



An unusual case of fracture healing

- A one year follow up

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Introduction:

Facial trauma have become common these days due to increase in RTA and varied sporting activities. This often is related to fractured anterior teeth, which can range from a simple enamel fracture to a complex root fracture. The most common teeth to get affected are the maxillary centrals 68% and laterals 27%. 5% of root fractures are found in mandibular incisors (Caliskan & Pehlivan 1996). As the complexity of the fracture increases the prognosis and the treatment planing becomes a challenge for the attending clinician. The treatment also varies from a simple composite restoration to root stabilization. Root fractures are the difficult ones to handle due to the unpredictable healing. Based on the location of the fracture line they are named as apical third, middle third and cervical third of the root. Fractures in the middle third of the root are the most common to occur (Andreasen et al. 1989). The treatment plan varies according to the site of fracture and even the prognosis differs.

The healing of the fracture line shows four different types: (I) interposition of calcified tissue (callus formation); (II) interposition of bone and connective tissue, which is characterized by peripheral rounding of the fracture's ends; (III) interposition of bone and connective tissue, radiologically characterized by the clear separation of the two fragments; and (IV) interposition of granulation tissue, caused by an infected or necrotic pulp (Andreasen et al. 2007). The treatment goes conservative in case of all favorable fractures whether there is little or no displacement much of fracture segments, in case of mid root horizontal fracture where the coronal segment is slightly displaced from the apical segment and when the situation is not favorable then extraction is the only choice. The acceptance of extraction among patients especially when it comes to anterior teeth is almost a big no. Here we present one such case which was deemed poor prognosis and extraction was advised. But we thought out of the box to treat a mid root displaced fracture and thus avoiding extraction . It turned out to be successful.

Case Report:

A 15 years old male presented to the Department of Conservative Dentistry and Endodontics with a chief complaint of pain, swelling and mobility in upper right front tooth region (11) following road traffic accident fifteen days back. On clinical examination 11 elicited grade 1 mobility with ellis class III fracture(fig1). Ellis class II in case of upper left central incisor. The swelling present a mild inflammatory one. The radiographic findings were fracture line extending horizontally at mid root level of 11 with mild displacement of fracture segments. Vitality test was done on the adjacent teeth using EPT and they all elicited vital response. Co relating the clinical findings and the

radiographic findings the provisional diagnosis was Ellis class III fracture of tooth with mid root horizontal fracture. It was almost decided for extraction, but the persistent request from the young patient and his parents, we deviated the thought process of treatment planning and decided to make an attempt of intra radicular stabilization of course with the help of MTA. The age and the general health of the patient was on our side. Access cavity was prepared and complete extirpation of the pulp was done under local anesthesia. Cleaning and shaping was performed in the first appointment and apex was enlarged unto 60 size ISO (DENTSPLY, USA). Calcium hydroxide (Apexcal - Ivoclar) was placed as an intracanal medicament and closed dressing was given, along with anti inflammatory drugs. Patient was recalled after two days and was found to be completely asymptomatic. After anesthetizing the patient the end of F1 gp was used to position the fragment segments (fig 2). Flowable MTA (Endoseal MTA) was placed crossing the fracture segment and allowing MTA to flow between the fracture segment since the joining of the segments was not possible under finger pressure. FRC post was placed beyond the fracture segment and luted with self cure luting cement (Multilink N). The core build up was done with composite and external splinting was done to make sure that the fragments stay in place. (fig 3). The patient was reviewed every week and radiographs were made to keep a close eye on the healing and prognosis of the treatment. Patient was asymptomatic during the first week follow up itself. The splint was retained for 6 weeks. Now its just more than a year and the tooth is doing great.

Discussion:

The most common teeth are the upper incisors to get insult by road traffic accident. Based on the impact of trauma tooth involving, dentin, pulp and cementum gets affected along with alveolar bone compromising the periodontal ligament (Welbury et al 2002). The common scenarios are extrusion, subluxation and lateral luxation of the teeth. In this case the patient reported almost after two weeks of the trauma with swelling and pain. Pulp extirpation was done and cleaning and shaping was performed for the patient to relieve from pain and swelling. Calcium hydroxide was given for two days with anti-inflammatory drugs and patient became asymptomatic.

The fracture segments were repositioned and being an unfavorable fracture flowable MTA was used at the apex and also made to flow in between the fractured segments. Because MTA has the ability to attract osteoblasts and cementoblasts and they promote healing and good seal and the same was noted in this case. The radiographs show them clear. To reposition the fracture segment an FRC post was chosen for internal splinting. FRC post was chosen in this case instead of the metal one due to the compatible physical properties of the post and also the bondability. Also the metallic post might hinder with the healing process.

The post was luted crossing the fracture segment with resin cement and core build up was done to place the external splinting. The external splinting was retained six weeks and later removed. After removal the patient was asymptomatic and no signs of mobility in 11. The patient was recalled once in every three months. The healing

was satisfactory clinically and radiographically. The flowable MTA and its property to promote healing played a vital role in the success of this case

Conclusion:

Trauma management sometimes is more traumatic than the trauma itself, especially when it comes to extraction of teeth. Due to increased awareness among patients and the importance given to look no one wants to lose their teeth, This push from the patient sometimes makes us think laterally to come out of the routine dentistry and perform procedures like the one mentioned in this case report. Endodontics is always an enigmatic branch due its unpredictable healing and there is always a quest to make this a predictable one, with newer medicaments and irrigants. One such material is MTA and in this case it was the flowable MTA which made the magic. In conclusion thinking out of the box is a must for a clinician to try out alternate procedure and to report to other co clinicians too, of course with a sound academic logic.



fig 1



fig 2



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