

# Accidental Displacement of Third Molar into the Sublingual Space: a Case Report

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## ABSTRACT

**Background:** Successful extraction of third molars depends on preoperative diagnosis and planning. Gold standard preoperative examinations are performed through computed tomography, decreasing risks and avoiding potential accidents. The present report highlights the value of preoperative examinations in face of accidentally displaced third molars.

**Methods:** An 18-years-old female patient underwent a third mandibular molar extraction with a general dentist. Accidentally, the mandibular left third molar was displaced into the sublingual space, making necessary a second surgical step. The surgery was interrupted and the patient was referred to an expert in maxillofacial surgery.

**Results:** After 21 days awaiting an asymptomatic health status, the second surgical step was successfully performed using multislice computed tomography as preoperative imaging guide.

**Conclusions:** The present case report highlights the clinical usefulness of imaging planning and informed consents in face of legal and ethic potential complaints.

**Keywords:** third molar; multislice computed tomography; oral surgery; tooth extraction.

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## INTRODUCTION

In general, the third molar extraction is considered a procedure of minor proportion into the field of maxillofacial surgery. However, this procedure requires a specific surgical indication, planning, technical approach, and follow-up.

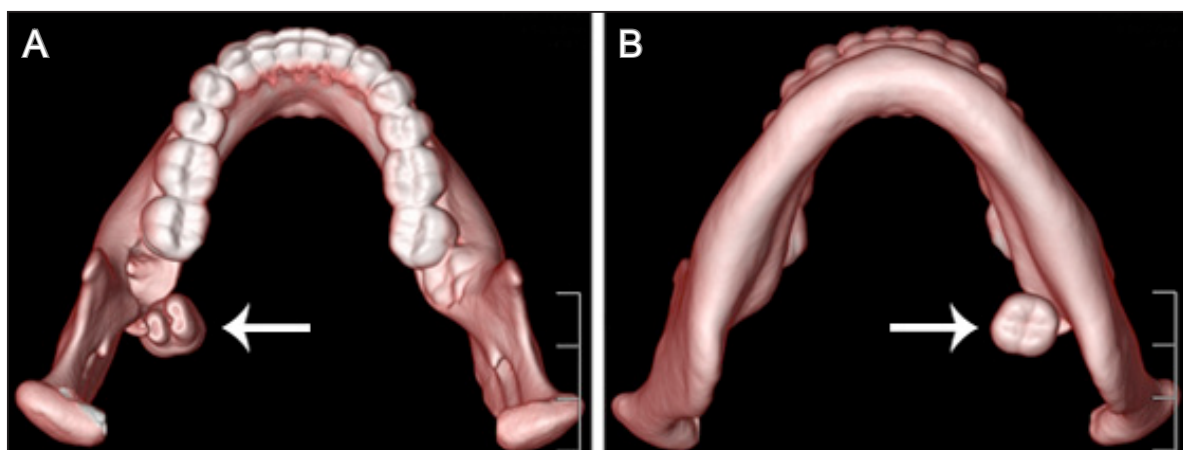
Transoperative accidents related to the extraction of third molars often involve fracture of the adjacent bone and teeth, laceration of soft tissue, haemorrhage, neural lesions, and dental displacement into the maxillary sinuses, extracranial fossae, and cervicofacial spaces [1]. Specifically in the medical literature, mandibular third molars were reported displaced into the infratemporal fossa [2]; the pterygomandibular fossa [3]; and the lateral pharyngeal [4], submandibular [5,6] and sublingual [7] spaces. In this context, the sublingual area is a triangular virtual space, located in the floor of the mouth, above the mylohyoid muscle, under the free portion of the tongue. The lateral limit of the sublingual space is the muscle complex hyoglossus-styloglossus, while the anterior limit is the genioglossus muscle [8]. Important morphologic structures are observed in the sublingual space, such as the duct of the submandibular salivary gland, branches of the lingual artery, and the lingual and hypoglossal neural bundles [7]. Thus, third molar extractions should be preferentially performed by maxillofacial surgeons, who are highly familiarized with the surgical morphology of head and neck. In addition, preoperative imaging must be properly used to avoid potential accidents in the routine of dental surgery. Based on that, the present study reports a case of a transoperative complication, in which a mandibular third molar was accidentally displaced into the sublingual space.

