Original Article

Preliminary Data on Clinical Performance of Bulk-fill Restorations in Primary Molars

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Abstract

Context: In pediatric clinic practice, bulk fill composite is gaining importance for shortened clinical time with a limited shrinkage. **Aims:** The present study evaluated the 1 year clinical performance of bulk fill composite and conventional composite material in occlusal caries of primary molars. **Settings and Design:** The study was designed as randomized single blind clinical trial and a total of 160 restorations were placed in the cavities of the 80 patients. **Materials and Methods:** Each patient received two restorations: one with Filtek Z250 (3M ESPE, St Paul, MN 55144, USA); the other restored with Filtek Bulk-Fill Restorative (FBF) (3M ESPE, St Paul, MN, USA). All restorations were clinically evaluated after baseline, 6 months, and 1 year in terms of retention, color matching, marginal discoloration, marginal adaptation, secondary caries, surface texture, anatomic form, and postoperative sensitivity. **Statistical Analysis Used:** Besides the descriptive statistical methods, the Friedman test and the Wilcoxon Signed Ranks were used. **Results:** Bulk fill was found to be worse compared to control with regard to postoperative sensitivity at baseline without statistical significance ($P > 0.05$). All of the evaluated restorations were retained and were still in function after 1 year ($P > 0.05$). With respect to marginal discoloration and marginal integrity, there were no significant differences between bulk fill and composite restorations at all intervals ($P > 0.05$). **Conclusions:** Based on this short term data, restoration of Class I cavities with both bulk fill and conventional composite restorations can be performed successfully. Postoperative sensitivity can be an issue with the restorations completed with Bulk fill restorative.

Keywords: *Bulk fill composite, class I restoration, clinical evaluation, primary teeth*

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Introduction

Conventional resin composites are being widely used for many years in the restoration of occlusal caries of posterior primary dentition. Due to the limitations of resin composite materials such as, technique sensitivity, shrinkage stress, microleakage and postoperative sensitivity, the researchers offered incremental filling technique which allows using 2 mm resin composite layer for better penetration and lower shrinkage stress. Nevertheless, it takes time and effort to restore deep cavities and the postoperative sensitivity might still be observed.[1-3]

Bulk fill composite is a relatively new concept which is introduced to fill up occlusal area of deep caries in a unique step as a single bulk increment up to 4 mm. The benefit of this material is reducing the number of composite layers, which in turn shortens clinical time and limits polymerization shrinkage. In pediatric clinic practice, reduced chair

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time is important for better cooperation and less contamination.[4-6]

It has been stated that the polymerization success of resin composites is directly associated with marginal discoloration, enamel fractures and marginal integrity. In long term follow ups microleakage, postoperative sensitivity and secondary caries might occur.[7] In an *in vitro* study, five bulk fill resin composites (Surefil SDR flow (SF, Dentsply), Tetric Evo Ceram Bulkfil (TE, Ivoclar, Vivadent), Venüs Bulk Fill (VB, Hereaus Kulzer), X-tra fil (XF, Voco), experimental bulk fill (FB,3M ESPE)) showed adequate degree of conversion at 4 mm thickness, however a methacrylate-based microhybrid composite Filtek Z250 (F2, 3M ESPE) showed inadequate results at the bottom of surface. It has been claimed that the deeper cure property of the bulk fill composites are due to advanced translucency and photoinitiators.[8]

In a retrospective clinical study, Pitchika *et al.*[9] analyzed the survival probability of two different composite resin system including flowable hybrid composite resin (Tetric EvoFlow, Ivoclar Vivadent) and a traditional hybrid composite resin (Tetric EvoCeram, Ivoclar Vivadent) in primary teeth. Among 2146 restorations, 1778 (82.9%) remained healthy/intact and only 368 failed (17.1%) due to secondary caries or total restoration loss. Although flowable materials had demonstrated significantly higher risks of failure, the longevity of conventional resin restorations was found as good.[9]

Since resin composites are increasingly being used for their aesthetic and mercury free properties, there is still a need to verify a faster and more comfortable material for restoring primary teeth. There are several *in vitro* studies assessing the shear bond strength,[10] flexural and microtensile bond strength of bulk fill composites to primary teeth.[11] Yet, to the best of our knowledge there is no clinical study evaluating conventional and bulk fill composites in primary dentition with vital teeth. Thus, the present study aimed to evaluate the 1 year clinical performance of bulk fill composite and conventional composite material in occlusal caries of primary molars. The null hypothesis was that, there was no difference among the clinical performance of both restorative materials tested over 1 year evaluations based on clinical assessment.

