



Case Report

Symmetrical secrets: A case report on bilateral dentigerous cysts

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Abstract

A dentigerous cyst is a developmental anomaly that surrounds the crown of an unerupted tooth at the cemento-enamel junction, often due to fluid accumulation between the reduced enamel epithelium and enamel. These cysts are usually asymptomatic but can cause discomfort if infected. This report highlights a rare case of a patient with bilateral dentigerous cysts who underwent bilateral enucleation of the cysts along with the extraction of impacted third molars. The procedure provided significant pain relief and improved the patient's quality of life, preventing potential future complications.

Keywords: Bilateral dentigerous Cysts, Enucleation.

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1. Introduction

A dentigerous cyst is a developmental anomaly lined with epithelium that surrounds the crown of an unerupted tooth at the cemento-enamel junction.¹ Cysts develop from fluid accumulation between reduced enamel epithelium and enamel, or within the enamel organ itself.² They are often discovered incidentally during radiographic examinations conducted to investigate reasons for tooth eruption failure, missing teeth, or dental misalignment. Typically, dentigerous cysts are asymptomatic, only causing discomfort if a secondary infection occurs.³ These cysts predominantly appear in individuals during their 2nd or 3rd decades of life, and their occurrence in childhood is quite rare. The lower third molars and maxillary canines are the mostly affected teeth.⁴ Instances of bilateral dentigerous cysts are extremely uncommon and rarely documented. When bilateral or multiple cysts do occur, they are generally related to conditions such as Maroteaux-Lamy syndrome, cleidocranial dysplasia, or Basal cell nevus syndrome. The development of bilateral dentigerous cysts without any underlying syndrome or systemic disease is a rare occurrence.⁵ Since these cysts can grow to substantial sizes with little to no symptoms,

prompt identification and surgical removal are crucial to reduce potential complications.⁶

2. Case Report

A 51-year-old female housewife, with an unremarkable medical history and no known allergies, presented for routine dental care. Notably, her dental history includes prior root canal treatments on teeth #26 and #27, and she maintains impeccable oral hygiene, evident through her regular brushing, flossing, and routine dental check-ups. Clinically, the patient exhibited no facial asymmetry, swelling, or palpable abnormalities in the facial and submandibular regions. Intraorally, her hygiene was commendable, with no significant plaque or calculus, and her mucosa appeared healthy, devoid of erythema or ulceration.

An orthopantomogram (OPG) was conducted initially to evaluate the region around tooth #28 in preparation for crowns on teeth #26 and #27. Unexpectedly, the radiographic examination revealed bilateral dentigerous cysts associated with the unerupted, horizontally impacted teeth #48 and #38. The right-side cyst, linked to tooth #48, measured

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approximately 3 cm by 2 cm, while the left-side cyst, associated with tooth #38, measured 2 cm by 1 cm. These radiolucent areas were well-defined and had not encroached upon adjacent anatomical structures, including the inferior alveolar nerve, nor had they caused root resorption of adjacent teeth.

The discovery was serendipitous, following the patient's initial presentation with intermittent mild to moderate pain in tooth #27. Upon subsequent advice for an extraction of tooth #28 prior to the crown placement, and the subsequent OPG to clarify unclear roots on the intraoral periapical (IOPA) radiograph, the incidental cysts were identified. Despite their asymptomatic nature, the patient was thoroughly informed about the potential future complications if these cysts remained untreated. This case, managed at M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, underscores the critical importance of comprehensive diagnostic imaging in revealing occult pathologies.



Figure 1: Preoperative photograph of the patient



Figure 2: Intraoral photo of affected site



Figure 3: Pre-operative OPG

3. Differential Diagnosis

The differential diagnosis for the patient included several conditions, among which were dentigerous cysts, odontogenic keratocysts (OKC), ameloblastomas, radicular cysts, adenomatoid odontogenic tumours (AOT), and central giant cell granulomas. Each condition was meticulously evaluated based on clinical presentation, radiographic characteristics, and histopathological features. The dentigerous cyst, a prevalent cyst associated with the crowns of unerupted teeth, typically manifests as well-circumscribed, asymptomatic radiolucent lesions unless infected or significantly enlarged. OKCs are known for their aggressive behavior and high recurrence potential, characterized histopathologically by a parakeratinized epithelial lining and presenting as unilocular or multilocular radiolucencies. Ameloblastomas, though benign, exhibit locally aggressive behaviour with significant bone expansion, presenting as unilocular or multilocular radiolucencies and histologically featuring epithelial islands resembling the enamel organ. Radicular cysts, the most common odontogenic cysts, are associated with the roots of non-vital teeth, presenting as radiolucent lesions at the apex of non-vital teeth. AOTs, benign epithelial tumours frequently involving the anterior maxilla, present radiographically as well-defined radiolucencies with potential radiopaque foci. Central giant cell granulomas usually present with multilocular radiolucencies, characterized by multinucleated giant cells within a vascular stroma causing significant bone expansion and tooth displacement.

