

Anterior Esthetic Restorations, the Putty Index Technique –A Case report

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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 chair side treatment modality. A traumatic injury to the dental hard tissue is the most common cause of tissue loss in the esthetic zone of the dentition. Esthetic restoration of fractured incisal edge of maxillary central incisors is demanding, challenging & technique sensitive. Its success depends on operator's skills and knowledge. It is important that not only the anatomy is replicated; also, the various shades are placed in proper thickness and position. This case report illustrates the use of a putty index technique for the reproduction of palatal anatomy of the teeth which needs esthetic corrections.

Keywords: Composite resin restoration, Ellis class II fracture, Putty index.

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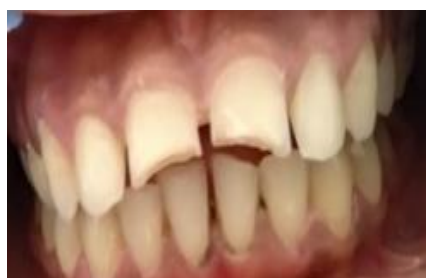
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I. Introduction

Traumatic injuries to the anterior teeth will lead to various esthetic, phonetics and functional problems.¹ Injuries in the anterior region of the teeth commonly lead to complication such as crown fractures which may or may not involve dental pulp. Fractures not involving dental pulp (Ellis class I & II) can be easily built-up with direct composite resin or by using techniques like putty index.² Advantages of this technique is that it provides exact palatal anatomy for large defects and can also be used to restore another defect at the same time.³ Putty index technique can be used to restore angle fracture, midline diastema, incisal edge fracture and for anterior space closure. This case report describes a technique by using a custom-made putty index to replicate the palatal contour and restore the form and function of the teeth using direct composite restorative materials. By using an intraoral mock up and a custom-made putty index, allows dentists to demonstrate their vision for the new smile.⁴

II. Case Report

A 24 years old female patient reported to the department of Conservative dentistry and Endodontics with the chief complaint of broken upper front teeth (figure 1) and (Figure 2) and desired to get them restored.



(Figure1)



(Figure 2)

Patient gave a history of trauma 6 month back due to fall from stairs. Clinical examination revealed an uncomplicated crown fracture with 11 and 21 (Ellis class II fracture) involving only enamel and dentin. The teeth were sensitive to cold with no other associated hard and soft tissue injuries to the surrounding structures. Teeth were non tender on percussion. Vitality of the teeth was checked using Electric pulp tester, on which teeth gave normal response as compared to adjacent and contra lateral teeth. Radiograph did not reveal any significant periapical pathology. Based on all these evaluations, a direct composite restoration was planned using a putty index technique. Treatment procedure was explained to the patient and informed consent was taken.

In the first appointment, after tray selection preliminary impression was made using dental alginate following which a diagnostic cast was obtained. (Figure 3 and 4). A diagnostic wax up done on the cast using modeling wax and a putty index was created (Figure 5, 6, 7, & 8). This index was then split into two halves in the mesio-distal direction to obtain palatal and labial halves respectively. In the next appointment, 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 surface. Shade selection was done. (Figure 9) Bevels were then given on the labial aspect of teeth to remove unsupported enamel margin and also to increase the surface area. (Figure 10).

MAKING ALGINATE PRELIMINARY IMPRESSION



(Figure 3)

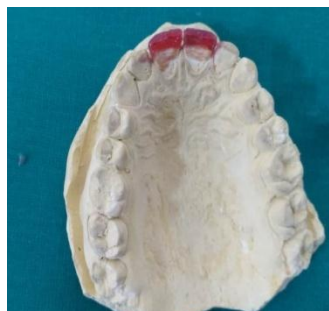


(Figure 4)

WAX BUILD UP



(Figure5)

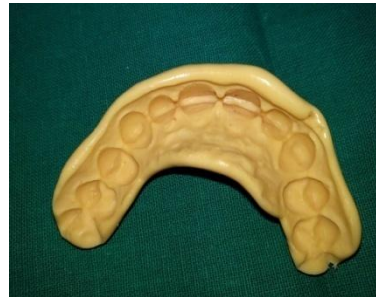


(Figure 6)

