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Integrating Techniques in Aesthetics: Modified Putty Index and Direct Composite Veneer Cases

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Abstract

Anterior aesthetic restorations demand precise tooth form, shade, and function. Composite resin provides a versatile, minimally invasive solution for fractured or discoloured anterior teeth. This report presents two clinical cases illustrating distinct composite-based approaches. The first case demonstrates the correction of midline diastema using a modified putty index matrix with a
mylar strip, providing accurate palatal contour, proper proximal contacts, and controlled incisal edge morphology. The second case describes a direct composite veneer for a discoloured
maxillary anterior tooth, highlighting careful shade selection, incremental layering, and meticulous finishing to achieve natural aesthetics Both techniques yielded satisfactory functional and aesthetic outcomes, emphasizing the importance of case-specific technique selection.
Integrating these approaches improves the quality and predictability of anterior aesthetic restorations.

Keywords: Composite resin restoration, anterior aesthetics, putty index, direct composite veneer, discoloured teeth, midline diastema, single visit procedures

Introduction

Achieving esthetic excellence in anterior restorations remains a constant challenge in restorative dentistry, particularly when dealing with complex cases such as diastema closure, fluorosis, or tooth wear. Maxillary anterior spacing or discoloration is a common aesthetic complaint of patients.[1] Fluoride-induced enamel alterations present as surface hypermineralization with subsurface hypomineralization, typically appearing as white opacities with secondary brown stains. The success of treatment for fluorosed teeth largely depends on the severity of the condition.[2] Recent advancements in aesthetic composite resin materials have enabled properties closely resembling those of natural teeth, both physically and mechanically, while providing an appearance that mimics the translucency and colour of natural dentin and enamel.[3]

Discolorations of teeth or restorations, fluorosis, dental malformations or mal-positions, diastemas, crown fractures and abrasive or erosive defects are some examples of up-to-dateindications of direct composite veneers.[4] Direct composite veneers have gained popularity as a minimally invasive, cost-effective, and reversible treatment option that provides excellent esthetics and function while preserving natural tooth structure.

For cases such as midline diastema putty index technique can prove a boon. This technique provides exact palatal anatomy in large defects and can also be

used to restore multiple defects such as fracture and diastema at the same time.[3]

This paper presents two clinical case reports highlighting the use of the modified putty index and direct composite veneers as conservative and effective approaches for anterior esthetic rehabilitation.

Case Reports

Case 1

A 23-year-old male patient reported to the Department of Conservative Dentistry and

Endodontics, Government Dental College and Hospital Chhatrapati Sambhajinagar, with the chief complaint of spacing and fractured upper front teeth and wished to get them restored for aesthetic purposes. He gives history of fall 5 years back along with history of composite restoration procedure. A discoloured old composite restoration was noted with tooth 21. Ellis class 1 fracture was noted with tooth 11 (Fig.1). Investigations carried out with radiographs and vitality testing showed no signs of pathology with preserved vitality. Direct composite resin restoration was planned using putty index technique. Treatment procedure was explained to the patient and informed consent was taken.

As per the patient's request, a single-visit treatment plan was chosen. Rubber dam application was done. (Fig.2) A preliminary impression was taken with silicone impression material palatally.(Fig.3) The section was checked intraorally for accuracy of fit, which would later function as a reference guide and rigid template for reconstructing the palatal enamel.

The impression was the modified chairside(Fig.4) during the same appointment to match the desired final contour, and its palatal adaptation was re-verified intraorally. The index was cut at the desired locations to facilitate the placement of the mylar strips between the two teeth to be restored. It maintains the proper midline contour of both the teeth.

