Surgical Endodontics for Traumatized Young Permanent Teeth

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Abstract: A clinical follow-up study on traumatized young permanent teeth which treated by surgical endodontics was made. These teeth had progressive root resorption, ankylosis, or endodontic-periodontic lesions. The cases included 3 teeth from 3 patients aged 8 to10 years at their initial visits. The treatments were curettage and resin filling of resorption cavities before intentional tooth replantation or surgical extrusion. Successful treatment relies on the complete removal of granulation tissue or the protection of resorption cavities by resin filling, and the proper splinting.

Keywords: root resorption, endodontic-periodontic lesion, surgical endodontiucs

Introduction

Immature permanent teeth often developed complications after luxation injuries and crown-root fracture. These complications include progressive root resorption, ankylosis, and endodontic-periodontic lesions as a long-term reaction to the injuriy.

Although there are many studies on the traumatized teeth, these do not demonstrate enough consistent data which support any treatment method for those teeth with the complications. The purpose of this study was to evaluate clinically surgical treatment for teeth with the complications. Herein, we report 3 cases of traumatized young permanent tooth which developed the complications after trauma and treated by surgical endodontics .

Case Report

Case 1. *[Chronic crown-root fracture]*

10 year- old girl C who had crown-root fracture in the maxillary right central incisor at 8 years of age, was referred to the Pedodontic Clinic of Tokyo Medical and Dental University (T.M.D.U.). The coronal part of this fracture line were covered by resin composite at the day of trauma in a dental office outside of our university. Radiograph of the maxillary right central incisor showed fracture lines at fist visit (Fig.1-a). The tooth had high mobility and endodontic-periodontic lesions. Then, professional tooth cleaning was perfomed and proper tooth brushing instruction was given after splinting with adjacent teeth. After 1 month, resin composite and the mesial colonal flagment was removed. The pocket depth was 17mm at mesial-palatal root surface(Fig.1-b). The root was then extracted and inspected for additional fractures(Fig.1-c). The tooth was extruded 3‡o with rotating 180°(Fig.1-d), and was splinted with adjacent teeth. The root canal was preparated and filled with calcium hydroxide, and temporary crown was formed by resin composite. The root canal was filled with gutta percha months after extrusion(Fig.1-e,f). 6years after the operation, periapical state seemed to be satisfactory in radiograph (Fig.1-g). It suggested that the new periodontal attachment was got on the surface of fractured root.

Case 2. *[Apicocurettage of the traumatic intruded tooth with root resorption and inflaocculsion]*

10 year-old boy Cwho had intrusion in the maxillary right central and lateral incisors by fallig down 5 months earlier, visited to the Pedodontic Clinic of T.M.D.U.. His chief complaint was subacute gingival abscess of the maxillary right lateral incisor at first visit. Atrophy and abscess were seen in the labial gingiva of maxillary right incisors. Apical root resorption and periodontal radiolucency were visible in the radiograph(Fig.2-a). These teeth had endodontic retreatment. After 2years, the infraoccluded central incisor formed a gingival abscess, and radiograph showed that root resorption and apical radiolucency(Fig.2-b). The presence of resorption and infraocclusion suggests that there will be high risk of ankylosis and root fracture if intentional tooth replantation is performed. Therfore, after the lingual flap had elevated, the central incisor had curettment of granulation tissue•iFig.2-c•j and was splinted with adjacent teeth. Radiographs in 1•iFig.2- to 8 months (Fig.2-e) after operation showed acceptable periapical state, but mild root resorption continued from 1 year (Fig.2-f) to 16 years (Fig.2-g) after operation.

Case 3*. [Intentional replantation of the luxated and crown-root fractured tooth which had multiple progressive root resorption after endodontic treatment]*

8 year- old boy C who had luxation and crown-root fracture of the maxillary right central incisor by fallig down, referred to the Pedodontic Clinic of T.M.D.U.(ig.3-a). After removing the mesial colonal fragment, the teeth were splinted with adjacent teeth. The ischemic exposed dental pulp was extirepated and filled with calcium hydroxide paste. Temporary crown restoration was formed with resin composite.

Two months after the treatment, multiple root resorptions occurred (Fig.3-b). 1 year and 6 months later, root canal was filled with gutta percha and root canal sealer, however, root resorption continued to extend (Fig.3-c). Therefore ,this tooth was extracted to be treated with curettment of granuration tissue, and curettaged surface was covered with bonding resin (Fig.3-d,e). The tooth was extruded about 4mm to expose palatal cervical root resorption cavity, and stabilized using wire-resin splint(Fig.3-f,g).

Radiographs in 1 month (Fig.3-h)to 1 year (Fig.3-) after operation showed wide periodontal ligament space at the cervical area of the tooth. However, the tooth had periodontal pocket with normal depth and physiological mobility suggesting a satisfactory periapical state.

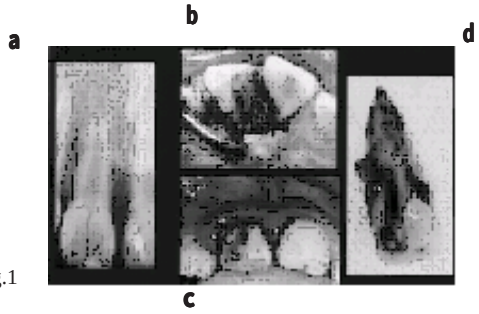
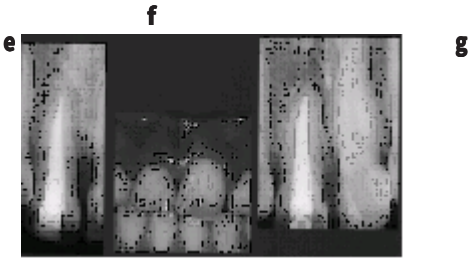


Fig.1



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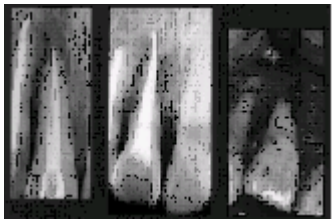

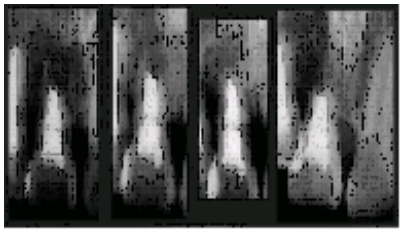

Fig.2

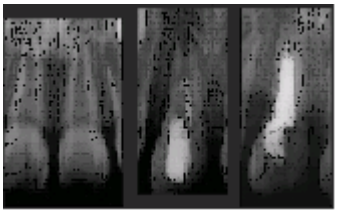

Fig.3

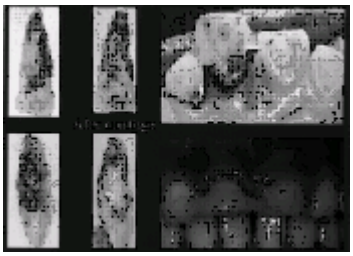

Fig.3