4. Final Diagnosis

A biopsy was performed to obtain a definitive diagnosis. Under local anaesthesia, an incisional biopsy was taken from the lesion, and the specimen was sent for histopathological analysis.

On Gross Examination, Multiple bits of tissue were received, soft to firm in consistency with irregular margins and borders, measuring 0.5x1 cm in diameter.

The H & E stained section showed the presence of a cystic lumen, epithelial lining, and connective tissue capsule. The epithelial lining, which is present focally, is non-

keratinized stratified squamous in nature and is 2-4 cell layers thick. The lining capsule interface is flat. The connective tissue capsule is fibrocellular in nature, composed of delicate collagen fiber bundles interspersed with plump fibroblasts. Areas of dystrophic calcification were also noted.

Consequently, the final diagnosis was established as bilateral dentigerous cysts associated with the unerupted, horizontally impacted teeth #48 and #38. This diagnosis was corroborated by the patient's asymptomatic clinical presentation, the radiographic findings of well-defined radiolucent areas surrounding the crowns of the unerupted teeth without displacement of adjacent anatomical structures or evidence of root resorption, and the histopathological evidence of the characteristic epithelial lining and fibrous connective tissue capsule indicative of dentigerous cysts, with no signs of other pathological changes. This comprehensive diagnostic process underscores the importance of thorough clinical, radiographic, and histopathological evaluations in accurately identifying such pathologies.



Figure 4: Specimen

5. Treatment Plan and Management

1. A thorough consultation with the patient was conducted to discuss the diagnosis and possible treatment options. The patient was informed about the nature of dentigerous cysts, their potential complications, and the necessity for treatment.
2. Patient consent was obtained for the proposed treatment plan.
3. A detailed clinical examination of the oral cavity was performed, including inspection and palpation of the affected area to assess the extent of the swelling and its impact on surrounding structures.
4. Vitality tests were conducted on adjacent teeth to evaluate their condition and rule out any additional pathology.
5. The patient was educated about the surgical procedure, potential risks, postoperative care, and expected outcomes to ensure they were well-informed and prepared for the treatment.
6. The procedure was performed under local anaesthesia with adrenaline to ensure patient comfort and cooperation.

7. An intraoral approach was chosen to access the cysts, minimizing external scarring and promoting better healing.
8. A Ward's incision was made in the mandibular region to expose the cysts and the impacted teeth.
9. The cysts were carefully enucleated, ensuring complete removal of the cystic lining to reduce the risk of recurrence.
10. The impacted teeth #48 and #38 were extracted based on their condition and potential impact on the patient's oral health.
11. The surgical site was irrigated with saline solution to ensure thorough cleaning.
12. The wound was closed with non-resorbable sutures, ensuring proper tissue approximation.
13. After surgery, the patient was prescribed antibiotics to prevent postoperative infection, three times a day for 7 days.
14. Analgesics for pain, were prescribed to manage postoperative discomfort.
15. An antiseptic mouthwash was recommended to maintain oral hygiene.
16. The patient was instructed to avoid strenuous activity for the first 24-48 hours and to follow a soft diet to minimize trauma to the surgical site.
17. Detailed oral hygiene instructions were provided, including gentle brushing around the surgical site and the use of the prescribed mouthwash.
18. The patient was scheduled for a follow-up appointment 1 week after surgery to assess healing and remove non-resorbable sutures.
19. Additional follow-up appointments were scheduled at 1 month, 3 months, and 6 months to monitor healing and ensure no recurrence of the cysts.
20. Regular dental check-ups and periodic radiographic evaluations were recommended to monitor the surgical site and ensure the absence of recurrence.
21. The patient was advised to report any unusual symptoms, such as swelling or pain, immediately.



Figure 5: Left side lower third molar



Figure 6: Removal of impacted 3rd molar



Figure 7: Right sided lower 3rd molar



Figure 8: Removal of right lower impacted 3rd molar

6. Discussion

Dentigerous cysts occur when fluid accumulates between the remnants of the enamel organ and a tooth's crown.² These cysts are non-cancerous dental lesions that are linked to the crowns of permanent teeth.⁵ They usually involve impacted or unerupted permanent teeth, supernumerary teeth, odontomas, and, in rare instances, primary teeth. Dentigerous cysts are typically solitary lesions, although bilateral and multiple cysts have been reported in patients with specific syndromes, such as basal cell nevus syndrome, mucopolysaccharidosis, and cleidocranial dysplasia.^{3,4,7} Bilateral mandibular dentigerous cysts have been linked to long-term use of cyclosporine A combined with calcium channel blockers. These cysts are extremely rare without underlying syndromes or systemic diseases.⁸ Reported cases

range from ages 3 to 57, with an average age of 22.5 years, and notably, 10 cases involved children under 15.^{4,6,9-13,15,16}

