Case Study
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Ceramic Veneers as a New Era in Esthetic Dentistry: A Case Series

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Abstract

The aim of this article is to improve the dental esthetics of patients with discolored teeth with the help of glass ceramics. The prolonged success of veneers is dependent on the tooth preparation that must be limited to enamel, cervical margin should be maintained, and involve the proximal contact area. The resistance of veneers is increased by involving the incisal edge of the tooth. Through careful treatment planning, the ceramic veneers in the treatment are used conservatively, with mechanical stability and biocompatibility with the surrounding tissues, obtaining excellent aesthetic results and clinical longevity.

Keywords: Ceramic, Discolored Tooth, Esthetics, Veneers

1. Introduction

In dental offices the demand of patients for preventive treatment is growing day by day. They are aware of the importance of proper oral hygiene and preventive care[1]. Esthetic treatment is always a challenge in clinical practice and especially in anterior teeth. Many improved dental materials such as all-ceramic crowns, resin composites, ceramic veneers became the choice of treatment. So the best material for better esthetic must be choose by the dentists and patients[2]. Among all the dental materials ceramic veneers are considered to be the minimally invasive esthetic treatment options used to improve the tooth color and shape[1].

Ceramics have good biocompatibility, mechanical properties, esthetic outcome and color stability and because of these properties they are considered as a good treatment option[3]. Minimally invasive restoration is essential for successful restorations in dentistry[4,5]. There was excellent end result to treatment, when ceramic veneers were well-planned[6]. The clinical success of veneers depends on the appropriate techniques and indications, adequate application of the available materials according to the need and the goal of the esthetic and functional treatment[3-5].

For a conservative esthetic approach ceramic veneers are the ultimate option because before the veneer is placed they leave the enamel intact[7]. Earlier materials that had been used had many disadvantages such as difficulty to polish which can cause abrasion of the opposing dentition and easy to stain, the materials needed to be too thick to cover any discoloration[8].

The purpose of this article is to improve the dental esthetics of discolored tooth with ceramic veneers.

2. Case Report 1

A 27yr old male patient came to the conservative dentistry and endodontics department with a chief complaint of discolored upper front tooth region and wanted cosmetic rehabilitation for the same (Figure 1).

2.1 Diagnosis and Treatment Planning

A through case history of the patient was taken along with diagnostic impression, radiographs including IOPA and OPG. Vitality tests were also performed. After examination

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a provisional diagnosis of enamel hypoplasia due to moderate fluorosis was made. Then shade selection was done. The treatment objective was to manage the discoloration of upper anterior tooth region. Patient was informed about the treatment plan. Ceramic veneers were planned on the upper six anterior teeth.

2.2 Tooth Preparation

Three-wheeled diamond bur used for depth-orientation grooves on the labial and incisal surfaces. On Incisal edge: 0.5mm, On Gigival one third: 0.3mm, On Incisal two thirds of the uncut labial surface: 0.5mm preparation was done.

2.3 Labial Surface Preparation

Round-end tapered diamond bur was used for the removal of tooth structure present in between the grooves made. Ideally, the finish line should be a slight chamfer placed within enamel slightly subgingival or at the level of the gingival crest, so in this case the finish line was placed at the gingival crest level.

2.4 Palatal Surface Preparation

A vertical stop is created by a slight incisal overlap that helps in proper seating of veneer. Round-end tapered diamond bur was used to create a lingual finish line forming a slight chamfer 0.5 mm deep. The finish line should be preferably 1.0 mm from centric contacts.

2.5 Recording of Impression

Gingival retraction cord was placed in the facial gingival sulcus for 5 minutes. Then the full arch impression was made using poly vinyl siloxane material using putty reline technique. The refractory material was poured into the impression and was allowed to set for 30 minutes. After removing of the refractory cast it was sent to the laboratory.

2.6 Try in Procedure

Prior to the trial the teeth were cleaned and color match, gingival extension and quality of fit of the veneer was assessed.

