**Case Report**

# Maxillary Third Molar Tooth Accidentally Displaced in Buccal Space: Two Cases Report

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**ABSTRACT**

The extraction of retained and completely impacted third molars is one of the most common surgical procedures performed by dental practitioner's with low rates of complications. The accidental displacement during the surgeries of the maxillary one into adjacent anatomical spaces is one of the most critical problems that can arise. The most common sites of migration during surgical interventions is the infratemporal fossa, the pterygomandibular space, the maxillary sinus, the buccal space, or the lateral pharyngeal space. In this paper, two cases of a maxillary third molar accidentally displaced into the buccal space are presented, and the retrieval of the tooth via intra-oral approach is explained and discusses the anatomical spaces implications.

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## Introduction

Post-operative complications can be observed during surgical extraction of third molars, such as uncountable bleeding, tooth root fracture, fracture of the tuberosity or the buccal bone, perforation of the sinus membrane, and prolapse of the buccal fat pad [1].

Few cases of accidental teeth displacement in direction of bordering anatomical areas such as the maxillary sinus [2-3], infra-temporal fossa [4-6], pterygoid-mandibular space [7], lateral pharyngeal space [8] and the buccal space [9-10] have rarely been reported. In the oral and maxillofacial region, many tissue spaces are inter-connected; consequently, a displaced tooth into one of these spaces can migrate to the others [10].

In this report, two cases of third molar in the maxilla moved accidentally toward the buccal space are described, and the extraction of the tooth via intraoral approach is explained and reviews the anatomical spaces implications.

## Case Description and Results

### First Case

A 25 -year- old male was oriented to our oral surgery clinic after unintentional movement of the third molar in the left side of the maxilla during surgical procedure under local analgesia.

The pre-operative panoramic X- ray shows the initial position of the third molar (Figure 1a). Intra oral palpation revealed a hard mass exist in the buccal space anterior to the coronoid process and the buccinator muscle and was painful for the patient. A new panoramic X-ray radiograph showed that the third molar was displayed parallel to the second maxillary molar (Figure 1b). Axial images of Computed Tomography Scan (CT) showed the position of the third molar in the left buccal space (Figure 1c).

Surgery was accomplished under local anesthesia using (2% articaine 1:100,000 adrenaline; 3M ESPE, Seefeld, Germany), tooth was reached after a submucosal incision in the buccal mucosa was done and tooth was released from the surrounding tissue with a periost-

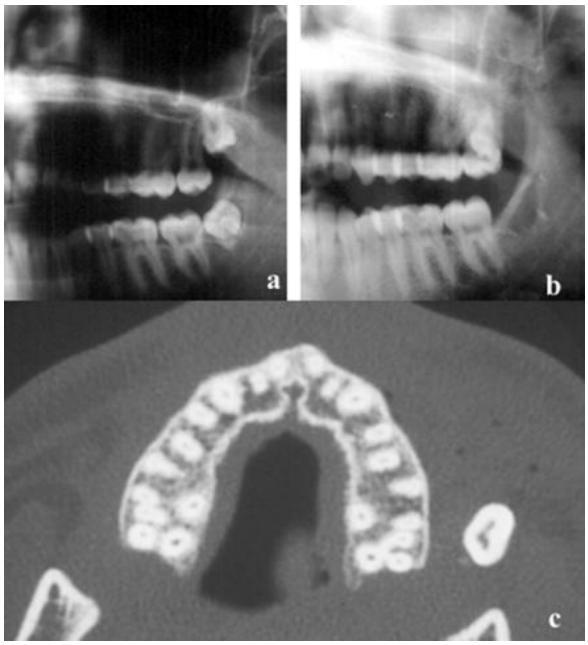


**Figure 1a:** pre-operative panoramic x-ray showing the maxillary left impacted molar in place before the surgery. **b:** post-operative panoramic x-ray showing the maxillary left molar in a parallel position to the second molar. **c:** axial cut of the CT Scan showing localization of the displaced molar.

eal elevator tissue was removed (Figures 2a and b). The most difficult part of the surgical procedure was the dissection of the fibrous connecting and the surrounding adipose tissues and the tooth. After the tooth was retrieved and the mucosal tissues were secured with single simple interrupted sutures (Vicryl® 3/0; Ethicon Johnson & Johnson, Somerville, NJ). Non-steroid anti-inflammatory (Mefenamic acid 500 mg BID), analgesic (Acetaminophen 1000 mg in case of pain), and antibiotic (Amoxicillin 1g BID) drugs were prescribe to the patient with a good oral hygiene recommendations (Chlorhexidine digluconate 0.12 %) and the use of pack of ice. The recovery period was without complications and he recuperated hid mouth opening movements one week after later.

