

New Treatment Needs Following Full Mouth Dental Rehabilitation Within 2 Years

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Introduction

General anesthesia (GA) is an essential tool for safe and successful dental treatment in scenarios of uncooperative patients with extensive dental caries, providing an immediate solution for patients by restoring normal form and function to teeth.

Treatment with GA has been shown to temporarily motivate parents to change diet and hygiene habits. Despite all decay being addressed at this one visit, new decay can still develop, requiring more treatment to be completed in the future, whether with local anesthetic, nitrous oxide sedation, moderate sedation, or under GA again.

Many studies explored success rates and longevity of restorations placed in the OR following FMDR. A study by Berkowitz with a sample size of 77 patients showed a 39 percent rate of relapse within 1 year following the initial treatment in patients with ECC. In 2014, Savanheimo determined that 75% of the 247 patients needed additional dental treatment within the first 3 years. Thirty-two percent of patients followed with the first 3 years needed new treatment within 6 months following FMDR.

Objective

To evaluate the number of pediatric patients who require additional dental restorative work due to new carious lesions within 2 years after receiving full mouth dental rehabilitation in the OR at TUSDM.

Methods

- Retrospective chart review study
- Reviewed Electronic Health Records (axiUm) to collect a convenience sample of up to 3000 patients who had FMDR (between 1/1/2009 and 12/31/2019).
- Experimental group: Patients with new treatment needs 2 years after FMDR
- Control group: Patients without new treatment needs 2 years after FMDR
- Inclusion criteria: ASA I or II, with at least 1 recall visit within 2 years of FMDR
- Exclusion criteria: ASA III or higher, medically compromised or special needs patients, OR cases where FMDR was not completed

Data Collected

- Demographics: age, gender, race, ethnicity, insurance
- # of teeth treated at FMDR
- # of teeth needing new treatment within 2 years
- Type of treatment needed
- Modality: local anesthetic, nitrous oxide, moderate sedation, general anesthesia

Statistical Analysis

Chi-square test for association and binary logistic regression for bivariate analyses to adjust for confounding, SPSS version 26

Results

Table 1: Association between demographic variables and new treatment needs within two years of original general anesthesia appointment

		New Treatment Needs Within Two Years: n (%)		Total	P*
		Yes	No		
Sex	Male	258 (56.6%)	198 (43.4%)	456	.460
	Female	241 (59.1%)	167 (40.9%)	408	
Age Category (years)	1-2	28 (75.7%)	9 (24.3%)	37	.141
	3-5	344 (56.4%)	266 (43.6%)	610	
	6-8	117 (58.8%)	82 (41.2%)	199	
	9-12	10 (55.6%)	8 (44.4%)	18	
	Medicaid	427 (58.6%)	302 (41.4%)	729	.258
Type of Insurance	Dual	28 (59.6%)	19 (40.4%)	47	
	Private	31 (46.3%)	36 (53.7%)	67	
	None	13 (61.9%)	8 (38.1%)	21	
	White	44 (55.7%)	35 (44.3%)	79	.628
Race†	Asian	252 (61.0%)	161 (39.0%)	413	
	Black	29 (63.0%)	17 (37.0%)	46	
Ethnicity‡	Hispanic	22 (41.5%)	31 (58.5%)	53	.022
	Non-Hispanic	239 (58.2%)	172 (41.8%)	411	
Total		499 (57.8%)	365 (42.2%)	864	

* All p-values were based on the chi-square test.
† 326 subjects had missing race data.
‡ 400 subjects had missing ethnicity data.

Table 2: Association between demographic variables and number of teeth needing treatment within two years of original general anesthesia appointment

		n	Number of Teeth Needing Treatment		P
			Mean (SD)	Median (IQR)	
Sex	Male	456	1.3 (1.6)	1 (0-2)	.308*
	Female	408	1.4 (1.6)	1 (0-2)	
Age Category (years)	1-2	37	2.6 (2.4)	2 (0.5-4)	.005**
	3-5	610	1.3 (1.6)	1 (0-2)	
	6-8	199	1.2 (1.4)	1 (0-2)	
	9-12	18	1.3 (1.6)	1 (0-2)	
	Medicaid	729	1.3 (1.6)	1 (0-2)	.193**
Type of Insurance	Dual	47	1.0 (1.2)	1 (0-2)	
	Private	67	1.0 (1.3)	0 (0-2)	
	None	21	1.8 (1.8)	2 (0-3.5)	
	White	79	1.2 (1.7)	1 (0-2)	.387**
Race†	Asian	413	1.4 (1.6)	1 (0-2)	
	Black	46	1.2 (1.4)	1 (0-2)	
Ethnicity‡	Hispanic	53	0.8 (1.3)	0 (0-1)	.007*
	Non-Hispanic	411	1.3 (1.5)	1 (0-2)	
Total		864	1.3 (1.6)	1 (0-2)	

* P-value based on the Mann-Whitney U test.
** P-value based on the Kruskal-Wallis test.
† 326 subjects had missing race data.
‡ 400 subjects had missing ethnicity data.

Among all 864 subjects, the majority were male (n=456; 52.8%), between 3-5 years old (n=610; 70.6%), covered by Medicaid (n=729; 84.4%), and in need of new dental treatment within two years (n=499, 57.8%). In bivariate analyses, the only independent variable significantly associated with new dental treatment needs within two years was ethnicity. Non-Hispanic subjects were significantly more likely to need new treatment within two years than Hispanic subjects (58.2% vs. 41.5%, $P=.022$, chi-square test).

