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Case Report

Expansile mandibular dentigerous cyst in an adult male: A case report and surgical approach

Palaniappan Ravisankar[1], Vijayaraghavan N[2], Padma Priya Camalarajan[3]*, Udaya Kumar Kuppan[4]

[1]Dept. of Surgical Oncology and General Surgery, Sri Venkateshwaraa Medical College Hospital & Research Centre, Puducherry, India.
[2]Dept. of Plastic Surgery Sri Manakula Vinayagar Medical College and Hospital, Puducherry, India.
[3]Dept. of General Surgery,Sri Venkateshwaraa Medical College Hospital & Research Centre, Puducherry, India.
[4]Dept. of Radiology, Udhaya Scans, Cuddalore, Tamil Nadu, India.

Abstract

Dentigerous cysts are benign odontogenic lesions arising around the crowns of unerupted teeth, most commonly affecting the posterior mandible. We report a 35-year-old male with a painful left cheek swelling; CECT revealed a well-defined expansile mandibular lesion with an impacted third molar. Surgical enucleation with tooth removal was performed via a per-oral approach. Histopathology confirmed a dentigerous cyst without dysplastic change. Postoperative recovery was uneventful, with no recurrence at follow-up. Radiological evaluation, particularly CT, is valuable for assessing lesion extent and surgical planning. Early detection and complete excision remain crucial to prevent complications, including bone destruction, root resorption, and rare malignant transformation. Long-term radiographic surveillance ensures early detection of recurrence and optimises functional and aesthetic outcomes.

Keywords: Dentigerous cyst, Mandible, Odontogenic cyst, Unerupted tooth, Enucleation

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1. Introduction

Dentigerous cysts are benign, slow-growing odontogenic cysts of developmental origin. It is commonly prevalent during the second (5.1%) and third decades (2.3%) of life, and low in the first decade (1.4%).[1] The reported incidence is approximately 1.44 per 100 unerupted teeth, with a slight male predilection.[2] These cysts are almost exclusively found in permanent dentition, 71.5% of cases are localized in the mandible, followed by the maxilla (28.5%).[1] It results from changes in the reduced enamel epithelium following the completion of amelogenesis, leading to fluid accumulation between the epithelium and the crown of the tooth. Multiple or bilateral cysts may be seen in syndromes such as basal cell nevus syndrome, mucopolysaccharidosis, or cleidocranial dysplasia.[3]

2. Case Report

A 35-year-old male presented with a 3-month history of painful swelling on the left cheek. Contrast-enhanced CT (CECT) of the neck revealed a bony, expansile, lytic lesion (measuring ~3.7 × 3.3 × 2 cm) in the posterior body of the left mandible. The lesion exhibited cortical thinning and areas of dehiscence, with an unerupted left third molar located antero-inferiorly within the lesion, suggestive of dentigerous cyst (**Figure 1** A, B, **Figure 2** A, B). Surgical intervention via a per-oral approach with incision through the gingivobuccal mucosa and periosteum, followed by complete excision of the cyst and associated left third molar. Postoperative follow-up showed no evidence of recurrence.

*Corresponding author: Padma Priya Camalarajan
Email: padma.priya537@gmail.com

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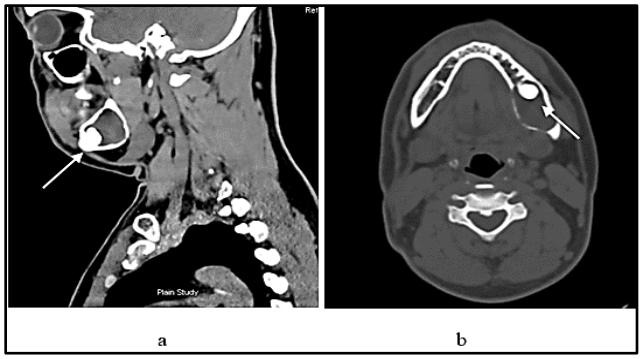

Figure 1: CECT, sagittal (**A**) and axial (**B**) sections, of paranasal sinuses demonstrating an expansile bony lytic lesion involving the posterior part of left side body of mandible with an unerupted left third molar tooth (arrow).

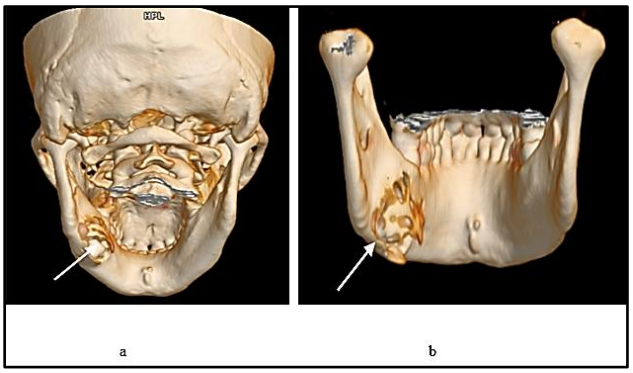

Figure 2: a & b: CT panoramic reconstruction of the mandible showing bony lytic lesion involving the left side body of the mandible with an unerupted left third molar tooth (arrow).

