Facultad de Odontología

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Extraoral surgical management of a third molar displaced to the mandibular inferior border

CASE REPORT

Manejo quirúrgico extraoral de un tercer molar localizado en planos profundos

Abordagem cirúrgica extraoral de um terceiro molar deslocado ao bordo mandibular

Abstract

Introduction: Surgical extraction of third molars is a common procedure, although not without risks. A rare but significant complication is the displacement of teeth or root fragments into deep anatomical planes, such as the mandibular border, posing both diagnostic and surgical challenges—particularly when undetected for years. Case presentation: We report the incidental finding of an inverted and displaced lower right third molar at the mandibular inferior border in a 35-year-old female patient undergoing evaluation for orthofacial surgery. The patient was asymptomatic and reported a previous extraction of the same tooth 18 years earlier. The molar was identified using cone-beam computed tomography (CBCT) and successfully removed via a submandibular extraoral approach under general anesthesia. Conclusion: This case highlights the importance of thorough imaging evaluation in patients with prior surgical history and the need for individualized surgical planning. A submandibular approach provides a safe and effective option for accessing deeply positioned third molars, reducing infection risk and preserving adjacent anatomical structures.

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Resumen

Introducción: La extracción quirúrgica de terceros molares es un procedimiento frecuente, aunque no exento de riesgos. Una complicación poco común es el desplazamiento de dientes o fragmentos hacia planos profundos, como el borde mandibular, lo que representa un desafío diagnóstico y quirúrgico, especialmente cuando pasa inadvertido por años. Se describe el hallazgo incidental de un tercer molar inferior derecho en posición invertida y desplazado hacia el borde mandibular, en una paciente de 35 años en planificación para cirugía ortofacial. La paciente se encontraba asintomática y refería haber sido sometida a exodoncia de la pieza referida 18 años antes. El diente fue identificado mediante tomografía computarizada de haz cónico (CBCT) y extraído con éxito por vía extraoral submandibular bajo anestesia general. La evolución postoperatoria fue favorable, sin complicaciones funcionales ni estéticas. Este caso resalta la importancia de la evaluación imagenológica en pacientes con antecedentes quirúrgicos y la necesidad de una planificación individualizada. El abordaje submandibular representa una opción segura para casos con localización profunda, al reducir el riesgo de infección y preservar la integridad de las estructuras vecinas.

Palabras clave: Tercer molar; Desplazamiento dentario; Procedimientos quirúrgicos orales; Complicaciones postoperatorias.

Resumo

Introdução: A exodontia cirúrgica de terceiros molares é um procedimento comum, embora não isento de riscos. Uma complicação rara, porém relevante, é o deslocamento de dentes ou fragmentos radiculares para planos anatômicos profundos, como a borda inferior da mandíbula, o que representa um desafio diagnóstico e cirúrgico — especialmente quando não é detectado por anos. Apresentação do caso: Relata-se o achado incidental de um terceiro molar inferior direito, invertido e deslocado à borda mandibular, em uma paciente de 35 anos em avaliação para cirurgia ortofacial. A paciente estava assintomática e relatava ter sido submetida à exodontia do referido dente 18 anos antes. O molar foi identificado através de tomografia computadorizada de feixe cônico (TCFC) e removido com sucesso por meio de abordagem submandibular extraoral sob anestesia geral. A recuperação pós-operatória foi favorável, sem complicações funcionais ou estéticas. Conclusão: Este caso reforça a importância da avaliação radiológica detalhada em pacientes com antecedentes cirúrgicos, além da necessidade de planejamento cirúrgico individualizado. A abordagem submandibular é uma alternativa segura e eficaz para casos com localização profunda, permitindo reduzir o risco de infecção e preservar estruturas anatômicas adjacentes.

Palavras-chave: Terceiro molar; Deslocamento dentário; Procedimentos cirúrgicos orais; Complicações pós-operatórias.

