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CASE REPORT

# Lower third molar displaced to lateral pharyngeal space after mandibular angle fracture: a case report

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## Abstract

The removal of displaced dental elements from deep anatomical spaces is a condition that requires the knowledge of the region and skills to perform the procedure. The lateral pharyngeal space contains important structures such as the internal carotid artery and close proximity with the cranium basis. The aim of this paper is to report a clinical case of a lower third molar displaced to the lateral pharyngeal space after a mandibular angle fracture and its treatment by surgical intervention. The tooth was removed under general anesthesia by direct approach and the fracture was reduced and fixed with a plate and screws. This case report illustrates the importance of an immediate procedure to avoiding severe complications and further damage to important anatomical structures.

**Keywords** Impacted tooth · Mandibular fractures · Molar · Third

## Introduction

The lateral pharyngeal space is a deep anatomic space that contains important structures such as the internal carotid artery, internal jugular vein, and cranial nerves IX, X, and XII [1]. The space is divided into two portions by the styloid process and its anterior and posterior muscles. The first one contains only muscles; whereas, the second has the vessels and nerves as well as connection with the base of the cranium and others anatomical spaces as submandibular and retropharyngeal [1]. The displacement of inferior wisdom teeth into this space has been discussed in literature but only as related to iatrogenic dental extractions. This type of removal is considered an extremely difficult procedure because of the structures inside of the space [2, 3]. The aim of this article is to report a case of mandibular angle fracture dislocating the left third mandibular tooth to the anterior compartment of the lateral pharyngeal space.

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## Case report

A 19-year-old woman was referred to the Oral and Maxillofacial Service of General Hospital of Nova Iguaçu, Rio de Janeiro, Brazil, with pain in the left side mandibular region, presumably incurred after a fall on the ground. During the clinical examination, the following were observed: a severe trismus (around 10 mm), malocclusion, and bone crepitation during mandible manipulation. The patient also complained of dysphagia while swallowing saliva. A computed tomography (CT) scan was performed and revealed a left mandibular angle fracture as well as displacement of the third mandibular tooth to the anterior compartment of left lateral pharyngeal space (Fig. 1).

The patient underwent the surgical procedure in the same day to remove the dental element and fix the fracture. The surgery was performed under general anesthesia and nasotracheal intubation guided by nasofiberendoscope through the right nostril. After this, the mouth could be opened because of muscle relaxation and an increase of volume in the glossopalatine arch. This enabled observation of the position of the inferior third molar (Fig. 2). An incision following the anterior margin of mandibular ramus and extending to the retromolar triangle was performed using an electric scalpel. Posterior to the tooth localization, a digital protection was used during the blunt dissection to avoid its displacement to deeper spaces. Thus, the dental element was captured with a

**Fig. 1** Axial computed tomography image demonstrating the tooth in the anterior compartment of lateral pharyngeal space

Kocher's forceps. After this, the incision was extended to the vestibular region to expose the mandibular fracture, which was fixed with a 2.0-mm plate and screws, according to Champy's technique [4] (Fig. 3). The wound was sutured using 4.0 Vicryl (Johnson & Johnson–São Paulo/Brasil). The patient remained in the hospital to receive 1 g of Clavulin (GlaxoSmithKline, London, UK) intravenously every 6 hours over the course of 3 days because of the dead space caused by the tooth. The postoperative CT scan showed an acceptable reduction of the fracture and no signs of infection (Fig. 4). After 2 months of follow-up, the patient improved her ability to open her mouth and experienced no postsurgical complications.

## Discussion

The presence of a lower third molar that has not erupted increases the chance of angle fractures; however, the avulsion of the dental element in this type of trauma is extremely rare and there are no cases reporting the displacement to deep spaces of the face associated with this injury [5, 6]. The dental displacement to these anatomical cavities normally occurs during iatrogenic dental extractions and is typically caused by inexperienced professionals [3, 7, 8].

**Fig. 3** Trans-surgical image after the tooth extraction and the osteosynthesis of the left mandible angle with a single 2.0-mm miniplate according Champy et al. [4]

Nevertheless, the tooth displacement to lateral pharyngeal space is not common, occurring in few cases [2, 3, 9–12]. In the present case report, we believe that the absence of the lingual portion of cortical bone, which occurs in the contralateral side, facilitated the dental displacement when combined with the direct trauma. The position of the tooth toward the medial direction could also have contributed.

Our choice to remove the tooth immediately was based on previous reports that indicated early procedures help prevent

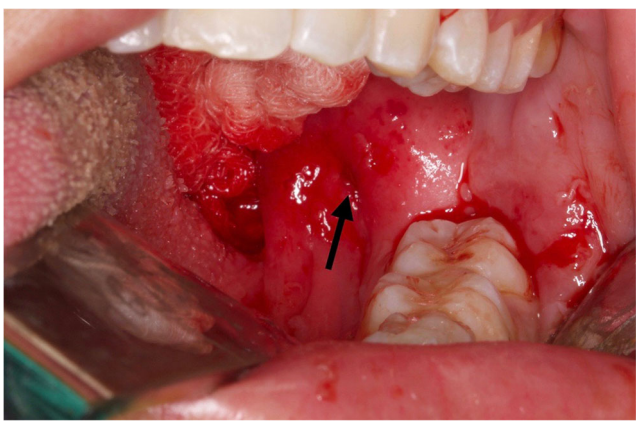

**Fig. 2** Clinical image demonstrating the increased volume in the glossopalatine arch (arrow)

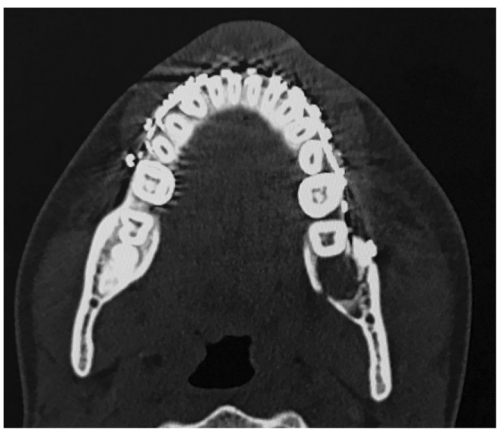

**Fig. 4** Post-surgical axial computed tomography indicating the bone fracture reduction and no signs of infections

injuries to other structures [13]. Some authors reported the possibility of waiting for the formation of a fibrous capsule to facilitate the removal because of its immobilization [7, 13]. Our work showed this would not aid removal and can instead displace the tooth into deeper spaces in the posterior compartment of lateral pharyngeal space through migration. In addition, serious complications can occur during this period including infections, thrombosis of the internal jugular vein, erosion of the internal carotid artery, and interferences in IX, X, and XII cranial nerves [2, 8, 10, 14]. Thus, immediate surgical intervention decreases the postsurgical complications as well as the hospitalization period and costs [15].

In conclusion, we described a clinical case of immediate surgical intervention for a lower third molar displaced to a deep anatomical space associated with a mandibular angle fracture. The approach to these cavities depends on the surgical team's knowledge and skills, exams and images of the injury, and the intention to decrease postsurgical complications. This case report illustrates the importance of an immediate procedure to avoiding severe complications to important anatomical structures.

## Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical statement** All procedures performed in case report involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent** Informed consent was obtained from participants included in the case report.

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