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Original Research

Assessment of clinical evaluation of teeth restored with porcelain laminate veneers

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ABSTRACT:

Background: The use of laminate veneers resulted in a better aesthetic outcome and less chair time. The present study was conducted to assess clinical evaluation of teeth restored with porcelain laminate veneers. **Materials & Methods:** 60 patients of both genders were divided into 2 groups. In group I, teeth (60) were treated with porcelain veneers, using a total-etch adhesive system and in group II, teeth (60) were bonded with a self-etch adhesive system. patients were recalled after 1 and 2 years. Modified United States Public Health Service (USPHS) criteria were used to assess the porcelain laminate veneers in terms of marginal adaptation, cavosurface marginal discoloration, secondary caries, postoperative sensitivity, satisfaction with restoration shade and gingival tissue response. **Results:** In group I, teeth were treated with porcelain veneers, using a total-etch adhesive system and in group II, teeth were bonded with a self-etch adhesive system. Group I had 20 males and 10 females and group II had 14 males and 16 females. There was non- significant difference in score value in marginal adaptation, cavosurface discoloration, secondary discoloration, post- operative sensitivity, satisfaction with shade and gingival tissue response in group I and II (P> 0.05). **Conclusion:** Porcelain laminate veneers showed successful clinical performance in terms of marginal adaptation, cavosurface marginal discoloration, secondary caries, postoperative sensitivity, satisfaction with restoration shade and gingival tissue response using both total-etch and two-step self-etch adhesives.

Key words: Porcelain laminate veneers, Gingival tissue, Self-etch adhesives

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INTRODUCTION

In the 1980s, porcelain veneers earned a prominent place in cosmetic dentistry as great strides were taken within the sphere of ceramic laminates. [1]New methods of preparation with minimal to no tooth wear became known as dental contact lenses. Thus, an alternative restorative treatment emerged and was considered more conservative when compared with crowns and traditional porcelain veneers, which cause increased wear of tooth structure.[2]

Porcelain laminate veneer preparation can be a stressful for dentists with insufficient clinical skills or experience. Lack of good procedural knowledge frequently results in failed restorations. Several longitudinal clinical studies have been performed on the performance of porcelain laminate veneers placed by general practitioners or specialists, revealing acceptable results regardless of the type of failure and/or veneer design.[3]

Researchers and dental material manufacturers have aimed to develop new materials with better aesthetic characteristics through the years.[4] In 1975 laminate veneers were introduced as a better material of choice to mask the dentition, the restorations were 1 mm in thickness and were made from a cross-linked polymeric veneer. The use of laminate veneers resulted in a better aesthetic outcome and less chair time. The progress of developing new materials reached porcelain in the 1980s when enamel was etched, and the porcelain surface was treated to improve the bonding.[5]The present study was conducted to assess clinical evaluation of teeth restored with porcelain laminate veneers.

MATERIALS & METHODS

The present study comprised of 60 patients of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups. In group I, teeth (60) were treated with porcelain veneers, using a total-etch adhesive system and in group II, teeth (60) were bonded with a self-etch adhesive system. All the veneers were luted with a light-cured hybrid composite. The patients were recalled after 1 and 2 years. Modified United States Public Health Service (USPHS) criteria were used to assess the porcelain laminate veneers in terms of marginal adaptation, cavosurface marginal discoloration, secondary caries, postoperative sensitivity, satisfaction with restoration shade and gingival tissue response.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Number	Porcelain veneers	Self-etch adhesive system
M:F	20:10	14:16

Table I shows that in group I, teeth were treated with porcelain veneers, using a total-etch adhesive system and in group II, teeth were bonded with a self-etch adhesive system. Group I had 20 males and 10 females and group II had 14 males and 16 females.

