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Case Report

NEW APPROACH OF ESTHETIC RESTORATION USING PUTTY MATRIX TECHNIQUE

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ABSTRACT

Direct anterior composite restorative procedures have gained a lot of popularity in the recent years due to their advantages such as immediate esthetics, minimal invasion, cost effectiveness, adhesion to tooth structure and as a chairside restorative modality. The predictable esthetic restoration of fractured incisal edge of maxillary central incisors is a demanding and technique sensitive procedure. Its success is dependent on operator's skill, knowledge, and also on adhering to a systematic and problem solving approach. It is important that not only the anatomy is replicated, also the various shades are placed in accurate thickness and position. This perfect blend of accurately placed shades gives the most natural and esthetic outcome. The current report is about esthetic restorations in maxillary central incisors using a putty matrix. A systematic and problem solving approach made possible an esthetic outcome of the case and resulted in an extremely satisfied patient.

Key words: Anterior composite , Ellis class I &II , Esthetics , Putty matrix.

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INTRODUCTION

Composites are one of the most used materials for rehabilitation of anterior teeth defects, so an extensive knowledge on use of this material is essential for a clinician.[1]One of the main challenges in anterior composite restorations is in establishing and reproducing the proper contour and contact form. Matrix application is a critical step in achieving this objective in anterior composite restorations.Injuries in the anterior region of the teeth commonly causes various complications such as crown fractures which may or may not involve dental pulp. Uncomplicated crown fractures (Ellis class I & II) can be easily build-up with direct composite resin using techniques like putty matrix.[2]This technique provides exact palatal anatomy in large defects and can also be used to restore multiple defect at the same time.[3] This case report describes a technique that uses a custom made matrix to replicate the palatal contour and restore the form and function of the teeth using direct tooth colored restorative materials.

CASE REPORT

A 26 years old female patient reported to the department of conservative dentistry and endodontics, Maitri Dental College and Research Centre with the chief complaint of fractured upper front teeth (Figure1) since past 6 months and desired to get them restored. Patient gave a history of fall from the stairs following which her anterior teeth get fractured. Clinical examination revealed an uncomplicated crown fracture seen with maxillary central incisors(11,12) involving only enamel and dentin. The teeth were sensitive to cold food and beverages with

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no other associated hard and soft tissue injuries to the surrounding structures. Vitality of the teeth were assured via electric pulp tester which showed normal pulp response, radiograph did not reveal any significant periapical pathology. Based on all these evaluations, a direct composite restoration was planned using a putty matrix technique. A preliminary impression was made using dental alginate (Dentsply) following which a diagnostic cast was obtained. A diagnostic wax up done on the cast using inlay wax(Figure 2) and a putty index was created (Figure 3,4). Shade selection was done using VITA shade guide.(Figure 5).The index was then split into two halves in the mesio-distal direction to obtain palatal and labial halves respectively. The palatal half was then checked intraorally for the fit, which will later serve as the reference guide and act as a rigid template to reconstruct palatal enamel (Figure 6). A long bevel was then given on the labial aspect of teeth to remove unsupported enamel margin and also to increase the surface area. After appropriate shade selection of the direct composite material (IvoclarVivadent) and isolation, all of the exposed facial and lingual surfaces of the affected teeth were etched using 37% phosphoric acid for 15 seconds followed by application of bonding agent. Composite material was then placed in the palatal portion of the previously made reference guide in thin layer of 0.5 mm which was then placed palatally into the patient's mouth and cured for 30 seconds. The matrix was then carefully removed leaving behind a rigid layer of composite bonded to the teeth as shown in (Figure 7). The teeth were then restored one by one by subsequently adding composite superficial to this rigid palatal composite layer. Occlusal correction and necessary adjustment were made followed by finishing and polishing using polishing discs. Interproximal finishing was accomplished using finishing strips. The final outcome of the treatment was shown in (Figure 8).The patient was given oral hygiene instruction how to take care of her restorations.

Figure 1: Pre- operative view

Figure 2: Study model with wax build up

Figure 3: Putty index preparation

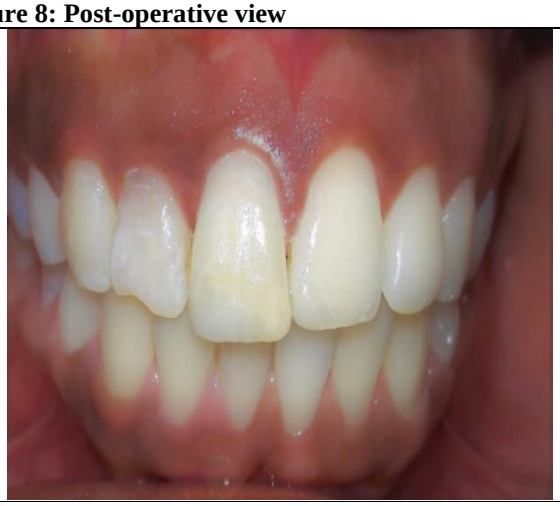
Figure 4: Putty impression

Figure 5: Shade selection

Figure 6: Putty index in patients tooth

Figure 7: Palatal shelf build up

Figure 8: Post-operative view



DISCUSSION

Composite restorations offer a cost effective treatment alternative where esthetics is a major concern. The survival rates of these anterior composites were reported to be extremely satisfactory even in patients with worn dentition.[4]

Dental tissue loss due to trauma has various impacts such as loss of function, esthetics and psychological problems.[5]In case of uncomplicated crown fractures, direct adhesive resin restoratives serve as cost effective and a chairside treatment modality. With the advancing technology and improvements in the bonding systems there is increased success rate of such restorations even further.[6] Management of anterior teeth fracture is a great challenge for clinician from esthetic point of view.[7] Considering the socioeconomic status and age of patient, in this case, a direct restoration was planned using putty matrix technique. This technique facilitates the reconstruction of the tooth structure by acting as guide that enables the clinician to plan the procedure in detail as the shape, size and inclination of the teeth are predetermined, which reduces the need for adjustment eventually.[8] Besides acting as a matrix, it also functions as rigid plate that acts like a wall to hold the restorative material, determination of incisal edge thickness and cervico-incisal length allowing easy insertion in the portion that needs to be restored.[6,8] Shade selection was done to achieve esthetic excellence. A bevel was created to exposed enamel rods and remove any unsupported tooth structure to ensure good bonding.[6] The layering of the composite resin was done subsequently followed by finishing and polishing to achieve a highly polished surface and a satisfied patient.

CONCLUSION

This matrix technique is a quick, simple and cost effective method in comparison to other invasive esthetic procedures. The matrix also acts like a guide to reestablish lost form of anatomy and contour of the teeth. One can utilize this technique for the restoration of both single as well as multiple teeth. A clinician with any level of experience can use this systematic approach and achieve great results.

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