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Case Report

Smile makeover with direct veneering using minimally invasive approach- Case report

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Abstract

A beautiful smile can significantly enhance a person's overall attractiveness and confidence. In esthetic dentistry, achieving a balance of brightness, beauty, and believability is crucial. Patients often seek treatments not just for aesthetics, but also to improve their self-esteem and social interactions.

Direct composite veneers are minimally invasive, functional, and long lasting 'aesthetic restorations' that perfectly mimic the natural dental tissues, allowing the operator to oversee and evaluate the entire procedure from shade selection to final morphology usually in a single appointment. These have often been heralded as a more conservative alternative to porcelain. When executed correctly, the aesthetic results of direct composite veneers are highly satisfactory, exhibiting excellent optical and physical characteristics. Direct veneering performed with 'U Veneer' template system introduced by Australian-based dentist, Dr. Sigal Jacobson, is an innovative approach that improves patient's aesthetic needs. This case report describes a step-by-step one-day smile makeover with direct composite veneers.

Key Messages: Direct composite techniques, particularly when utilizing innovative methods such as the U-veneer template system, are more cost-effective than indirect methods. They offer reliable results, enhance efficiency, and improve patient comfort.

Keywords: Minimally invasive aesthetics, U Veneers, Direct composites, Diastema, Discoloration, Smile.

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1. Introduction

Direct composite veneers are common treatment options, following the developments in adhesive system,[1] which involves less tooth reduction, less chairside time and are economical.[2] Indirect veneers serve as a viable option for aesthetic concerns. However, this approach necessitates several appointments and increased chairside time.[3]

The creation of freehand composite veneers is still considered quite a challenging procedure for dentists to perform. So a new system with more conservative approach, the U veneer, has recently been introduced. The U veneer technique provides a fast and predictable way to create anatomically beautiful direct composite veneers in a fraction of the time.[4]

The objective of this case report was to restore the aesthetics and symmetry of the smile using U-veneers as the chosen restorative technique. These case reports details a comprehensive one-day smile transformation utilizing direct composite veneers on the anterior teeth, providing a step-by-step guide.

2. Case Presentation

2.1. Case History

A 24-year-old male patient reported to the department with a chief complaint of an unattractive smile due to pitted, discolored upper anterior teeth. A complete history of the patient as well as preoperative photographs were taken. Intraoral examination revealed 3mm diastema between central inscisors, white spot lesions and mild dental fluorosis involving the upper and lower teeth. (**Figure 1a,b).** Teeth responded positively for pulp sensibility test and there was no periapical lesion evident on radiographic examinations. The patient was explained about various treatment options. After evaluating all the options, the treatment plan was established to include a smile makeover using direct composite veneers,

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focusing on the maxillary incisors to canines, all completed in a single appointment.

First, flat-surfaced round composite button samples in different shades were placed on the middle third of the maxillary right lateral incisor to select the perfect natural shade. The teeth were isolated and retracted with cheek retractor. The selection of U-veneer template of all teeth was done **((Figure 1c)**. Minimally invasive preparations rather than full veneer preparations were performed on maxillary central incisors to canine. The depth of the preparations was limited to enamel. The layering of the restorations was carried out one by one for each tooth.

2.2. Restorative procedure

Following isolation, 37% orthophosphoric acid was applied selectively for 15 sec, washed and dried, and a universal adhesive agent was applied (G-Premio Bond, GC, Japan**) ((Figure 1d).** By using U veneer template (ULTRADENT), composite (SHOFU BEAUTIFUL 11 Universal) was adapted on the tooth surface followed by light curing for 20 seconds. Interdental polishing was carried out with interdental strips in different grains from coarse to fine (Epitex, GC, Japan). Marginal roundings and line angles were created by using polishing discs in different grains from coarse to fine (SofLex, 3M, Japan). Coarse polishing of the surfaces was carried out with a spiral, rubber polishing disc (Twist Dia, Kuraray, Japan). Surface micro-texture was created for each tooth with a red-banded diamond bur at very low speed, in one direction and under dry condition. Same procedure was followed for all teeth (**Figure 1e)**. Oral hygiene instructions were given and the patient was called for recall visits at 3, 6 and 12 month and yearly intervals (**Figure 1f**).

2.3. Case 2

A 21-year-old male patient reported to the hospital with a complaint of fractured teeth and spacing in upper anterior teeth. He reported history of trauma two months ago. Intraoral examination revealed Ellis class 2 fracture in relation to 21 and 2mm diastema between centrals and laterals. Teeth responded positively to sensibility test and there was no evidence of periapical lesion on radiographic examination **(Figure 2a,b**). Case was planned and discussed with the patient, for a smile make-over with direct composite veneers primarily on maxillary incisors to laterals in a single appointment. The anterior rehabilitation procedure was followed similar to case report-1. **(Figure 2c,d,e)**

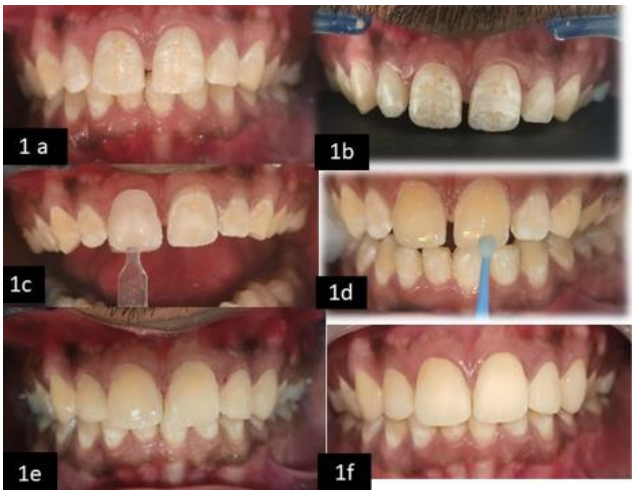

Figure 1: ***a,b:*** **P**re-operative pictures; ***c*****: S**election of templates; ***d:*** Bonding protocol; ***e:*** **P**ost-operative picture; ***f:*** 6 months follow up.