Materials and Methods

This study was approved by Baskent University Institutional Review Board and Ethics Committee (Project no: D-KA 16/03) and supported by Baskent University Research Fund. A total of 80 children were included in this study. The study was designed as a 1 year follow-up examination of randomized prospective, single blind clinical trial. The sample size was calculated on the basis of previous study of Papagiannoulis *et al.*[12] and set to 42 restorations per group to determine significant differences at 95% confidence level with an alpha value of = 0.05 and 80% power. The average age of the children was 7,41(±1,80). The inclusion criteria were a child presenting with: (a) a need for maximum four posterior tooth-colored occlusal restorations; (b) the presence of teeth to be restored in occlusion; (c) teeth that were symptomless and vital; (d) a healthy periodontal status; (e) a good likelihood of recall availability. The exclusion criteria were as follows: (a) xerostomia and bruxism; (b) absence of adjacent and antagonist teeth; (c) extremely poor oral hygiene, (d) adverse medical history; (e) potential behavioral problems. Children were required to have maximum four deep Class I carious lesions teeth with pulp vitality. The purpose and clinical procedure of the study were explained to the patients, and a written informed consent was obtained. The children included in the study were submitted to oral hygiene instructions both at the initial examination and during the study.

Restorative Procedure

Teeth were cleaned with rubber caps using pumice and water slurry. The Class I preparation was performed using diamond round and straight fissure burs (6801/016, 6879/016 Komet Medical, Brasseler, Lemgo, Germany) at high speed handpiece under copious water cooling. Hand instruments and slow-speed tungsten carbide burs were used to remove the caries. The distribution of the tested materials is shown in Table 1. To prevent discomfort during the restorative procedures, local anesthesia was used for patients who complained of pain or sensitivity. No bevels were prepared. The outline shape of the preparations was limited to the removal of the caries/defective restoration and the depth of cavities was measured with a periodontal probe. The mean depth was 3,1(±0,5) mms. After the cavity preparation, the operative field was isolated with cotton rolls and suction. Resin modified calcium silicate filled liner (TheraCal LC, Bisco Inc, Schamburg, IL, USA) was only used in deep preparations. Restorative procedures were performed by one experienced and calibrated pediatric dentist (BÖ). A total of 160 restorations were placed in the cavities of the 80 patients. In order to make intra-individual comparison possible, each patient received two restorations that were as similar in size and location as possible. The cavity pairs in each individual were restored with either the experimental or the control restoration before the operative procedure started in accordance with a predetermined scheme of randomization. The bulk-fill composites were deemed to

represent the experimental group, while the conventional hybrid composite serve as the control group. Each restorative material was placed randomly using lottery method. The participants were not aware of which type of composite restoration was used in which cavity. Each patient received two restorations: one with Filtek Z250 (3M ESPE, St Paul, MN 55144, USA); the other with Filtek Bulk-Fill Restorative (FBF) (3M ESPE, St Paul, MN, USA). The universal adhesive 3M ESPE Single Bond Universal Adhesive (3M, Neuss, Germany) was used in self-etch mode for both composites. The materials used in the study (including the compositions and manufacturer information) are listed in Table 2. All light-curing procedures were performed with the same LED-curing unit (Elipar Freelight 2, 3M ESPE, 1226 mW/cm²) operating in a continuous mode while emitting a light-intensity of 1200 mW/cm². Restorations were finished with fine-grid diamond burs (Diatech, Dental AG, Heerburg, Switzerland) and polishing disks (3M ESPE, St Paul, MN, USA). Occlusion was checked with articulating paper (Bausch, Nashua, NH, USA). Concave shaped polishing brushes were used to obtain smooth surfaces (Optishine; Kerr, Bioggio, Switzerland).

