Survival Rate of Primary Anterior Zirconia Crowns in Different Settings

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INTRODUCTION

- In recent years, prefabricated zirconia crowns (ZCs) have gained popularity due to their durability, biocompatibility, and esthetic qualities.
- While past studies have shown that zirconia crowns are clinically acceptable and have high parental satisfaction ratings, there is a lack of evidence in assessing the longevity of zirconia crowns in primary maxillary incisors beyond 12-months in normal clinical setting.
- According to past studies, the overall survival probabilities for ZCs at 12, 24, and 36 months were 93 percent, 85 percent, and 76 percent, respectively when placed under general anesthesia (1).
- The zirconia crown is more technique sensitive and requires more patient cooperation and provider's behavior management due to more aggressive tooth preparation and difficult to adjust crown.
- Hence, the aim of the study is to determine if there is a significant difference in survival rate when ZCs are placed under GA compared to in a normal clinic setting, where the patient's behavior may not be ideal. The results of this study may justify the risk and financial burden of having patients undergoing GA.

PURPOSE

- The purpose of this study is to compare the 24-month survival rate of prefabricated zirconia crowns (ZCs) on primary incisors placed in children in clinical settings versus under general anesthesia (GA).
- The methodology employed in this research endeavor will be retrospective in nature, involving the retrieval and analysis of historical data from past patient records and treatment cases .

METHOD

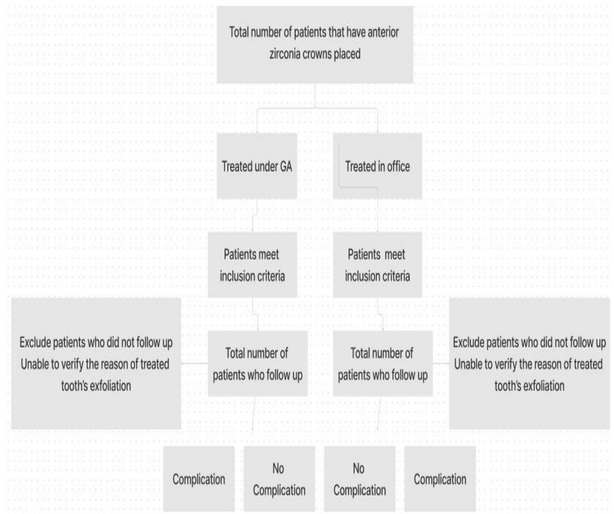
- The study will be retrospective analysis of survival rate of ZCs on maxillary primary incisors in clinical setting versus under general anesthesia.
- The status of the crown was recorded using success-fail criteria, whereby a crown was considered failed if one of the crown de-bonded, fracture, diagnosed with secondary caries associated with pain, abscess .
- Descriptive statistics including means, standard deviations, frequencies, and percentages were used to summarize patient demographics and clinical characteristics. The Wilcoxon rank sum test was employed to compare continuous variables such as patient age between clinic and hospital settings. Categorical variables, including gender, ethnicity, and 24-month survival outcomes, were assessed using Fisher's exact test due to small sample sizes in some subgroups

FIGURE (FOR PLACEMENT ONLY)

Table 1. Summary of Patient Characteristics and Outcomes by Treatment Setting

Variable	Total (N = 270)	Hospital Setting	Clinic Setting	p-value
Mean Age (years)	4.43 (SD = 1.19)	4.35 (SD = 1.11)	6.32 (SD = 1.30)	< 0.001
Hispanic or Latino (%)	20.1% (n = 52)	19.8%	27.3%	0.5
Not Hispanic or Latino (%)	79.9% (n = 207)	80.2%	72.7%	—
24-month Survival Rate (%)	97.0% (n = 262)	97.7%	81.8%	0.037

Table 2. Flowchart of Patient Selection and Outcome Assessment for Anterior Zirconia Crown Placement



RESULTS

A total of 270 patients were included in the study. The mean age at visit was 4.43 years (SD = 1.19). When comparing treatment settings, patients treated in the clinic had a higher mean age (6.32 years, SD = 1.30) than those treated in the hospital (4.35 years, SD = 1.11), with a statistically significant difference ($p < 0.001$).

Regarding patient ethnicity, 20.1% (n = 52) of the total sample identified as Hispanic or Latino, while 79.9% (n = 207) identified as not Hispanic or Latino. The distribution of Hispanic or Latino patients was slightly higher in the clinic setting (27.3%) compared to the hospital setting (19.8%). However, the p-value for this comparison was 0.5, indicating no statistically significant difference in ethnicity distribution between treatment settings.

In terms of 24-month survival, the overall survival rate was 97.0% (n = 262). Patients treated in the hospital had a significantly higher survival rate (97.7%) compared to those treated in the clinic (81.8%), with a statistically significant difference ($p = 0.037$).

CONCLUSIONS

The findings from this study highlight important differences between treatment settings for pediatric patients.
Patients treated in the clinic setting were older on average (mean age 6.32 years) compared to those treated in the hospital setting (mean age 4.35 years), with this difference being statistically significant ($p < 0.001$).
Ethnicity distribution did not significantly differ between settings ($p = 0.5$), suggesting equitable representation across both environments.
However, a notable difference in survival outcomes emerged, with hospital-treated patients demonstrating a significantly higher 24-month survival rate (97.7%) compared to those treated in clinic settings (81.8%; $p = 0.037$).
These findings suggest that hospital-based treatments may confer survival advantages. Nevertheless, there is a big discrepancy between the sample sizes of the two settings, which may affect the interpretation of these results. Hence, further information needs to be obtained and investigated to better understand the factors contributing to the observed differences.
Future research should explore underlying reasons for these differences, including access to resources, level of care, and clinical management strategies.

REFERENCES

1. Seminario AL, Garcia M, Spiekerman C, Rajanbabu P, Donly KJ, Harbert P. Survival of Zirconia Crowns in Primary Maxillary Incisors at 12-, 24- and 36-Month Follow-Up. Pediatr Dent. 2019 Sep 15;41(5):385-390. PMID: 31648670.

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