

# Use of a handheld video game to reduce pediatric pre-operative anxiety: Effect on emergence agitation and post-operative pain

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**Introduction:** Higher preoperative pediatric anxiety has been co-related with a higher incidence and severity of emergence agitation (1). A recent study reported that use of a handheld video game in the pre-operative period and during mask induction resulted in no increase in anxiety during induction compared to baseline anxiety as measured by the modified Yale Preoperative Anxiety Scale (mYPAS)(2). The present study sought to determine whether reducing anxiety with video games pre-operatively and during mask induction affected emergence agitation (EA) or postoperative pain (Pain) following pediatric surgery.

**Methods:** This was an IRB approved, prospective randomized controlled trial of 119 children ages 4-12 yrs undergoing outpatient surgery. Anxiety was assessed after admission (Base) and again at mask induction of anesthesia (Preinduction), using the modified Yale Preoperative Anxiety Scale (mYPAS). Patients were randomly assigned to three groups parent presence (PP), PP+ a handheld video game (VG), and PP+ 0.5 mg/kg oral midazolam (M) given >20 min prior to entering the operating room. Patients assigned to GB were allowed to play the game through the mask induction of anesthesia. In the PACU, an independent observer, blinded to the intervention rated postoperative pain (faces pain scale) and emergence agitation on a five point scale at 5 and 10 minutes and then at 10 minute intervals for up to 60 minutes (3).

**Results:** Data were analyzed with SPSS (v.13.0). 119 children mean age 6.6 yrs ( $2.47 \pm S.D$ ) participated. A positive effect of video game playing on preoperative anxiety was demonstrated: patients in the VG group had a median mYPAS change score of zero (from Base to Preinduction) while PP patients increased +5 and M patients increased +8.5 mYPAS units ( $p=0.08$ ). By logistic regression, preinduction mYPAS scores were higher for P and M than VG ( $p=0.05$ ). Younger age and increase in pulse at induction were significant covariates to mYPAS preinduction scores. The incidence of EA (score of 3 or higher) was 22% with the highest incidence at 10 minutes after admission to the PACU. No effect on EA or Pain was observed as a function of the pre-anesthetic intervention. EA and Pain were highly intercorrelated ( $p<0.001$ ).

**Discussion:** Emergence agitation and postoperative pain were not affected by the pre-anesthetic intervention despite a lack of increased anxiety at induction in the VG group. Although a lower trend of EA was seen in VG patients the results were not statistically significant. Limitations of the study include not controlling for type of surgery since otorhinolaryngology procedures are an independent risk factor for EA (4). EA and pain may be difficult to distinguish from one another. Although a potential relationship between EA and preoperative anxiety has been suggested, studies report conflicting results (4). Pre-anesthetic intervention with a handheld video game does not appear to affect EA and Pain which remain stubborn issues in pediatric anesthesia.

## References:

1. Anesth Analg; 99:1648-54, 2004
2. Pediatr Anesth; 16:1019-27, 2006
3. Pediatr Anesth; 12:442-447, 2002
4. Anesth Analg; 96; 1625-30, 2003