

Unilateral Double Impaction of Fourth and Third Mandibular Molars: A Rare Case Report

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Abstract

Supernumerary molars are occasionally found in a preoperative radiographic third molar evaluation. The presence of a supernumerary molar is rare and is usually impacted. Clinicians should be aware of the diagnosis and treatment of this entity. Aim of the article is to present a case of a 22 years old nonsyndromic female who was referred for a preventive extraction of third molars. The presurgical radiographic examination revealed the existence of an unilateral double impaction of a fourth and third molars in the right posterior mandible. The simultaneous surgical extraction of the fourth and third mandibular molars was performed without any postoperative complications. The preoperative radiographic evaluation was of crucial importance for the surgery.

Keywords: *supernumerary molars, fourth molars, distomolars, treatment.*

INTRODUCTION

Third molar extraction is one of the most common surgical procedure in oral surgery. Panoramic and periapical radiography are the standard methods for the primary preoperative examination of patients referring for third molar evaluation 1. Rarely, the presence of supernumerary teeth may be found in a routine radiographic examination of a patient 2.

Supernumerary teeth are additional teeth occurring in the dental arch in excess of the normal number of the teeth for each quadrant 2. The frequency with which impacted supernumerary teeth are encountered in a clinical setting is relatively high, with the majority of such cases occurring in the median maxillary region, and in a small percentage in the molar region 3,4. Supernumerary teeth in the molar region are very rare and are termed as paramolars or fourth molars (distomolars) according to their location 2, 3, 5, 6. Paramolars are situated lingually or buccally to the molar row, whereas fourth molars situated distally to the third molars 2, 7, 8. They usually have a rudimentary

shape and are impacted in the jaws 2, 7, 8.

The present article presents a rare case of unilateral double impaction of fourth and third mandibular molars.

CASE PRESENTATION

A 22 years old female was referred to our clinic for a preventive removal of third molars due to orthodontic reasons. The medical history of the patient was free and the clinical examination showed a right impacted third mandibular molar whereas the rest third molars were erupted. As a part of the preoperative radiographic evaluation, the panoramic radiograph coincidentally revealed the existence of a unilateral double impaction of a third and supernumerary fourth molar in the right mandible (Fig. 1A, 1B). The panoramic and periapical radiographs showed that the inverted impacted fourth molar was located superior and in a safe distance from the mandibular molar. The tooth had a rudimentary conical shape and it was in regular size as others molars. However, the initial radiographic evaluation was not sufficient as a

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preoperative imaging of the third molar region, because of the intimate relationship between the mandibular canal and the third molar and the close relationship of the tooth with the inferior border of the mandible. Hence, a cone beam computed tomography scan was indicated (Fig. 2). The cross-sectional images revealed a disruption of the cortical layer of the mandibular canal

when it passed lingually and crossed the third molar. This implied the possible intra-operative exposure of the inferior alveolar neurovascular bundle and, perhaps, a risk for postoperative paresthesia of the corresponding nerve. Also, the lingual cortical plate of the mandible was found to be perforated due to the fourth and third molars crowns' proximity with it.

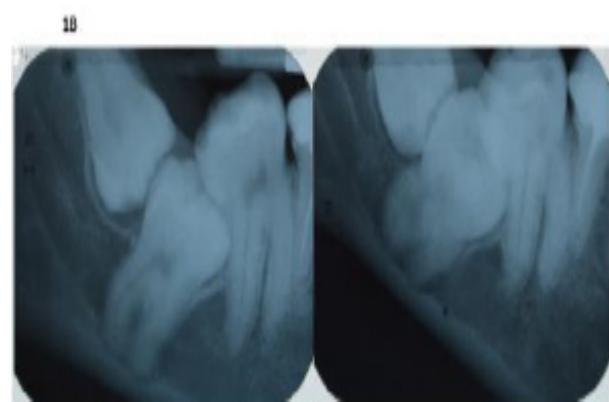
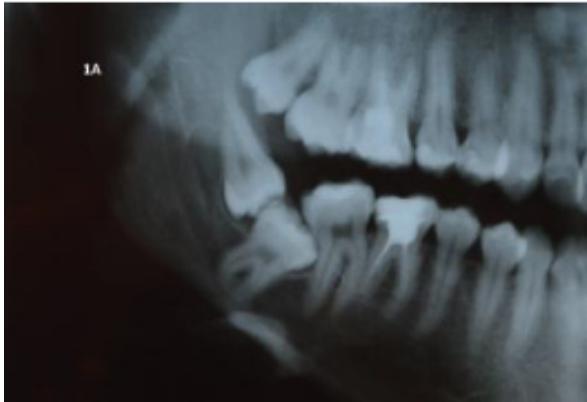


