

**Full Mouth Rehabilitation of Multiple Decayed: A Clinical Case Report**

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**Abstract**

Full mouth rehabilitation requires careful attention and meticulous treatment planning with interdisciplinary approach. It is the biggest challenge to any clinician in Restorative Dentistry. It requires effective diagnosis and detailed treatment planning to develop regulated occlusal contacts and harmonious articulation in order to optimize stomathognathic function, health and esthetics which then translates to patient's comfort and satisfaction. This case report is of full mouth rehabilitation of a 60 years old patient with multiple decayed teeth

**Keywords:** angulation change, everstick post, full mouth rehabilitation

**Introduction**

A pleasant smile is considered a symbol of beauty and well being in the modern society. Teeth have the greatest impact on improving the smile, physical appearance and hence self-esteem. Traumatic injuries are one of the primary reasons for the fracture of upper anterior teeth. The need for the treatment is primarily aesthetics. The restoration is easy to accomplish if the occlusion conforms

to simple class 1 relation. But in cases with malocclusion the treatment is complex and challenging as it is not just aesthetics, it should also be in harmony with the patients existing occlusion.<sup>1</sup>

Gingival Recession is very common in elderly patients. Exposed root surfaces are areas more prone for biofilms stagnation and can result in caries initiation. Demineralization of root exposes collagen fibrils, which can lead to the greater breakdown of dentin. Root caries can also occur when root structure is exposed, cementum has been removed (abrasion, erosion or abfraction) and bacteria enter directly into dentinal tubules without demineralization.<sup>2</sup>

Over the past few years, the development of fiber-reinforced composite (FRC) has offered the dental professional variety of clinical applications. It provides the possibility of fabricating resin-bonded, aesthetically acceptable and metal-free tooth restorations for immediate teeth replacement. This material can be directly processed intraorally, shows good adherence to natural teeth and has adequate strength to withstand masticatory forces. Also,

prefabricated FRC posts composed of glass fibers embedded in a polymer matrix can be considered as viable alternatives to metal post systems in the restoration of endodontically treated teeth.<sup>3</sup>

Every patient management is unique while managing full mouth rehabilitation patient it require knowledge of personality characteristics, expectations of patients and our knowledge of interdisciplinary concepts for understanding various treatment options and outcomes.<sup>4</sup>

This case discusses the rehabilitation of upper anterior teeth using EverstickFRC (GC) as a post system for angulations changes and rehabilitation of the upper and lower jaw with removable partial denture.

### Clinical Report

Female patient, age sixty years reported to the Department of conservative and endodontics, with a chief complaint of fractured and decayed upper front teeth. She gave the history of trauma 20 years back. On clinical examination, mesio-out rotation irt 11, 21 & disto in rotation irt - 13, 23 & class IV fracture irt 11 were seen which resulted in reverse smile arc. Deep dental caries irt 12, 22, 24, 25, 26 were present & 24, 25, 26 were tender on percussion. On examination maxillary and mandibular arches were partially edentulous only 38, 47, 48 were present and 31, 32, 33, 34, 35, 36, 41, 42, 43, 45, 17, 27 extracted due to caries. The patient had a symmetrical facial pattern and a straight profile. During posed smiling, however, there was no gingival display and incomplete upper incisor exposure. TMJ function was normal with no clicking or tenderness. The patient denied of having any parafunctional habits. [Figure 1-4]

Vitality test was carried out, it revealed 11, 21, 12, 22, 24, 25, 26 were nonvital. Preliminary impressions of maxillary and mandibular arches were made using alginate impression material (ALGITEX, DPI). Patient's cast was mounted on a semi-adjustable ARTEXTM articulator with

the face-bow transfer (ARTEXTMA MANNGIRRBACH). Diagnostic mock-up was done to ascertain the treatment plan and final prosthetic outcome. After obtaining necessary approval from the patient the rehabilitation treatment was started. [Figure-5]

After the endodontic treatment of 11, 12, 21, 22 the gutta-percha was removed from coronal two third of the root canals using Gates drills leaving 5 mm of gutta-percha in the apical third. The post space was prepared using peeso reamers. The depth of the prepared canal was measured and the height of crown structure was estimated.

