

Effects of Behavior Guidance Techniques on Choices in Space Maintenance

Nottoli A, Renfro M, Hu A, Law CS

Section of Pediatric Dentistry

Introduction

Premature loss of primary teeth can lead to space loss and further orthodontic problems. Choices in space maintainer can depend on several factors including site of tooth loss, stage of development, time since tooth loss, patient's health status, oral hygiene, and patient's cooperative ability (AAPD 2009).

The literature does not provide strong evidence regarding any significant difference in success rates between prefabricated vs lab-fabricated space maintainers, though prefabricated appliances have the advantage of requiring only one appointment (Tahririan *et al.* 2019). This can be helpful when treating a child under general anesthesia who may not be cooperative for a second appointment, as cooperation is important for success. There is also some evidence that there is a difference in survival rates of different types of space maintainers in children receiving treatment under general anesthesia (Amin *et al.* 2016).

Purpose: The purpose of this retrospective study was to demonstrate differences in choices in space maintenance when performing extractions utilizing different behavior guidance techniques.

Hypothesis: Patients with difficulty cooperating are more likely to undergo treatment under general anesthesia, in which all of their treatment can be completed in a single visit. As such, we hypothesize that advanced behavior guidance techniques influence different space maintenance choices than basic techniques.

Materials & Methods

- Data were collected from axiUm electronic patient records spanning 2011-2022 at the UCLA Pediatric Dental Clinic.
- Space maintainers delivered the same date as the extractions were treated as a proxy for prefabricated space maintainers, whereas those delivered on a different date were considered lab-fabricated.
- Analysis was performed using STATA: Pearson's chi-squared test was conducted to assess the difference between type of behavior guidance technique used and type of space maintainer delivered.

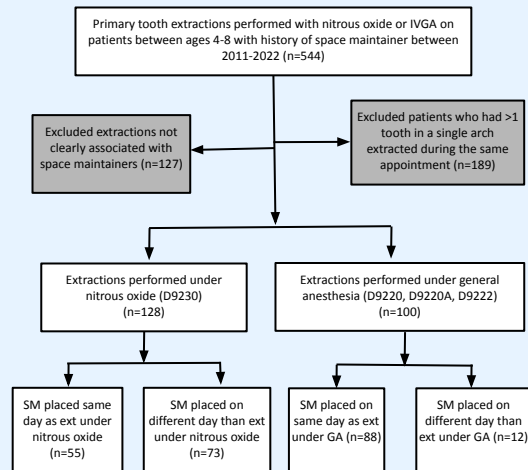


Figure 1. This flow chart represents the methods for patient inclusion and exclusion.

Results

Date of space maintainer delivery relative to extraction

	Same day	Different day	Total
General anesthesia	88	12	100
Nitrous oxide	55	73	128
Total	143	85	228

Table 1. The frequency table represents the number of space maintainers that were delivered either on the same date or on a different date as the extraction, in addition to the behavior guidance technique used during the extraction appointment.

- Of 100 patients with extraction under general anesthesia, 88 (88%) had space maintainers delivered the same day and 12 (12%) on a different date.
- Of 128 patients with extractions with nitrous oxide, 55 (43%) had space maintainers delivered the same day and 73 (57%) on a different date.
- Data analysis utilizing Pearson's chi-squared test yielded a significant p-value < 0.01, indicating a significant association between type of behavior guidance technique and date of space maintainer delivery.

Conclusions

The results support our hypothesis that the type of behavior guidance used during extraction affects the choice of space maintainer delivered.

- Patients undergoing extractions under general anesthesia are much more likely to have a space maintainer placed the same day compared to those treated with nitrous oxide.

Limitations: The current study design is limited by the lack of specificity when using the CDT billing codes. If a patient had more than one extraction billing code or more than one space maintainer billing code, it could not be determined for which extraction the space maintainer was delivered or if the delivered space maintainer was associated with any of the extractions at all. As a result, these data points were excluded until individual chart analyses of these patients can be performed.

Future Directions: Further analyses will include extractions not associated with any space maintainer and extractions performed under additional types of behavior guidance techniques.

References

- AAPD (2009). Guideline on Management of the Developing Dentition and Occlusion in Pediatric Dentistry. Amin *et al.* (2016). Success Rate of Treatments Provided for Early Childhood Caries under General Anesthesia: A Retrospective Cohort Study. Tahririan *et al.* (2019). Comparison of the longevity of prefabricated and conventional band and loops in children's primary teeth.