Periods and Evaluation Criteria

All restorations were clinically evaluated by one separate and trained investigator who was not involved in restoration placement and who was unaware of which material used in which teeth. All evaluations were carried out under a dental operating light using flat-surfaced mouth mirrors and dental explorers after 1 week (baseline), 6 months, and 1 year. The modified United States Public Health Service (USPHS) criteria for retention, color matching, marginal discoloration, marginal adaptation, secondary caries, surface texture, anatomic form, and postoperative sensitivity were used as detailed in Table 3. Score A (Alpha) stands for the clinically ideal restoration. Score B (Bravo) is a clinically acceptable situation except for secondary caries. Score C (Charlie) indicates clinically unacceptable restorations that must be replaced. Before the evaluation, a prophylaxis using pumice and water slurry was performed.

Statistical Analysis

Data was analyzed using a computer software (NCSS Number Cruncher Statistical System, 2007, Kaysville, Utah, USA). Along with the descriptive statistical methods (median, frequency, standard deviation), the Friedman test was used to evaluate the changes of intragroups and the Wilcoxon Signed Ranks was also used to determine the pairwise comparison differences between the results taken at baseline, 6 months' post-treatment, and 1 year's post-treatment. The confidence level was set to 95% ($P < 0.05$).

Results

The results of the evaluated criteria are shown in Table 4. In the present study, 160 restorations were performed in 80 patients, and re-evaluated at one week later, 6 months and 1 year. In the first recall after 6 months, 63 patients were evaluated, resulting in 126 restorations (recall rate: 79%). After 1 year, 100 restorations were evaluated, with a total of 50 patients (recall rate: 50%). At the evaluation stage, 50 cases with all follow-up were used. At baseline, there were no differences found between the two materials with regard to each criteria, except postoperative sensitivity [Table 5]. The number of teeth with postoperative sensitivity in the bulk fill group was greater than the number of teeth with postoperative sensitivity in composite group, but there was no statistically significant difference between these the two materials ($P > 0.05$). Overall, 30 molars (23 first primary molar, 7 second primary molar) were dropped out in the bulk fill at the 1 year recall. In

Table 1: The distribution of the tested materials

	Bulk fill		Conventional composite		Total
	First primary molar	Second primary molar	First primary molar	Second primary molar	
Maxilla	11	11	11	12	45
Mandible	10	16	13	16	55
Total	21	27	24	28	100

Table 2: Chemical composition of the tested bulk fill and conventional composite and bonding agent

Materials	Manufacturer	Type	Composition
Single Bond Universal	3M Dental Products, Seefeld, Germany	Etch and Rinse and self etching	Methacryloxydecyl dihydroen phosphate, phosphate monomer, resins, filler, ethanol, water, initiators, silane
Filtek Z250	3M/ESPE, St. Paul, MN, USA	Universal composite	Bis-GMA, bis-EMA, UDMA, silica/zirconia, Filler 60% (volume)
Filtek TM bulkfill posterior restorative	3M/ESPE, St. Paul, MN, USA	Bulk-fillpaste composite	Bis-GMA, bis-EMA, UDMA, zirconia, Filler load: 76.5 wt%, 58.4 vol%.

Table 3: Modified United States Public Health Service evaluation criteria

Category	Scores	Criteria
Retention	A	Complete retention of the restoration
	C	Loss of the restoration
Color match	A	Restoration matches adjacent tooth structure in color and translucency
	B	Mismatch is within an acceptable range of tooth color and translucency
	C	Mismatch is outside the acceptable range
Marginal discoloration	A	No discoloration evident
	B	Slight staining, can be polished away
	C	Obvious staining can not be polished away
Marginal integrity	A	Closely adapted, no visible crevice
	B	Visible crevice, explorer will penetrate
	C	Crevice in which dentin is exposed
Secondary caries	A	No evidence of caries
	C	Caries is evident
Surface texture	A	Smooth surface
	B	Slightly rough or pitted
	C	Surface deeply pitted, irregular grooves
Anatomic form	A	Continuous
	B	Slight discontinuity, clinically acceptable
	C	Discontinuous, failure
Post operative sensitivity	A	Absence of the dentinal hypersensitivity
	B	Presence of mild and transient hypersensitivity
	C	Presence of strong and intolerable hypersensitivity