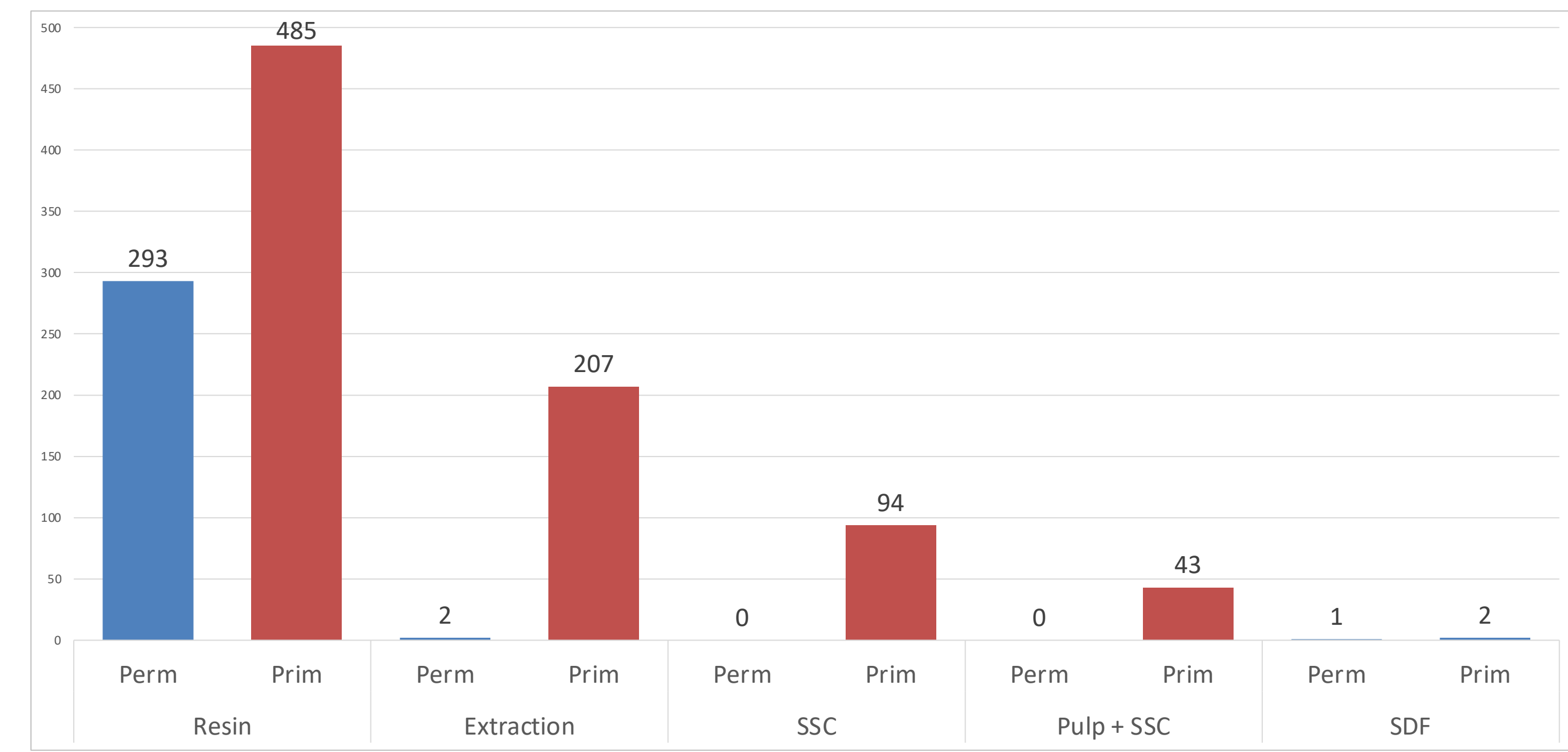


Figure 1: Total number of teeth treated based on treatment type and dentition type

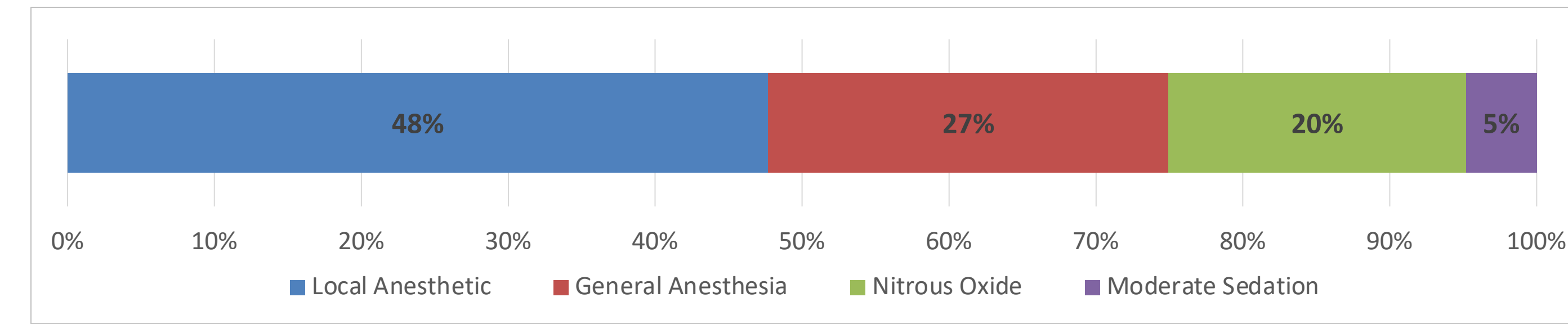


Figure 2: Distribution of various modalities of treatment used in patients who required new treatment needs following FMDR

Conclusions

The majority of patients following FMDR had new treatment needs within 2 years. Non-Hispanic ethnicity and younger patient age at time of FMDR played a factor into likelihood of new treatment needs.

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