Introduction

Surgical extraction of third molars is one of the most common procedures in oral and maxillofacial surgery, with overall tooth-inclusion rates ranging from 16.7% to 68.6% across different populations.[1] Although most of these procedures are performed without major complications, rare adverse events with significant risk to the patient may occur. Among these, the displacement of teeth or root fragments into deep anatomical planes has been reported with a frequency of less than 1%,[2] yet may lead to potentially relevant clinical consequences.

The most frequently affected spaces are the submandibular, sublingual, and pterygomandibular regions. The etiology of this complication is multifactorial and involves both anatomical factors—such as a thin or absent lingual cortex, distolingual angulation of the molar, or a deep mandibular fossa—and technical factors, including improper use of instruments, application of excessive forces, and inadequate surgical planning.[3,4] These conditions can result in the displacement of whole teeth or root fragments into deep planes, making immediate

recovery difficult and posing risks of infection, neurosensory dysfunction, and even life-threatening complications.[5]

Despite their low incidence, these events must be carefully considered due to their impact on surgical planning and postoperative prognosis. While some authors propose observation in asymptomatic patients, others recommend early removal to prevent further migration, ankylosis, or interference with future surgical procedures.[2,6]

This report describes a case of particular interest due to its atypical evolution: the incidental finding, eighteen years after an attempted extraction, of a fully displaced and inverted lower right third molar located at the inferior mandibular border. The patient was asymptomatic, and the finding was made during preoperative imaging evaluation for orthofacial surgery. Clinical, imaging, and surgical findings are discussed, as well as the therapeutic decision-making process and its correlation with current scientific literature.

Background

PATIENT PRESENTATION

We present the case of a 35-year-old female patient with no relevant medical history or associated comorbidities, no chronic medication use, and no known allergies. She was evaluated in private consultation as part of the presurgical protocol for orthodontic–surgical treatment of a Class III dentofacial deformity, with indication for orthofacial surgery.

The patient reported having undergone extraction of the lower right third molar (tooth 4.8 according to FDI nomenclature) at age 17, without recalling any complications during the procedure.

CLINICAL FINDINGS

On extraoral examination, the patient shows no facial asymmetry or increased volume in the right submandibular region (**Figure 1**).

Soft-tissue palpation was negative for pain, fluctuation, or evident masses. No sensory alterations were detected in the territories innervated by the inferior alveolar, mental, or lingual nerves.

Intraoral examination revealed a Class III occlusion and absence of the lower left first molar as well as all third molars. The oral mucosa, floor of the mouth, and retromolar region showed no signs of alteration or visible scarring.

No dental remnants or active infectious processes were identified on clinical examination, which made the subsequent imaging finding even more noteworthy.

Figure 1. Clinical photograph.

A – Frontal view.

B – Lateral view.

Description

DIAGNOSTIC EVALUATION

As part of the preoperative work-up for orthofacial surgery, orthopantomography and cone-beam computed tomography (CBCT) were requested to evaluate the maxillofacial bone structures.

The orthopantomography revealed the presence of a lower right third molar (tooth 4.8) in inverted position, with incomplete root formation and displacement toward the inferior border of the mandibular body, slightly posterior to the antegonial notch. The root apex was projected in close proximity to the inferior alveolar nerve canal (**Figure 2**).

The ectopic location of the molar was confirmed by CBCT, showing close contact with the internal mandibular cortex and no evidence of capsule formation or local inflammatory signs. Axial and coronal sections revealed a tight interface between the molar crown and the osseous cortex, with partial loss of periodontal space and a root–bone transition with diffuse borders—radiological findings suggestive of ankylosis. No alterations were identified in the course of the inferior alveolar nerve, nor was there involvement of adjacent soft tissues or periapical reactions (**Figure 3**).

Figure 2. Preoperative panoramic radiograph.

