Clinicopathologic variability and spectrum of dentigerous cysts - A case series

Abstract

Background: Dentigerous cysts are developmental odontogenic cysts associated with impacted or unerupted teeth and are usually asymptomatic, though occasional aggressive behaviour has been reported.

Case Series: Three patients with uncommon presentations of dentigerous cysts were managed at a tertiary care centre, including a large mandibular lesion with root resorption in an elderly patient, bilateral mandibular cysts in a paediatric patient, and an incidentally detected maxillary cyst. Surgical enucleation with or without extraction was performed. Histopathology confirmed infected dentigerous cysts. Six-month follow-up showed satisfactory healing without recurrence.

Conclusion: Dentigerous cysts may show variable clinical behaviour. Early diagnosis and complete surgical enucleation ensure favourable outcomes and prevent recurrence or malignant transformation.

Keywords: Dentigerous cyst, odontogenic, enucleation, jaws.

Introduction

Dentigerous cysts are slow-growing odontogenic cysts originating from the dental follicle that were initially described by Paget in 1863. They account for about 24% of all jaw cysts and are most commonly linked to the crowns of impacted or unerupted third molars that attach at the level of the cementoenamel junction [1]. Their prevalence is estimated to be 1.44 cysts per 100 unerupted teeth. They are typically discovered by accident during a routine radiography evaluation and are frequently asymptomatic in clinical settings [2]. Dentigerous cysts are most frequently recognized radiographically as well-defined, unilocular, pericoronal radiolucent lesions (greater than 5 mm^3) with a sclerotic edge. The subtypes are

circumferential, lateral, and central, depending on where pericoronal radiolucency is located. [3]

Dentigerous cysts are benign, however they can result in significant bone resorption, root displacement, and neighbouring tooth resorption. Rarely, there have been reports of neoplastic transition into squamous cell carcinoma, mucoepidermoid carcinoma, or ameloblastoma.

This article aims to bring forward three uncommon presentations of dentigerous cyst cases and their management.

Case Series

Case 1

A 67-year-old woman complained of tooth pain and movement in regard to her mandibular left molars when she visited the Department of Oral and Maxillofacial Surgery. She didn't have any noteworthy medical history. Clinical examination revealed that 36 and 37 were grade I mobile with percussion-induced soreness, 38 was clinically absent, and there were no palpable mucosal or bony alterations or paresthesia. A distinct multilocular radiolucent lesion with sclerotic boundaries that covered the crown and mesial surface root of 38 was visible on OPG.

Computed Tomography (CT) confirmed an expansile lesion - measuring 51 x 34 x 25 mm, extending anteriorly till mesial root of 36, posteriorly till sigmoid notch, inferiorly till lower border of mandible with external root resorption in relation to 36 and 37.

Under general anesthesia, cyst enucleation and the extraction of 36, 37, and 38 were carried out while the inferior alveolar nerve was preserved. After surgery, the patient was monitored for six months. Excellent progressive bone healing with no recurrence was demonstrated by a sequential follow-up orthopantomogram (OPG).

Case 2

A 10-year-old girl complained of increased edema in the area of her left lower jaw over the previous five months when she visited the paediatric dental department. The patient describes a two-year history of a stainless steel (SS) crown prosthesis and pulpectomy for a bilateral deciduous second molar. The patient was referred to the department of oral and maxillofacial surgery after an initial examination revealed a possible odontogenic cyst tumour. Examining the left body of the mandibular region revealed bony hard, non-compression, non-fluctuant, non-pulsatile widespread swelling. Vestibular obliteration and intraoral buccal cortical expansion were observed in the 32–36 region with SS crown in relation to 75 & 85. No other mucosal alterations or neurological disorders were seen.

Bilateral unilocular radiolucency with sclerotic boundaries emerging laterally from unerupted 35 and 45 was shown by OPG. 75 and 85 were extracted while under general anesthesia. The unerupted 35 and 45 were then saved after cyst enucleation. Six months after surgery, the OPG shows unobstructed eruption of 35 and 45, adequate bone healing, and no recurrence.

Case 3

A 41-year-old man complained of pain during mastication in the right posterior tooth region when he visited the Department of Oral and Maxillofacial Surgery. During a screening CT scan of the patient's facial bones following a car accident a year ago, it was discovered that the patient had a dentigerous cyst in proximity to the affected 18 tooth site. After being asymptomatic for the previous ten months, he eventually started experiencing sporadic, non-radiating throbbing pain in that area when moving his jaw laterally. Examination revealed no pertinent clinical findings. The prior diagnosis of a clearly defined central radiolucency with sclerotic boundaries originating from the cementoenamel junction of impacted tooth 18 was validated by OPG.

The Cadwell Luc technique was used to treat the cyst for enucleation and extraction of 18 without piercing the intraoral mucosa. For antrostomy and sinus packing, ribbon gauze soaked in betadine and glycerine was employed; it was gradually removed over a period of seven days.

Six months later, the surgical site had healed nicely and there were no signs of maxillary sinus disorders.

