

Unusual Horizontal Root Fracture in a Mandibular Second Molar after Lower Wisdom Teeth Removal

Luiz Fernando Magacho Da Silva, Jonathan Ribeiro Da Silva, Fabrizio Albieri, Rodrigo Dos Santos Pereira

Department of Oral and Maxillofacial Surgery, General Hospital of Nova Iguaçu, Rio de Janeiro, Brazil

Abstract

Dental trauma is a common injury observed at dental practices that normally occurs in young patients. It especially affects the anterior teeth, although trauma to the posterior teeth can also be observed frequently when caused by high-impact trauma and masticatory forces. Horizontal root fracture in the posterior teeth is even more rare and involves a more specific type of trauma. This article reports the case of a second molar root fracture that happened during the removal of an impacted wisdom tooth. The patient had no discomfort associated with the event, and the tooth had no change in sensibility or mobility during follow-up. Seven months after the fracture, there was complete radicular healing even though no treatment was given.

Keywords: Dental trauma, horizontal root fracture, wisdom teeth

INTRODUCTION

Traumatic dental injuries occur predominantly in young patients and in the anterior part of the maxillary bone, often as a result of automobile accidents, violence, or sporting activities.^[1] The incidence of horizontal fractures in permanent teeth ranges from 0.5% to 7% of all traumatic injuries of teeth.^[2] These lesions can be observed in higher incidence in the maxillary central and lateral teeth, with fractures occurring more in the middle third of the root followed by apical and coronal third fractures.^[3-5]

Occlusal trauma is the main etiology for root fractures in the posterior teeth without endodontic treatment; however, its incidence is very low. Vertical fractures are most common mainly in the mandibular first molars.^[6-9] The diagnosis of root fractures is accomplished through clinical and radiographic examination. The first examination includes the evaluation of mobility and the presence or absence of sensibility and pain during a palpation/percussion test. The second examination includes radiographic images, which can confirm the diagnosis but must be performed carefully.^[10,11]

The clinical management of the teeth with root fractures depends on pulp vitality, dislocation of fragments and the location of the fracture line. Healing can occur through hard-tissue deposition or by the interposition of connective and hard tissue between

the fragments, which relies on two factors: pulp integrity and bacterial contamination in the fracture line.^[12,13]

The aim of this article is to report an unusual horizontal fracture of a second molar during wisdom teeth extraction.

CASE REPORT

A 16-year-old patient was referred to the Oral and Maxillofacial Surgery Division of General Hospital of Nova Iguaçu, Rio de Janeiro, Brazil, presenting with pain in the right posterior region of the mandible and history of pericoronitis episodes. The initial radiography demonstrated that the third inferior molar with anterior angulation and the II-A Pell and Gregory classification [Figure 1]. The treatment consisted of removing the dental element under a local anesthesia using lidocaine 2% with 1:100.000 epinephrine (Nova DFL, Taquara, Rio de Janeiro, Brazil). An incision in the retromolar region extending to the vestibular region of inferior second molar was performed. The blade was tilted toward the inferior and an “L” mucoperiosteal

Address for correspondence: Dr. Rodrigo Dos Santos Pereira, Zeferino Street 243, Mesquita, Rio De Janeiro 26551-081, Brazil.
E-mail: dr.pereira@live.com

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How to cite this article: Da Silva LF, Da Silva JR, Albieri F, Santos Pereira RD. Unusual horizontal root fracture in a mandibular second molar after lower wisdom teeth removal. *Ann Maxillofac Surg* 2018;8:344-6.

Access this article online

Quick Response Code:



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DOI:
10.4103/ams.ams_129_18

flap was performed to expose the tooth. After this, an osteotomy was performed in the vestibular region, followed by a dental section in the cementitious junction, a crown separation using a dental elevator, and the extraction of the 2 parts. No abnormal events were noticed during the surgical procedure. Sutures were done using 4-0 Vicryl resorbable thread (Ethicon, Johnson and Johnson, São José dos Campos, Brazil). An immediate postoperative X-ray showed a horizontal fracture of the mesial root of the lower right inferior second molar [Figure 2]. The clinical evaluation presented with no mobility, and because of this, no immobilization was done. After 1 week, the sutures were removed, and the patient reported no discomfort around the lower second molar. Clinical evaluations including pulp vitality tests and tooth mobility evaluation were performed weekly. Seven months later, another X-ray was taken that showed root healing with a small callus and without any trace of root fracture [Figure 3].

DISCUSSION

Posterior dental fractures commonly occur because of occlusal trauma during sports practice, physical injuries, or automobile accidents. Horizontal root fractures are especially rare.^[14] Cobankara and Ungör^[2] reported a horizontal root fracture involving a maxillary first molar caused by an automobile accident. Wang *et al.* reported a series of cases involving posterior teeth root fractures but with no fracture found on a mandibular second molar and with the main etiology being damaging masticatory habits and occlusal forces.^[4] In the present case, the etiology of the fracture was probably the force applied through dental elevators during removal of the wisdom teeth. There were no literature findings that connect wisdom teeth removal to a possible second molar root fracture by the time this article was written.

Horizontal root fractures, with or without initial treatment, tend to heal in 80% of the cases.^[2,3,12,15] This case demonstrates the potential of a nontreated tooth with a horizontal fracture to heal spontaneously. The pattern of healing observed was type 1 as described by Andreasen and Hjørtting-Hansen, where a hard-tissue callus is formed around the fracture, the root is reunited, and the tooth preserves its vitality.^[12] During all postoperative stages, in this case report, the tooth kept its sensibility.

CONCLUSION

Posterior teeth root fractures are normally associated with masticatory forces or external agent trauma. This case report showed a new potential etiology for horizontal fractures of mandibular second molars as well as a new complication to wisdom teeth removal. Oral surgeons should be advised of the consequences of the use of unappropriated movements or forces during tooth extraction.

Declaration of patient consent

The authors certify that they have obtained all appropriate



Figure 1: Preoperative X-ray demonstrating the third inferior molar with anterior angulation and the II-A Pell and Gregory classification



Figure 2: Immediate postoperative X-ray showed a horizontal fracture of the mesial root of the lower right inferior second molar



Figure 3: Postoperative X-ray after 7 months showing the root healing

patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other

clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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