The old restoration was removed and a long bevel was prepared on the labial surface of the teeth to eliminate unsupported enamel margins and enhance the available surface area for bonding. (Fig.5) Shade selection was done using the button method. All exposed facial and lingual surfaces of the affected teeth were etched with 37% phosphoric acid for 15 seconds, followed by the application of a bonding agent which was then cured. (Fig.6 and Fig.7)

A thin layer of composite resin was then adapted onto the palatal portion of the modified putty index, positioned intraorally, and light-cured for 30 seconds. The matrix was carefully removed, leaving a stable palatal layer of composite bonded to the teeth. The teeth were then restored individually by incrementally adding composite over this rigid palatal foundation. (Fig.8 and Fig.9)

The mylar strips were placed and proximal contours were adapted. Occlusion was evaluated and necessary adjustments were made, followed by finishing and polishing with polishing discs.

Interproximal areas were refined using finishing strips, and the patient was provided with oral hygiene instructions for maintaining the restorations. (Fig.11)

Case 2

A 37-year-old female patient reported to the Department of Conservative Dentistry and Endodontics, Government Dental College and Hospital Chhatrapati Sambhajinagar, with the chief complaint of discoloured upper anterior teeth and wanted to get them treated for aesthetic concerns. On examination, brown stains were observed on the maxillary central incisors along with incisal caries with tooth 11. (Fig.13) Radiograph of the same show's caries involving one third of the dentine. The remaining tooth structures were adequate for both teeth for composite laminate veneer restorations Among the different treatment options given patient opted for the direct composite veneers. Treatment procedure was explained to the patient and informed consent was taken.

Following rubber dam isolation, removal of caries was done (Fig.14). Under water cooling, 0.8- mm-deep preparations were made on the labial surfaces of the teeth. The cervical margins were positioned at the level of the gingiva by creating a cervical step, ensuring the natural gingival contour was not disturbed. (Fig.15)

Shade was selected as B1 on the Vita scale. 37% phosphoric acid was applied to the enamel surfaces for 15 seconds, rinsed with water spray for 20 seconds, and gently air-dried. A bonding agent was then applied

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in two layers using a applicator tip and light-cured for 20 seconds. (Fig 16 and Fig.17)

In order to mask the discolorations on the prepared surfaces, opaque A2 shade composite resin was applied to and polymerized with a light-curing unit. Later, the cavities were filled with B1 shade of composite resin incrementally and polymerized each time for 20 secs. (Fig .18)

Finishing and polishing procedures were done. (Fig.19)

Discussion

The two presented case reports highlight conservative and predictable approaches for anterior aesthetic rehabilitation using direct composite restorations. Both the modified putty index technique and direct composite veneers offer significant advantages in terms of minimal invasiveness, cost-effectiveness, and reversibility compared to indirect restorative options.[5] With direct composite restorations, the putty index aids in re-establishing tooth form and

function by accurately replicating the palatal contour. It also serves as a template for proper placement of the restorative material, assessment of cervico-incisal length and thickness, and allows clinicians to carefully preplan the procedure in advance.[6] Placement of a flexible mylar strip prevents composite from bonding to the adjacent tooth, and when used during labial build- up, it assists in achieving the desired anatomic contour along with a smooth, highly esthetic labial surface finish.[7]Several authors have described using a putty index alone or in combination with PTFE (Teflon) tape for anterior composite restorations. However, PTFE tape is difficult to manipulate and remove, and it does not allow proper labial contouring, leading to risks such as gingival overhang—so in this case report, a mylar strip was used instead.[3] The

chairside modification of the putty index can be done within an appointment making it a single visit procedure, eventually saving patients time.