3. Discussion

Dentigerous cysts are benign, non-inflammatory odontogenic cysts that develop in association with the crowns of unerupted permanent teeth.[4] They are often identified incidentally on radiographs or present with jaw swelling. Pathogenesis involves fluid accumulation between the reduced enamel epithelium and the tooth crown, resulting in follicular distension and interference with normal eruption.[5] Benn and Altini proposed three histogenetic pathways: development from inflamed dental follicles; origin from radicular cysts of non-vital deciduous teeth into which the permanent successor erupts; and formation from infected follicles of permanent teeth due to periapical inflammation from primary predecessors.[6] The presence of enamel hypoplasia depends on the developmental stage at cyst formation; lesions arising after crown completion typically lack hypoplasia, as seen in our case.[7] Untreated lesions can cause progressive bone loss, root resorption, and in rare cases, neoplastic transformation into ameloblastoma (5–6%) or primary intraosseous squamous cell carcinoma (1–2.5%).[8,9]

Radiographically, dentigerous cysts appear as well-defined unilocular radiolucencies surrounding the crown of an unerupted tooth.[10] Panoramic radiography (OPG) is useful for diagnosis and monitoring healing, while computed tomography (CT) is indicated for large lesions, those involving multiple teeth, or supernumerary teeth, as it provides a detailed assessment of lesion margins, bone involvement, and cortical integrity.[11,12] The differential diagnosis includes odontogenic keratocysts, primordial cysts, and several odontogenic tumors such as ameloblastomas, adenomatoid odontogenic tumours, and odontomas.[13]

Management aims to eradicate the lesion while preserving dentition when possible. Conservative approaches include the extraction of the associated deciduous tooth with incisional biopsy for histopathologic confirmation.[14] Surgical intervention is warranted in symptomatic, large, expansile, or aggressive lesions, or cases with tooth displacement or root resorption.[15,16] Miyawaki et al. suggest intervening once the cyst-associated tooth has reached two-thirds root development with an open apex to optimise eruptive potential. Maintaining communication between the cyst cavity and oral cavity can promote decompression and reduce fibrous scarring that may impede eruption.[14]

Enucleation with removal of the involved tooth remains the standard for adults with minimal eruption potential. Marsupialisation or decompression is reserved for large cysts to reduce intracystic pressure and allow shrinkage, facilitating eruption either spontaneously or with orthodontic assistance.[17,18] A drawback of marsupialization is retention of cyst lining, which carries a risk of recurrence.[19] Although extremely rare, reported recurrence rates are <2% for enucleation, ~10–20% for marsupialisation, and <5% for decompression, particularly when followed by enucleation.[20-23] Bone grafting is recommended for large osseous defects, although implant placement post-marsupialisation is less documented.[24]

In certain maxillary lesions, enucleation via Caldwell-Luc or endoscopic approaches provides excellent visualisation and access while avoiding external incisions and complications such as oroantral fistulas[17,25,26] Endoscopic removal through the middle meatal route has been reported for large maxillary sinus cysts.[27] Whilst uncommon, postoperative complications such as infection, paresthesia, and occasional pathologic fractures may occur.[28] Long-term follow-up should include clinical examination and serial radiographs at 3 months, then every 6–12 months for at least 2–3 years, as radiographic recurrence often precedes clinical symptoms.[15,16]

4. Conclusion

Dentigerous cysts are benign odontogenic lesions with potential for significant morbidity if untreated. Early diagnosis, appropriate surgical selection, and long-term radiographic monitoring are essential to minimise recurrence. Enucleation offers the lowest recurrence, while marsupialisation and decompression are effective for large cysts when preservation of adjacent structures and tooth eruption is desired.

5. Ethics Approval

This is a case report. The Institutional Ethics Committee (IEC) has confirmed that no ethical approval is required.

6. Consent to Participate

Written informed consent was obtained from the patient and bystanders.

7. Consent to Publish

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his images and other clinical information to be reported in the journal. The patient understands that his names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

8. Authors 'Contribution

Literature search, interpretation and writing of the report were performed by PP. The patient was under the care of P. R and V. N. The first draft of the manuscript was written by PP. P. R, UK and V. N. revised it critically for intellectual content writing. All authors read and approved the final manuscript.

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10. Conflict of Interests

All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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