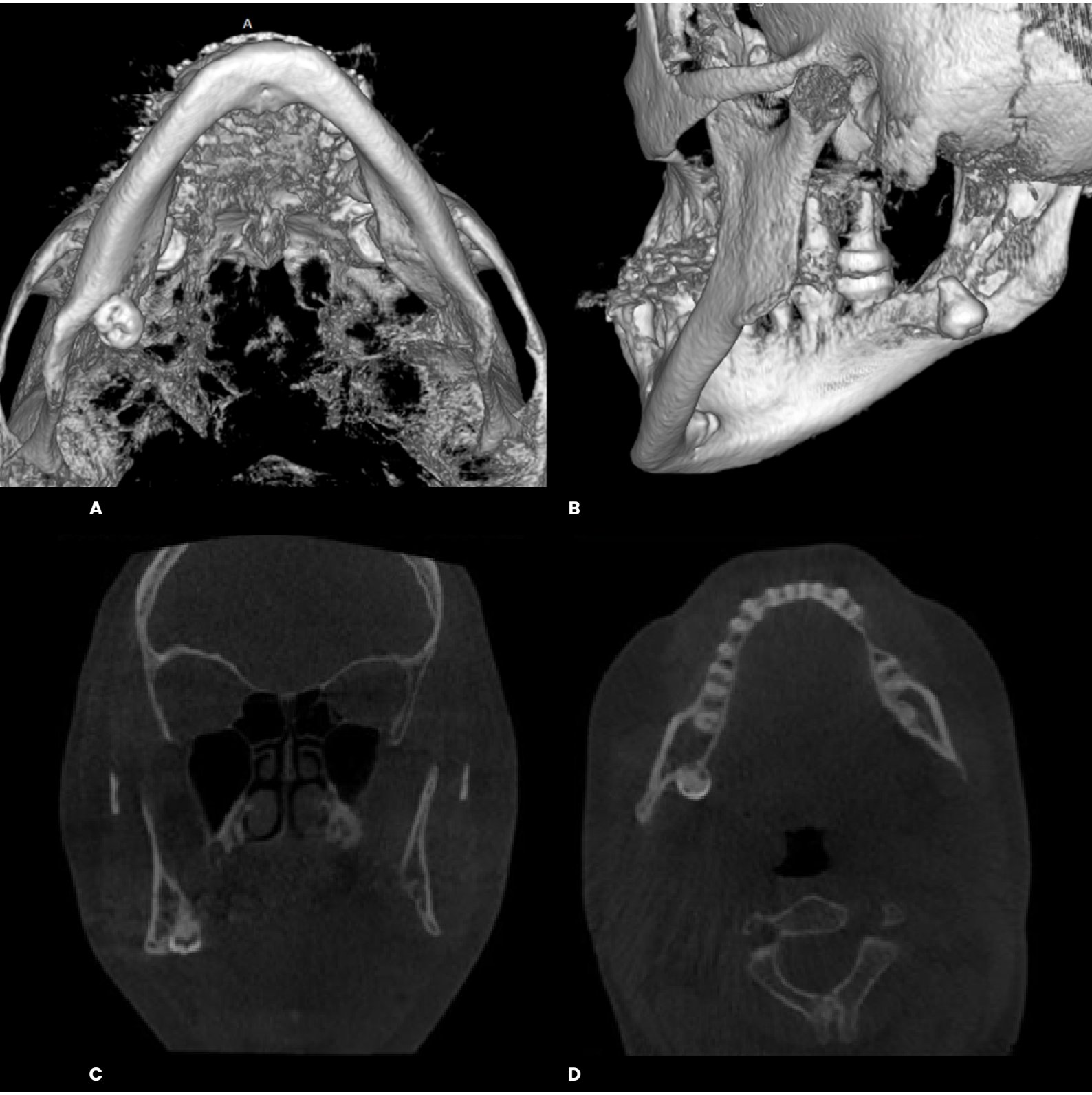


Figure 3. CBCT imaging study of the displaced third molar. **A.** Three-dimensional reconstruction, inferior view, showing the inverted position of the lower right third molar displaced toward the mandibular border. **B.** Oblique posteroanterior three-dimensional reconstruction, evidencing the deep location of the molar in close contact with the internal mandibular cortex. **C.** Coronal section showing the relationship between the molar crown and the medial cortex, with partial preservation of the periodontal space. **D.** Axial section showing the proximity of the root to the inferior alveolar nerve canal.