Figure 1A. *Cropped panoramic radiograph of right mandibular molar region revealing the presence of a double impaction of an inverted fourth molar and a vertical third molar.*

Figure 1B. *The intraoral periapical radiographs with the tube shift technique of the molars' region*

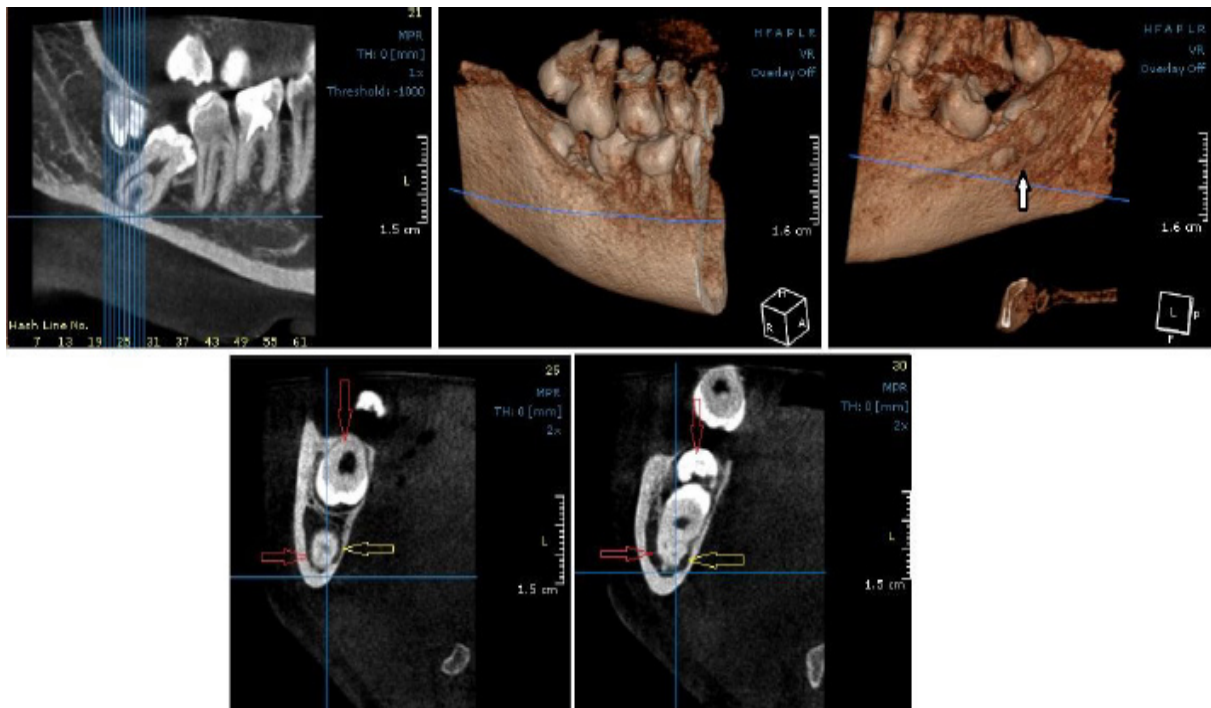


Figure 2. *Cone beam computed tomography scan of the right mandibular molar region. The cross sectional slices showed the proximity of the third molar root (right arrow) with the uncorticated (cortical break) lingually positioned mandibular canal (left arrow). The fourth molar (down arrow) is situated superiorly to the crown of the third molar. The three dimensional reconstructions revealed the close relationship between the crowns of the fourth and third molars to the lingual cortical plate of the mandible resulting in cortical perforations respectively (up arrow).*

