

Title: ATTENUATION OF SUCCINYLCHOLINE MYALGIAS: EFFECT OF MIDAZOLAM AND VECURONIUM

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Introduction:

Postoperative myalgias (POM) are common following the use of succinylcholine (SUX) in ambulatory patients.¹ Pretreatment with atracurium² d-tubocurarine (dTC)³ and diazepam⁴ have been shown to diminish fasciculations and POM when SUX has been utilized to facilitate endotracheal intubation. The purpose of this study was to investigate the usefulness of pretreatment with vecuronium (VEC) or midazolam (MID) in attenuating POM in ambulatory female patients following laparoscopy.

Methods:

Following Institutional Review Board approval and written informed consent, 80 ASA I or II ambulatory female patients scheduled to undergo laparoscopy were studied. In a double-blind, randomized fashion, 20 patients were assigned to one of four pretreatment groups to receive: Saline (SAL), dTC 0.05 mg/kg, VEC 0.006 mg/kg or MID 0.025 mg/kg. Immediately after placement of an intravenous catheter, fentanyl 100 mcg and droperidol 1.25 mg were administered followed by the pretreatment drug, in each case made up to an injectate volume of 5 cc. 1.75 minutes later, anesthesia was induced with sodium thiamylal 4 mg/kg and after a further 1.25 minutes, SUX 1.5 mg/kg was administered. An observer blinded to the patient's group then rated fasciculations on a scale of none, mild (facial, neck, feet or hands), moderate (involving limbs and/or trunk), or severe (violent motion requiring restraint of limbs). Anesthesia was maintained with N₂O (50%) in O₂, and isoflurane. All patients were contacted by telephone on the first and third postoperative days by another blinded observer and questioned about POM, which were rated on a scale of none, mild, moderate and severe. Data were analyzed using Fisher's exact and chi square tests. A p value of less than 0.05 was considered significant.

Results:

The results of the analysis of fasciculations are presented in table I. For the comparisons, fasciculations categorized as none or mild versus moderate or severe. The incidence of fasciculations was significantly greater in the SAL and MID groups. There were no differences between SAL and MID, or between dTC and VEC in the incidence of fasciculations. There was no association between fasciculations and postoperative myalgias. Tables II and III show the analyses for postoperative myalgias. There were no significant differences among any of the groups when comparing none or slight versus moderate or severe POM on the first and third postoperative days.

Discussion:

The effects of the pretreatment drugs on fasciculations were as expected for SAL, dTC and VEC. Midazolam, 0.025 mg/kg, did not attenuate fasciculations although diazepam, 0.05 mg/kg, has this effect⁴ and MID has been reported as having twice the potency of diazepam in its other properties.⁵ There was no association between fasciculations and POM, nor did the choice of pretreatment drug affect the incidence of POM on the first and third postoperative days. We conclude that, aside from preventing esthetically displeasing fasciculations, there is no advantage in "defasciculating" ambulatory laparoscopy patients prior to the administration of SUX.

References:

1. Durant NN, Katz RL. Suxamethonium. *Br J Anaesth*, 54: 195-210, 1982.
2. Manchikanti L, Grow JB, Colliver A, Canella MG, Hadley CH. Atracurium pretreatment for succinylcholine-induced fasciculations and postoperative myalgia. *Anesth Analg* 64:1010-1014, 1985.
3. Sosis M, Broad T, Larijani GE, Marr AT. Comparison of atracurium and d-tubocurarine for prevention of succinylcholine myalgia. *Anesth Analg* 66:657-659, 1987.
4. Eisenberg M, Balsley S, Katz RL. Effects of diazepam on succinylcholine-induced myalgia, potassium increase, creatine phosphokinase elevation, and relaxation. *Anesth Analg* 58: 314-317, 1979.
5. Cole SG, Brozinsky S, Isenberg JI. Midazolam, a new more potent benzodiazepine compared with diazepam. *Gastrointestinal Endoscopy* 29:219-222, 1983.

	None or Mild	Moderate or Severe
Saline	6/20	14/20
Midazolam	4/20	16/20
dTC	20/20	0/20
Vecuronium	17/20	3/20

	None or Mild	Moderate or Severe
Saline	18/20	2/20
Midazolam	14/20	6/20
dTC	19/20	1/20
Vecuronium	16/20	4/20

	None or Mild	Moderate or Severe
Saline	20/20	0/20
Midazolam	16/20	4/20
dTC	19/20	1/20
Vecuronium	19/20	1/20