

Background

- In recent years, there has been an increased emphasis on esthetics in pediatric dentistry.
- Pre-fabricated zirconia crowns offer:
 - Excellent esthetics
 - High durability
 - Favorable gingival response
- AAPD recommendations for zirconia crowns are based on expert opinion and calls for long-term prospective studies to validate their clinical use

Aim

- To evaluate the clinical and radiographic outcomes of pre-fabricated zirconia crowns placed on primary maxillary incisors and canines over a follow-up period of up to 36 months or until natural exfoliation.

Methods

- Subjects recruited were patients 3-7 years old that have had treatment of zirconia crowns of their primary maxillary incisors and canines at the University of Pennsylvania School of Dental Medicine Pediatric Clinic or Children's Hospital of Philadelphia.
- Exclusion Criteria: history of dental trauma, pulp therapy needed or previously treated on maxillary incisors/canines
- Zirconia crowns were clinically and radiographically evaluated every 6 months at routine recall visits.
- Clinical Success:
 - Crown retention
 - Asymptomatic
 - No abscess formation
 - Natural exfoliation
- Radiographic Success:
 - No periapical pathology



Figure A: Zirconia crowns #C,D,E

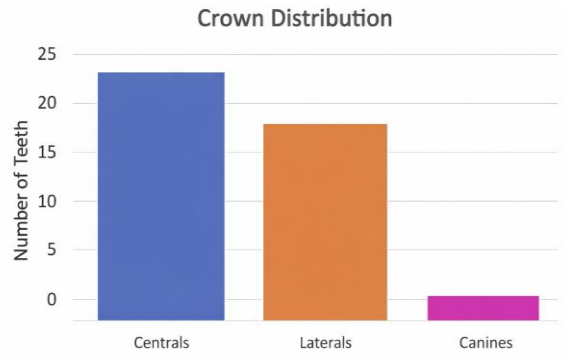


Figure B: Zirconia crown distribution of enrolled teeth

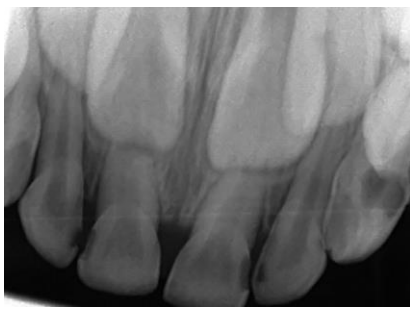


Figure C: Pre-op maxillary occlusal radiograph



Figure D: 8 month post-op photo of zirconia crowns #D-H

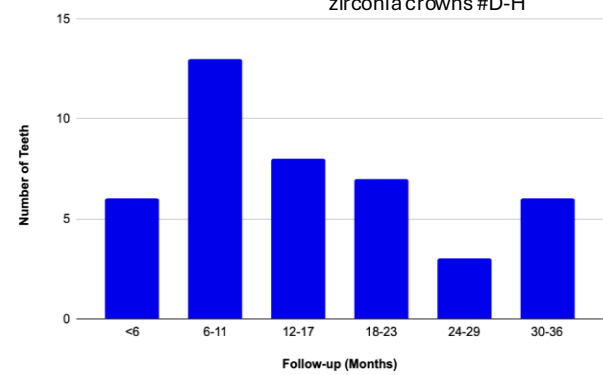


Figure E: Follow-up time (months) for enrolled crowns



Figure F: 14 month post-op zirconia crowns #D-#G presenting with failures of #D (fistula) and #G (abscess).



Figure G: #D crown loss 5 months post-op.

Results

- 43 crowns were followed over a period of 3-35 months
- 39 teeth were deemed a success at their latest follow-up visit (90%)
- 4 failures have been recorded (10%)
 - 1 failure due to loss of retention at 5 months (Figure G)
 - Outcome: new crown re-cemented
 - 3 failures due to periapical pathology
 - 2 failures occurred at 14 months (Figure F) and 1 failure at 3 months
 - Outcome: All 3 failures due to periapical pathology resulted in tooth extraction

Discussion

- Zirconia crowns proved a high clinical success rate (90%)
- Abscess was the most common failure outcome
- The study is ongoing to achieve a robust sample size and 36 month follow-up for all enrolled crowns

References

•Alzanbaqi, S. D., Alogaiel, R. M., Alasmari, M. A., Al Essa, A. M., Khogeer, L. N., Alanazi, B. S., Hawsah, E. S., Shaikh, A. M., & Ibrahim, M. S. (2022). Zirconia crowns for primary teeth: A systematic review and meta-analyses. *International Journal of Environmental Research and Public Health*, 19(5), Article 2838.

•American Academy of Pediatric Dentistry. (2023). *Restorative dentistry*. In *The reference manual of pediatric dentistry* (pp. 443-456). Chicago, Ill.

•Seminaro, A. L., Garcia, M., Spiekerman, C., Rajanbabu, P., Donly, K. J., & Harbert, P. (2019). Survival of zirconia crowns in primary maxillary incisors at 12-, 24- and 36-month follow-up. *Pediatric Dentistry*, 41(5), 385-390.