

Enhancing esthetics of anterior teeth with direct composite veneer: A case series

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Abstract

Veneers are restorations intended to correct existing anomalies, esthetic deficiencies, and discoloration of fluorosed teeth. They can be processed in two ways-directly or indirectly: Direct composite veneers for fluorosed teeth are affordable and minimally invasive. They are great alternative to full coverage crown in young and healthy dentition patients and financially aware patients.

Conclusions Based on the esthetic result obtained with direct composite veneer restorations it can be concluded that they are an excellent choice for treating fluorosed teeth.

Key words: Direct composite veneer, Fluorosis, Esthetic.

Introduction

In the last decade, esthetics has assumed importance in the social fabric of the society. This has percolated to dentistry in the form of esthetic restorative procedures. Toward this end, composite have been utilized extensively, engaging various type of defects ranging from small fissural defects to those encompassing the entire tooth surface.¹

Fluorosis is one of the causes for patients to seek esthetic restoration. For restoration of these defects using composite, various techniques have been proposed, which include both direct and indirect methods. One of the popular techniques, is use of composites as a direct veneer. These offer multiple advantages over the full coverage restorations and have been employed in various situations.² Fluorosed teeth have been successfully treated with direct composite veneers.³ Various authors have proposed composite veneers for fluorosed teeth with varying severity. This case series is an attempt to explain various situations and manner in which direct composite veneers can be utilized for enhancing the esthetic appearance of patients with fluorosed teeth.

Case Report:

Case 1:

A twenty-year-old woman from Moradabad district, Uttar Pradesh presented with the chief complaint of generalized teeth staining that compromised her smile to the Conservative dentistry and Endodontic department. There was no significant past medical history. Clinical analysis revealed opacities along with mild brown stained enamel on all teeth surfaces (Figure 1). Dental fluorosis, mild (code 3) type as per Deans index was identified. Different treatment methods for treating discoloration were discussed with the patient as options but she declined crowns and indirect ceramic veneer and choose direct composite veneer restoration for anterior teeth. Written consent was obtained from the patient. Supragingival scaling and polishing was carried out, subsequently shade selection was made.

After local anesthesia, the preparation of the tooth was performed on the right central and lateral maxillary incisor with tapered round diamond instrument using air-water coolant, on the labial surfaces of the teeth to a

depth of approximately 0.5 to 0.8 mm. The preparation of the tooth was carried out in three planes with the cervical plane parallel to the long axis of teeth, without compromising natural gingival contours. A fine chamfer gingival finish was prepared and the remaining undercuts were removed. In the proximal contact areas, the contact in enamel was maintain and all the defective enamel in the cervical area was removed. Similar procedure for the left central and lateral maxillary incisors was followed (Figure 2). The preparation was cleaned with pumice slurry and water using rubber cup. Teeth were then dried and etched for 15 seconds with 37% phosphoric acid, rinsed for 20 seconds using water spray, and dried. On the prepared tooth surfaces, the dentin bonding agent was applied in thin layer using an applicator brush and polymerized for 20 seconds with a light-curing unit.

Translucent matrix bands were cut and positioned interdentially around the mesial and distal margins. Incrementally, universal microhybrid composite (Spectrum, Densply) was placed and cured for 40 seconds. Finishing was carried out using a yellow-banded knife-edge bur in a high-speed handpiece. Super snap mini kit (shofu) was used for polishing the veneers using coarse to fine grit polishing disks (Figure 3).



Figure 1: Pre-Operative



Figure 2: After tooth preparation



Figure 3: Post-Operative

Case 2:

A nineteen-year-old male patient with esthetic problems due to intrinsic stains on anterior maxillary dentition presented to the Conservative dentistry and Endodontic department, Teerthanker Mahaveer Dental college and research center Moradabad, Uttar Pradesh. Upon inspection, the incisal and middle third portion of the anterior teeth were found with slight intrinsic discolorations. Dental fluorosis, very mild (code 2) type as per Deans index was diagnosed. Class 4 incisal fracture was also found in relation to # 31 (Figure 4). Patient was given an option for both composite and ceramic veneers, but patient opted only for the composite veneers of maxillary central incisors. A1 shade was selected on the vita scale and composite veneer tooth preparation was initiated on right central maxillary incisor with tapered round diamond instrument using air-water coolant on the labial surface of the tooth to a depth of approximately 0.5 to 0.8 mm.

The preparation of the teeth was carried out in three planes with the cervical plane parallel to the long axis of teeth without compromising natural gingival contours. A fine chamfer gingival finish was prepared and the remaining undercuts were removed. Proximally contact in enamel was maintain and all the defective enamel in the cervical area was removed. Similar procedure for the left central maxillary incisor was followed (Figure 5). The preparations were cleaned with pumice slurry and water using rubber cup. Teeth were then dried and etched for 15 seconds with 37% phosphoric acid, rinsed for 20 seconds using water spray, and dried. Dentin bonding agent was applied in thin layer using an applicator brush and polymerized for 20 seconds with a light-curing unit.

