Success of Carious Primary Molar Treatment Across Different Sedation Modalities

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PURPOSE

This study aims to compare the long-term success of composite restorations and stainless steel crowns (SSCs) when the patient is treated under nitrous oxide (N2O), oral minimal/moderate sedation (OCS), or general anesthesia (GA).

METHODS

This study is a retrospective cohort study. Data was collected from the electronic patient record system (axiUm), from the Herman Ostrow School of Dentistry of USC Pediatric Dental Clinic. IRB approval was obtained. The study included any patient seen for N2O, OCS, or GA from 01/01/2012 to 09/01/2022. A filter was applied for any tooth that had more than one procedure code charged out. A report was generated with the following CDT codes:
D9230 (N2O), D9248 (OCS), D9222/D9223 (GA), D2392 (resin based composite – 2 surfaces, posterior), D2393 (resin based composite – 3 surfaces, posterior), D2930 (SSC), and D7140 (extraction).

Other information collected were: type of sedation (N2O, OCS, or GA), tooth treated, type of treatment, initial treatment and re-treatment dates, reason for treatment (new tooth decay, recurrent decay, defective restoration, presence of abscess or over-retained tooth), how long the restoration lasted, patient age at time of treatment, and operator experience.

Charts were excluded due to teeth which were charged out twice on the same day (i.e. tooth treated with pulpotomy and SSC), incomplete records, and for those who did not return for recall appointments after treatment visits.

RESULTS

Of a total of 1133 treatment appointments, 436 were included. There was a total of 859 teeth treated for these 436 treatment appointments. Of the 859 teeth treated, 77% teeth received composite restorations, while 23% were treated with SSCs.

The most common reason for re-treatment of composite restorations among all sedation modalities was the presence of new tooth decay (**Figure 1**). The most common reason for re-treatment of SSCs under N2O was due to abscessed teeth, while for OCS and GA was due to presence of PARL (**Figure 2**).

Fig. 1: Reasons for composite restorations retreatment under different sedation modality

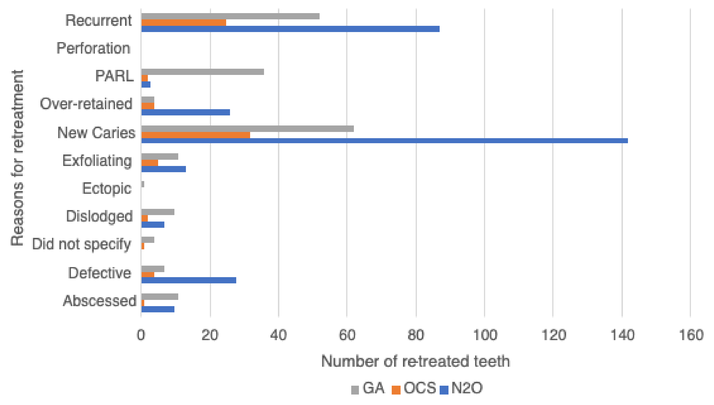


Fig. 2: Reasons for retreatment of SSCs under different sedation modality

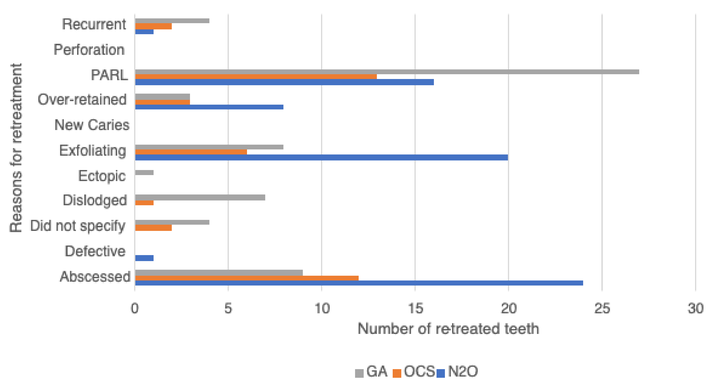
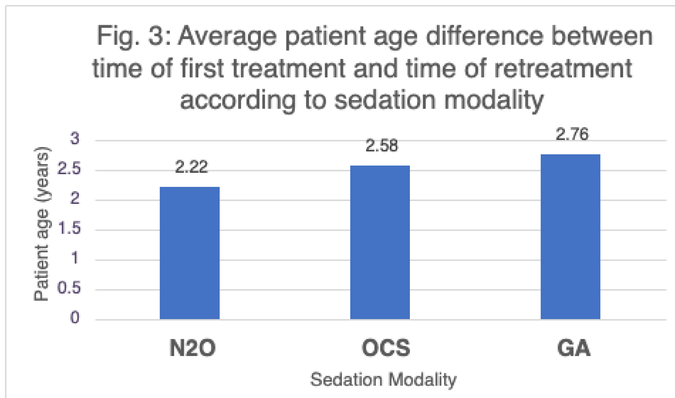


Fig. 3: Average patient age difference between time of first treatment and time of retreatment according to sedation modality

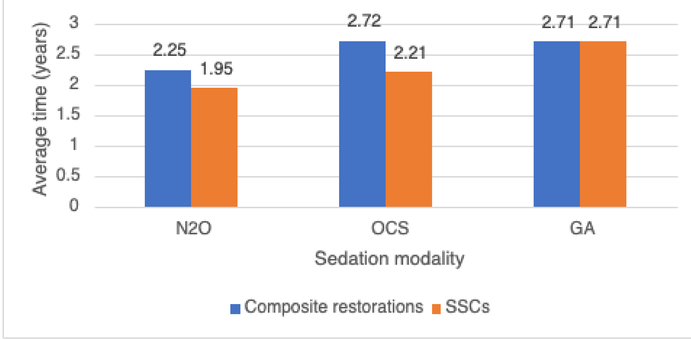


The total number of re-treated teeth under N2O was 452, followed by OCS (210), and then GA (200).

The average patient age difference between time of the first treatment and time of re-treatment was highest under GA (2.76 years), then OCS (2.58 years), then N2O (2.22 years) (**Figure 3**).

Composite restorations and SSCs treated under GA lasted the longest. The average time composite restorations lasted under OCS (2.72 years) was similar to that under GA (2.71 years), followed by N2O (2.25 years). The average time SSCs done under GA (2.71 years) lasted longer than those done under OCS (2.21years) and N2O (1.95 years) (**Figure 4**).

Fig. 4: Average time restorations lasted under different sedation modalities



CONCLUSIONS

Our results show that composite restorations were more frequently retreated (77%) than SSCs (23%). In addition, the patient's age does not affect the success of carious primary molar treatment, whereas the sedation modality affected the success of composite and SSCs. Composite restorations lasted longer under OCS and GA, whereas SSCs lasted longer under GA, followed by OCS, then N2O.

REFERENCES:

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