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Research Article

DIRECT COMPOSITE VENEERS: AN ESTHETIC DEMAND IN MODERN TIMES

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ABSTRACT

Introduction: Restoring esthetic appearance of patients is one of the leading treatment modality in routine dental practice. Discolorations of anterior teeth are fairly common with varying etiologies. In recent times, concept of minimal tooth preparation and improved esthetic properties of composite resins, composite veneering has gained importance. Low cost, reduced treatment time and improved esthetics have envisioned composite resin as an alternative treatment to ceramic laminates.

Case Report: The present case report describes 3 cases of composite laminate veneers as an alternative treatment to ceramic veneers for management of discoloration and esthetics. All cases were completed in single appointment with followup of one year.

Conclusion: Composite laminate veneers can be considered as an alternative treatment to ceramic veneers with reduced cost and treatment time.

INTRODUCTION

The concept of no preparation or minimal-preparation has followed the development of appropriate enamel bonding procedures.[1]New ceramic and composite are the material of choice for conservative treatments of compromised anterior teeth. Laminate veneers of anterior teeth are restorations which are envisioned to correct existing abnormalities, discolorations and esthetic deficiencies such as rotated teeth, coronal fractures, congenital or acquired malformations, diastemas, discolored restorations, palatally positioned teeth, absence of lateral incisors, abrasions and erosions.[2] The cosmetic improvement of the smile is possible with both direct and indirect techniques . Direct laminates are applied on tooth surfaces after minimal tooth preparation and applying composite resin directly on the tooth in single appointment. As composites have achieved excellent esthetic characteristics in recent times, they have become appealing and demanding restorations.[3] Low cost, easy to repair cracks or fractures, intraoral polishing, acceptable price, no need for an additional adhesive cementing system are some advantages of this technique.[4,5] Also, marginal adaptation is better than that of indirect laminate veneer restorations [6]. However, the main disadvantages of direct laminate veneers are low resistance to wear, discoloration and fractures.[6,7]

Indirect additive veneering which was introduced in the 1980s have high resistance against attrition and fractures[6] and discolorations[8] compared to direct laminate veneer restorations. However, long chair time, higher cost and use of an adhesive cementing system are the main disadvantages of indirect laminate veneer restorations.[7,9]

Restoration of missing dental tissue with resin composites is quick, minimally invasive, and inexpensive and the resulting restorations are easy to repair, if necessary.[10] In the present case report, direct composite laminate veneer technique was used in three patients to treat discoloration in the anterior dentition with thin composite laminate veneers andto restore esthetics and function.

CASE REPORT

Case 1

A 26 year female patient with concern about discoloration of anterior teeth was referred to the department of conservative and endodontics. There was no positive findings from her past medical history. Patient was unhappy with her smile and gave history of similar findings amongst people residing in nearby areas. On intraoral examination, there was generalized mottling of enamel and yellowish discoloration of teeth with white opaque bands in enamel near the cervical areas of crown (Dean's Fluorosis index score- 4, Figure 1). A diagnosis of fluorosis was made based on history and clinical examination.

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Different treatment options were explained for managing discoloration but she rejected crowns and indirect ceramic veneer as treatment options. Therefore, after taking written consent direct composite veneer restoration for anterior teeth was planned.

Figure 1

After giving local anesthesia, tooth preparation was done first on right maxillary central and lateral incisor with tapered round diamond instrument and air-water coolant to a depth of about 0.5 to 0.8 mm on the labial surfaces of the teeth. Tooth preparation was done in three planes with cervical plane being parallel to long axis of teeth without damaging natural gingival contours. Finished tooth preparation resulted in chamfer edge gingival margin. Interproximal extension was kept facial to the contact area with no unsupported enamel areas (Figure2). Once the cavity preparation was completed, shade was selected as A2 on the Vita scale using adjacent and contralateral teeth as reference. Similar procedure was followed for left maxillary central and lateral incisors.

Teeth were then etched with 37% phosphoric acid (Tetric-N-etch) for 15 seconds, rinsed with water spray for 20 seconds and dried slightly. Total etch adhesive agent (Tetric- N- Bond, Ivoclar Vivadent) was applied in thin layers on the prepared tooth surfaces by using a applicator brush and polymerized with a light-curing unit (Woodpecker Lux curing light,Unicorn Denmart, New Delhi) for 20 seconds. Translucent matrix bands were cut and placed interdentally around mesial and distal margins and retained with appropriate size wedges Also A2 shade opaquer(3M ESPE, USA) was applied over dentin to mask the reflection of dentin shade and cured for 40 seconds. A2 shade composite (Tetric-N-Ceram, Ivoclar Vivadent, Schaan, Liechtenstein)was applied in incremental fashion and cured for 40 seconds. Similar procedure was followed for left maxillary central and lateral incisors.Finishing of composites was initiated first a yellow-banded knife-edge bur (Mani, INC. Japan) was used in a high-speed handpiece (NSK Pana Air, Japan). For advanced polishing, Super-Snap Rainbow Technique Kit (SS, Shofu) from coarse (black) to fine (red) grit polishing disks were used in different dimensions (Figure3). Patient was instructed to maintain oral hygiene and recalled for followup after 6 months to evaluate for discoloration and disintegration.

