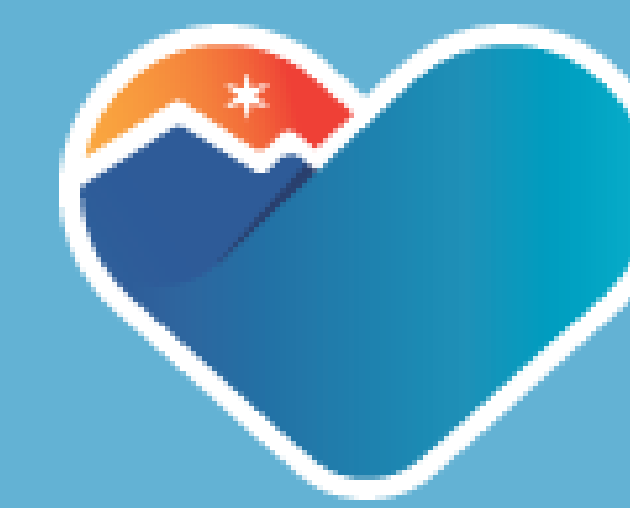


Occlusion Settling of Posterior Prefabricated Stainless-Steel Crowns vs Prefabricated Zirconia Crowns



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Introduction

- Pediatric patients with rampant caries are routinely treatment planned for full mouth rehabilitation under general anesthesia with full coverage restorations.
- SSCs have been the standard of care for decades while zirconia crowns are relatively new (7). There have been multiple studies that show that the occlusion of a pediatric patient who has multiple SSCs placed will be temporarily changed and then “settle” back to its normal state (6).

Objectives

- This project seeks to compare the “settling” of the occlusion in patients receiving SSCs vs patients receiving zirconia crowns. It is based on a study that was done with patients only receiving SSCs and measuring the canine overlap at different times (6). This project does not have any similar previous studies nor are there many studies about occlusion and zirconia crowns.

Methods

- 19 pediatric patients aged 2 to 10 years old were seen for full mouth rehabilitation under general anesthesia and received at least 1 posterior crown in each dental quadrant or at least 5 posterior crowns total.
- The patients’ canine overlap was measured in millimeters, and overbite by percentage.
- A baseline measurement was taken prior to placing the crowns during the intraoral exam. The occlusion was measured again at two separate times: immediately post-operatively (after cementing the crowns) and at the 2-week post-operative visit.

Results

Table 1: Stainless Steel Crown Change in Overbite and Canine Overlap

Stainless Steel Crowns						
Patient Number	Postop Overbite	Follow-up Overbite	Change in Overbite	Postop Canine Overlap (mm)	Canine Overlap (mm)	Change in Canine Overlap (mm)
1	0%	0	0%	1	2	1
2	0%	0	0%	-1	1	2
3	50%	100%	50%	1	2	1
4	-30%	-20%	10%	-1	-1	0
5	-20%	10%	30%	1	1	0
6	20%	50%	30%	1	2	1
7	10%	100%	90%	0	1	1
8	0%	50%	50%	0	1	1
9	50%	50%	0%	1	1	0
10	25%	50%	25%	0	2	2
11	-10%	10%	20%	-1	1	2
Mean	9%	36%	28%	0.181818182	1.181818182	1

1mm average settling of stainless-steel crowns

Table 2: Zirconia Crown Change in Overbite and Canine Overlap

Zirconia Crowns						
Patient Number	Postop Overbite	Follow-up Overbite	Change in Overbite	Postop Canine Overlap (mm)	Canine Overlap (mm)	Change in Canine Overlap (mm)
1	50%	50%	0%	1	2	1
2	20%	50%	30%	-1	1	2
3	-10%	10%	20%	-1	1	2
4	-10%	10%	20%	-1	1	2
5	-30%	-20%	10%	-1	1	2
6	0%	10%	10%	1	2	1
7	-10%	20%	30%	-2	2	4
8	10%	10%	0%	0	1	1
Mean	3%	18%	15%	-0.5	1.375	1.875

1.875mm average settling of zirconia crowns

Table 3: Average number of Crowns Placed and Canine Zirconia crowns placed



	SSCs	Zirconias
Average Number of Crowns Placed	6.8	5.9
Average Canine Zirconia Crowns	<1 per case	<1 per case



Conclusions

- Based on the sample size n=19 there was a statistically significant difference (P< 0.05) between the settling of posterior zirconia crowns and posterior SSCs.
- Data shows that the occlusion settles with placement of both types of restorations
- The sample size is small due to the study parameters, patient compliance with their follow-up visits and patients/parents agreeing to the study.
- Data shows that occlusion settling is comparable in both posterior SSCs and zirconia cases.
- Confounding variables include the number of crowns seated in the posterior dentition, presence of permanent teeth, presence of anterior full coverage restorations, and extraction of any teeth.
- More data collection is needed to determine the difference in settling.

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