Table 4: Clinical assessment of restorative materials according to the USPHS criteria

Category	Score	Baseline		6 months later		12 months later	
		Bulk *n* (%) 80 (100.0%)	Comp *n* (%) 80 (100.0%)	Bulk *n* (%) 63 (100.0%)	Comp *n* (%) 63 (100.0%)	Bulk *n* (%) 50 (100.0%)	Comp *n* (%) 50 (100.0%)
Retention	A	80 (100.0)	80 (100.0)	62 (98.4)	63 (100.0)	50 (100.0)	50 (100.0)
	C	0 (0.0)	0 (0.0)	1 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)
Color match	A	80 (100.0)	80 (100.0)	60 (95.2)	62 (98.4)	44 (88.0)	45 (90.0)
	B	0 (0.0)	0 (0.0)	3 (4.8)	1 (1.6)	6 (12.0)	5 (10.0)
	C	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Marginal discoloration	A	80 (100.0)	80 (100.0)	56 (88.9)	58 (92.7)	37 (74.0)	43 (86.0)
	B	0 (0.0)	0 (0.0)	7 (11.1)	5 (7.9)	13 (26.0)	7 (14.0)
	C	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Marginal integrity	A	80 (100.0)	80 (100.0)	60 (95.2)	61 (96.8)	45 (90.0)	47 (94.0)
	B	0 (0.0)	0 (0.0)	3 (4.8)	2 (3.2)	5 (10.0)	3 (6.0)
	C	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Secondary caries	A	80 (100.0)	80 (100.0)	63 (100.0)	63 (100.0)	50 (100.0)	50 (100.0)
	B	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	C	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Surface texture	A	80 (100.0)	80 (100.0)	63 (100.0)	63 (100.0)	49 (98.0)	48 (96.0)
	B	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.0)	2 (4.0)
	C	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Anatomic form	A	80 (100.0)	80 (100.0)	59 (93.7)	60 (95.2)	45 (90.0)	45 (90.0)
	B	0 (0.0)	0 (0.0)	4 (6.3)	3 (4.8)	5 (10.0)	5 (10.0)
	C	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Postoperative sensitivity	A	76 (95.0)	78 (97.5)	63 (100.0)	63 (100.0)	50 (100.0)	50 (100.0)
	B	4 (5.0)	2 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	C	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

Number (*n*) and (%) of restorations. A=Alpha B=Bravo C=Charlie (distributions of descriptive variables)

composite group, 4 first primary molars and 1 second primary molar exfoliated between 6 and 12 months and only 2 first primary molars were extracted by the end of 1 year. At the 6th month, 63 bulk fill and 63 composite

Table 5: Scores at baseline, after 6 month and 1 year for evaluation of Class I restorations of bulk fill and conventional composite (*n*=50)

