

Clinical management of transverse root fractures

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I. Introduction

Root fractures are relatively uncommon among dental traumas, comprising 0.5-7% of the injuries affecting the permanent dentition and involve dentin, cementum, pulp and periodontal ligament. Transverse root fractures occur most commonly in the maxillary incisors and are usually caused by an injury received in a fight or sporting event or by an object striking the teeth.

Successful management of the transverse root fracture depends on three major factors : the position of the fracture line, the extent of mobility of the coronal segment, and the state of the pulpal tissue. The position of the fracture line and its relationship to the base of the gingival crevice are the most important factors in determining the long-term prognosis for the tooth.

Treatment is usually directed at repositioning and stabilizing the tooth in its correct position and monitoring the tooth for an extended period for pulpal vitality. If pathologic change has been detected, root canal treatment will be followed. However, the chance of healing with calcified tissue is poorest when the cervical third fracture line is very close to the gingival crevice. The treatment option would be removal of the coronal fragment and subsequent orthodontic or surgical extrusion of the remaining apical fragment.

The following presents the different treatment cases of transverse root fracture.

II. Case presentation

< Case I >

Age / Sex: 14 / M

Chief Complaint: Mobility of maxillary anterior tooth

Past Dental History: RCT of #12

Present Illness: Per(+), Mob(2), Fracture line showed at middle 1/3 root of #21

Impression: Root fracture of #21

Tx. plan: Splinting, F/U or RCT of #21

< Case II >

Age / Sex: 14 / M

C.C: Fracture of #11 tooth 7days ago

PDH: Caries treatment of #26

P.I: Severe mobility of #11 Crown portion, bleeding from gingival sulcus

Impression: Cervical transverse root fracture of #11

Tx. plan: Removal of Crown portion, RCT, Forced eruption of #11

< Case III >

Age / Sex: 8 / F

C.C: The patient claimed #11 tooth should be extracted from private dental clinic

PDH: N.S

P.I: Per(+), Mob(1), Fracture line showed at middle 1/3 root of #11

Impression: Root fracture of #11

Tx. plan: Splinting, F/U or RCT of #11

III. Conclusion

If the tooth can be immediately repositioned and properly stabilized, the prognosis of a transversely root-fractured tooth is quite favorable. However, if the fracture occurs in close proximity to the gingival crevice communicating between the oral cavity and the fracture line, complicated and extended treatment regimen may be necessary. By considering the factors which affect prognosis in the transverse root fracture, appropriate treatment option should be performed.