## CASE DESCRIPTION AND RESULTS

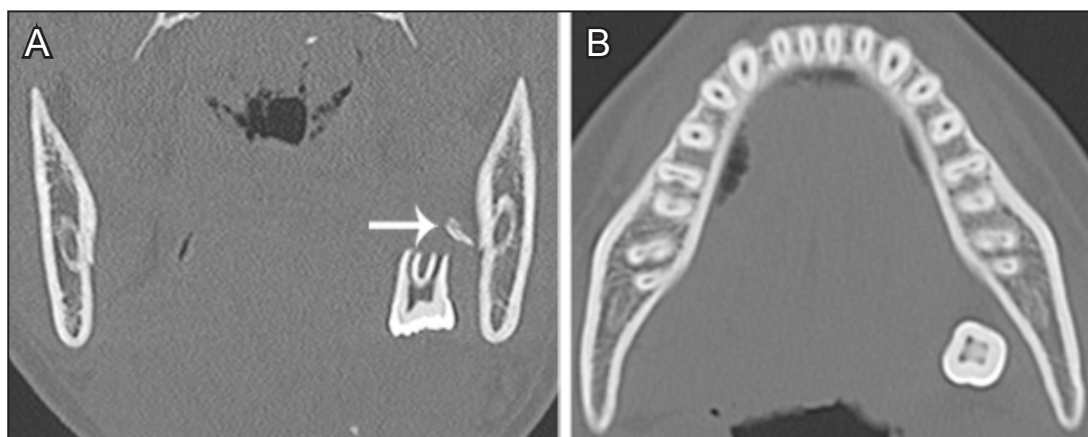
In December, 2012, an 18-year-old female patient underwent extraction of the mandibular left third molar (tooth #38) for orthodontic reasons. Accidentally, the tooth #38 was displaced from the dental socket to an unknown adjacent site. The surgery was interrupted after the patient complains about the prolonged time taken to find the tooth. Anti-inflammatory (Ibuprofen 600 mg) on every 12 hours, and analgesic (Metamizole Sodium 500 mg) on every 6 hours, were prescribed covering a period of 3 days after the surgery. The patient was referred to a radiology clinic for a proper diagnosis by means of multislice computed tomography, using a Toshiba Aquilion® 64-channels (Toshiba Corporation®, Tokyo, Japan) device.

Three-dimensional reconstructions and axial and coronal slices enabled to detect the third molar in the medial surface of the left mandibular ramus in an inverted position (Figures 1 and 2). In addition, a detailed examination revealed that the third molar was displaced above the mylohyoid muscle, laterally to the tongue: into the sublingual space (Figure 3).

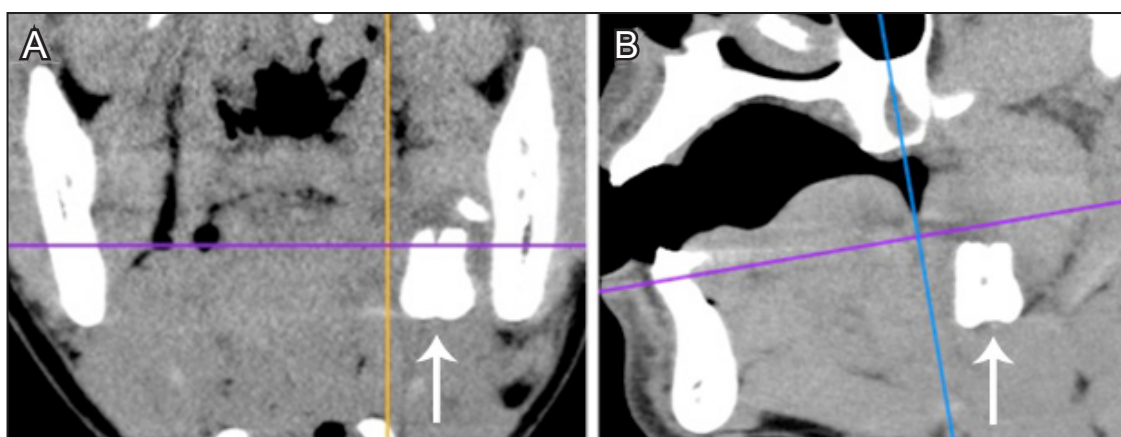
Despite advised about the importance of a second surgical intervention, the patient became apprehensive and uneasy in the following days. Additionally, functional and psychological conditions were worsened due to the presence of trismus, hampering daily activities. Based on that, the patient was convinced to undergo a second surgery only after 21 days from the accident. The second surgery was performed by an expert in the field of maxillofacial surgery. The surgical costs were afforded by the first dentist. During the preoperative examination the patient physical status was classified as ASA I, enabling the surgery.



**Figure 1.** Superior (A) and inferior (B) views of the mandible, presented in three-dimensional reconstruction by means of multislice computed tomography, illustrating the position of the tooth #38 (indicated by the arrows).



**Figure 2.** Axial (A) and coronal (B) views of the mandible, presented in two-dimensional slices for bone analysis by means of multislice computed tomography, revealing a small bone fragment of the left lingual cortical plate (indicated by the arrow), broken during the surgery.



**Figure 3.** Coronal (A) and sagittal (B) views of the mandible, presented in two-dimensional slices for soft tissue analysis by means of multislice computed tomography, illustrating the relation between the tooth #38 (indicated by the arrows) and the morphologic limits of the sublingual space.

