

A Randomized Controlled Trial to Compare Pain Medications for Children Undergoing Strabismus Surgery

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Background

- Every year approximately 1,000 children undergo eye muscle surgery provided by physicians at our institution
- All of these children will experience differing degrees of postoperative pain
- In addition to pain, children undergoing strabismus surgery frequently experience postoperative nausea and vomiting

Study Purpose

- The purpose of this study is to investigate optimal combinations of analgesia to create a standardized approach for pain management in pediatric patients undergoing surgery for strabismus

Research Questions

- What is the difference in the postoperative pain score in children undergoing strabismus surgery who are administered hydromorphone as compared to fentanyl intraoperatively?
- What is the association between parental and child reported level of anxiety and the post procedure pain score?
- What is the difference in post anesthesia care unit length of stay (LOS) in children undergoing strabismus surgery who are administered hydromorphone as compared to fentanyl intraoperatively?
- What is the difference in pain reported by the parent 24 hours after discharge in children undergoing strabismus surgery who are administered hydromorphone as compared to fentanyl intraoperatively?
- What is the difference in number of vomiting episodes postoperatively and 24 hours after discharge in children undergoing strabismus surgery who are administered hydromorphone as compared to fentanyl intraoperatively?

Methods

Sample

A convenience sample of 128 pediatric patients undergoing first or repeated strabismus surgery

Inclusion criteria:

- Children ages 3 to 10 years old
- ASAPS classification Class 1 or 2
- Caregiver present in the hospital

Exclusion Criteria

- Non English speaking children evaluated as an ASAPS Class 3 or 4
- No additional surgery performed at the same time
- Children with behavioral difficulties

Setting

- Participants were recruited from the SDS and CSCC of a pediatric Mid-western academic hospital

Instruments

- Baseline demographic data sheet
- Amsterdam Preoperative Anxiety and Information Scale (APAIS)/Cronbach's alpha \geq 70
- Modified Anxiety Scale (mYPAS) /Inter rater reliability=0.79
- rFLACC/inter-rater reliability 0.76-0.90

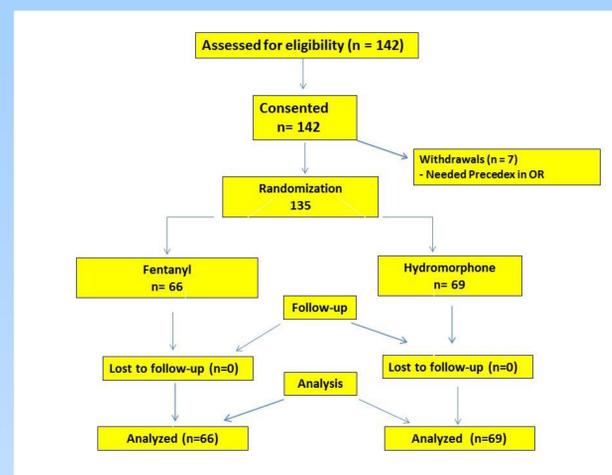
Outcome Measures

- Pain, Anxiety, Nausea, LOS

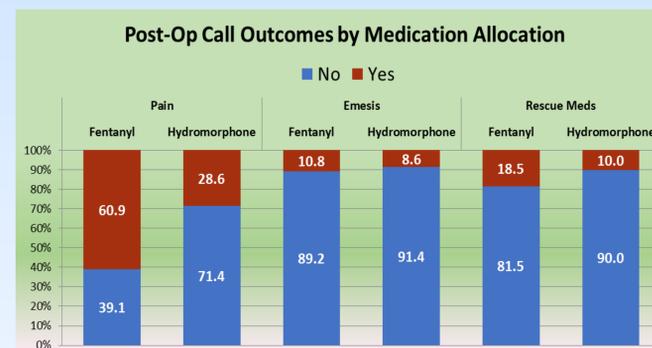
Data Analysis

- Univariate summary statistics were created for demographic and clinical background variables as well as pain and anxiety instrument measures to assess distribution
- Categorical variables were compared using Chi-square tests
- Continuous variables were compared using independent samples t-tests; non-parametric Mann-Whitney U tests
- Factorial ANOVA was used to assess a continuous dependent variable by two categorical independent variables
- Alpha was preset at 5% for all testing of significance ($p < 0.05$)

Significant Results



- rFLACC pain score upon SDS arrival was found to be significantly higher (more pain) among patients receiving Fentanyl as compared to those receiving hydromorphone (1.45 vs 0.93, $U = 1762.0$, $p = 0.011$).



- Pain during post-op call was reported more often among patients who received Fentanyl compared to those who received hydromorphone (60.9% vs 28.6%, $\chi^2=14.212$, $df=1$, $p < .001$)

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Conclusion

- Standardize hydromorphone as the preferred agent for children undergoing strabismus surgery in a medication protocol for Anesthesia



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