Comparison of clinical performance of sealants placed under General anesthesia versus without, A retrospective chart audit

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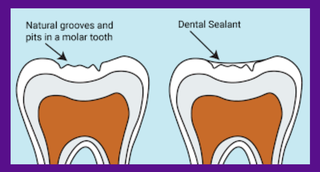
INTRODUCTION

- Pit and fissure sealants have been proven to prevent and control carious lesions in primary and permanent teeth.
- There is no data in the dental literature concerning the quality of the sealants performed under general anesthesia versus those without.
- The results of this study might bring more insight into the effect of treatment conditions on the clinical performance of sealants, thereby assisting practitioners in clinical decision-making and modifications for sealant placements.
- We anticipate that the sealants placed under general anesthesia would perform better clinically than those without general anesthesia.

PURPOSE

- Study goal: To compare the clinical performance of sealants by evaluating the frequency of reapplication within the first two years of initial placement for those placed under general anesthesia vs. those without.



METHODS

- Hypothesis: Sealants placed under general anesthesia would perform better clinically than those without general anesthesia due to decreased patient movement, better isolation, and better application control during treatment with general anesthesia.
- Study Design: Retrospective study
- Study population: patients aged 0-16, received first-time sealants at Compass Pediatric Dental Clinic between 1/1/2018 to 12/31/2019.
- Primary outcomes: sealant success rate (measured by the number of sealant reapplications and further restorative treatments on the same tooth).
- Data analysis: controlled for the rendering provider, patient age, and gender.

DATA ANALYSIS

	level	Overall
n		232
Patient Age in Years (Date of Service) (mean (SD))		7.56 (2.23)
Patient gender (%)	F	117 (50.4)
	M	115 (49.6)
Prior sealant exists (%)	N	232 (100.0)
Original Sealant Service Location (%)	Clinic	184 (79.3)
	OR	48 (20.7)
Use of General Anesthesia (Y/N) (%)	N	184 (79.3)
	Y	48 (20.7)
Orginal Sealant Rendering Provider (%)	SSS	232 (100.0)
Follow up adherence (Y/N) (%)	N	59 (25.7)
	Y	171 (74.3)
Re application of sealant: duration since last application (in months) (mean (SD))		28.76 (13.22)
Sealant Reapplied (Y/N) (%)	N	215 (93.1)
	Y	16 (6.9)
No. of times sealants reapplied (mean (SD))		0.08 (0.28)
Post sealant procedure: yearduration since last Tx (sealant/procedure, in		27.67 (11.44)
Restorative Treatment done after initial sealants. (Y/N) (%)	0	196 (84.5)
	1	24 (10.3)
	2	10 (4.3)
	3	2 (0.9)

Table 1: Univariate Analysis

	level	Overall	Sealant reapplied N	Y	p	test
n		232	215	16		
Patient Age in Years (Date of Service) (mean (SD))		7.56 (2.23)	7.56 (2.27)	7.50 (1.71)	0.92	t-test
Patient gender (%)	F	117 (50.4)	106 (49.3)	10 (62.5)	0.448	
	M	115 (49.6)	109 (50.7)	6 (37.5)		
Prior sealant exists (%)	N	232 (100.0)	215 (100.0)	16 (100.0)	NA	NA
Original Sealant Service Location (%)	Clinic	184 (79.3)	167 (77.7)	16 (100.0)	0.071	chi-square
	OR	48 (20.7)	48 (22.3)	0 (0.0)		
Use of General Anesthesia (Y/N) (%)	N	184 (79.3)	167 (77.7)	16 (100.0)	0.071	chi-square
	Y	48 (20.7)	48 (22.3)	0 (0.0)		
Orginal Sealant Rendering Provider (%)	SSS	232 (100.0)	215 (100.0)	16 (100.0)	NA	NA
Follow up adherence (Y/N) (%)	N	59 (25.7)	58 (27.2)	1 (6.2)	0.12	chi-square
	Y	171 (74.3)	155 (72.8)	15 (93.8)		
Re application of sealant: duration since last		28.76 (13.22)	NaN (NA)	28.56 (13.63)	NA	NA
No. of times sealants reapplied (mean (SD))		0.08 (0.28)	0.00 (0.00)	1.06 (0.25)	<0.001	t-test
Post sealant procedure: yearduration since last Tx		27.67 (11.44)	26.77 (11.56)	36.67 (4.73)	0.156	t-test
Restorative Treatment done after initial sealants. (Y/N)	0	196 (84.5)	182 (84.7)	13 (81.2)	0.558	chi-square
	1	24 (10.3)	21 (9.8)	3 (18.8)		
	2	10 (4.3)	10 (4.7)	0 (0.0)		
	3	2 (0.9)	2 (0.9)	0 (0.0)		

Table 2: Bivariate Analysis

	term	estimate	std.error	statistic	p.value
(Intercept)		0.223	0.082	2.709	0.007
Use of General Anesthesia	Yes	-0.129	0.051	-2.518	0.012
	No				
Patient Age in Years		-0.014	0.009	-1.441	0.151
Patient gender	Male	-0.033	0.037	-0.899	0.370
	Female				

Table 3: Linear Regression

RESULTS

1. 91 patients [Age-Mean(SD)=7.56(2.23); Female=50.4%] met the criteria
2. 232 teeth received initial sealant application, with 48 (20.7%) placed under GA.
3. Patients who had sealants placed under GA had an average of 0.129 fewer sealants reapplied compared to patients in the non-GA group.

- Statistically significant difference (p = 0.012) in the number of times sealants placed under GA have been replaced to the number of times sealants placed without GA were replaced.

- No statistically significant difference (p = 0.370) in the proportion of male vs female patients treated in the study period.

CONCLUSIONS

- At 24 months, sealants placed under general anesthesia were replaced fewer times than those placed without general anesthesia.
- General anesthesia has proven to be a better setting for sealant placement compared to without using general anesthesia.
- Findings support the diagnosis and placement of sealants as part of comprehensive dental treatment for patients treated under GA versus deferring the treatment to later appointments.

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