

Comparison of Subsequent Treatment Needs Two Years Postoperative in Patients Aged 5+ years who Received Treatment Under Oral Conscious Sedation versus General Anesthesia



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INTRODUCTION

Seen more commonly than asthma and obesity, caries has been defined as the most common chronic disease of childhood.¹ Caries, especially those left untreated, could impair a child’s day to day life by affecting chewing, speaking, and more.⁴ There are many modalities used to treat caries in children, even from a young age. Many children who are diagnosed with severe early childhood caries receive dental treatment under oral conscious sedation or general anesthesia in order to treat their extensive dental needs. However, each treatment modality comes with its effective and more ineffective qualities and there are discussions regarding the best treatment modality for treating ECC in children.

Oral conscious sedation using agents such as Midazolam or Hydroxyzine has been proven to be safe and effective in children three years of age and older.⁶ While effective in some studies, it has also been known to cause agitation and distress during or after treatment which can become problematic when several OCS appointments are necessary.⁷ Other studies have also found that treatment general anesthesia (GA) results in a longer caries-free period after treatment.² Although the two different groups present different positive and negative outcomes, both have been associated with more positive behavior than nitrous oxide alone in the clinic setting.³ However, patients who received treatment under GA were 3.9 more likely to exhibit positive behavior at 12 and 18 month intervals when compared to children who received treatment under conscious sedation. This study aimed to determine whether there was any relationship between retreatment needs in children who received treatment under OCS versus GA over a 24 month follow up period.

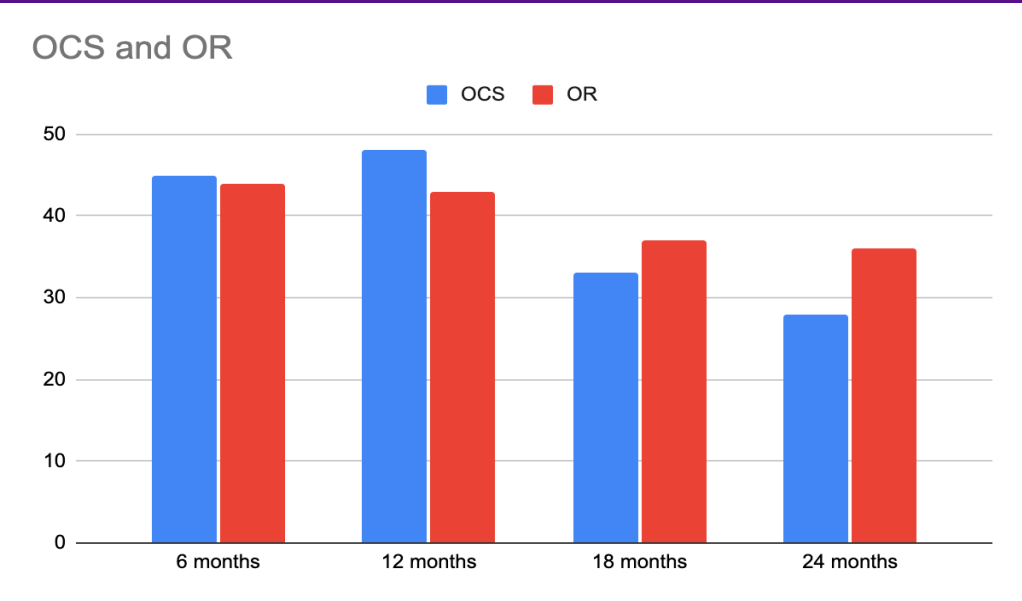


Figure 1. Number of retreated teeth in patients who received treatment under OCS and GA at each six month recall

PURPOSE

The purpose of this study was to evaluate whether there was a difference in postoperative treatment needs in children who received oral rehabilitative treatment under oral conscious sedation versus general anesthesia. The retrospective study analyzed patients aged 5 years and above with at least three quadrants of work that received treatment at Chesapeake Health Center, an approved satellite site, as well as Tidal Health Peninsula Regional, the affiliated hospital. It is hypothesized that there is a higher need for subsequent treatment in patients requiring restorative work in at least three quadrants that are treated under oral conscious sedation than those treated under general anesthesia.

METHOD

The office’s internal software (iDentalSoft) was used to identify 202 patients aged 5+ years who received treatment under oral conscious sedation in the Princess Anne clinic, or general anesthesia at the local hospital between January of 2015 and December of 2018. One hundred and two charts were excluded due to lack of follow up, and the remaining 100 charts were split evenly between children receiving care under OCS versus GA. The average age of children who received treatment under OCS was 6.4 years and 7.6 years for children who received treatment under GA.

For oral conscious sedation patients, a combination of Midazolam and Hydroxyzine was used. Mizadolam was dosed at .75 mg/kg with a maximum dose of 15 mg while Hydroxyzine was dosed at 1.0 mg/kg with a maximum dose of 20 mg. The same sedation protocol was used on each child, and the children received a variety of treatments including stainless steel crowns, indirect pulp caps, pulpotomies, strip crowns, composite fillings and extractions. The patients seen at the local hospital under general anesthesia received similar restorative treatments. All procedures were completed by PGY-1 and PGY-2 residents at the NYU Langone site in Princess Anne, MD. Patient’s age, gender, and number of teeth that required retreatment at each recall visit following treatment under OCS or GA were recorded.

Retreatment was defined as any tooth that previously received restorative treatment and needed extended treatment due to recurrent decay or infection at any interval in the subsequent 24 months. The total number of teeth requiring retreatment was calculated at each interval visit and analyzed for statistical significance.

	OCS	OR	p-value
6 months	45	44	0.481
12 months	48	43	0.304
18 months	33	37	0.228
24 months	28	36	0.088

Table 2. Results of Pearson Chi-Square test, p values and number of retreated teeth at each interval

RESULTS

The data was recorded and a t-test was performed to evaluate if there is a significant difference between the two categorical groups that include the retreatment needs of 1) patients treated with oral conscious sedation versus 2) patients treated in the operating room under general anesthesia. The t-test was used to determine whether there is a statistically significant difference between the expected frequencies and the observed frequencies in the four categories (6 months, 12 months, 18 months, and 24 months intervals) of a contingency table. Significant differences were found when looking at certain individual categories; however, the aggregated p-value is more than 0.05. Additional analysis shows that there was a 2% increase in teeth that needed retreatment after OCS vs GA at 6 months, a 10% difference at 12 months, a 12% difference at 18 months, and a 28% difference at 24 months. Furthermore, both groups showed a positively linear relationship between retreatment needed within the 24 months follow up interval. However, because the p value was over .05, the alternative hypothesis was rejected and the null hypothesis was accepted.

CONCLUSIONS

Postoperative treatment needs in children who received restorative work under oral conscious sedation had no significant difference when compared to children who had dental treatment completed under general anesthesia. However, this study was limited by sample size, variability of providers, short follow up (24 months) and lack of patient compliance. More studies are needed with a larger sample size, limited providers and longer recall follow-ups (2-5 years) are needed to further evaluate if children treated under oral conscious sedation have higher retreatment needs than those treated under general anesthesia.

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