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Complex Odontoma Associated With Inferior Displacement of the Mandibular Second Molar: A Case Report

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Abstract

Complex odontomas are benign odontogenic lesions composed of an irregular mass of dental hard tissues and may interfere with eruption or displace adjacent teeth. A 24-year-old man presented with a hard swelling in the right posterior mandible and clinical absence of the mandibular right second molar (47). Cone-beam computed tomography (CBCT) demonstrated a well-defined radiopaque lesion measuring 26.4 × 22.2 × 21.3 mm, surrounded by a thin radiolucent rim, associated with inferior displacement of 47 and impaction of the mandibular right third molar (48). Buccal and lingual cortical expansion with focal perforation and thinning of the inferior mandibular border were present. The lesion was surgically exposed, sectioned, and removed under local anesthesia. Histopathology confirmed a complex odontoma. The patient healed uneventfully during follow-up at 1 week, 21 days, and 3 months. This case highlights the importance of three-dimensional imaging for assessing lesion extent, tooth displacement, cortical integrity, and surgical risk.

Keywords: complex odontoma;compound odontome;benign odontogenic lesions; impacted tooth; oral surgery

Introduction

Odontomas are benign odontogenic lesions composed of dental hard tissues. The World Health Organization recognizes compound and complex odontomas; complex odontomas form an irregular conglomerate of dental tissues without the tooth-like organization seen in compound lesions [1,2]. They are commonly detected during the first two decades of life and are frequently associated with delayed eruption or impaction. Larger lesions may cause cortical expansion and displacement of adjacent teeth [3,4]. CBCT is particularly useful when lesion size, cortical integrity, tooth displacement, or proximity to important anatomic structures affects surgical planning [5-8]. We report a posterior mandibular complex odontoma associated with inferior displacement of 47 and impaction of 48, with marked thinning of the inferior mandibular border.

Case Presentation

A 24-year-old man presented with a hard swelling in the right posterior jaw. Medical and family histories were non-contributory, with no reported local trauma or infection. Extraoral examination showed no obvious facial asymmetry. Intraorally, 47 was clinically absent and a firm-to-hard, non-tender calcified mass was present in the right posterior mandibular region with mild alveolar ridge expansion. The overlying mucosa was intact.. There was no reported history of pain, discharge, or other local symptoms.

Figure 1. Preoperative intraoral photograph showing clinical absence of 47 and presence of the calcified mass.



Diagnosis

CBCT demonstrated a well-defined radiopaque mass coronal to the impacted 47, composed of irregular radiopaque components with attenuation similar to dental hard tissues and surrounded by a thin radiolucent rim. The lesion measured 26.4 mm superoinferiorly × 22.2 mm buccolingually × 21.3 mm anteroposteriorly. Buccal and lingual cortical expansion with focal perforation was evident. The second molar was displaced inferiorly, with thinning of the inferior mandibular border. The third molar (48) was impacted and associated with the lesion. Distal bone loss and widening of the periodontal ligament space were also noted in relation to 46.

Figure 2A. CBCT axial section demonstrating the radiopaque lesion and cortical expansion/perforation.



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Figure 2B. CBCT sagittal section showing the lesion associated with the displaced mandibular molar.



Figure 2C. CBCT coronal section demonstrating the lesion and impacted mandibular third molar.



Based on the well-defined radiopaque mass with a surrounding radiolucent rim and its association with impacted mandibular molars, a provisional diagnosis of complex odontoma was made. Differential diagnoses included calcifying epithelial odontogenic tumor, cementoblastoma, cemento-ossifying fibroma, and other mixed odontogenic lesions. The morphology, location, and relationship to impacted teeth favored complex odontoma.

Management

Surgical removal was performed under local anesthesia. A full-thickness mucoperiosteal flap was reflected and the calcified mass was exposed. The lesion was carefully sectioned and removed using

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rotary instrumentation, followed by curettage of the surrounding capsule and surgical cavity.**The lesion was removed in sections to facilitate controlled delivery while minimizing unnecessary removal of surrounding bone. Particular attention was given to the thinned inferior mandibular border during manipulation of the lesion.** Because the roots of 47 were close to the thinned inferior mandibular cortex, 47 was retained to avoid further weakening of the mandibular border. Hemostasis was achieved and the wound was closed with 3-0 silk sutures.

Figure 3A. Intraoperative photograph showing surgical exposure of the lesion.



Figure 3B. Intraoperative photograph showing removal of the calcified odontoma.



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Histopathological Examination

The excised specimen consisted of an irregular hard calcified mass and was submitted for histopathologic examination

Figure 4. Excised calcified specimen.



Histopathological examination of hematoxylin and eosin-stained sections showed irregularly arranged calcified dental tissues, predominantly dentin, with areas of basophilic calcification and osteoid-like tissue surrounded by a fibrous connective tissue capsule. The findings were consistent with a complex odontoma.

Postoperative Course And Follow Up

The patient was followed at 1 week, 21 days, and 3 months postoperatively. Clinical follow-up demonstrated adequate healing of the surgical site without significant postoperative complications.

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Figure 5. Postoperative intraoral photograph at 7 days showing satisfactory healing.



Discussion

Complex odontomas are characterized by a conglomerate of dental hard tissues and are often identified because of delayed eruption or impaction. The present case is notable for substantial inferior displacement of 47 and impaction of 48, together with bilateral cortical expansion, focal perforation, and thinning of the inferior mandibular border. Although odontomas are frequently asymptomatic, larger lesions can alter the position of adjacent teeth and compromise mandibular anatomy [3,4,9].

The combination of tooth displacement, cortical expansion, focal perforation, and thinning of the inferior border indicates that the lesion had produced considerable alteration of the local anatomy despite its well-defined appearance, emphasizing that lesion size and three-dimensional relationships should be assessed before surgical intervention rather .

The characteristic radiographic appearance is a dense mass of dental hard tissue surrounded by a radiolucent rim. CBCT provides three-dimensional information when conventional imaging cannot adequately demonstrate cortical integrity, lesion extent, or the relationship to impacted teeth and the inferior alveolar canal [5-8]. In this case, CBCT directly influenced surgical planning by demonstrating the structurally weakened inferior mandibular border. Removal of a large lesion from a thin mandibular base may increase the risk of fracture; therefore, the surgical approach should be individualized according to lesion size, location, cortical thickness, and tooth relationships [10-12].

Management of teeth associated with odontomas should also be individualized. Some impacted teeth erupt spontaneously after removal of the obstructing lesion, whereas others require later surgical exposure and orthodontic traction [13,14]. Decisions regarding retention or removal depend on tooth position, angulation, root development, periodontal prognosis, and available space. In this case, retention of 47 was chosen because of its close relationship to the thinned inferior cortex and the potential risk of further weakening the mandible.

Histopathologic confirmation remains important because several calcified odontogenic and fibro-osseous lesions may have overlapping radiographic

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features. Correlation of clinical, radiographic, and microscopic findings establishes the diagnosis [1,2].

Conclusion

A complex odontoma should be considered when a well-defined radiopaque lesion is associated with delayed eruption or impaction of a tooth. This case demonstrates that a posterior mandibular odontoma may produce marked tooth displacement and cortical thinning. CBCT is valuable for defining three-dimensional lesion extent and mandibular integrity and for guiding a conservative, individualized surgical approach. Histopathologic examination confirms the diagnosis, and postoperative follow-up is important to document healing.

Declarations

Patient Consent

Written informed consent for publication of the case and accompanying clinical and radiographic images was obtained from the patient.

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