

Comparison of Subsequent Treatment Needs Two Years Postoperative in Patients Aged 2-4 years who Received Treatment Under Oral Conscious Sedation versus General Anesthesia



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INTRODUCTION

Tooth decay is the most common chronic disease of childhood, affecting three times more children than obesity and four times more than asthma (1). It's an oral health epidemic that affects many children worldwide. If left untreated, one's quality of life may be impaired, and problems including pain, infections, abscesses, difficulty chewing, and systemic issues may result (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, there is some speculation on the merits of each modality of treatment and how/when each option should be utilized.

Oral 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). However, some children were agitated and distressed either during or after treatment and in cases requiring multiple dental management issues, the sedation method was not found to be a useful alternative to general anesthesia (7). Other studies have also found that compared to conscious sedation, GA results in a longer caries-free period after treatment (2). While the two treatment modalities have their different pros and cons, they both exhibit more positive behavior following dental treatment than control groups who underwent dental work with nitrous alone in a clinical 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.

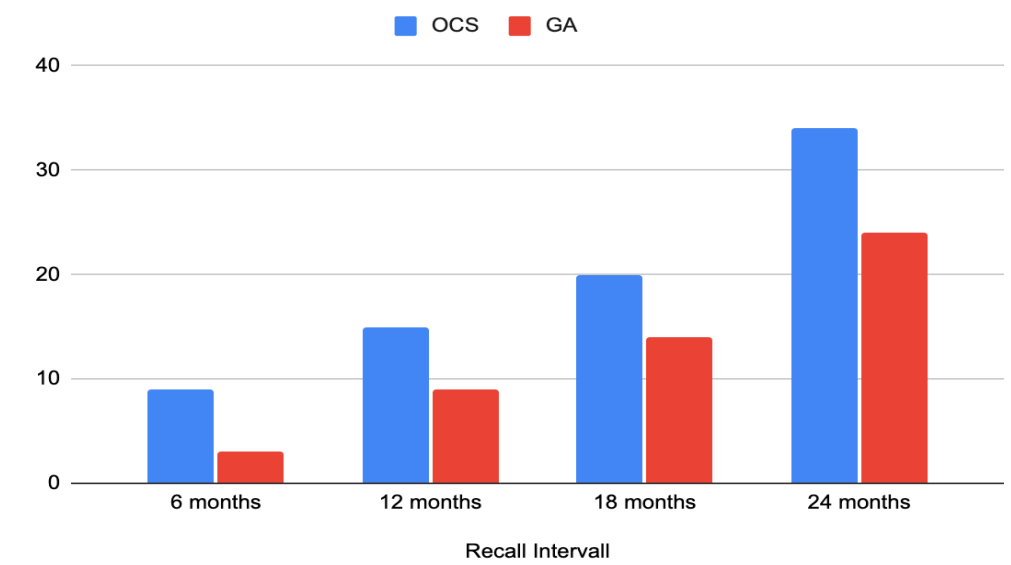


Figure 1. Number of retreated teeth in patients who received treatment under OCS and GA at each six month recall

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 2-4 years 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 204 patients aged 2-4 years who received treatment under oral conscious sedation in the Princess Anne clinic, or general anesthesia in the local hospital between January of 2015 and December of 2018. One hundred and four 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 3.44 years and 3.2 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.

Months	OCR	OR	Row Totals
6	9 (7.31) [0.39]	3 (4.69) [0.61]	12
12	15 (14.62) [0.01]	9 (9.38) [0.02]	24
18	20 (20.72) [0.02]	14 (13.28) [0.04]	34
24	34 (35.34) [0.05]	24 (22.66) [0.08]	58
Column Totals	78	50	128

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 Pearson's chi-squared 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 Pearson's chi-squared 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 (the chi-square statistic is 1.2162, and the p-value is .749132). Additional analysis shows that there was a 100% increase in teeth that needed retreatment after OCS vs GA at 6 months, a 50% difference at 12 months, a 35% difference at 18 months, and a 34% 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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