Translucent matrix bands were cut and positioned interdentially around the mesial and distal margins. Incrementally, composite universal microhybrid composite (Spectrum, Densply) was placed and cured for 40 seconds. Finishing was carried out using a yellow-banded knife-edge bur in a high-speed handpiece. Super snap mini kit (shofu) was used for polishing the veneers using coarse to fine grit polishing disks (Figure 6).



Figure 4: Pre-Operative



Figure 5: After tooth preparation



Figure 6: Post-Operative

Discussion:

The suggested treatment modalities in teeth with fluorosis are Micro / Macro abrasion, Bleaching, Composite restorations, Veneers and Full Crowns.³ Among the veneers choice is between direct composite veneers and indirect composite or ceramic veneers. Following the recent development of adhesive and restorative dentistry, direct composite veneers have taken on an important role in clinical dental applications.⁴ The key technique, as well as the benefit of direct composite veneer, is direct application on prepared tooth surfaces or even without any preparation, with an adhesive agent and a composite resin material in single visit. Where a patient has chipped, discolored, damaged, underdeveloped, or worn teeth, specific areas can be bonded and repaired with direct composite to improve the condition.⁵ The advantages of Direct composite veneers include being the more conservative, noninvasive, providing immediate results, involve no lab expense and are more predictable since they are carried out chairside.⁶

In both the treated cases, Young adults patients with fluorosed teeth without any decay were chosen since such cases are better candidates for direct composite veneer than they are for indirect veneers because dentition is in the developing stage. Later, composite veneer can be upgraded with recessed gingiva compared to indirect veneers. Patients with fluorosis ranging from very mild (code 2) to mild (code 3) are better treated with direct composite veneers.³ For patients without any anterior decay, composite veneers are used widely.⁷ They are noninvasive and conservative, offering a more holistic approach without any reduction of tooth structure.

In both cases, chamfer diamond bur was used to prepare the gingival margin, on rest of the facial surface approximately 0.7 mm of enamel was removed to provide the necessary room for multiple layers of material. Care was taken to maintain as much enamel as possible, which would enhance the bond strength of the restoration. The preparation followed the contour of the gingival tissue and the margins were placed equigingival.

In both cases before starting the procedure of etching and bonding, clear matrix strips were placed interproximally to prevent bonding to the adjacent teeth. Two different shades of microfill were used to replicate the adjacent tooth color. In first case, A1 shade and in second case A2 shade was placed at the cervical area and sculpted down with a long-bladed composite instrument to the incisal edge. This was then thinned to make room for the second shade. Because the adjacent tooth exhibited more chroma at the cervical edge, one shade darker microfill was used there. Because of the higher value at the incisal half, the next increment of microfill that is B1 shade in case 1 and B2 shade in case 2 was placed at the incisal area and blended into the cervical portion. To replicate natural form and texture, the initial contouring was performed with a series of finishing burs and discs. Surface texture and final polishing were accomplished with a carbide bur at low speed using a back-and-forth motion along the entire tooth structure. Robert in his case used same technique and he showed that several steps must be followed to achieve a successful outcome for an anterior direct composite veneer.⁸ Proper layering is critical to the outcome.⁹ Without proper anatomy and surface characterization, the restoration will not match the adjacent tooth.¹⁰ The final polish is essential to improving the longevity of the restoration.⁸ Similarly Fahl in his case report outlined step by step procedural approaches to solve day to day anterior direct restorative challenges and demonstrated satisfactory esthetic outcomes using direct composite resin materials, on anterior teeth.¹¹

It was once thought that composites would be replaced by porcelain veneers in the anterior region because of their success.¹² Resin composite's visual and physical properties have recently improved significantly therefore it is commonly used in clinical practice.¹³ It does not require extensive preparations. In many clinical studies, the survival rate of composite veneers is constant. For 23 patients, Peumans et al. placed 87 direct composite veneers; after 5 years they reported a survival rate of 89%.¹⁴ A recent randomized control trial to compare two types of composites has shown an 87 percent survival rate over three years.¹⁵

Some factors can nevertheless play a major part in patient satisfaction, such as the quality of the final esthetic product, the required amount of teeth preparation for the type of material and the cost of treatment.¹⁶ Meijering et al. found indirect porcelain veneers to provide better esthetic than direct composite veneers.¹⁷ Conversely, Nalbandian and Millar found no statistical difference between the response of patients to composite veneers and veneers of porcelain.¹⁸ Korkut et al also found direct composite veneer technique to provide satisfactory esthetic outcomes.¹⁹ Similarly Kyatham et al reported two cases of esthetic rehabilitation of anterior teeth using direct composite veneering with two-year follow-up and showed that the direct composite veneering allows restoring the tooth in a natural way and

preservation of sound tooth structure when compared to indirect restorations.²⁰

Direct composite veneers were taken up for esthetic rehabilitation in both these cases because of conservation of tooth structure and since they could be completed in single appointment. Moreover these are strong and durable, require no luting agent and are cost-effective. It is a fairly predictable procedure, allows for modifications in future. Patients have the opportunity to influence the outcome as well. Their involvement in the treatment process makes them more likely to be satisfied with the final result.

Conclusion:

Based on the esthetically satisfactory results obtained with direct veneer composite in these two cases, it can be concluded that direct composite veneer is an esthetically acceptable and successful treatment option.

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