Table II Comparison of USPHS criteria for porcelain veneer restorations

Parameters	Score	Group I			Group I			P value
		Baseline	At 1 year	At 2 years	Baseline	At 1 year	At 2 years	
Marginal adaptation	A	60	60	58	60	58	58	0.85
	B	0	0	2	0	2	2	
	C	0	0	0	0	0	0	
	D	0	0	0	0	0	0	
Cavosurface discoloration	A	60	59	59	60	58	58	0.92
	B	0	1	1	0	2	2	
	C	0	0	0	0	0	0	
Secondary discoloration	A	60	60	60	60	60	60	0.74
	B	0	0	0	0	0	0	
Post- operative sensitivity	A	58	60	60	58	60	60	0.53
	B	2	0	0	2	0	0	
Satisfaction with shade	A	60	58	58	60	59	59	0.25
	B	0	2	2	0	1	1	
	C	0	0	0	0	0	0	
Gingival tissue response	A	60	60	57	60	58	58	0.14
	B	0	0	3	0	2	2	
	C	0	0	0	0	0	0	

Table II shows that there was non- significant difference in score value in marginal adaptation, cavosurface discoloration, secondarydiscoloration, post- operative sensitivity, satisfaction with shade and gingival tissue response in group I and II (P> 0.05).

DISCUSSION

Significant progress in bonding capacity to both enamel and dentin has enabled the luting of porcelain veneers to the labial surfaces of teeth.[6] The luting of porcelain veneers to minimally invasively prepared teeth requires various treatments of both tooth substrate and the veneer restoration.[7] These treatments include hydrofluoric acid application, silanization and bonding application on the veneer side and acid etching, primer and bonding application on the tooth surface. Bonding to enamel has been very successful since Buonocore introduced the acid-etch technique.[8] However, the integrity of restorations with dentin margins is still an important research topic. Although minimal preparation limited to enamel is always the aim during veneer preparation, a slight exposure of dentin is often inevitable. Furthermore, in the correction of malpositions, dentin may be exposed in certain regions of the tooth to be veneered.[9]The present study was conducted to assess clinical evaluation of teeth restored with porcelain laminate veneers.

We found that in group I, teeth were treated with porcelain veneers, using a total-etch adhesive system and in group II, teeth were bonded with a self-etch adhesive system. Group I had 20 males and 10 females and group II had 14 males and 16 females. Aykor et al[10]evaluated the long-term clinical performance of porcelain laminate veneers luted with hybrid composite in combination with totaletch and self-etch adhesive systems. The study was performed on 30 patients ranging in age between 28 and 54 years. Ten veneers were performed per patient in the maxillary arch. In Group 1, 150 teeth were treated

with porcelain veneers, using a total-etch adhesive system (Scotchbond Multi-Purpose Plus, 3M ESPE). In Group 2, 150 teeth were bonded with a self-etch adhesive system (AdheSE, Ivoclar-Vivadent). All the veneers were luted with a light-cured hybrid composite (Z100, 3M ESPE). The patients were recalled after 1, 2 and 5 years. Modified United States Public Health Service (USPHS) criteria were utilized to evaluate the porcelain laminate veneers in terms of marginal adaptation, cavosurface marginal discoloration, secondary caries, postoperative sensitivity, satisfaction with restoration shade and gingival tissue response. Porcelain veneers exhibited successful clinical performance with both total-etch and two-step self-etch adhesives at the end of five-years.

We found that there was non- significant difference in score value in marginal adaptation, cavosurface discoloration, secondarydiscoloration, post- operative sensitivity, satisfaction with shade and gingival tissue response in group I and II (P> 0.05).da Costa G[11]investigated the longevity of ceramic laminates with minimally invasive preparations. Of 197 citations identified, five studies were included. The survival of the ceramic laminates with minimal preparation was satisfactory, which led to conclude that the technique has longevity for 10 years. Smales et al[12]evaluated the long-term survival of anterior porcelain laminate veneers placed with and without incisal porcelain coverage.Two prosthodontists in a private dental practice placed 110 labial feldspathic porcelain veneers in 50 patients; 46 veneers were provided with incisal porcelain coverage, and 64 were not. The veneers were evaluated retrospectively from case records for up to 7 years (mean 4 years).At 5, 6, and 7 years, the cumulative survival estimates were 95.8% for veneers with incisal porcelain coverage and 85.5% for those without incisal coverage. The difference was not statistically significant. Six of the nine failures occurred from porcelain fracture in the veneers without incisal coverage.Although there was a trend for better long-term survival of the veneers with incisal porcelain coverage, this finding was not statistically significant.

The limitation the study is small sample size.

CONCLUSION

Authors found that porcelain laminate veneers showed successful clinical performance in terms of marginal adaptation, cavosurface marginal discoloration, secondary caries, postoperative sensitivity, satisfaction with restoration shade and gingival tissue response using both total-etch and two-step self-etch adhesives.

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