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The patient was informed about the high-risk radiographic findings and any complications that may postoperatively result. Preoperatively, the patient was prescribed an antibiotic treatment with amoxicillin 500mg (1 tab every 8 hours) starting the day before and continuing for at least 5 postoperative days. Also, for anti-inflammatory and analgesic therapy was administered with ibuprofen 600 mg (1 tab every 8 hours) starting one hour before surgery and continuing for at least 3 postoperative days.

Surgery was carried out under inferior alveolar nerve block anaesthesia with anesthetic solution of mepivacaine 3% 1:100,000 (one ampoule: 1.8 ml) and long buccal nerve anaesthesia with anesthetic solution of lidocaine 2% and 1:80,000 epinephrine (one ampoule: 1.8 ml). A sulcular incision was made starting from the mesiobuccal edge of the second molar to its distal surface and two vertical relieving

incisions were made, one in the second molar region in the mesial edge without cutting the interdental papilla and the other in the mandibular ramus distally to the second molar. Thus, a mucoperiosteal flap was elevated with good visibility in the retromolar region (Fig. 3). An osteotomy was performed using a round bur with a low-speed handpiece and sterile saline irrigation. The supernumerary molar was revealed and removed (Fig. 4A, 4B). The inferior alveolar bundle was intraoperatively exposed during the extraction of the third molar (Fig. 5A, 5B, 5C), but great attention was made avoiding any injury to the bundle. After curettage of the extraction sockets the flap was repositioned with 3,0 silk sutures, leaving a small gauze for drainage, which was removed the next day. The patient was given postsurgical instructions and was reminded about medications. A mouthwash with chlorhexidine 0.2% for 7 days was also prescribed.



Figure 3A. *Intraoral picture of the right mandibular posterior region.*



Figure 3B. *The surgical field after the elevation of the mucoperiosteal flap.*

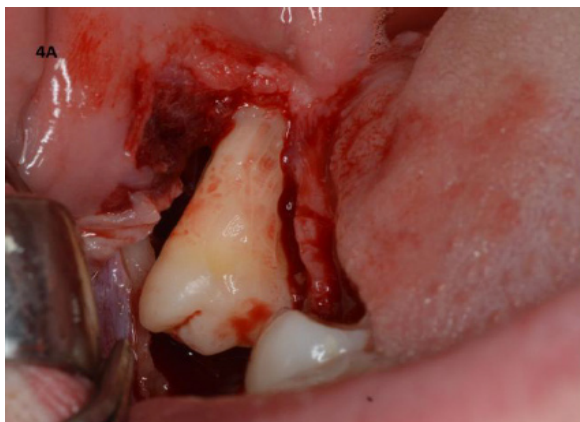


Figure 4A. *Surgical extraction of the fourth mandibular molar.*



Figure 4B. *Postextraction socket of the fourth mandibular molar. The third mandibular molar is disclosed.*