2.7 Cementation

In this case, 10% hydrofluoric acid was used as an etchant and applied on the internal surface of veneers for 2-minutes. After etching, ceramic was treated with a silane coupling agent. The composite cement was coated on the internal surface of the restoration; then light pressure was used to insert the veneer immediately into the prepared tooth. Thin bladed composite instruments or an explorer was used to remove the excess composite cement. Then



a



b



c

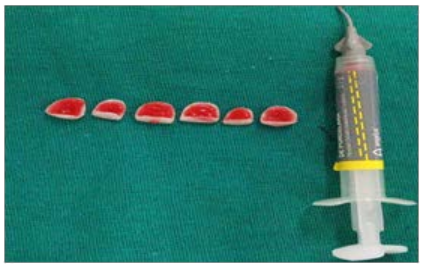




d



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g



h



i



j

Figure 1. (a) Preoperative clinical picture (b) Tooth preparation front view (c) Tooth preparation lateral views (d) Upper and lower arch impression (e) Ceramic veneers (f) Hydroflouric acid etching (g) Primer application (h) Veneers luted (i) Pre-operative picture (j) Six Months Follow Up Picture.

the cement was light-cured from incisal, facial, and lingual directions with an exposure of 60 seconds.

3. Case Report 2

A 25yr old male patient came to the conservative dentistry and endodontics department with a chief complaint of discolored upper front tooth region and wanted cosmetic rehabilitation for the same. All the procedures which were discussed in case report 1 were followed for case report 2 (Figure 2).

4. Discussion

Now a days many techniques in dentistry mimic the natural tooth structure like ceramic materials and modern bleaching techniques. Recently most of the clinicians are using all ceramic restorations which leads to its popularity. For improved esthetics Ceramic veneers are one of the most conservative and esthetic techniques that can be applied[9]. Because of their most important physical properties which is fluorescence they can mimic the natural tooth[10]. Veneers are indicated in the case of improving esthetics by changing the form and texture of teeth with no severe discoloration.

In these cases, when the patients were informed about various restorative options by the clinician, they opted for the conservative ceramic veneers.

The advantage of using these restorations are they are biologically acceptable to the body owing to their lesser cytotoxicity, increased clinical stability and reduced risk of sensitivity and irritation of tissues. The plaque buildup



a



b

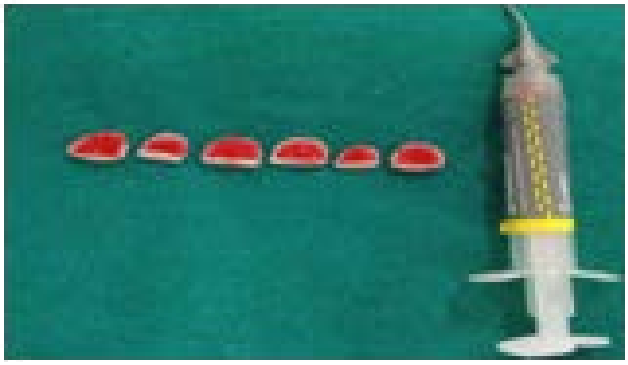




c



d



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f



g



h



i

Figure 2. (a) Preoperative clinical picture (b) Tooth preparation front view (c) Tooth preparation lateral views (d) (e) Working cast (e) Hydroflouric acid etching (f) Primer application (g) Veneers luted (h) Pre-operative picture (i) Six Months Follow Up Picture.

for these restorations is very less[11–13]. Various studies have been conducted, for long term clinical outcomes and improved properties of restorative materials. Ceramic is much superior to composite resin in many ways, ceramic material is more resistant to fracture and has the improvements in the co-efficient of thermal expansion than any other dental material, giving an improved prognosis[14]. To avoid the stress concentration within the ceramic a finished preparation was provided in these cases, which was smooth and free of any sharp internal line-angles.

As porcelain veneers are delicate, fracture is the most possible post-operative complication. If the veneer is not an esthetic concern, and is well bonded to the underlying enamel, the veneer should be left in place but the patient should be informed about this[15].

5. Conclusion

When considering the esthetic and mechanic criteria's, ceramic veneers displayed promising results. when the patient is young, the clinician must give sufficient consideration to the materials to be used for veneer restorations. During tooth preparation and luting procedure the clinician should be careful enough so that the optimal results can be ensured.

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