	Baseline[t1]			6 month[t2]			1 year[t3]			Bulk fill				Conventional composite			
	Bulk, *n* (%)	Comp *n* (%)	*P*[a]	Bulk, *n* (%)	Comp *n* (%)	*P*[a]	Bulk, *n* (%)	Comp *n* (%)	*P*[a]	*t1-t2-t3 P*[b]	*t1-t2 P*	*t1-t3 P*	*t2-t3 P*	*t1-t2-t3 P*[b]	*t1-t2 P*	*t1-t3 P*	*t2-t3 P*
Retention																	
A	50 (100)	50 (100)	-	49 (98)	50 (100)	**0.317**	50 (100)	50 (100)	-	**0.368**	-	-	-	-	-	-	-
C	0	0		1 (2)	0		0	0									
Color match																	
A	50 (100)	50 (100)	-	47 (94)	49 (98)	**0.317**	44 (88)	45 (90)	**0.763**	**0.011***	-	**0.014***	**0.046***	**0.015***	-	**0.025***	**0.046***
B	0	0		3 (6)	1 (2)		6 (12)	5 (10)									
Marginal discoloration																	
A	50 (100)	50 (100)	-	44 (88)	45 (90)	**0.763**	37 (74)	43 (86)	**0.180**	**0.001****	**0.014***	**0.001****	**0.052**	**0.020***	**0.025***	**0.008****	-
B	0	0		6 (12)	5 (10)		13 (26)	7 (14)									
Marginal integrity																	
A	50 (100)	50 (100)	-	48 (96)	48 (96)	**1.000**	45 (90)	47 (94)	**0.480**	**0.042***	-	**0.025***	-	**0.247**	-	-	-
B	0	0		2 (4)	2 (4)		5 (10)	3 (6)									
Secondary caries																	
A	50 (100)	50 (100)	-	50 (100)	50 (100)	-	50 (100)	50 (100)	-	-	-	-	-	-	-	-	-
Surface texture																	
A	50 (100)	50 (100)	-	50 (100)	50 (100)	-	49 (98)	48 (96)	**0.564**	**0.368**	-	-	-	**0.135**	-	-	-
B	0	0		0 (0)	0 (0)		1 (2)	2 (4)									
Anatomic form																	
A	50 (100)	50 (100)	-	47 (94)	48 (96)	**0.655**	45 (90)	45 (90)	**1.000**	**0.093**	-	-	-	**0.042***	-	**0.025***	-
B	0	0		3 (6)	2 (4)		5 (10)	5 (10)									
Postperative sensitivity																	
A	46 (92)	48 (96)	**1.000**	50 (100)	50 (100)	-	50 (100)	50 (100)	-	**0.018***	**0.046***	**0.046***	-	**0.135**	-	-	-
B	4 (8)	2 (4)		0	0		0	0									

[a]Wilcoxon Signed Ranks test, [b]Friedman test, **P*<0.05, ***P*<0.01

restorations and at 1 year 50 bulk fill and 50 composite restorations were available for evaluations.

Fracture and Retention

With regard to fracture of material and retention, only one bulk fill restoration revealed a fracture and enamel loss between 6 months and 1 year control and only 1 caries lesion was seen in mesial surface, but it was clinically acceptable. All of the evaluated restorations were retained and were still in function after 1 year ($P > 0.05$).

Marginal Discoloration

With respect to marginal discoloration there were no significant differences at all months between bulk fill and composite restorations ($P > 0.05$). The Bravo scores were statistically higher in 6 months and 1 year evaluation in both bulk ($P = 0.001$, $P < 0.01$) and in composite group ($P = 0.02$, $P < 0.05$) respectively. Although no significance was found, Bravo marginal discoloration scores of bulk fill group increased remarkable with time between 6 months and 1 year evaluation ($P = 0.052$, $P > 0.05$). Composite marginal discoloration scores did not show significant difference between 6 months and 1 year evaluation ($P > 0.05$). None of the materials displayed marginal discoloration that penetrated in the pulpal direction.

Marginal Integrity

There was no statistically significant difference between two materials with regard to marginal integrity in baseline, 6 months and 1 year evaluation ($P > 0.05$). A significant reduction in the marginal integrity was seen in baseline, 6 months and 12 months controls in bulk fill restorations having some crevice formation ($P = 0.042$, $P < 0.05$). In composite groups Bravo scores of anatomic form changed significantly from baseline to 6 months and 1 year ($P = 0.025$, $P < 0.05$). No secondary caries developed in both groups. There was no significant difference between two materials with regard to secondary caries, surface texture and color match at all periods ($P > 0.05$).