In 2006, DQ Freitas et al. conducted a case study at the UNIRP involving a boy of age 14 presenting with no symptoms, facial swelling that had developed over six months. An intraoral examination shows swelling in the left lower region and unerupted mandibular second molars. The boy underwent surgery under general anaesthesia to remove two lesions, along with the mandibular 1st, 2nd and 3rd molars, and the maxillary third molar. Pathological evaluation confirmed the lesions were dentigerous cysts.⁸

In 2010, Kannan N. reported a study of a 32-year-old male patient at Narayana Dental College & Hospital in Nellore. The patient experienced pain and purulent discharge from the upper left side jaw for six months. Although initial swelling decreased with medication, pus began to discharge later.¹⁷ An examination showed a 1 x 1 cm soft, non-tender swelling in the left cheek, with palpable and non-tender submandibular lymph nodes. Intraorally, there was an over-retained tooth (#53) and a missing tooth (#23), along with partial obliteration of the maxillary left buccal vestibular sulcus in the area of teeth 24 to 26, which was tender. A sinus opening with pus discharge was found near tooth #26, and aspiration revealed pus and blood. The patient underwent surgical enucleation of the cysts and extraction of the impacted canines under local anaesthesia. Histopathological examination confirmed dentigerous cysts associated with teeth #13 and #23.

In 2016, Jae-Yun Jeon studied a 15-year-old male patient referred to our clinic in January 2005 due to multiple asymptomatic cystic lesions in both jaws, discovered during a routine dental radiograph. The panoramic view showed bilateral radiolucent cystic lesions around the unerupted mandibular third molars and additional well-defined lesions in the superior-lateral aspects of both maxillary sinuses. In February 2005, the cystic lesions in the maxilla were enucleated using the Caldwell-Luc approach, and the mandibular third molars were extracted under general anaesthesia. Histopathological analysis confirmed a typical dentigerous cyst. The patient was monitored for ten years after surgery, showing no signs or symptoms related to the lesions.¹⁸

In 2019, Amal M. Sindi presented a case of bilateral mandibular dentigerous cysts that were discovered incidentally in a 44-year-old man who came in for the extraction of a retained maxillary deciduous tooth. The right-sided lesion measured approximately 3 × 1.5 cm and extended anteromedially to the distal surface of tooth #47, ranging from the alveolar ridge to the lower border of the mandible. In contrast, the left-sided lesion was smaller, measuring approximately 2 × 1 cm, and involved the distal surface and apex of tooth #37 anteromedially, also extending from the alveolar ridge. Notably, the left-sided cyst had a thicker inferior border than the right-sided cyst. Bilateral cyst

enucleation along with the extraction of the impacted wisdom teeth and excisional biopsy were performed under general anaesthesia. Histological examination of the tissue specimens obtained after the bilateral enucleation confirmed the diagnosis of bilateral dentigerous cysts.¹⁹

In 2021, Gen Udagawa conducted a study involving a 33-year-old woman who presented with swelling and pain on the right side of her mandible at Tokyo Women's Medical University Yachiyo Medical Center. The patient had no significant medical history or medications. During the oral examination, a sinus tract was observed on the right buccal cortical plate, along with swelling and tenderness upon palpation; however, there was no pus discharge. A panoramic radiograph revealed bilateral impaction of the second and third molars on both sides of the mandible. The patient underwent surgical extraction of the third molar, as well as the extraction of the second molar and enucleation of the associated lesion. Histopathological analysis confirmed the diagnosis of a dentigerous cyst. Following the surgical procedure, there were no signs of infection in the inferior alveolar nerve, and there were no reports of paresthesia.²⁰

In 2024, Zhibin Wei and colleagues presented a case involving a 35-year-old male patient who had a large odontogenic cyst. The patient was successfully treated using a multidisciplinary approach. His primary complaint was discomfort while chewing in the lower left molar region, which had persisted for one month. A clinical examination revealed that teeth 36 and 37 were intact and exhibited no pain upon percussion, while tooth 38 was unerupted. A radiological examination showed a well-defined, oval radiolucent lesion surrounding the crown of the unerupted tooth 38, extending to the distal root of tooth 37. The treatment plan was divided into two stages: first, the removal of the cyst and the impacted third molar, followed by filling the defect with collagen bone particles; second, the preservation of tooth 37 through hemisection, root canal treatment, and crown restoration. Pathological examination confirmed the presence of a dentigerous cyst. Eighteen months after treatment, the bone defect had completely healed, and tooth 37 was functioning well following the hemisection.¹⁶

7. Conclusion

This study presents a rare case of dentigerous cysts associated with impacted left and right lower third molars. The cysts were treated with surgical enucleation following confirmation from histopathological analysis. It is important to note that the absence of a concurrent syndrome does not rule out the possibility of dentigerous cysts, which should be removed to prevent future complications.

8. Source of Funding

None.

9. Conflict of Interest

None.

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