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## Case Report

# Direct Composite Laminates - A Case Report

### Abstract

Rehabilitation of lost dental aesthetic is one of the most important concerns for contemporary dentistry. Conservative treatment modality along with aesthetic approaches, such as direct and indirect laminate veneer restorations were the treatment of choice. Laminate veneers are restorations to correct aesthetic deficiencies and discolorations. Direct laminate veneers involve the application of a composite material directly to the prepared tooth surface. This case report discusses the composite mirroring using direct composite laminate veneer technique application to the re-established the aesthetic problems related to discolorations in anterior region.

## Introduction

With the advancement in dentistry, various materials and methods were introduced with aims to achieve aesthetics and successful dental rehabilitation with minimal invasiveness. Among these material, composites are the most dynamic restorative material, especially for the aesthetic dentistry. The aesthetic dentist uses composite in a mirage of indications and techniques. Its uses includes as direct and indirect restorative material on anterior and posterior teeth, correction of erosive and abfraction lesions, bases, liners, core build-ups and post and cores, mock-up for anterior aesthetic or posterior occlusal trial therapy, splinting, provisionalization, gingival stabilization [1].

Direct laminate veneer technique has been developed for advanced aesthetic problems of anterior teeth. When considering the direct anterior restoration in composite, one need to understand natural tooth structure in colour, form, and function, then composite mirroring becomes the objective. Composite mirroring is the replacement of teeth with minimal or no additional removal of the intact, health dentition to normal form and function with tooth-coloured material. Tooth discolorations, coronal fractures, congenital or acquired malformations, diastemas, discoloured restorations, abrasions and erosions are the main indications [2]. With this approach, the restorative dentist must indulge the optical, anatomic, and functional characteristics of natural teeth. In this case report, composite mirroring direct laminate veneer technique, used for the rehabilitation of aesthetic problems related to discolorations due to intrinsic staining.

## Case Report

A 24-year-old female, presented with aesthetic complaints due to intrinsic stains on maxillary anterior dentition (Figure 1). She reported previous bleaching treatment with mild resolution of stain. Oral examination revealed mild fluorosis staining, rotation of tooth #22 and the rest of teeth structures were adequate for composite laminate (Figure 2). Direct composite restorations were considered

treatment of choice due to financial constraint and immediate restoration of problem. Teeth #12 to #22 were also included in the treatment plan due to discolorations and correction of mild rotation to achieve better aesthetic results.

## Procedure

1. Shade selection technique was initiated before tooth preparation. The shade selection technique was followed as:
  - i. Teeth was pumice wash lightly to remove any stains, debris, pellicle, but not much as it may influence the tooth's natural luster and finish as this could affect the shade matching.



Figure 1: Preoperative extraoral view.



Figure 2: Preoperative intraoral frontal view.

- i. The dentin shade was obtained from the gingival third of the tooth where the enamel is the thinnest or (the canines can be used because of high chroma). Clinically, this was accomplished by placing a minimal thin convenience form of the shade in the gingival third and light curing.
  - ii. The enamel shade was conveniently obtained in the middle third of the tooth, where the enamel is the thickest. The incisal or translucent shade is observed in the incisal third of the tooth, where the enamel is the thickest and there is little dentin opacity. In most anterior teeth the translucent zone carries into the transitional line angle zones.
  - iii. This was used as an alternative technique to colour mapping while doing the aesthetic composite restoration. The colour mapping procedures were lengthy and often the operator's eyes fatigue physically and mentally.
  - iv. Aesthetic Pre-recontouring mock-up using the selected shades was done without adhesive technique. Once satisfied, procedure was initiated.
1. Preparations of labial surfaces were limited to enamel borders with cervical areas preparation finished at the gingival margin (Figure 3).
  2. With the preparations finished, translucent matrix bands were placed covering the mesial and distal surfaces of the teeth, engaged to the cervical area with appropriate wedges; 37% phosphoric acid (Etching Gel, Kerr, USA) was applied for 30 seconds, rinsed with water spray and allow to dry slightly.
  3. A one-bottled bonding agent (Adper Single Bond, 3M ESPE, USA) was applied in two layers to prepared surfaces and polymerized with the light-curing unit for 20 seconds. B2 shade was selected. A B2 dentin shade composite resin material (GC Gaenial, GC Corp., Tokyo, Japan) was applied and polymerized with the light-curing unit for 40 seconds. Then, B2 enamel shade of composite material (GC Gaenial, GC Corp., Tokyo, Japan) was applied gradually to the whole labial areas of the teeth and polymerized for 40 seconds every time.
  4. Finishing was achieved with a yellow banded diamond bur (Acurata, Germany) in a high-speed hand piece. Then, polishing discs (UltraGloss Composite Polishing System, Axis, U S A) were used in a low-speed hand piece (DURAtec 2068D, Germany) for fine polishing from coarse to fine grits.
  5. Once procedure is over, the patient was instructed to maintain oral hygiene and was scheduled for control appointments once every 6 months (Figures 4, 5).

## Discussion

Composite mirroring is the replacement of teeth, with minimal or no additional removal of the intact dentition, to normal form and function with tooth-coloured material. In composite mirroring, the restorative dentist chooses an enamel and dentin replacement material that emulates the missing tooth structure in optical properties and strength. When used properly, the composite mirroring system



Figure 3: Intraoperative view minimal enamel preparation.



Figure 4: Postoperative frontal view.



Figure 5: Postoperative extraoral view.

of layering is crucial in creating life-like restorations in strength and aesthetics. 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. The purpose of composite mirroring system of layering is to establish the aesthetic, strength and optical properties to the restoring dentition.

As stated, direct composite veneers using composite mirroring system of layering rehabilitate existing aesthetic deficiencies and discolorations. Minimal necessity for tooth preparation, reversibility of treatment, no need for an additional adhesive cementing system and low cost compared with indirect techniques and other restoration approaches are advantages of direct composite laminate veneers. Intraoral polishing is easy and any cracks or fractures on the restoration may be repaired immediately intraorally and marginal adaptation is better than that of indirect laminate veneer restorations. Furthermore as noted, technician related problems during shade



harmonization, long chair time for repairing simple fractures and technique sensitive cementation procedure are problems with indirect restoration [3-5].

With the increase in superior physical properties of composite resin, they are applicable for more aesthetic options such as laminate veneer. The advantages such as one appointment treatment completion, low costs compared with the ceramics and no lengthy laboratory procedures; direct composite laminate veneers are more popular in today's dentistry. Conversely, it may create thin layers over surfaces, which are at risk under mechanical load. When restoring the anatomy and function of teeth with minimal tissue loss, direct composite veneers using composite mirroring system of layering can be used [6-9].

### Conclusion

Although some disadvantages are noted, especially fragility and discolorations, when applied judiciously, direct laminate veneer can be a treatment option for patients with aesthetic problems of anterior teeth and with maintainable hygiene practice.

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