Discussion

This study presents preliminary data regarding clinical performance of bulk fill and conventional composite restorations in occlusal cavities of primary teeth. The study was performed as a prospective, controlled and randomized clinical trial in 80 children with a split mouth design. All restorations were placed by one experienced pediatric dentist (BÖ) which eliminates the limitations due to variant skills of different operators. The clinical evaluation was performed by another researcher (KD) who was blind to the type of the composite used. Placing the restorations on the same patient eliminates the influence of patient related factors such as oral hygiene, diet and brushing habits etc. on the longevity of restorations. The majority of the USPHS criteria were classified as Alpha [Table 4]. And both restorations were classified as clinically acceptable. There were no significant differences between both materials for all parameters at baseline, 6 and 1 year control. Thus, the null hypothesis was accepted. *In vitro* studies showed that bulk fill technique allowed good interfacial adaptation and satisfactory microtensile bond strength to cavity bottom dentin in high C-factor cavities.[13,14] In one of the longest clinical evaluation study none of the Class I restorations using bulk fill technique on permanent teeth failed during 6 year, confirming the durability of Class I restorations despite the high C-factor of the occlusal cavity.[13] In present study all of the restorations were in function after 1 year except a single cavity showing a small fracture and material loss with bulk fill restoration. Wilson *et al.*[1] evaluated the overall performance of Z250 composite restorations during one year and demonstrated clinically successful results. In this study Z250 composite restoration was chosen for gold standard when compared with bulk fill and our results were similar with Wilson *et al.*'s[1] study. The evaluation period, which is one year, reveals a short term data as similar with the ones reported by Wilson *et al.*[1], Bayraktar *et al.*[4] and Cantekin and Gumus.[15] On the other hand, regarding the primary dentition, the major clinical failures are seen between 6 and12 months.[16,17] Cantekin and Gumus[15] evaluated clinical performance of bulk fill liner under hybrid composite resin on extracted primary teeth (*ex vivo*) as well as on pulpotomized primary molars (*in-vivo*). In that particular study, control group was stainless steel crowns (SSC) and the bulk fill liner placed with sandwich technique under the resin composite demonstrated similar results as with control *in vivo*. In the *in vitro* microleakage test, sandwich technique was superior then SSC regarding marginal seal. As Chesterman *et al.*[6] stated in their review that there is limited good quality *in vitro* research regarding bulk-fill materials, while clinical *in vivo* research is scarce apart from a few trials and case reports. However, there is a scarcity of data on performance of bulk fill restorations in primary teeth. To the authors' knowledge, the majority of the data is *in vitro*, the present study is the first randomized controlled clinical evaluation. It is difficult to evaluate children and parents in long term recall due to various factors; the school schedule and tooth exfoliations being the main reasons. Thus, since long term recall is desirable, one year clinical data still has a clinical importance.

Operatory mistakes, unsatisfactory bonding and stress fatigue can cause defects which are known as the main reasons for marginal discoloration.[4] In Bayraktar *et al.*'s study a very slight degree of marginal discoloration was observed after one year in both conventional resins and the bulk fill resins. Their results showed a total of 100% Alpha scores for composites and 97.67% for bulk fill at 1 year control.[4] No previous study evaluated marginal discoloration of bulk composites in primary teeth, thus we compare our findings with Bayraktar *et al.*'s study[4] in permanent teeth. In this study, a total of 86% of Alpha scores for composites and 74% for bulk fill at 1 year control were observed. Clinically, marginal discolorations are important because of being first sign of decrease in the marginal integrity of composite restorations. However recent dental literature report marginal discoloration is not always related with caries.[18] An *in vitro* experimental study conducted on primary molar teeth showed that there was no significant difference among two bulk fill composites (3M bulk fill and Sonic Fill bulk fill) and one conventional composite (Z250) in terms of microleakage of Class II cavities. Our results were in accordance with Mosharrafian *et al.*'s[19] study. Bulk fill composites have similar properties to conventional composites in terms of marginal integration at 6 months and 1 year control. Postoperative sensitivity was reported in only 4 bulk fill and 3 composite restorations which showed bravo scores at baseline and none of the children complained again in other appointments. This postoperative sensitivity was statistically higher in bulk fill group at baseline but then disappeared gradually after 6 months control ($P = 0.018$, $P < 0.05$) [Table 4]. Overall, all groups showed alpha scores with regard to postoperative sensitivity and no significance were observed between groups at 6 and 12 months control ($P > 0.05$). These findings are in accordance with previous studies reporting low frequency of post sensitivity.[4,20] We used resin modified calcium silicate filled liner (TheraCal LC, Bisco Inc, Schamburg, IL, USA) in deep cavities, so this might affect our low post sense results. Another factor may be the use of universal bond in the self-etch mode. It will definitely increase time and effort but utilizing selective etch would probably have a favorable effect on the postoperative sensitivity.

Conclusion

Based on the 1 year clinical data restoration of Class I cavities with both bulk fill and conventional composite restorations can be performed successfully in primary teeth.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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