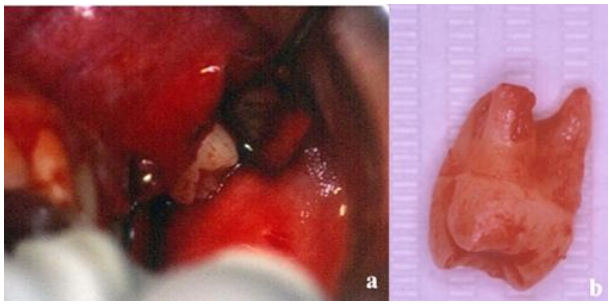


**Figure 2a:** Intra-oral clinical view showing the molar coming out. **b:** The extracted tooth.

**Second Case**

A 16-year-old female was oriented to our surgical clinic by her dental practitioner. A surgical procedure was planned for an early removal of her left maxillary impacted molar for orthodontic reasons, but accidentally the tooth had been lost during the surgical procedure.

Pre-operative axial and sagittal CT cuts showed a third molar in a very high position in relation with an inflamed maxillary sinus membrane and a dentigerous cyst image that englobe the tooth (Figures 3a and b).

A New CT scan images showed that the molar is in the buccal space; it was jammed between the ramus and masseter and buccinator muscles, higher than the level the second molar for at least 2 cm (Figures 4a and b).

The intra-oral palpation revealed the deep position of the tooth in the buccal vestibule. Local analgesia was given to the patient followed by a submucosal incision the tooth was approached via blunt dissection using Metzenbaum scissors then with a tissue forceps the crown was reached and rotated and pulled out true the incision line. As in the first case, the difficulty faced during the surgical procedure was the dissection of the fibrous tissue and the tooth. After separating the third molar from the adipose tissue, it comes out with the dentigerous cyst, the mucosal tissues were secured with separate stiches like in the first case (Figures 5a and b).

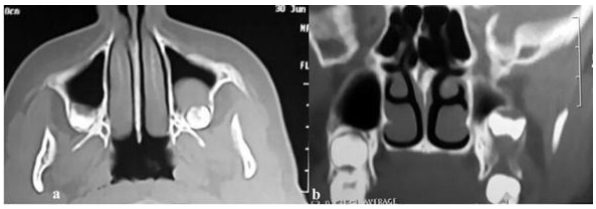


**Figure 3a:** The axial view of the CT scan showing the position of the dental germ of the third molar and its relation to the maxillary sinus and the thin posterior cortical bone with a pathological image surrounding the tooth inside the sinus. **b:** Para-axial cut of the CT scan showing the high level of the third molar and the thin cortical buccal bone.

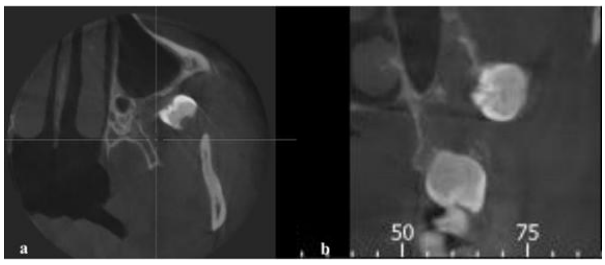


**Figure 4a:** The axial view of a post-complication CT scan revealed the new position of the third molar in the buccal space. **b:** The para-axial cuts of the CT scan showing the movement in the buccal space of the tooth.