Based on that, the patient was medicated with 8 mg of orally administered corticosteroid dexamethasone 1 hour prior to the surgery, aiming optimal postoperative outcomes. The second surgical procedure was performed under mandibular nerve block, using Lidocaine 2% with adrenaline 1:100.000 (Nova DFL<sup>®</sup>, Rio de Janeiro, Brazil). The third molar was accessed and successfully removed through an envelope incision, with a mucoperiosteal flap detachment from the retromolar trigone to the medial surface of the mandibular left first molar (tooth #36). In the following week the patient received the same medication prescribed in the first surgical attempt. Despite the close relation between the tooth #38 and the submandibular salivary gland and the lingual nerve, the patient did not report postoperative sequels within a follow-up period of 45 days.

**DISCUSSION**

Displacement represents one of the most important

accidents during the extraction of third molar due to the common need for major secondary surgical steps [2-6]. Additionally, accidentally displaced third molars may cause iatrogenic/traumatic neural injuries [9] and even temporomandibular joint pain and dysfunction [10]. The current literature reports the displacement of both maxillary and mandibular third molars. Specifically, Gómez-Oliveira et al. [11] described a case in which a maxillary third molar was displaced into the infratemporal fossa. Despite the close relation with the internal maxillary artery and the venous pterygoid plexus, the third molar was removed through a secondary surgical intervention, performed 2 weeks after the initial attempt, under local anesthesia. Similarly, Hoekema et al. [12] reported the accidental dental displacement into the same anatomic site. However, the authors state that asymptomatic patients could be treated with periodic clinical and radiographic follow-ups prior to additional invasive approaches.

Yet in extractions of mandibular third molars, most of the accidents involve the displacement of dental roots. It is justified due to the tilted position in which mandibular third molars are often observed, which makes necessary the crown resection prior to the dental extraction [13]. Huang et al. [14] reported a case in which a third molar root was displaced into the pterygomandibular space. In this situation, the patient was successfully reoperated 5 months after the initial attempt, under general anesthesia and intraoral access. Similarly, Aznar-Arasa et al. [14] compiled 6 cases of third molar root displacement into the sublingual space. Specifically, the authors observed that 2 out of the 6 cases required a secondary intraoral surgical intervention for root retrieval. Both of the patients presented postoperative impairment of the inferior alveolar and lingual nerves. The other 4 patients were asymptomatic, excluding the need for a new surgery. Differently, in the present report an entire third molar was displaced into the sublingual space, indicating that the tooth was in a favourable position for extraction, in which the crown resection was not necessary. Besides, wrong surgical techniques are closely related to the transoperative displacement of third molars [15], potentially justifying the accident reported in our study. The same was observed in the reports of Pippi and Perfetti [16], and Olusanya et al. [17], in which general practitioners performed unsuccessful extractions, highlighting the relevance of not performing surgical interventions without having a proper expertise on the field. Based on that, we recommend that third molar extractions should be preferentially managed by maxillofacial surgeons for optimal surgical outcomes.

Considering the current literature, most of the third molars displacements into the sublingual space allows for a second surgical intervention under local anesthesia, making feasible a faster postoperative recovery, as observed in our study. An optimal postoperative recovery also depends on the technique addressed during the second approach for third molar removal. In some situations invasive techniques, such as double mucoperiosteal flaps, are necessary [16]; while in other cases high-tech performances, such as endoscopic-assisted retrieval, are feasible [18]. In the present case a single large mucoperiosteal surgical flap was necessary to reach the displaced third molar. Despite a close relation between the third molar and the submandibular salivary gland and the lingual nerve, no postoperative sequel was reported by the patient.

Independent from the situation, the level of surgical difficulty must be examined in forehand. Specifically, cases involving tilted and multiradicular third molars,

and in close relation with neurovascular bundles, must be detailed studied for an optimal surgical intervention. In this context, the radiographic surgical planning is the most adequate approach to avoid third molar accidental displacement [19]. Cone-beam and multislice computed tomography play an important role, allowing for detailed analysis through three-dimensional reconstructions and slice navigation. In combination, the knowledge concerning the anatomy of head and neck is essential for an adequate and planned intervention.

In parallel to the surgical care, accidents involving iatrogenic performances must be promptly reported to the patient, or legal responsible, informing the patient's health status and treatment choices [20]. Thus, the bioethical principle of autonomy, which comprehends the patient's rights of being informed, and making decisions, is respected [21]. Above all, more important is the preoperative description of technical steps and potential risks, and further record of the patient's decision within a signed informed consent form [21,22]. Despite the best approach for clinical solutions involving iatrogenic performances, the dialogue not always avoids juridical complaints. In this context, the combination of preoperative imaging data, surgical plan, technical knowledge, informed consent, and the correct registration of the patient's files plays a valuable part as the main tool to support the professional against legal and ethic complaints.

## CONCLUSIONS

Despite common in the routine of maxillofacial surgeons, the third molar extraction is subject to transoperative complications. Based on that, professionals must be aware to the fact of keeping patients informed prior to the technical procedure, and supported after the treatment. Additionally, the present case report highlights the importance of technically planning and performing oral surgeries; requesting and interpreting complementary exams; and registering the patient's consent; in face of legal and ethic potential complaints.

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The authors report no conflicts of interest related to this study.

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