To fit with the diameter of the canal, an EverStick Post with a diameter of 1.2 mm was used. The post was inserted into the root canal to the appropriate depth and the coronal section of the post was shaped to improve support for the crown, and then shortened to an appropriate length with sharp scissors. Post cementation was done using low viscosity dual-cure resin cement (3M™ RelyX™) following the manufacturer's instructions. Core build-up was done using composite resin core build-up material. [Figure-6]

The residual ridge of the lower jaw was smooth and well rounded and the overlying mucosa was firm and resilient inconsistency. Border molding for the mandibular arch was done using pinnacle tracing sticks (DPI) and the secondary impression made using ZOE impression paste (DPI) followed by pick-up alginate impression (ALGITEX, DPI) using functional impression technique. Maxillo-mandibular jaw relation was done maintaining 2 mm freeway space with a minimum overjet and overbite. Try-in for the mandibular denture was done and verified according to aesthetics and phonetics. Rotated and RCT treated maxillary (11, 12, 13, 21, 22, 23, 24, 25, 26) teeth were prepared to receive porcelain fused to metal (PFM) crowns. Definitive impressions were made with

polyvinylsiloxane impression material (Aquasil; Densply USA) putty and light body using two-step technique. Individual PFM crown was fabricated in the lab for the teeth requiring full coverage restoration. Porcelain fused to metal restorations were cemented with resin-modified glass ionomer cement (FujiCEM; GC America, Alsip, USA) maintaining the aesthetics and minimum overjet and overbite. A flexible denture was fabricated for missing 17 and 27 as insufficient abutment bone support precluded the restoration with a fixed prosthesis. The definitive mandibular RPD was fabricated and delivered with minor occlusal adjustment. The prostheses were designed using group function occlusion. Oral hygiene instruction and regular check-up were administered.[Figure-7,8].

### **Discussion**

In the restoration or replacement of traumatized or missing anterior teeth, both esthetic and mechanical considerations should be taken into account. For fractured anterior teeth, there are several treatment alternatives. However, the combination of glass fiber as the post and composite restorations as core material can serve as immediate, minimally invasive, reversible, single visit and cost-effective alternative for anterior tooth replacement.<sup>5</sup>

Fiber-reinforced posts are currently an acceptable treatment modality in the restoration of endodontically treated teeth having little remaining coronal tooth structure. These posts are preferred over metal posts as they have overcome the inherent disadvantage of metal posts, which include root cracking and subsequent root fracture. The fiber-reinforced posts possess a high tensile strength and an elastic modulus similar to that of dentin, thus precluding the possibilities of root fracture in addition to having an aesthetic appearance.<sup>6</sup>

Ever Stick is a type of FRC material that is made from unidirectional glass fibers and a polymer/resin gel matrix. The polymer/resin gel matrix holds the individual glass

fibers in a bundle, which facilitates handling of the fiber bundle. The fiber bundle is flexible and tacky which allows its easy and reliable bonding to teeth. This design makes the glass fibers flexible but prevents the fraying of the material from within the matrix when adapted to a surface. Previous studies have reported that Ever Stick posts have acceptable fracture resistance values ( $950.1 \pm 4.7$  N). This can be attributed to the interpenetrating polymer network(IPN) structure of the post that results in an interdiffusion bonding phenomenon, thus enabling the resin to penetrate the post along with the establishment of a strong bond to dentin via the resin cement. The interlocking of the resin cement into the IPN polymer matrix hence creates a strong bond after polymerization.<sup>7</sup>

Porcelain fused to metal (PFM) shown high structural performance and aesthetic capability with the dependability of more than five decades. Behr et al. shows that PFM crowns showed 96.4% survival rate over 5 years. Layers of feldspathic porcelain are then allowed to fuse to the metal substructure in a high heat oven in order to make it more aesthetically pleasing. It has the property of good marginal finish, can mask stump shade, and has good wear compatibility to opposing teeth. It is a bi-layered restoration and has the long well-documented history of providing lasting service.<sup>8</sup>

The rehabilitation of anterior teeth with crowns and posterior with RPD provides posterior support. This is affordable and common form any patients who require the treatment due to teeth wear. However ,excessive occlusal load can leads to resorption of the residual ridge of the restored anterior teeth if the patient does not wear the RPD. Regular check-up for the occlusal adjustment and RPD fitting is essential & the education on wearing RPD is necessary. Regular check-up for the occlusal adjustment and RPD fitting is essential.<sup>9</sup>

As it has been stated that management of worn dentition using fixed or removable prostheses is complex and among the most difficult to rehabilitate. Assessment of the vertical dimension is important and a comprehensive treatment plan is required for each individual case. Articulated study casts and a diagnostic wax-up can provide important information for the evaluation of treatment options.<sup>10</sup> In this case anterior esthetic is achieved by using PFM crown. Since there was no loss of VD the occlusion is maintained with the removable partial denture.

### **Conclusion**

There are many challenges in smile make-overs and full mouth rehabilitations, not the least of which is affordability. In this case the main considerations were given to the facial midline, changing the angulation of anterior and also provision of the RPD in posterior region to provide occlusion and function.

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Legends Figure



Figure 1: Pre Operative



Figure 4: Frontal view



Figure 2: Upper arch



Figure 5: Facebow transfer



Figure 3: Lower arch



Figure 6- Crown Preparation



Figure 7: After cementation



Figure 8: Post operative