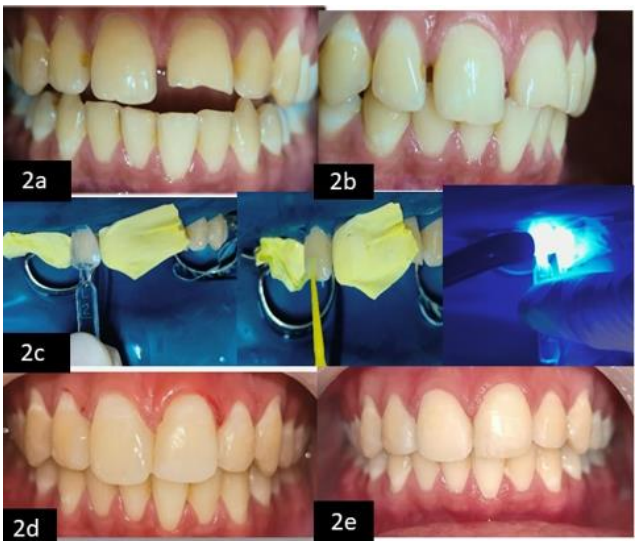

Figure 2: ***a,b:*** Pre-operative pictures; ***c:*** Templates selection, etched, rinsed, bonded. Followed by composite application; ***d:*** Post-operative Aesthetic Smile after Finishing and Polishing; ***e:*** 6 months follow up.

3. Discussion

Smile designing is a technique in aesthetic dentistry that involves a series of minimally invasive procedures to improve the appearance of a smile that is compromised by various factors such as teeth alignment, shape, color and spacing. The need for aesthetics among the people, motivates them to seek dental treatment which is often dictated by cultural, ethnic and individual preferences.[5] So, in this case report, a simple U-veneer template procedure was carried out to enhance the patient's esthetics by a more conservative approach.

Several treatment alternatives are available, including ceramics, indirect veneers, laminates. While ceramics are aesthetically pleasing and represent a viable therapeutic

choice for these situations, their expense is considerably greater due to the need for a laboratory phase, in addition to often requiring more tooth reduction.[6]

Indirect veneers requires multiple visits, reshaping of natural teeth in order to fit the veneer, removal of surface structure leading to sensitivity, failures due to debonding & fracture and also need for a temporary restoration between appointments.[5,11,12] Whereas direct composite restorative techniques are generally characterized as minimally invasive, easy to apply, cheaper, and repairable.[5,7]

By analyzing social and economic expectations and treatment needs, it is possible to select the suitable diagnostic and treatment technique. This ensures the success of the therapy and the durability of the restorations.[3]

Considering the optical (color stability) and physical properties of the direct composites, the treatment method with direct composite restorative material in a single visit was preferred in these case reports, which indeed provided symmetrical and harmonious restoration of the teeth.[8]

A research study examined the long-term clinical performance of direct anterior composite restorations. Clinical investigations that assessed the survival rates of anterior light-cured composite restorations, with a minimum follow-up period of two years, were reviewed, revealing survival rates that varied from 28.6% to 100%.[9]

Patient presented with anterior spacing, discoloration and white spot lesions in case report-1, and in case report-2 , diastema and Ellis class 2 fracture in relation to 21. So in order to establish both functional and aesthetic integrity, U-veneers direct composite technique was considered.

The U-veneer template system has been introduced, facilitating a placement protocol that is user-friendly, time-efficient, and offers enhanced predictability, which is anticipated to lead to increased acceptance among both clinicians and patients. This template system ensures a precisely contoured facial surface and eliminates the oxygen-inhibited layer. It is designed for quick application, is easy to manage, and does not necessitate any additional polishing steps on the buccal surface. It is also available in different sizes. It can be cleaned with saline or alcohol after use and can be autoclaved. Similar techniques such as, waldent myveneer composite template system, customized single tooth template system-c veneers [5] etc., are also available.

In this case report, nano composite material (SHOFU BEAUTIFUL 11 Universal) was selected, as nano composites are the most aesthetically pleasing and appropriate restorative materials.[10] Studies also confirmed that the nano composites show superior performance in bond strength, compressive strength studies.[13] Color matching and stability are the essential considerations in restorative dentistry, as they contribute to the longevity and esthetic appeal of the restorations. Composites with nanoparticles and more filler content are anticipated to be more color-stable.[14]

The limitation of this study is the need for longer follow-up, apart from the 6-months recall period**.** Advanced composites can provide significantly improved long-term outcomes.

4. Conclusion

In conclusion, direct composite techniques, particularly when utilizing innovative methods such as the U-veneer template system, are more cost-effective than indirect methods. They offer reliable results, enhanced efficiency, and improved patient comfort.

5. Patient Consent

Taken.

6. Source of Funding

None.

7. Conflict of Interest

None.

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