The representative coronal and axial CBCT sections (**Figure 3C** and **3D**) showed the intimate relationship between the molar crown and the mandibular medial cortex, as well as probable loss of periodontal space in specific areas. This justified planning a controlled osteotomy prior to extraction in order to minimize the risk of cortical fracture and facilitate tooth luxation.

Because the patient was asymptomatic and presented no suggestive clinical signs, the finding was classified as incidental. Considering the need for a major procedure—orthofacial surgery involving mandibular osteotomy—, surgical removal of the ectopic molar was indicated prior to the scheduled intervention.

No differential diagnoses were considered due to the clarity of the imaging finding and the reported surgical history.

THERAPEUTIC INTERVENTION

Surgical extraction of the displaced third molar was planned via a submandibular extraoral approach, under general anesthesia and aseptic operating-room conditions. This approach was selected due to the inferior and medial position of the molar, which made intraoral access unfavorable and increased the risk of infection or injury to deep structures.

A horizontal skin incision of approximately 2.5cm was made in the right submandibular region after identifying and marking key anatomical landmarks. Deep-plane access was achieved through careful blunt dissection until the inferior mandibular border was exposed. The marginal mandibular nerve and the facial neurovascular bundle were preserved throughout the procedure.

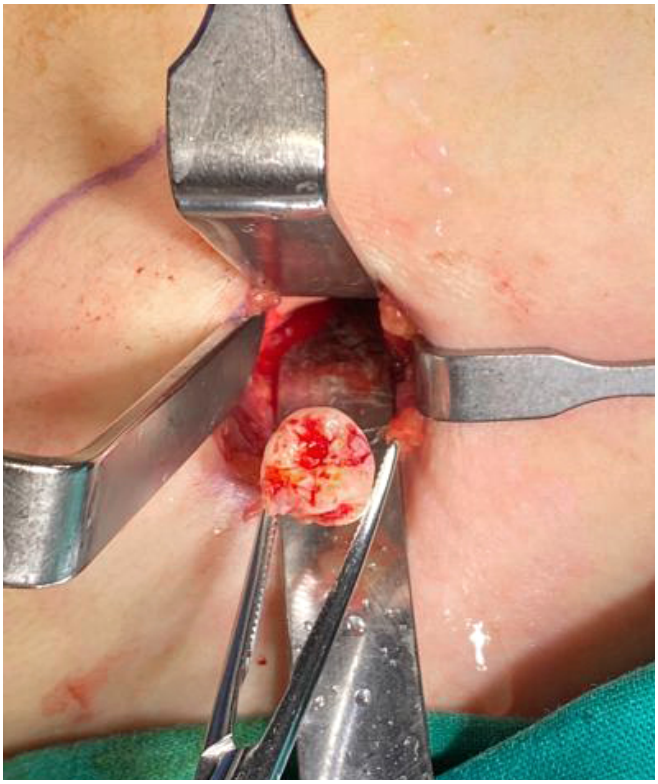
Once the molar —inverted and embedded in the medial mandibular cortex— was identified, its occlusal surface was exposed. A controlled osteotomy was performed using a #10 fissure surgical bur to create an access channel allowing insertion of a straight chisel, achieving luxation and subsequent extraction of the tooth without fracture or fragmentation (**Figure 4**).