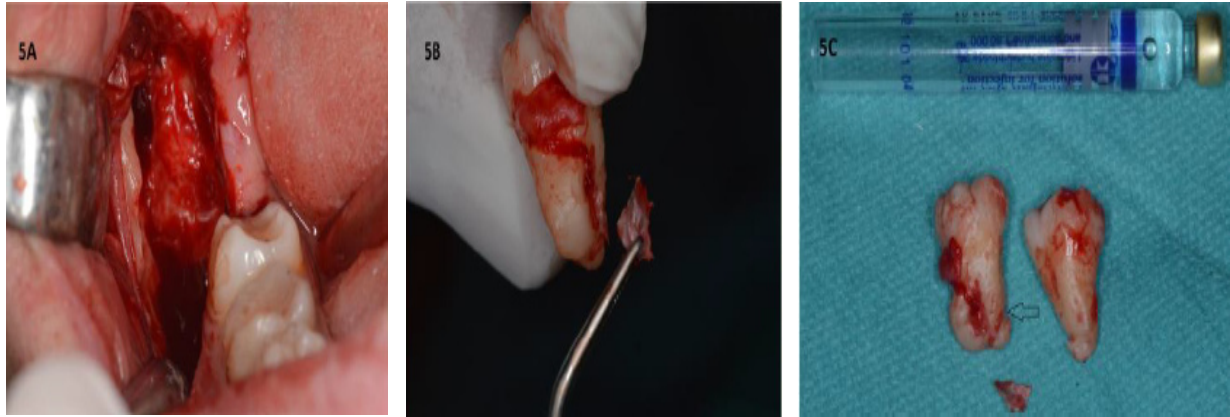


Figure 5A. Postextraction sockets of the fourth and third mandibular molars.

Figure 5B. The extracted third molar with a part of the mandibular canal's cortex.

Figure 5C. The extracted third and fourth molars. The arrow shows the root marking (hook) at the point where the lingually positioned mandibular canal crosses the mandibular third molar.

The sutures were removed after 7 days and the clinical follow-ups were done at 1 and 6 months showing a postoperative healing without any complications.

DISCUSSION/CONCLUSION

The incidence of fourth molars has been found to be between 0.76 and 2.2%^{5, 6, 9, 10}. In a clinical epidemiological analysis of 173 supernumerary molars, Martinez-González et al ⁶ recorded 137 distomolars and 36 paramolars. The etiology of supernumerary molars has not been yet clarified and various theories have been suggested such as hereditary disorders and abnormal embryological formation^{2,8}. Although, the existence of supernumerary molars is usually associated with nonsyndromic patients, as in our case, other studies reported an association with syndromes such as cleidocranial dysplasia, Gardner's syndrome, or cleft lip and palate⁸.

Generally, supernumerary teeth are more common in males than in females and different ratios have been reported, whereas in fourth molar occurrence the male:female ratio was found to be close to 1:15. Similarly, in a survey on supernumerary molars, no great difference was found between the sexes in the frequency of fourth molars¹¹. It is reported that fourth molars are more frequently found in the upper jaw (78-100%) than in the lower one (0-23.9%)^{5,9,11,12}. Most patients had them

unilaterally (55-76.1%)^{5,11}. Shahzad and Roth⁵ found that fourth molars were notably more common in black patients than in whites. The shape of fourth molars is reported to differ according to their location i.e. maxillary fourth molars appeared conical and peg-shaped while mandibular ones as miniature third molars^{5,12}. However, others reported supernumerary fourth and fifth molars with normal tooth morphology with regard to their crowns and roots, but slightly smaller than the existing third molars^{10,12}. In our case report, the fourth mandibular molar had a regular shape and morphology.

In bibliography, cases where the third and fourth molars had fused into one entity are reported¹³⁻¹⁶. Fusion is a tooth anomaly considered to be the result of the joining between two adjacent tooth buds during development and it also exists in less than 1% of the population¹⁴⁻¹⁶. Although fusion of teeth is most commonly reported in the deciduous dentition, particularly in the anterior teeth, fusion of fourth and third molars are reported in the permanent dentition resulting into a unique form of a supernumerary tooth fused to the distal surface of a third molar, resulting to a difficult differential diagnosis of developmental anomalies^{13,15,16}. The radiographic evaluation may demonstrate the communication of the pulpal tissues in some fusion cases¹⁵. Furthermore, concrescence of a mandibular third molar and a supernumerary

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fourth molar is reported, which is defined as a twinning anomaly involving the union of two teeth by cementum only¹⁷.

