

Title : THE COMPARATIVE INCIDENCE OF POSTOPERATIVE VOMITING IN ADULT AND TEEN UNILATERAL STRABISMUS SURGERIES PERFORMED UNDER GENERAL ANESTHESIA OR RETROBULBAR BLOCKADE

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Postoperative vomiting has been shown to occur in 50-80% of strabismus surgeries performed under general anesthesia (1,2,3). Attempts to reduce this high incidence of vomiting have primarily focused on the inclusion of centrally active antiemetic drugs such as promethazine, droperidol or hydroxyzine within the perioperative period(4). In theory, the peripheral deafferentation of the surgical site by retrobulbar blockade(RBB) should be far more effective at controlling the initiating emetic stimuli than the current approach. This study was designed to determine the effect of RBB on the incidence of postoperative vomiting in the teenage and adult unilateral strabismus patient.

Methods: The charts of 78 ASA Class 1 or 2, fasting and unpremedicated patients between the ages of 15 and 78 were reviewed following elective strabismus surgery. All procedures were performed by a single Ophthalmologist between 1983 and 1986. The patients were divided into 2 groups. One group(n=14) was anesthetized with IV thiopental (5mg/kg), atropine (0.02mg/kg), fentanyl (1.0 to 4.0ug/kg) and succinylcholine (1.5mg/kg), endotracheally intubated and ventilated with isoflurane in 50% N₂O. The second group(n=64) received IV diazepam (0.1 mg/kg) and fentanyl (1.0 to 4.0ug/kg) prior to the RBB containing 2.5 ml of 2% mepivacaine to which 150 units of hyaluronidase was added. D5 1/2NSS was given IV during and after surgery until oral fluids could be retained. Each patient was observed for an additional 3 hours following discharge from the PAR. Vomiting was said to have occurred if emesis was noted once or more during the postanesthetic observation period. Persistent vomiting was treated with antiemetic agents. The patients were discharged when motor activity, state of consciousness, stability of vital signs and ability to tolerate oral fluids returned to baseline status. Statistical significance (p<0.05) was determined using analysis of variance, chi-squared analysis, univariate F tests, multivariate tests (Wilks' Lambda, Pillai Trace and Hotelling-Lawley trace) and binary probit analysis.

Results: The incidence of vomiting in the general anesthesia group was 28.57%, compared to 6.25% for the retrobulbar anesthesia group. A binary probit analysis revealed that the use of general anesthesia was a statistically significant predictor of increased vomiting, $X^2(1)=4.909$, $p<0.01$. The mean ages(31.4, SD=15 vs 40.06, SD=17.2), weights (64.8kg, SD=16.4 vs 69.7kg, SD=15.4) preoperative duration of NPO period(10.9hr, SD=1.02 vs 10.77, SD=2.47) and total fentanyl dosages(1.15ug/kg, SD=0.73 vs 1.71, SD=0.76) were compared for the two groups using univariate F tests (one-way ANOVA for

continuous measures). Fentanyl dosages were the only statistically significant difference between the two groups (GA=1.145, RBB=1.708) with the retrobulbar anesthesia group having the higher figure [$F(1,76)=6.349$, $p=0.014$]. A binary probit analysis, with the fentanyl dose included, showed that there was no correlation between patients receiving increased fentanyl dosages and their propensity to vomit. The patients were then divided into those who vomited vs those that did not, to facilitate the examination of potential differences. Employing the general linear model (unweighted) and univariate F tests, age, weight, NPO duration and fentanyl dosages were then examined. Only age was statistically different [$F(1,76)=0.060$, $p=0.045$], with the younger patients vomiting more frequently. A probit analysis was performed regressing the number of operative eye muscles on the aforementioned two groups and determined that the number of operative eye muscles was not a predictor of vomiting.

Discussion: Postoperative vomiting in the adult and teen unilateral strabismus patient occurred in 28.57% of our patients under GA. Employing RBB instead of GA significantly lowered this incidence to 6.25%. In addition, our younger patients vomited at a higher frequency than our older patients. The incidence of vomiting under GA in our study is significantly lower than those published in previous studies for the pediatric strabismus patient (50 to 80%). However, our study population was older and we showed an age-related effect on the incidence of vomiting. This effect was seen independent of the type of anesthesia involved. An earlier study by Szmyd(5) in 1984-5 included 91 strabismus patients under RBB, but reported only the duration of blockade and not the incidence of postoperative complications. This is the first study comparing the incidence of vomiting in the strabismus patient between GA and RBB.

References:

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