Figure 2

Figure 3

Figure 4 .1 year follow-up

Case 2

A 17 year female patient with aesthetic complaints due to intrinsic stains on maxillary anterior dentition presented to department of conservative and endodontics (Figure 1). On examination, mild intrinsic discolorations were seen over the incisal and middle third aspect of anterior teeth. Also there was class 4 incisal fracture with respect to #31.Initially extracoronal bleaching was attempted as a conservative treatment to lighten the stains, but it resulted in only mild resolution. Patient was unhappy with the result. Therefore, patient was given option for both composite and ceramic veneers, but she opted for composite veneer as treatment option for maxillary central incisors only.

A1 shade was selected on vita scale and tooth preparation for composite veneers was initiated similar to as described in case 1(Figure 2). Preparation was restricted to intraenamel and extended just short of gingival margin. Restorative preocedure similar to case 1 was followed. After final polishing, oral hygiene instruction were given and recalled after 6 months for followup

Case 3

A 26 year female with chief complain of yellowish discoloration of teeth unesthetic appearance of teeth was referred to department of conservative and endodontics. On clinical examination, generalized yellowish discoloration of

teeth and spacing were observed (Figure 9). Also there was generalized pitting of enamel with dean's fluorosis index score of 4. No positive findings with respect to medical history were noted. However, patient complained of similar findings in people residing in nearby areas. Based on history and clinical examination, a diagnosis of Dental fluorosis was made. Different treatment options were explained for managing discoloration i.e. from bleaching to ceramic veneer, but she rejected crowns and indirect ceramic veneers and opted for either bleaching or composite veneering. Initially extracoronal bleaching was done during initial weeks, but there was only mild resolution of discoloration. So, finally composite veneer restoration was executed for both upper and lower anterior teeth.

Figure 5

Figure 6

Figure 7 Finished and polished veneers with class 4 composite build-up in 31

Shade was selected using Vita scale as A1. Tooth preparation was done in similar manner as described for case 1, first for upper six anterior teeth and then lower arch. Etching, bonding and incremental buildup with A1 shade composite was done. Finishing and polishing was done using fine grit diamond burs and finishing disks (Shofu) similar to as decribed for case 1.The procedure was the repeated for lower arch (Figure 10). Patient was instructed to maintain her oral hygiene and recalled for followup at 6 months

Figure 8 Preoperartive photograph showing discoloration and pitting of enamel

Figure 9 Postoperartive photograph

DISCUSSION

In modern times, with increasing esthetic demands, direct and indirect laminate veneers have gained much importance. However, choosing one amongst them depends on economic, social and time as prime factors.[11] Although ceramic laminate veneer restorations have some advantages like color stability and high resistance against abrasion, they are at the expense of multiple appointments and increased cost.[7,12] Additionally, they have some problems of requirement of adhesive cement for bonding to tooth. Composite veneering, on the other hand provides replacement of teeth, with minimal or no additional removal of the intact dentition, to normal form and function with tooth-coloured material. Thus, restoring missing tooth structure has improvedoptical properties and strength, creating life-like restorations.[13] The layering of composite material can be simple, involving one or two shades based on patient's financial commitment and the aesthetic requirement of the patient. Hence, treatment can be completed in single appointment with reduced cost to the patientand no extended laboratory procedures.

In the present case report, all the cases had discolorations of teeth and increased esthetic demand. With Improved material properties, composite resin correct existing deficiencies, increase the physical properties and are now more esthetic options instead of laminate veneer applications.[14]In case 1 and case 2 discolorations were moderate but were not masked even after bleaching. Also age and gender did have influence on esthetics. Class 4 composite buildup was done in case 2 along with composite veneering in anterior teeth. Composite veneering provided not only esthetic but also improved functional and psychological demands of the patient. Case 3 had severe fluorosis with pitting of teeth. Although ceramic veneer would have achieved exceptional results in case 3, patient wanted the treatment to be completed as soon as

possible; therefore, direct composite laminate veneer restorations were considered instead of ceramic veneers. With final postoperative treatment patient had positive feedback in terms of esthetics and function. During followup visits discolorations and disintegration of composite material was checked. Any roughened areas were smoothened with finishing burs and interdental plaque was removed with interdental floss.

CONCLUSION

With the development of newer and advanced composite resins, direct composite laminate veneer restorations can be a treatment option for patients with esthetic problems of anterior teeth. Although composites have disadvantage of wear and discoloration, it can be considered a valuable treatment option where time and economic criteria are of prime importance.

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