

## Date

Title : ANTACID ANTICHOLINERGIC PREMEDICATION IN THE PARTURIENT

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**Introduction:** Glycopyrrolate increases gastric pH and decreases gastric volume (1). We investigated whether the combination of anticholinergics and antacids provided greater protection for cesarean section patients from the risk of aspiration than the administration of antacid alone.

**Methods:** Sixty healthy term parturients scheduled for elective cesarean section under general anesthesia were included in the study and randomly assigned to one of three premedication regimens: 1) gelusil (R) 30 cc PO, 2) gelusil (R) 30 cc PO plus atropine 0.007 mg/kg IM, 3) gelusil (R) 30 cc PO plus glycopyrrolate 0.004 mg/kg IM. Premedications were given an estimated 60 minutes preoperatively.

Anesthesia was induced with thiopental 3 mg/kg and the patient intubated following a 1.2 mg/kg IV bolus of succinylcholine. Subsequently we administered nitrous oxide 66% and oxygen 33% while maintaining muscle relaxation with a 0.1% succinylcholine infusion. After intubation we passed a #18 Salem sump tube orally and aspirated the gastric contents with a 50 ml syringe. We compared parturients for age, weight, interval from premedication to gastric sample time, gastric volume, and gastric pH using analysis of variance, Dunkins new multiple range test, Chi square, and "T" test.

**Results:** The groups were similar in age, weight, and sampling interval. The volume of gastric contents did not differ significantly for the three groups. The pH was significantly lower in the gelusil group than when either glycopyrrolate or atropine was given with antacid. (See Table)

All pH values < 2.5 were seen in patients with sampling intervals > 75 minutes. These pH values occurred more frequently with gelusil (7/15) than with glycopyrrolate (2/14) or atropine (1/16). This difference between gelusil and gelusil plus anticholinergic was significant when atropine was used ( $P < .05$ ) and approached significance with glycopyrrolate ( $P < .1$ ). (See Table)

When comparing groups for incidence of volumes > 25 ml and pH < 2.5, glycopyrrolate and atropine were significantly better ( $P < .05$ ) than gelusil alone. There were no differences between the two anticholinergic groups. (See Table)

**Discussion:** General anesthesia continues to have a place in obstetric anesthesia in spite of obvious disadvantages. Of 38 maternal anesthetic deaths reported recently in Britain 16 were associated with aspiration (2). The consequences of aspiration become more serious with a gastric fluid pH of < 2.5 and volume of > 25 ml (3,4). Regimens either increasing pH or decreasing gastric volume should diminish the threat of aspiration.

Antacids do not always raise pH above 2.5 (5). Thirty five percent of our parturients after gelusil premedications had a pH of < 2.5 and we hoped that the addition of an anticholinergic could improve this figure. Surprisingly, atropine increased gastric pH as effectively as glycopyrrolate.

A closer examination of patients with a pH of < 2.5 revealed no patient with an interval < 75 minutes with a pH of < 2.5. The groups began to separate after 75 minutes. Nearly one-half (47%) of the patients premedicated with gelusil alone had a pH of < 2.5 after 75 minutes. The addition of atropine or glycopyrrolate reduced this to 6 and 15% respectively. These changes would seem clinically important although only with atropine were they statistically significant.

Since glycopyrrolate decreases gastric volume in pediatric patients we hoped for similar results in parturients (1). Although glycopyrrolate tended to decrease gastric volume in our study this reduction was not statistically significant.

Finally the incidence of patients with volumes > 25 ml and pH < 2.5 is zero regardless of premedication when the sampling interval is less than 75 minutes. Beyond 75 minutes the incidence with glycopyrrolate (1/14) and atropine (1/16) is significantly less than with gelusil (6/15).

We conclude that when the interval between premedication with gelusil and induction of general anesthesia may be longer than 75 minutes either glycopyrrolate or atropine should be given to decrease the likelihood of the patient being "at risk" for acid aspiration.

**References:**

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	gelusil	gelusil + atropine	gelusil + glycopyrrolate
Volume	37 ± 22	31 ± 18	26 ± 14
pH	4.54 ± 2.46*	6.78 ± 1.20	6.42 ± 1.72
p < 2.5	35% **	5%	10%
After 75 Minutes			
pH < 2.5	47%**	6%	14%
pH < 2.5 and Vol > 25ml	40%*	6%	7%

\* P &lt; .05 when compared to both groups

\*\* P < .05 when compared to atropine  
Values are mean ± SD