

# Interdisciplinary Approach as an Aid for Management of Anterior Traumatized Tooth in Esthetically Challenging Case: A Case Report

Syed Shafaq<sup>1</sup>, Santosh Kumar<sup>2</sup>, Shikha Jain<sup>3</sup>, Adeel Ahmed Bajjad<sup>4</sup>

<sup>1</sup>Post Graduate Student Kothiwal Dental College, Moradabad, U.P., India

<sup>2</sup>Head and Professor Kothiwal Dental College, Moradabad, U.P., India

<sup>3</sup>Professor Kothiwal Dental College, Moradabad, U.P., India

<sup>4</sup>Post Graduate Student Kothiwal Dental College, Moradabad, U.P., India

**Abstract:** A case report of 21 years old female patient who accidentally got her maxillary left central incisor fractured is presented. The fracture line was 1mm above the marginal gingiva but the coronal tooth structure present was discoloured, weak and brittle. By means of orthodontic mechanism a healthy tooth structure was brought above the marginal gingiva and was restored with a crown after being endodontically treated. A collaborative approach that aimed in preserving the natural permanent tooth along with a healthy periodontium and an esthetic smile of a young patient rather than extracting the tooth and opting for an implant was attempted.

**Keywords:** Central incisor, esthetic, traumatized, interdisciplinary.

## 1. Introduction

Fracture of a tooth to an extent that the healthy coronal structure below the marginal gingiva presents a difficulty for restorative procedures. Many clinicians consider such cases as hopeless for restoration and consider extraction of these traumatized teeth. Studies<sup>1-3</sup> are showing that such cases can be managed by crown lengthening procedures (electrosurgery of the gingival margins or periodontal surgery). Exposure of clinical crown by gingival surgery is discouraged in anterior tooth region because of compromise in esthetics and the possible adverse periodontal change to adjacent teeth. Orthodontic extrusion what is referred to as 'forced eruption' should be the treatment of choice for such cases<sup>4-8</sup>.

In Orthodontics the easiest tooth movement to achieve is that of extrusion. Minimal force i.e 0.2-0.3 N of force is required for the forced eruption of a single rooted tooth.<sup>9</sup> Forced eruption is usually limited to one, two or three maxillary anterior teeth or premolars with as much as 5 mm of extrusion possible.<sup>10</sup> Various splint and modified Hawley appliances<sup>8,11</sup> have been proposed for orthodontic forced eruption.

It is important orthodontically as well as periodontically to determine any pathologic changes in the tooth supporting structure accompanying forced orthodontic extrusion. Studies reveal absence of gingival migration, pocket formation or inflammation. No clinical or histological pathology was encountered if extrusion was carried properly.<sup>12</sup>

## 2. Case Report

A 21 years old female patient reported with fractured maxillary left central incisor. Because of the patients strong

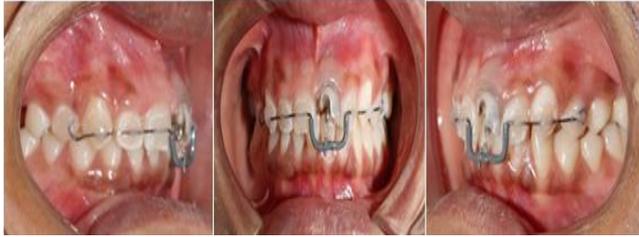
desire to preserve the natural tooth she refused to undergo extraction. The patient had undergone endodontic treatment one month prior to her visit to the department. On clinical examination the fractured tooth (Ellis Class III) was discoloured with only one half of the clinical crown visible. On radiographic examination the tooth was endodontically treated with no periapical pathology. After ruling out any pathology in supporting structures, orthodontic extrusion (Forced eruption) was considered. (Fig1)



**Figure 1:** (A) Patient with fractured maxillary left central incisor. (B). Unesthetic smile with discoloured maxillary left central incisor. (C) Traumatized central incisor with one-half of crown clinically present. (D) Occlusal view of the fractured tooth

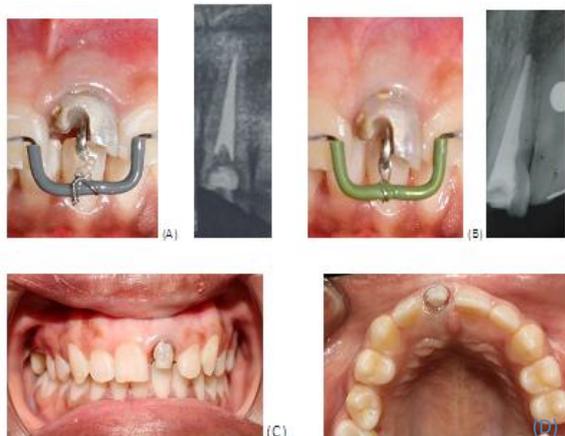
The resorption from the coronal region and 2-3mm of guttapercha from the root canal was removed. A J-hook was

fabricated with 19 gauge Stainless Steel wire and was placed in the root canal and sealed with composite resin. The hook was placed in the canal so that the extrusive force passes from the centre of resistance thereby avoiding any labial or palatal movement of the tooth. 0.018 Australian archwire was cemented on all teeth from maxillary right first bicuspid to maxillary left first bicuspid. The J-hook was actively ligated to the wire using elastomeric chain. (Fig2)



**Figure 2:** J-hook actively ligated to 0.018 Australian archwire cemented from maxillary right first bicuspid to left first bicuspid

The extrusive force on the tooth was activated every week for three consecutive weeks. At the end of third week 3mm of healthy tooth structure was above the marginal gingiva which was sufficient for crown preparation. After 5 weeks of retention the orthodontic appliance was removed and the patient was sent for crown preparation. (Fig3)



**Figure 3:** (A) and (B) shows clinical and radiographic tooth structure before and after orthodontic extrusion respectively.

(C) and (D) Frontal and occlusal view of the tooth after being extruded and prepared for prosthetic rehabilitation. No buccal or labial tipping is seen.



**Figure 4:** Following completion and retention, the patient was referred for porcelain fused to metal restoration.

### 3. Conclusions

The multidisciplinary approach to treatment of various dental problems have been recognized since long. Many

techniques for orthodontic extrusions have been used for forced eruption. In the above case the aim was to extrude the tooth more physiologically preserving the healthy tooth and supporting structure and the line of action of the force was passed from the centre of resistance rather than labially or buccally. It was a combined participation of an orthodontist, endodontist and a prosthodontist. It is clear that without such cooperative action the prognosis would not have been good.

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