

Case Report

Accidental Displacement of Mandibular Third Molar Roots into the Pterygomandibular Space

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Date of Acceptance:
30-Mar-2018

ABSTRACT The surgical removal of impacted third molars is one of the most common procedures performed in both oral surgery and general dentistry. Accidental displacement of the impacted tooth or root fragments to the adjacent anatomical spaces is a rare but serious complication with even life-threatening complications. This case report presents the diagnosis and surgical management of an accidentally displaced right mandibular third molar root via an intraoral approach.

KEYWORDS: *Complication, impacted third molars, pterygomandibular space*

INTRODUCTION

The surgical extraction of impacted third molars is one of the most common operations, which is performed by oral and maxillofacial surgeons and dentists as well. Indications for the removal of impacted third molars include chronic pericoronitis, presence of cysts or a tumor, periodontal problems, and presence of a carious lesion on the second or third molar.^[1] The possible intra- and post-operative complications associated with this procedure are estimated to be 1.1%^[2] and involve alveolar osteitis,^[3] dysesthesia of the inferior alveolar^[4] and lingual nerves,^[5] hemorrhage,^[6] and infection.^[7] Other less common complications are periodontal pocket formation distal to the adjacent tooth, fracture of the tuber maxilla or the mandible, and damage to adjacent teeth. Another rare complication is the accidental displacement of the fractured roots or the entire tooth into the fascial spaces or inferior alveolar canal.^[8] Although there exist a number of anatomical predispositions contributing to the displacement of mandibular third molars such as distoangular inclination and thin or dehiscence lingual cortex, most of these complications are iatrogenic by inadequate preoperative clinical and radiological examination, lack of experience, and excessive and uncontrolled force.^[9]

This report describes the diagnosis and management of an accidentally displaced fractured mandibular third molar root fragment into the pterygomandibular space.

CASE REPORT

A 33-year-old male patient was referred with the complaints of pain, difficulty in swallowing, and a gradual restriction in mouth opening. He reported an unsuccessful attempt for the surgical extraction of an impacted right mandibular third molar by a general dentist, 5 days before his referral. After a traumatic intervention, he was informed about the accidental displacement of the roots after sectioning it from the crown, as the general dentist had lost visual contact of the roots intraoperatively. Clinical examination revealed a tender indurated swelling on the lingual aspect of the right angle of the mandible. His mouth opening was limited to 12 mm and there were no clinical symptoms of dysesthesia of the lip or tongue. The patient's medical history was otherwise noncontributory. A cone-beam computed tomography (CBCT) (Planmeca, Helsinki, Finland) confirmed the precise position of the root fragment, located lingual to the mandibular ramus, above the inferior border [Figure 1a-c]. Under general anesthesia, a 3-cm mucosal incision was made on the floor of the mouth, 10 mm medially from the extraction socket, extending anteriorly. With utmost care to protect the lingual nerve, exploration with blunt dissection using fine curved mosquito artery forceps was done. Despite

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How to cite this article: Tamer Y, Pektas ZÖ. Accidental displacement of mandibular third molar roots into the pterygomandibular space. Niger J Clin Pract 2018;21:1075-7.

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Quick Response Code: 	Website: www.njcponline.com
	DOI: 10.4103/njcp.njcp_427_17

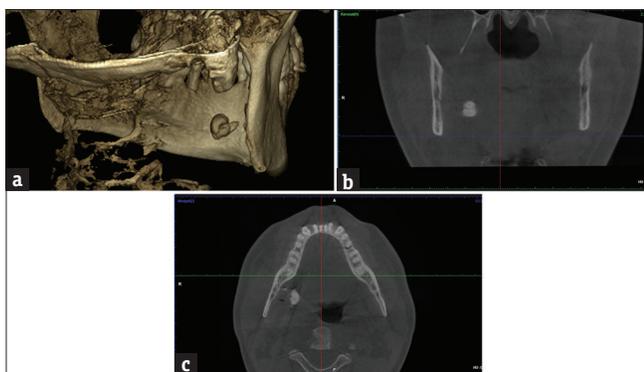


Figure 1: (a) Root fragment located lingual to the mandibular ramus, above the inferior border, (b) coronal computed tomography scan showing the tooth into the pterygomandibular space, (c) axial computed tomography scan taken to determine the precise position of the tooth



