



Introduction

as a result of advances in adhesive properties and the causing reduction in cavity preparation size means that many of the composite resin restorative materials used in current restoration have the capacity to strengthen the remaining tooth structure far more than conventional amalgam restoration(2) .Composite resin restoration can be placed into cavity by different approaches, many studies used layering technique in which the material can be placed in increments of 2-mm or less (3) . This way results in adequate light infiltration and improved polymerization of composite resin materials (4). Also, this will lead to decrease polymerization shrinkage as well as cuspal deflection (5) . Bulk-fill resin composites introduced into cavities in one increment that up to 4 –mm, this thickness offers several advantages of saving time and simplifying technique of placement the restoration (6). There is no clinical study that reported the efficiency of packable bulk- fill composite resin with maximum 4 mm depth in class I cavity in children ..

Methods & Materials

A total (33) Normal, apparently healthy and cooperative children adolescences aged from (9-14) years and they were selected from Outpatient Clinic, Pedodontic Department, Faculty of Dentistry, Suez Canal University. The patient general information, including name, gender and age were recorded . Medical and dental histories were taken. A preoperative bitewing radiographs was taken to exclude proximal caries. Patients had at least one pairs of similar class I permanent first molar. The reasons for restoring permanent molars were primary or secondary caries lesions. Treatment was explained to parents and written informed consents was obtained before the study. Adequate diagnosis and treatment planning were formed. Each patient had similarity cavity size and depth as possible. Each patient had cavities more than 2 ml. depth. Molars had class V according to ICDAS.

Results

At all periods of evaluation, no statistically significant differences were detected between packable bulk fill composite resin and Nano hybrid composite resin in marginal discoloration, surface roughness and caries detection ,whereas statistically significant differences between both materials in anatomical form and marginal discoloration parameters in favor with packable bulk fill. Sensitivity was not reported during all evaluation periods Performance at one week base line, 1 month, 3 months, 6 months, 9 months and 12 months for all criteria.

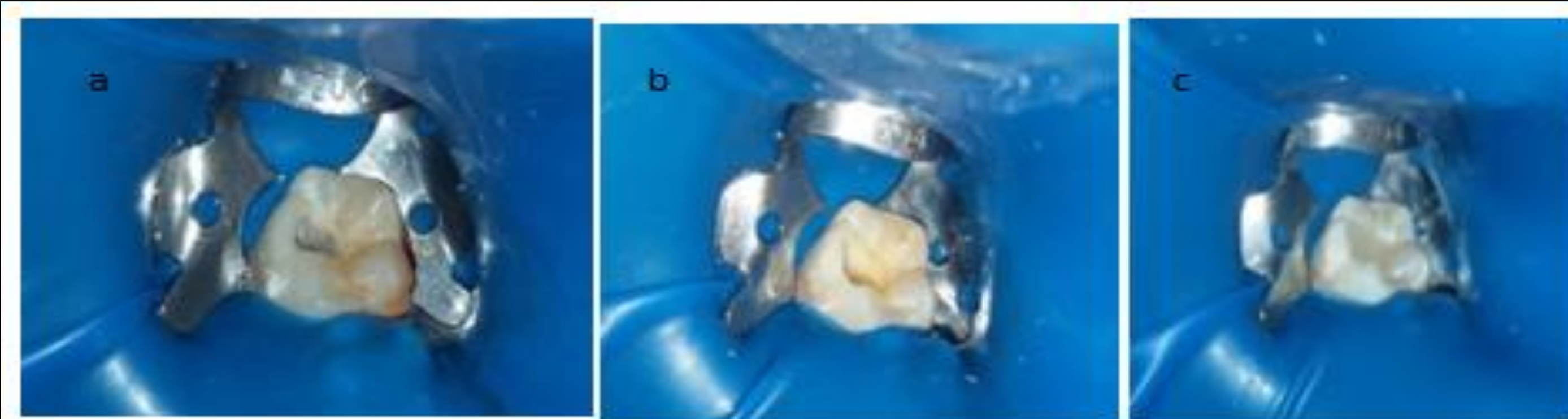


Figure 1 :- (a) Preoperative carious first permanent molar, b) cavity preparation, c) Bulk fill composite resin restoration



Figure 2 :- (a) Preoperative carious first permanent molar, b) cavity preparation, c) Bulk fill composite resin restoration

Tables showing different scores for evaluation of (Quixfil) and (Ceram X mono+) at all evaluation periods (n=33and 33) given as relative frequencies(%)

Table (3) showing different scores for evaluation of (Quixfil) and (Ceram X mono+) at all evaluation periods (n=33and 33) given as relative frequencies(%)

Category	Evaluation period	Score	Quixfil		Ceram X mono +	
			(n)	Frequency(%)	(n)	Frequency(%)
Anatomical form	Baseline (1 week)	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	1 month	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	3 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	6 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
9 months	0	33	100	33	100	
	1	0	0	0	0	
	2	0	0	0	0	
12 months	0	33	100	33	100	
	1	0	0	0	0	
	2	0	0	0	0	

Category	Evaluation period	Score	Quixfil		Ceram X mono +	
			(n)	Frequency	(n)	Frequency
Marginal adaptation	Baseline (1 week)	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	1 month	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	3 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	6 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
9 months	0	33	100	33	100	
	1	0	0	0	0	
	2	0	0	0	0	
12 months	0	33	100	33	100	
	1	0	0	0	0	
	2	0	0	0	0	

Category	Evaluation Period	Score	Quixfil		Ceram X mono +	
			(n)	Frequency (%)	(n)	Frequency (%)
Marginal adaptation	Baseline (1 week)	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	3 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	6 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	9 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
12 months	0	33	100	33	100	
	1	0	0	0	0	
	2	0	0	0	0	

Category	Evaluation Period	Score	Quixfil		Ceram X mono +	
			(n)	Frequency (%)	(n)	Frequency (%)
Marginal discoloration	Baseline (1 week)	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	3 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	6 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	9 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
12 months	0	33	100	33	100	
	1	0	0	0	0	
	2	0	0	0	0	

Category	Evaluation Period	Score	Quixfil		Ceram X mono +	
			(n)	Frequency (%)	(n)	Frequency (%)
Surface roughness	Baseline (1 week)	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	3 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	6 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	9 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
12 months	0	33	100	33	100	
	1	0	0	0	0	
	2	0	0	0	0	

Category	Evaluation Period	Score	Quixfil		Ceram X mono +	
			(n)	Frequency (%)	(n)	Frequency (%)
Caries	Baseline (1 week)	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	3 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	6 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
	9 months	0	33	100	33	100
		1	0	0	0	0
		2	0	0	0	0
12 months	0	33	100	33	100	
	1	0	0	0	0	
	2	0	0	0	0	

Conclusions

The packable bulk fill composite resin is more simply and easy as a tooth colored restorative material for children. One placement layer for packable bulk fill shows acceptable clinical results when compared with nano hybrid composite at different evaluation periods (1week, 1 month, 3 month, 6 month, 9 month and 12 month)

- The packable bulk- fill composite resin showed highly clinical performance when compared with Nano hybrid composite resin restorations at one- year follow up. Further studies necessary for long term clinical evaluation of these materials.

References

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