Histopathology

Histological analyses of all these cases showed that the lesion was an infected dentigerous cyst with stratified squamous non-keratinizing cystic epithelium that ranged in thickness from two to three layers and a flat epithelial connective tissue interface. The capsule contained areas of hemorrhage, many cholesterol clefts, mucinous cystic filling, and increased vascularity. It had a moderate amount of collagen.

Discussion

Single dentigerous cysts are the second most common type of odontogenic cyst, after radicular cysts.

The crowns of unerupted or impacted teeth, particularly mandibular third molars, maxillary canines, and mandibular premolars, are most frequently associated with dentigerous cysts (DCs), which are developing odontogenic cysts [1,2]. Since the cyst was linked to an unerupted, clearly defined unilocular radiolucency on imaging, the current case series is consistent with this distribution.

Mandibular dentigerous cysts are often unilateral and frequently coexist with conditions like Maroteaux-Lamy syndrome and cleidocranial dysplasia. Less than twenty cases of non-syndromic bilateral odontogenic cysts have been documented in the literature thus far.

The most popular methods for treating these cysts are enucleation or marsupialization. The patient's age, the size of the lesion, the position of the related tooth, and the relationship to neighbouring teeth are all taken into consideration when choosing a course of treatment. [10, 11]
To confirm the diagnosis, a comprehensive histological study was performed in each of our

cases. because metaplastic alterations, such as mucous, ciliated, or even sebaceous epithelium, may be present in inflammatory or secondarily infected cysts, making it more difficult to distinguish them from other cystic or neoplastic lesions [4].

The lesion showed standard radiographic features, such as attachment to the cementoenamel junction and pericoronal radiolucency surrounding the crown, which are essential for diagnosing DCs [6]. Notably, despite the cyst's benign nature, it had buccal cortical enlargement, elevation, vestibular obliteration, and slight tooth displacement, all of which suggested the possibility of local aggression.
Although neoplastic transition is uncommon, it is nonetheless clinically relevant even if the majority of DCs have an indolent history. Ameloblastoma, squamous cell carcinoma, and mucoepidermoid carcinoma have all been reported to develop from the epithelial lining of persistent or untreated dentigerous cysts [7]. In certain instances, immunohistochemical analyses have also revealed the presence of proliferative and carcinogenic markers such p53, Bcl-2, and Ki-67, indicating a possible dysregulation of cellular growth pathways [8].

In the current case series, follow-up imaging at six months revealed no signs of recurrence, and surgical enucleation with extraction of the related tooth was curative. This is in line with research showing that when the lesion is completely removed, total enucleation produces excellent results with minimal recurrence rates [5]. In bigger cysts, especially in younger individuals, marsupialization may be taken into consideration to protect nearby tissues and aid in the eruption of affected teeth. [9]

Conclusion

This case series emphasizes the significance of early identification and proper surgical treatment of dentigerous cysts. These lesions are common and usually benign, but in order to rule out unusual features and the possibility of malignant transformation, comprehensive radiographic and histologic investigation is necessary.

References

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Case 1 :

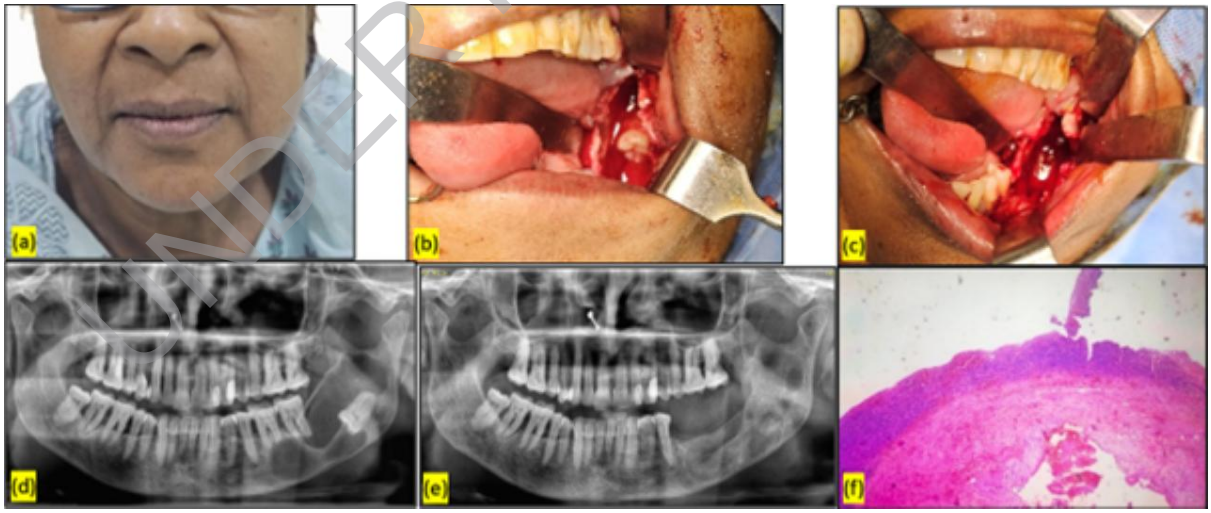

Figure 1 : Left to Right (a) Preoperative extraoral image (b) Intraoperative image- lesion with impacted 38 (c) Intraoperative image – post enucleation (d) Preoperative OPG (e) Postoperative 6 months OPG (f) Histopathological section – H & E stained.