Figure 2: Postoperative panoramic X-ray after 3 months

a meticulous and comprehensive exploration, no contact could be established with the root fragment and it was decided to approach from just lingually to the extraction socket of the third molar via a second incision. A crestal mucoperiosteal flap was raised and the granulation tissue was curetted from the socket to improve the vision. The root fragment was reached at the apical area of the socket and retrieved from the medial pterygoid muscle, close to its attachment to the lower border of the mandible. Primary closure of both incisions was achieved with 4-0 vicryl (Doğsan, Turkey). and the patient was placed on a weekly course of amoxicillin 500 mg 3 times a day for 5 days and flurbiprofen 2 times a day as necessary. Postoperative recovery was uneventful [Figure 2].

DISCUSSION

A literature review reveals number of individual case reports of accidental displacement to various anatomical locations, namely, the infratemporal fossa,^[10] pterygomandibular space,^[8] lateral pharyngeal space,^[11] submandibular space,^[12] and sublingual space.^[13] Along with tissue injury, pain, swelling, trismus, foreign body reactions, and significant physical and psychological concerns, the infection caused by dislodged tooth or root fragments may result in life-threatening complications,

such as deep neck infections, thrombosis of the internal jugular vein, erosion of the carotid artery and its ramifications, interference with cranial nerves (IX–XII), mediastinitis, and airway compromise.^[14]

Today, the CBCT is the ideal diagnostic tool with widely accepted advantages over the conventional imaging techniques. Conventional radiography is inefficient in displaying fenestrations of the lingual plate, either caused by anatomical or some pathological resorptive process, because of superimposition. When a CBCT is not available, radiography should be performed in at least two planes.

The timing of the surgical retrieval of the displaced tooth or root segment may be controversial. Some authors advocate the late intervention (3 or 4 weeks following the accident) to allow the encapsulation of the tooth with fibrous tissue, thus stabilizing its position.^[15] This approach, however, necessitates close monitoring with frequent clinical follow-up and radiographic examination. In favor of this concept, Xavier *et al.* presented an accidentally displaced mandibular third molar to the pterygomandibular fossa which migrated spontaneously to the oral cavity. They had observed the exteriorization of the dislodged tooth for 7 weeks and managed to extract it in an outpatient setting, under local anesthesia.^[9] On the other hand, a majority of investigators do not recommend a late intervention, especially if the extraction was due to infections.^[16] Moreover, it may increase the risk of greater discomfort, swelling, trismus, and infection, resulting in a foreign body reaction or migration of the tooth to deeper areas.

Techniques to retrieve a displaced tooth or root fragments may be intraoral, extraoral, or a combination of both approaches, though the intraoral technique utilizing the lingual mucoperiosteal flap from the mandible ramus to the premolar region is more widely used. This facilitates the surgical access to the anteroinferior aspect of the pterygomandibular space with a minimized risk of damaging the lingual nerve, so an extraoral intervention is rarely required.^[8]

Regardless of the timing or the technique used, the accurate localization of the displaced tooth is of paramount importance. This may be somehow challenging because of limited space, hemorrhage, and poor visualization, and moreover, blind probing may result in further displacement, lingual nerve or inferior alveolar nerve impairment. Although an immediate postoperative CBCT was available for the presented case, we could not be able to detect the root fragment through the initial incision that was made just superior to the root fragment. Subsequently, a lingual mucoperiosteal flap via a second incision enabled us to access and to retrieve the

fragment from the medial pterygoid muscle, close to its attachment to the lower border of the mandible, just lying apically to the alveolar socket of the third molar. The medial and slightly superior location of the root fragment was thought to be due to the contraction of medial pterygoid muscle action, during the time span (5 days) between the accident and the surgical removal or due to the “walking” its way out of the root.

The surgical extraction of impacted third molars is frequently performed by the general dentists as well, on an outpatient basis. This frequency may result in a misperception as to consider the operation as relatively “simple.” However, many case reports reveal the complications and life-threatening consequences of this relatively “simple” procedure. As a result, the accidentally displaced tooth or root fragments should be managed by oral surgeons with adequate technical skill and knowledge, provided that a meticulous preoperative clinical and radiographic evaluation has been made.

Declaration of patient consent

The authors certify that they have obtained all appropriate 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

Baskent University supported the study.

Conflicts of interest

There are no conflicts of interest.

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