

# Orthodontic Extrusion- An Approach to Restore Aesthetics, A Case Report

**Abstract:**

Orthodontic extrusion, a novel procedure that can preserve an otherwise unsalvable tooth, restore one's confidence and rehabilitate the aesthetics. It is opted for its rapid and obvious results. A certain amount of force is applied to tooth's long axis and is subjected to stretch and repositioning in the periodontal fibres without shifting the bone that leads to rapid extrusion of tooth. Although intriguing, it may lead to failure due to its limitations.

**Key-words:** Orthodontic Extrusion, Crown-en-mass, Trauma, Rehabilitation, Restoration, Aesthetics.

**Introduction:**

Traumatic cervical fractures are a common occurrence that can be successfully treated with orthodontically extruding fractured teeth. Heithersay first introduced the Orthodontic Extrusion approach in 1973, and Ingber expanded on it in 1974 and 1976. The root's long axis must be subjected to a force of 60-70P for an effective extrusion.[1]

The rapid extrusion causes the periodontal fibres to be stretched and realigned without significantly changing the bone. As a result, it can be accomplished without a coronal displacement of marginal bone, which makes it easier to perform coronal restoration.

An extrusion of 3–4 mm is predicted with periodic evaluation and assessment, with 6 mm as the maximum.[2] Due to the greater risks of relapse, although being a simple procedure, success might be challenging. Rapid extrusion causes the marginal periodontal fibres to remain stretched, which reverses the condition.[3,4]

To reduce the chance of relapse, fibrotomy has been advised both before and right after the extrusion. Additionally, gingival recontouring to establish an optimum relationship between the gingiva and the restoration's margin.

Rapid extrusion may also have an impact on the root. Studies have found the areas of radicular resorption laterally however, histologically, apposition of cellular cementum was also noted.[5]

In this case report, an orthodontic extrusion procedure was carried out on an endodontically treated tooth with a crown-root cervical fracture.

**Case Report:**

A crown en mass fracture in the left maxillary Central Incisor owing to trauma was reported by a 32-year-old patient to the department of Conservative Dentistry and Endodontics. Ten years ago, patient met with an accident-causing trauma, for which endodontic therapy was administered. Three days back patient met with another accident and lost his crown leaving the root fragment only.

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The damage resulted in Elli's Class VIII fracture of the left maxillary central incisor, with the fracture borders spreading sub-gingivally, according to the intraoral and radiographic examination. (Fig 1a, 1b). Orthodontic extrusion of 21 followed by pericision, construction of a core with a fibre post, and restoration of the tooth with a porcelain-fused-to-metal crown was planned as the root length was adequate on radiographic analysis.



Fig. 1 (a)

Fig. 1 (b)



Fig. 2 (a)

Fig. 2 (b)



Fig. 3



Fig.4



Fig.5(a)



Fig.5(b)

**Orthodontic Extrusion:**

The tooth had previously undergone endodontic treatment; therefore, a gap was made inside the canal to accommodate a metal post, and an orthodontic wire measuring "0.016\*0.022" was engaged to the appropriate metal post that had been placed inside the canal. The wire was wrapped and were luted with glass ionomer cement with the medium-2 size metal

post. Additionally, a thick arch wire was light-cured with composite buttons from 11 to 22. The hefty arch wire was wrapped in the post-luthered wire, which was then tightened until the patient felt pressure.(Fig. 2a, b)

To continuously apply pressure to extrude the tooth throughout the course of the following three months, the wire was tightened every week by two folds. (Fig. 3) Dontrix gauge was used to measure the force and for 3-4 weeks was activated and 5-6 weeks the tooth was left in position for periodontal ligament relaxation. As there was good anchorage control so there was no intrusion or effect on anchorage teeth. Gingivoplasty and fibrotomy, which enhance stability and aesthetics, were done after that. Metal arch-wire and post were taken out once extrusion was finished. A core made of flowable composite material was formed around a fibre post. (Fig. 4) Afterward, a porcelain fused-to-metal crown restoration was done to reconstruct the tooth. (Fig. 5a,b)

The height of the gingival margins of 21 differed between the pre- and post-treatment intraoral observations, which were compared. Thus, gingivoplasty was performed. The root apex of 21 has migrated coronally by 3mm, according to radiographs taken before and after the therapy. No signs of root resorption were discovered.

### Discussion:

Orthodontic Extrusion, often referred to as orthodontic forced eruption, is the coronal forceful extrusion of a tooth to modify the surrounding tissues and the tooth's position. The treatment of non-restorable teeth seems to be successful using this straightforward and aesthetically pleasing method.[2,5] It offers trustworthy outcomes and can be used as a line of treatment without specialized care. According to some reports, when a tooth extrudes, the gingiva and alveolar bone around it may also extrude, necessitating a surgical incision either immediately after the extrusion or before the stabilization phase. After 7–14 days of non-surgical or surgical periodontal therapy, the epithelial healing around the teeth is completed.<sup>7</sup> Radiographs and photographs do not suggest any tipping and torquing of any involved tooth. Extrusion of about 3 mm has been effectively detected at a follow-up of three months with an extrusion rate of 1 mm/month, without any pathological or clinical problems.[8]

### Conclusion:

In this case study, Orthodontic Extrusion was chosen over surgical extrusion to improve the stability and aesthetics. There are very small chances of root resorption with this safe and simple therapeutic technique. Relapse is always a possibility, hence fibrotomy should be done after extrusion to reduce this risk.

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