Case 2 :

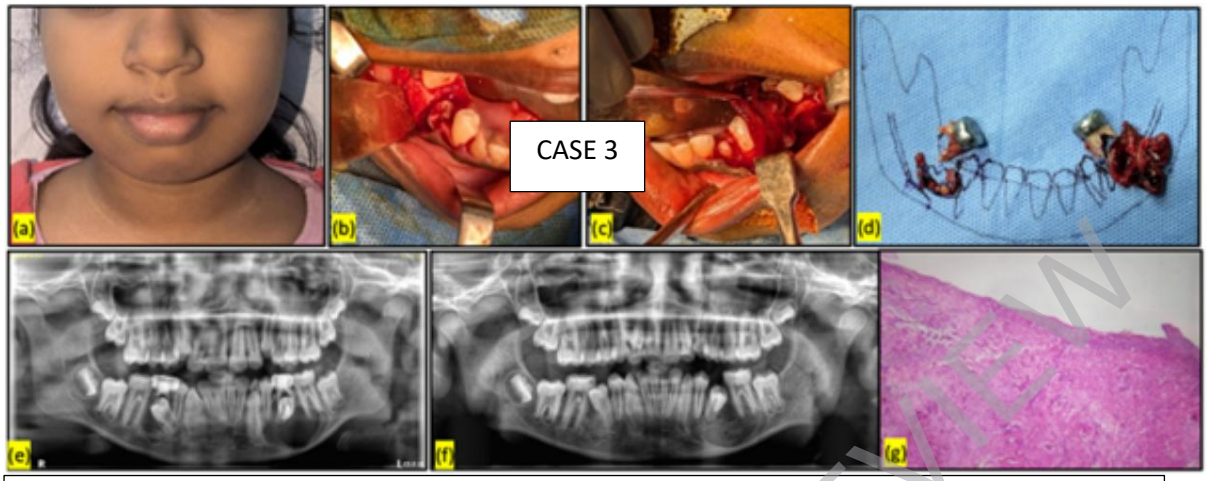

Figure 2 : Left to Right (a) Preoperative extraoral image (b) Intraoperative image- right side lesion (c) Intraoperative image- left side lesion (d) diagrammatic representation of post enucleation specimen with extracted 75 & 85 (e) Preoperative OPG (f) Postoperative 6 months OPG (g) Histopathological section – H & E stained.

Case 3 :

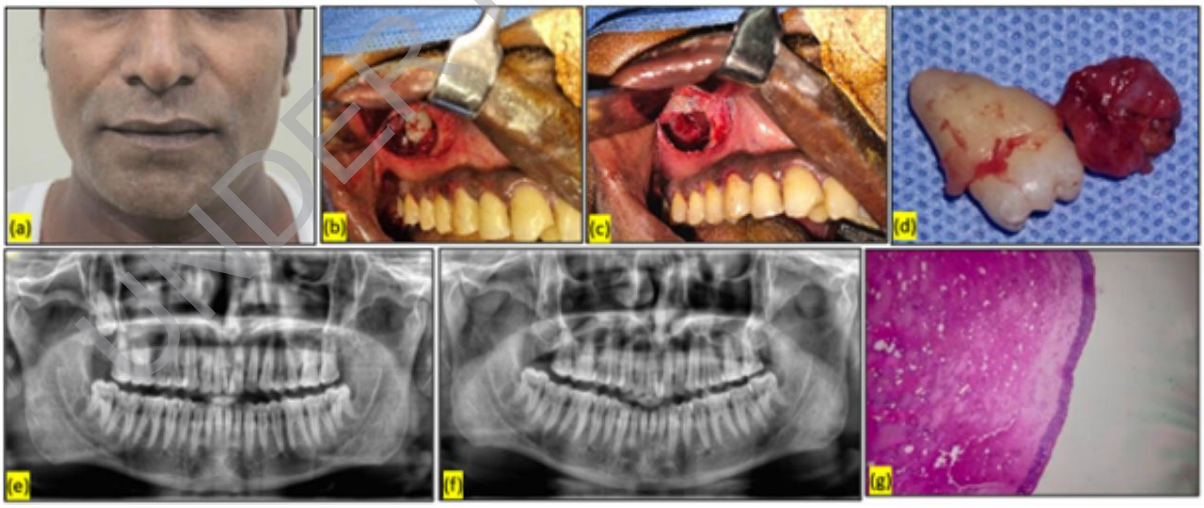

Figure 3 : Left to Right (a) Preoperative extraoral image (b) Intraoperative image- lesion with the impacted 18 (c) Intraoperative image- post enucleation (d) Specimen with extracted 18 (e) Preoperative OPG (f) Postoperative 6 months OPG (g) Histopathological section – H & E stained.