For diastema closure, porcelain veneers and crowns are viable treatment options; however, in the current era of minimally invasive dentistry, conservative approaches are generally preferred.[8] Excellent results have been shown by various authors who have used composites for diastema closures. [9,10]

Direct composite veneer restorations are applied on prepared tooth surfaces or even without any preparation, with an adhesive agent and a composite resin material directly in a single visit in the dental clinic.[11] The advantages of this technique include single visit restorations, the probable absence of tooth preparation, lower cost compared to indirect and prosthetic approaches, reversibility of the procedure, and the elimination of the need for an additional adhesive cementation system.[4]

Direct composite veneers serve as a reliable treatment modality for cases involving discolorations, fluorosis, minor malformations, diastemas, and erosive or abrasive defects. In fluorosis cases, the first-line conservative approach is often vital bleaching, which is particularly effective for superficial discolorations. However, its effectiveness diminishes in cases of severe intrinsic staining. A major limitation is the risk of prolonged sensitivity, resulting from elevated intrapulpal temperature and inflammatory changes linked to hydrogen peroxide application. In severe cases of fluorosis, management often requires masking the affected teeth with restorations such as composite veneers, porcelain veneers, or full-coverage crowns.[12] In the present case, however, a minimally invasive approach was chosen, utilizing a direct composite veneer to successfully mask fluorosis-related brown stains while providing both esthetic enhancement and functional restoration.

Direct composite resins provide excellent smoothness, strength, esthetics, and ease of handling. They require only minimal tooth reduction, and their shade-matching and blending properties allow them to closely replicate the natural color and contour of teeth.[13]

Both techniques have the greatest advantage of producing maximum results in a single appointments time and can be utilized in cases where patients cannot afford another visit.

However, are technique-sensitive and require adequate operator skill to achieve optimal results.

Factors such as shade selection, composite layering, finishing and polishing, and occlusal adjustments are ritical to the long-term success of these restorations.

Literature supports that direct composites, when properly executed, can provide long-term clinical performance with good esthetics and functional

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stability. [15-16] Patient-related factors, including oral hygiene maintenance and functional habits, also play a vital role in longevity [17].

Conclusion

These case reports reinforce that modified putty index and direct composite veneer techniques are practical, conservative, and highly effective solutions for managing anterior esthetic concerns. The choice between techniques should be guided by the clinical scenario, defect extent, and patient-specific requirements. Both approaches emphasize the importance of minimally invasive dentistry while delivering esthetically pleasing and functionally durable outcomes.

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Figures

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Fig1. Preoperative photograph showing midline diastema

Fig 2. Rubber Dam isolation with split dam technique

Fig3. Impression of the teeth taken with addition silicone to obtain a putty index

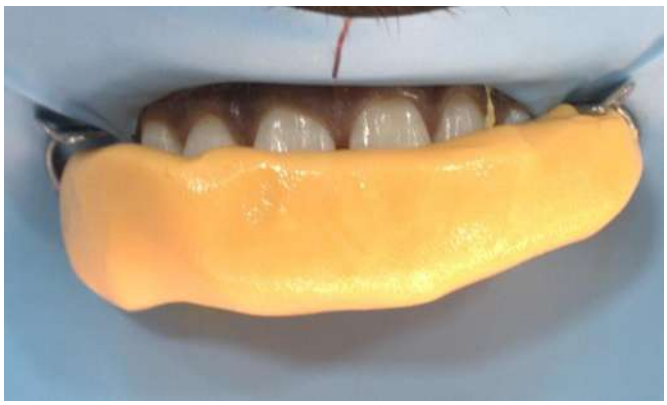

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Fig 4. Modified Putty index

Fig 5. Removal of old composite restoration

Fig 6. 37% phosphoric acid etchant is applied

Fig 7. Application of bonding agent

Fig 8. Curing of composite

Fig 9. Composite buildup with the help of index

Fig 10. Placement of mylar strips to achieve contour

Fig11. Completion of composite buildup

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Fig12. Final Composite Resin Restoration after finishing and polishing

Fig.13 Preoperative photograph showing fluorosis

Fig.14. Rubber Dam Isolation with gingival retraction cord placement

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Fig15. Preparation of margins

Fig16. Acid etching of the teeth

Fig17. Bonding Agent is Applied

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Fig 18. Composite Layering Done

Fig19. Finishing And Polishing Done

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