The bone bed was then smoothed with a surgical file, irrigated thoroughly with sterile saline, and closed in layers without placement of a drain. No intraoperative complications occurred. The procedure was performed by an experienced team of maxillofacial surgeons, with a total duration of approximately 50 minutes.

Prophylactic antibiotic therapy, non-steroidal anti-inflammatory drugs, and postoperative follow-up at 48 hours were indicated.

Figure 4. Intraoperative photograph

A – Exposure of the displaced third molar.



B – Extraction of the displaced third molar.

FOLLOW-UP RESULTS AND OUTCOME

Postoperative evolution was favorable. No signs of infection, hematoma, or wound dehiscence were observed at the 48-hour and 7-day follow-ups. Soft-tissue healing was adequate, with no need for drainage or reintervention.

During the first postoperative month, there was no evidence of persistent edema, neurosensory alterations, or signs of paresthesia in the facial or mental nerve territories. The patient reported mild, self-limiting pain in the operated area, effectively controlled with non-steroidal anti-inflammatory drugs.

At the one-month follow-up, the patient was asymptomatic and showed no functional or esthetic alterations. The skin scar was esthetically acceptable, with no keloid formation or visible retraction. No aesthetic or functional sequelae were reported, and the orthofacial surgical plan was subsequently authorized.

Discussion

Displacement of lower third molars into deep neck spaces is a rare but clinically relevant complication, with an estimated incidence of less than 1% of all third molar extractions.[2] This event may occur during the surgical extraction maneuver, particularly in the presence of predisposing anatomical factors such as a thin lingual cortex, distoangular orientation, or excessive bone depth.[1,3]

In this case, the incidental finding of a displaced and inverted third molar at the level of the inferior mandibular border—more than a decade after the attempted exodontia—represents an unusual situation. Similar cases were described by Primo et al. (2014), who reported the delayed removal of a molar displaced into the infratemporal fossa following spontaneous migration. Although prolonged observation was chosen in that asymptomatic patient, in the present report the need for subsequent orthofacial surgery justified early extraction to prevent interference during the planning and execution of the primary procedure.

In the review by Su et al. (2023), iatrogenic displacement was identified as one of the most frequent complications among those considered uncommon, accounting for 23.8% of the cases analyzed. Of the 248 patients included, 14.9% presented severe complications, and three died as a result of sequelae arising from exodontia-related events. These findings reinforce the importance of a thorough preoperative evaluation, particularly in patients with impacted third molars and complex anatomical morphologies.[5]

Regarding the surgical approach, although several authors have shown that an intraoral approach may be feasible for teeth displaced into the submandibular or sublingual spaces,[4,7] the choice of an extraoral approach in this case was based on the depth and orientation of the molar, which hindered intraoral access and increased the risk of neurosensory injury. In addition, the use of CBCT imaging was essential for accurate surgical planning, determining the relationship with critical anatomical structures, and reducing operative risk.[8]

Finally, this case underscores the importance of imaging evaluation in patients with a history of previous exodontia, particularly when major procedures such as orthofacial surgery are planned. It also emphasizes the need for meticulous surgical technique during third molar extractions, since improper application of force or inadequate use of instruments may result in inadvertent displacements that later require complex approaches by specialists.[9]

Conclusion

The incidental finding of a lower third molar displaced toward the mandibular border, more than a decade after a failed extraction, highlights the importance of imaging evaluation in patients with a dentoalveolar surgical history. In this case, the extraoral submandibular approach was a safe and effective option, allowing complete tooth extraction without complications. This report underscores the importance of individualized surgical planning and the use of cone-beam computed tomography (CBCT) as an essential tool for diagnosis, decision-making, and execution of procedures in complex clinical contexts.

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Data availability

The dataset supporting the results of this study is published within the article itself.

Conflict of interest statement

The authors declare no conflict of interest.

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Ethics committee

This study did not require approval from an ethics committee. However, patient privacy was protected, and informed consent for publication was obtained.

Authors' contributions

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