The indications for surgical extraction of fourth molars are generally the same as to those for full impacted third molars^{5,12}. However, the risk-benefit analysis is preoperatively estimated and in a case of surgery a minimally invasive procedure is chosen⁵. The surgical removal of a fourth maxillary molar encloses the risk of displacement of the tooth into the infratemporal fossa or the maxillary sinus intra-operatively⁵. In addition, a mandibular fourth molar may be considered as high-risk if there is a close relationship with mandibular canal and hence possibly results in inferior alveolar nerve paresthesia. In our case report, the mandibular third molar was considered as high-risk for nerve exposure and paresthesia after appropriate radiographic evaluation. Hence, careful intervention was done in order to avoid any compression to the bundle during the elevation of the tooth.

Also, the proximity of a mandibular fourth molar to the lingual cortical plate of the mandible may be result to an idiopathic or intraoperative thinning and perforation of the lingual cortical plate and hence causing an increased incidence of fracturing of the lingual cortex and/or lingual nerve injury during the surgery¹⁸⁻²⁰. Thus, the risk of dislodgement of bone or tooth fragments to the soft tissues of the floor of mouth (into the submandibular and sublingual space) is increased with subsequent postoperative complications^{1,20,21}. In the present case, the computed tomography scan revealed that the crowns of the third and fourth mandibular molars penetrated the lingual cortical plate and attention was taken during surgery. In addition, the surgical extraction of supernumerary molars poses the risk of fracture of the mandible².

In the present case report, the patient was referred for a preventive removal of the third molars due to orthodontic reasons. Although, supernumerary molars are usually diagnosed as a coincidental radiological finding without any associated pathology, however, a higher percentage of associated pathological

conditions was found⁶. One possible risk of leaving the fourth molars in place would be the development of pathological lesions (cysts, tumors) that may stem from the dental follicle or subacute pericoronitis and gingival inflammation, periodontal abscesses, root's absorption and tooth crowding^{2,5,8}. In a clinical epidemiological analysis of 173 supernumerary molars, Martinez-González et al⁶ reported that mechanical-obstructive pathology was associated with 28.9%, whereas enlargement of the follicular sack bigger than 3 mm was present in 6.2% of the sample. Nishikawa et al²² reported a patient with a large dentigerous cyst involving the crowns of the third and fourth molars. Sanghera and Jones²³ reported a rare case of a parotid fistula due to an extraorally draining infected dentigerous cyst associated with a mandibular fourth molar in ascending ramus.

The decision as to whether supernumerary molars require removal or maintenance in the arch (and frequent observation) is based on their position and the likelihood of their causing any pathological lesions or problems to the dental arch². Moreover, during the surgical extraction of the third molar, the clinician has to decide whether to simultaneous extract the fourth and third molar or extract the molars independently or keep the fourth molar in place⁵. It is generally thought that removing the third molar only in order to let the fourth molar move into a more favorable position (and then extract it in a second surgery) is a possible solution limiting any risks of the simultaneous surgical removal of the two molars^{2,5}. In the present case, the surgical extraction of the fourth and third molars was performed at the same appointment. The fourth molar was located in a superior and distant position from the mandibular canal. Finally, the third molar was simultaneously removed, because it was considered that the molar would not move into a favorable position, due to his anatomical marking (hook) where it crosses the mandibular canal.

In conclusion, the decision of maintenance or surgical removal of supernumerary molars has to be evaluated individually with an appropriate preoperative radiographic examination^{1,5}. Initial evaluation of supernumerary teeth is conducted with panoramic and

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periapical techniques. Moreover, further radiographic examination is necessary where a fourth molar are in fusion with the third molar or high risk fourth molar is presented. Computed tomography scan may help the clinician to weigh the risks and benefits of remove these molars or not 1, 5.

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