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Esthetic RehabilitationFor Mutilated Anterior Teeth – A Case Report

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Abstract:*The practical and esthetic reinstatement of severely mutilated anterior teeth is a challenge to clinicians in their daily practice. An endodontically treated anterior tooth requires extra coronal restoration when the tooth structure is weakened or lost due to caries, endodontic treatment, placement of previous restoration and/or is discoloured. The reduced tooth structure makes retention of extra coronal restorations difficult. This article describes a case report on restoration of mutilated maxillary anterior teeth using cast post and core, followed by layered zirconiarestoration.*

Keywords: *cast post and core, esthetics, layered zirconia restoration*

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I. Introduction:

Fractured teeth are always a challenge to the dentist. The root canal therapy today can retain even very badly broken teeth.[1] The reduced tooth structure makes retention of subsequent restoration more challenging. If substantial amount of coronal structure is missing, a post and core restoration is indicatedcast post has the advantage of approximating and adapting to the morphology of the prepared canal.[2]

II. Case Report:

A 23yearold male patient reported to the Department of Prosthodontics, at D.Y. Patil University, School of Dentistry, Nerul, Navi Mumbai with a chief complaint of poor appearance of his front teeth. The patient had undergone endodontic treatment for his five anterior teeth five months ago, due to caries(Fig.1).

Fig. 1: Pre-operative frontal view

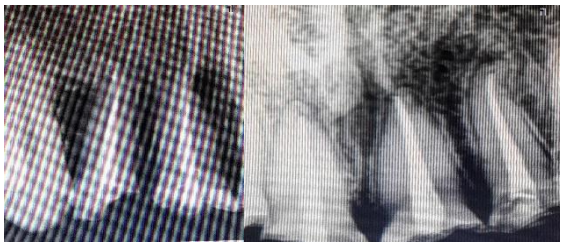

Fig: 2: Pre-operative radiograph

A diagnostic impression was made, and diagnostic casts were obtained. Evaluation was done after analysing the mounted casts and intraoral radiographs (Fig. 2). A multidisciplinary treatment plan was devised, it consisted of crown lengthening procedure for all five anterior teeth, which wereseverely compromised.

This procedure was done to increase crown heightin 11,12,13,21 and 22. After whichcast post were fabricated and restored with layered zirconia crowns.

Initial treatment sequence started with removal of unsupported enamel and caries (Fig. 3). Followed by crown lengthening procedure for 11,12,13,21 and 22(Fig. 4)with osseous reduction with the help of a stent, as it is of paramount importance to the longevity of restored endodontically treated tooth the presence of adequate height (1.5-2mm) of sound tooth structureor ferrule, between the core and the crown margin(Fig. 5).[3]

Fig. 3: Pre-operative frontal view

Fig. 4: Stent prepared for crown-lengthening procedure

Fig. 5: After crown-lengthening procedure

On the next appointment, post space was prepared in 11,12,13,21 and 22 using peaso-reamer. The canal was prepared to have a 5mm of apical gutta-percha to maintain the apical seal. The apical seal and remaining endodontic obturation was confirmed on the radiograph.

The canal space was lubricated using petroleum jelly and impression of post space was made by direct technique using preformed plastic post (PINJET) and relining it with autopolymerising resin (GC pattern resin). Core built-up was also done with autopolymerising resin(Fig. 6).Core was prepared for layered zirconia crown on 11,12,13,21 and 22. Impression was made in irreversible hydrocolloid impression material and cast was poured in type III dental stone. Provisional restoration was fabricated and luted with non-eugenol cement.

Fig. 6: Cast post and core fabrication

Fig. 7: Cast post and core luted

The cast post and corewasluted with glass ionomer cement(Fig.7).Double stage final impression was made usingPolyvinyl siloxane (Aquasil) impression material after the placement of gingival retraction cord. The shade for the ceramic layering was matched with the adjacent teeth.

Provisional restoration was modified and luted back with non-eugenol cement. Individual layered zirconia crowns were fabricated for 11,12,13,21 and 22 and cemented using resin modified glass ionomer cement (Figs. 8).Patient was pleased with the life-like appearance of his new crowns and oral hygiene instructions were given to the patient (Fig 10).

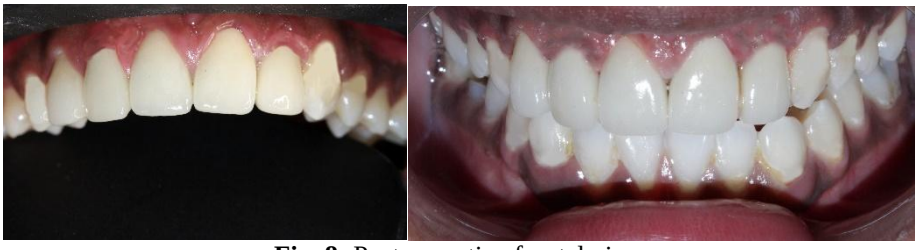

Fig. 8: Post-operative frontal view

Fig 9: Before Prosthesis

Fig 10: After Prosthesis

III. Discussion:

Restoration of teeth become more complex when involved teeth have previously undergone trauma, fractures, endodontic treatment and other idiopathic causes. Excessive loss of dental hard tissues creates difficulties for esthetic outcome of subsequent prosthetic restorations.

The size, form and appearance of the maxillary anterior teeth are important not only for dental but also for facial esthetics. The goal is to restore the maxillary anterior teeth in harmony with the adjacent tissues as well as the facial appearance.[4]

To do so, crown lengthening procedure is advised to provide with a circumferential ring of sound tooth structure, ferrule that is enveloped by the cervical portion of the crown restoration. The ferrule provides bracing or casting action to protect the integrity of the root. cast post has a long history of clinical success.[5]

The cast post core provides a better geometric adaptation for the canals and almost always requires minimum tooth structure removal. The defects in the coronal dentine can be filled with the casting.[6,7]

Layered zirconia restorations combine both the highest esthetics and the strength and flexibility for anterior cases. The zirconia substructure typically has a flexural strength of 1200 MPa, comparing favourably to traditional porcelain fused to metal crowns.

Additionally, extensive laboratory testing has shown the fracture toughness and flexural strength of zirconia is significantly higher than that of alumina or any other all-ceramic materials.With layered zirconia crowns there is no metal to show through and no unsightly black lines at the gingival margins.[8]Also, layered zirconia is now available in different opacities, so that it can now mask the opacity of the cast post and core placed. Layered zirconiarestorations demonstrate outstanding biocompatibility in the mouth.

This clinical report describes an interdisciplinary approach for rehabilitation of severely mutilated teeth by, periodontal treatment to provide sound tooth structure for fabrication of cast post and core and layered zirconia restoration which is both esthetically and functionally satisfying.

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