OBTAINED PUTTY INDEX

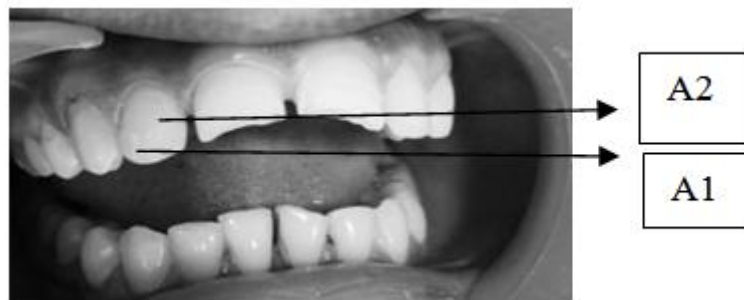


(Figure 7)



(Figure8)

SHADE SELECTION



(Figure 9)

PREPARATION OF BEVEL



(Figure10)

After appropriate shade selection of the direct composite material (DENTSPLY, Spectrum) and proper isolation, 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 (DENTSPLY, Spectrum)

(Figure 11&12).Putty index was then placed in the mouth and checked for proper placement. Putty index was removed and composite material was placed in the palatal portion of the putty index in thin layer which was again placed palatally into the patient's mouth and cured for 30 seconds. (Figure 13& 14) The putty index was then carefully removed leaving behind a rigid layer of composite bonded to the teeth as shown in (Figure 14 &15) which acts as a reference guide for further placement of composite material.



(Figure 11)



(Figure 12)

ETCHING OF SURFACE APPLICATION OF BONDING AGENT



(Figure 13))



(Figure14)



(Figure 15)

PLACEMENT OF PUTTY INDEXOBTAINED PALATAL REFFERENCE GUIDE

The teeth were then restored by subsequently adding composite superficial to this rigid palatal composite layer.After that polishing& finishing was done to get final restoration (Figure 16 &17).



(Figure 16)



(Figure 17)

LABIAL VIEW

PALATAL VIEW

PREOPERATIVE PHOTOGRAPH



(Figure18)

POSTOPERATIVE PHOTOGRAPH



(Figure19)

Figure 18 &19 show preoperative & postoperative photographs.

III. Discussion

Compositorestorationsoffer acost-effectivetreatment alternative where esthetics is a primary concern. The durability oftheseanteriorcompositeswerereported tobeextremelysatisfactoryeveninpatientswithworn dentition.⁵

Loss of dental tissues due to trauma has various impacts such as loss of function, esthetics and psychological problems¹.In case of uncomplicated crown fractures, direct composite resin restoratives serve as cost effective and a chair side treatment modality. With the advanced technology and improvements in the bonding systems there is increased success rate of direct composite restorationseven further⁶. Management of anterior teeth fracture is a great challenge for dentists from esthetic point of view⁷. Considering the socio-

economic status and age of patient, in this case, a direct restoration was planned using putty matrix technique.

This putty index technique facilitates the reconstruction of the tooth structure by acting as a guide that enables the dentists to plan the procedure in detail as the shape, size and inclination of the teeth are predetermined, that reduces the need for further adjustment⁸. Besides acting as an index, it also serves as a rigid plate that acts like a template to hold the restorative material, determination of incisal edge thickness and cervico-incisal length of teeth allows easy insertion in the portion that needs to be restored^{6, 8}.

A bevel was created to expose enamel rods and remove any unsupported tooth structure to ensure good bonding and good adaptation of composite and tooth interface⁶. The layering of the composite resin was done subsequently followed by proper finishing and polishing in order to achieve a highly polished surface and a satisfied patient.

IV. Conclusion

This PUTTY INDEX TECHNIQUE is a quick, simple and cost-effective method in comparison to other invasive esthetic procedures. The putty index also serves as guides to re-establish lost anatomy form and contour of the teeth. One can utilize putty index technique for the restoration of both single as well as multiple teeth. An operator with any level of dexterity can achieve good result by using putty index technique.

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