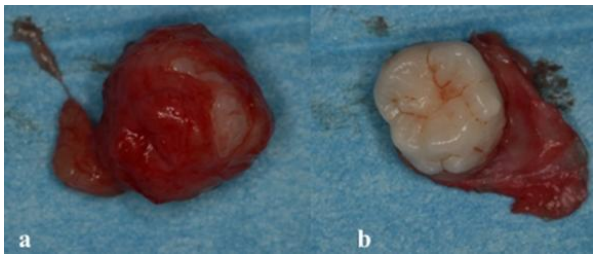


**Figure 5a:** The removed germ encapsulated with a cyst. **b:** The crown surrounded by the cyst tissue.

Postoperatively medication was used as in the first case. The recovery period was longer than the first case most probably due to the age and the position of the displaced tooth.

**Discussion**

Many complications associated with the surgical extraction of completely impacted maxillary third molars have been widely described in literature, such as osteitis, alveolar bone fracture, tooth fracture, tuberosity fracture, bleeding, oro-nasal communication, injury of adjacent teeth, infection and accidentally displaced teeth. The most shared types of accidental displacement happen in the infratemporal fossa followed by the maxillary sinus. The use of elevators with excessive force associated with inadequate movements are mentioned as the most common errors related to iatrogenic displacements [11-12].

Inappropriate use of the dental elevators may provoke the tooth displacement due to a fracture of the buccal thin wall or the complete bone of the tuberosity, which is composed of sponges bone surrounded by a thin cortical layer. If the tooth is in a very bone height position and the buccal bone and the posterior bone is very this risk increases and third molar can be moved easily into the buccal space [9].

The maxillary third molar, is located very posteriorly on the dental arch; most often, it is located in the posterolateral part of the maxillary tuberosity and presents close relationships with the vasculo-nervous pedicle of the tuberosity, fascia of the buccinator and the infratemporal fossa [3].

The maxillary third molars are limited by the buccal region laterally, the posterior palatal region medially (inside), the infra-temporal side of the maxilla then the infra-temporal fossa posteriorly, the maxillary arch anteriorly and the maxillary sinus superiorly [10].

The fat bad, filled by adipose tissue, is on the buccal space and extends medially between the ramus and maxillary bone limited medially by the buccinator muscle, superficially by the deep cervical fascia and muscles of facial expression laterally and anteriorly, masseter muscle, mandible and the maxillary alveolar ridge, lateral and medial pterygoid muscles and the parotid gland posteriorly [9].

Buccal fat pad play a major role in the muscular motions such those needed for the movements of the jaws [12-14].

The parotid duct, emerge from the gland and superficially to the masseter muscle, is a long excretory duct. The duct opens into the mouth on the inner surface of the cheek after piercing the buccinator muscle usually facing the second molar in the maxilla [11].

Relationship and the position of the displaced tooth should be evaluated with a CT scan or a cone beam CT (CBCT). Radiological images from CT scan or CBCT are required to localize the displaced tooth in two and three dimensions [15]. Radiological exams are suggested immediately and before the surgical procedure in order to localize and be sure that the tooth displaced will not affect function of adjacent anatomical spaces [9-10].

Factors influencing treatment decision for maxillary third molars are based in clinical and radiological information's. Parameters influencing the decision about the surgical procedure should be based on a CBCT complete study [15].

The management of displaced maxillary third molar teeth implicates beside the surgical approach, the oral surgeon's skills and experience and adequate surgical tools and a conservative approach to remove tooth from the area with less complications.

Kocaelli *et al.* [9] reported a third molar displacement into the buccal space. They conclude that the displacement is related to the luxation of third molar during surgical procedure. We approved with their conclusion.

Ohba *et al.* [10] demonstrated, using ortho-pantomograms (OPG) that were taken during the path of tooth's migration, that maxillary third molar should be moved laterally to the buccinator to be able to migrate into the buccal space.

In our two cases, it have been clinically and radiologically confirmed that teeth were displaced in the buccal space after applying a rotational forces oriented from mesially to distally.

We agree with both authors that complications may be confronted when teeth are accidentally displaced toward anatomical spaces where they may be able to migrate and this is what happens with our second case due to the non-development of the roots. At the end of the treatment, patients showed a high satisfaction of the surgical procedures that was not associated with any kind of complications.

## Conclusion

Careful attention to surgical details, including, a good interpretation of the radiological images, particular management of soft tissues, controlled force on the hard tissue when applying surgical instruments to avoid such complications.

## Disclaimers

The authors do not have any financial interests, either directly or indirectly, in the products or information listed in this paper.

## Conflict of Interests

None

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