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SPONTANEOUSLY HEALED ROOT FRACTURE IN MAXILLARY CENTRAL INCISOR: REPORT OF A CASE

MAKSİLLER KESİCİ DİŞTE SPONTAN İYİLEŞMİŞ KÖK FRAKTÜRÜ: BİR VAKA RAPORU

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ABSTRACT

Root fractures of maxillary incisor teeth are more frequent than other root fractures. This study describes the horizontal root fracture of a maxillary left central incisor. 46 years old male patient had reported a falling trauma, occurred 26 years ago. The tooth was asymptomatic and vitality test of the tooth was positive to the electrical stimulations. The fractured root was spontaneously healed and diagnosed during a routine radiographic examination

Key words: Asymptomatic Fractured Tooth, Radiographic Examination, Dental Injuries.

ÖZET

Üst çene kesici dişlerin kök kırıkları diğer kök kırıklarından daha sık görülür. Bu çalışma sol üst çenede santral kesici dişin kök kırığını anlatmaktadır. 46 yaşındaki erkek hasta 26 yıl önce düşerek travmaya uğradığını belirtti. Diş asemptomatikti ve elektriksel uyarıya pozitif vital olarak cevap verdi . Kırık kök kendiliğinden iyileşmiş ve rutin radyografik muayane esnasında teşhis edilmiştir.

Anahtar kelimeler: Asemptomatik Kırık Kök, Radyografik Muayene, Dental Yaralanma.

Root fractures are rare comprising only 0.5-7% of all dental injuries in the permanent dentition.[1] The most common age range for root fractures involving the permanent dentition in children is between 11 and 20 years with 75% affecting maxillary central incisors.[2] The etiology of root fractures can be classified in two groups: 1) endodontically treated teeth and 2) non- endodontically treated teeth.[3] Horizontal root fractures have been reported to occur in less than 3% of all dental injuries.[4] These fractures are more likely to take place in fully erupted permanent maxillary central incisors with completely formed root.[5] Horizontal root fractures most often occur in maxillary central incisors and are frequently seen in the middle – third of the root followed by apical and coronal third fractures.[6]

Generally, fractured roots are diagnosed shortly after the injury but occasionally they are identified at subsequent routine dental examinations. Clinical management of a fracture depends on its position and the extent of root involvement. Conservative treatment of the root fractures below the alveolar crest may require reduction of the dislocated fragment, immobilization and relief of the occlusion.[7] However, spontaneous healing of the root fractures without any treatment is also reported.[8-10] This case report presents the spontaneously healed horizontal root fracture in maxillary central incisor.

Case report

A 46-year old male came to the Inonu University Faculty of Dentistry Department of Oral and Maxillofacial Radiology clinic with the complaint of periodontal problems. Routine examination of full mouth radiographs revealed a horizontal root fracture in the apical third of the maxillary left central incisor

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(Fig.1). The patient reported an accident, which had occurred 26 years ago. He had fallen on a tent pole and had a trauma to his face. Since then no complaint relating to this teeth had occurred even the patient had not been referred to a dentist. Clinical examination of the left central incisor revealed that it was asymptomatic; there was no discoloration, no mobility, no tenderness or pain to percussion or palpation. Soft tissue examination showed no sign of fistulae (Figs. 2a, 2b). Vitality test of the tooth was positive to the electrical stimulation and cold pulp test. Radiographic examination revealed no periapical or periradicular pathology (Fig.1).

Figure 1. Periapical radiogıraphy

figures 2a and 2b. Intraoral images of case.

DISCUSSION

The majority of the traumatic dental injuries still involve the anterior teeth, especially the maxillary central incisors.[2] The most frequent etiologic agents were falls, car accidents and physical assaults, which agree with the findings of the other studies.[11] Boys are more susceptible to traumatic injuries due to their greater involvement in sports activities, car accidents and fights.[12] Root fractures are generally defined as those that involve the dentin, cementum, pulp and periodontal ligament. Healing was seen in 74% of all cases which were damaged by this way.[13] Root fracture healing is, by its nature, complicated event, being very dependent upon pulpal and periodontal healing processes and bacteria entering the coronal part of the pulp, which subsequently will arrest the healing process in the fracture area. Under optimal conditions (no displacement of the coronal fragment), healing process will take place by differentiated odontoblasts and cementoblasts whereby the hard tissue union between the fragments.[14] The accepted treatment procedure for the root-fractured teeth has been repositioning and rigid splinting for 2-3 months.[10] Purpose of the treatment is to maintain the vitality with adequate observation period. If the vitality control reveals non-vital pulp tissues or if the patient had complaints about the tooth, then endodontic therapy can be performed.[3] Repositioning supposedly facilitates pulp revascularization in the coronal part of the pulp. The final tissues healing -dentin and cementum- depend upon the activity of odontoblasts.[15] Andreasen&Hjorting-Hansen had classified the type of fracture healings. The first type of healing is with interposition of hard tissue. The second type is with interposition of connective tissue. The third type is with interposition of bone and connective tissue between the fragments. The fourth type is with interposition of granulation tissue that means no healing.[14] In a study healing with hard tissue was seen 33%, healing by interposition of only periodontal ligament was 36%, healing with interposition of bone and periodontal ligaments was 8% and no healing was 23%.[15] In this case according to the radiographic examination, there are individual small root fragments between the main root fragments (Fig.1). Healing process was completed probably by surrounded with the periodontal tissues.

It's likely that, the small gaps occurred between the root fragments during the trauma, had ossification process after several years and the periodontal tissues had surrounded the fracture edges. Therefore, this type of healing is likely to be the third type of healing.

It is concluded that the fractured roots can be healed without any treatment. The root fractured teeth with no or slight loosening of the coronal fragment and with no bacteria entering the coronal part of the pulp, may preserve the pulp vitality, even so 26 years after the trauma had occurred.

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