	0.5
	Postop	1.3	0.7	0.3
PAIN (LAS)	Preop	0.6	0.3	0.6
	Postinj	0.4	0.3	0.4
	Intraop	1.2	1.1	0.3
	Postop	1.4	0.9	0.9
SEDATION (LAS)	Preop	0.6	0.2	0.1
	Postinj	3.8	3.3	3.7
	Intraop	4.9	2.1	4.9
	Postop	3.0	1.8	1.0
TRIEGER (#errors)	Preop	7.9	10.1	7.0
	Postinj	17.0	12.6	14.2
	Postop	15.0	10.9	10.6

¹mean scores. ²LAS: 0 = no effect; 10 = maximum effect

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TITLE: LOWER ESOPHAGEAL CONTRACTILITY MONITORING PROLONGS RECOVERY AFTER OUTPATIENT ANESTHESIA

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The Lower Esophageal Contractility (LEC) Monitor may be useful for outpatient anesthesia to both lower anesthetic agent usage and decrease discharge time. We compared the ANTEC Lectron 302 monitor to the use of vital signs for outpatient surgery performed under general endotracheal anesthesia in terms of psychomotor recovery and discharge.

20 ASA I or II outpatients having knee arthroscopy or laparoscopy aged 20 to 45 years gave informed consent for this IRB approved study. Anesthesia was induced with fentanyl 1.5 mcg/kg, droperidol 15 mcg/kg, thiamylal and vecuronium. Patients received N₂O 66%, enflurane (E) 1% and O₂ via endotracheal tube. All patients had a LEC probe inserted. The esophageal contractility index (ECI), systolic blood pressure (SBP), and heart rate (HR) were recorded every 3 min. Patients were randomly assigned to have anesthesia titrated by the Lectron (to maintain a ECI index of 60-120) or to a control group (maintain an SBP and HR within 25 % of baseline with the anesthesiologist blinded to the ECI). If there was no change in the ECI or SBP/HR for 6 min the E was titrated down by 0.2% increments until 0.3 % E was reached on the vaporizer. If the ECI or SBP/HR

increased above the stated limits the E was increased by 0.6% every 3 min. For readings below specified target limits the E was decreased by 0.2 % every 3 min. All patients had preoperative baseline Maddox Wing readings, a Critical Flicker Fusion (CFF) and Digit Symbol Substitution (DSS) tests. These tests were repeated at 30, 60 and 120 min postop by a blinded research nurse. Length of surgery, times to eye opening, response to verbal command, orientation, ambulation and discharge were recorded.

The time to orientation and discharge were longer in the LEC group even though the length of surgery was shorter (see Table 1). Only 2/11 patients were awake enough to perform psychomotor testing in the LEC group at 30 min vs 7/9 in the control (P < 0.05). At 60 and 120 min the control group performed better on psychomotor tests.

	TABLE 1	
	LEC	Control
Time to:		
Length Surgery	56 ± 7	75 ± 12
Eye Opening	5.3 ± 1.1	3.7 ± .76
Verbal Command	4.9 ± 1.1	3.9 ± .88
Orientation	7.8 ± 1.2*	5.1 ± .87
Ambulation	158 ± 15	133 ± 22
Discharge	198 ± 14*	161 ± 22

(* P < 0.05)

We failed to demonstrate any advantage by the use of LEC. We were frequently able to run patients on lower E concentrations in the control group than if we used the ECI index.

This study was supported in part by a grant from American Antec.