

Dentigerous cyst in the mandibular premolar region of a young adult: A case report

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Abstract

Background: Dentigerous cyst is one of the most common developmental odontogenic cysts and is characteristically associated with the crown of an unerupted or impacted tooth. Although frequently encountered in the posterior mandible, unusual presentations involving the mandibular anterior and premolar region may create diagnostic challenges.

Case Report: A 23-year-old male reported to the Department of Oral and Maxillofacial Surgery with pain and swelling in the lower left posterior tooth region for approximately 15–20 days. Medical and personal histories were non-contributory. Clinical examination was supplemented by panoramic and cross-sectional radiographic investigations, which demonstrated a radiolucent lesion involving the mandibular left anterior–premolar region. A provisional diagnosis of an odontogenic cyst was considered. Fine-needle aspiration cytology revealed inflammatory cells, macrophages and debris and was reported as suggestive of an inflammatory lesion. Surgical management was performed under local anesthesia. Extraction of teeth 75, 34 and 35 was followed by surgical enucleation of the cystic lesion. The excised tissue was submitted for histopathological examination. Histopathological examination demonstrated a cystic lumen lined by epithelium with an underlying connective tissue stroma, confirming the diagnosis of a dentigerous cyst. Postoperative healing was satisfactory, with progressive resolution of the surgical site at subsequent follow-up visits.

Conclusion: This case emphasizes the importance of correlating clinical, radiographic, cytological and histopathological findings in the diagnosis of odontogenic cysts. Complete enucleation with appropriate management of associated teeth can provide satisfactory healing in selected cases.

Keywords: Dentigerous cyst, odontogenic cyst, mandibular cyst, enucleation, histopathology, young adult, oral and maxillofacial surgery

Introduction

Dentigerous cysts are developmental odontogenic cysts associated with the crown of an unerupted permanent tooth [1, 2]. They develop by accumulation of fluid between the reduced enamel epithelium and the crown of the developing tooth and are among the most frequently encountered developmental odontogenic cysts. They are usually discovered during routine radiographic examination or when they become sufficiently large to produce swelling, pain, infection, displacement of adjacent teeth or expansion of cortical bone [3, 5].

Radiographically, a dentigerous cyst generally appears as a well-defined, unilocular radiolucency associated with the crown of an unerupted tooth [1, 3]. However, inflammatory changes may modify its radiographic and cytological appearance and may result in an initial diagnosis of another odontogenic cyst or inflammatory lesion. Therefore, definitive diagnosis requires clinicoradiographic correlation and histopathological examination.

Treatment depends on factors such as patient age, lesion size, location, involvement of adjacent anatomical structures and the relationship of the lesion with associated teeth [6, 9].

Enucleation, marsupialization and decompression are commonly employed treatment modalities [6, 9]. In selected lesions, complete enucleation with extraction of non-restorable or causative teeth can provide predictable healing. The present case describes the clinical presentation, radiographic evaluation, surgical management, histopathological diagnosis and follow-up of a dentigerous cyst involving the mandibular left anterior–premolar region in a young adult.

Case Report

1. Patient Information

A 23-year-old male patient reported to the Department of Oral and Maxillofacial Surgery with the chief complaint of pain and swelling in the lower left posterior tooth region for approximately 15–20 days. The patient's medical and personal histories were non-contributory.

Extraoral clinical photographs included frontal, lateral and inferior views. Intraoral examination included frontal and bilateral lateral views. The maximum interincisal mouth opening was recorded as 56 mm, indicating adequate mouth opening for intraoral surgical access.



Fig 1: Preoperative clinical examination showing extraoral and intraoral views

2. Radiographic Examination

Radiographic assessment included panoramic and cross-sectional imaging. The radiographic images demonstrated a radiolucent lesion involving the mandibular left anterior-premolar region, corresponding clinically to the region of teeth 33–36.

The initial clinical diagnosis documented in the case presentation was suspected dentigerous cyst in relation to the 33–36 region. The radiographic assessment was important in determining the extent of the lesion and its relationship to the adjacent teeth and surrounding mandibular structures.

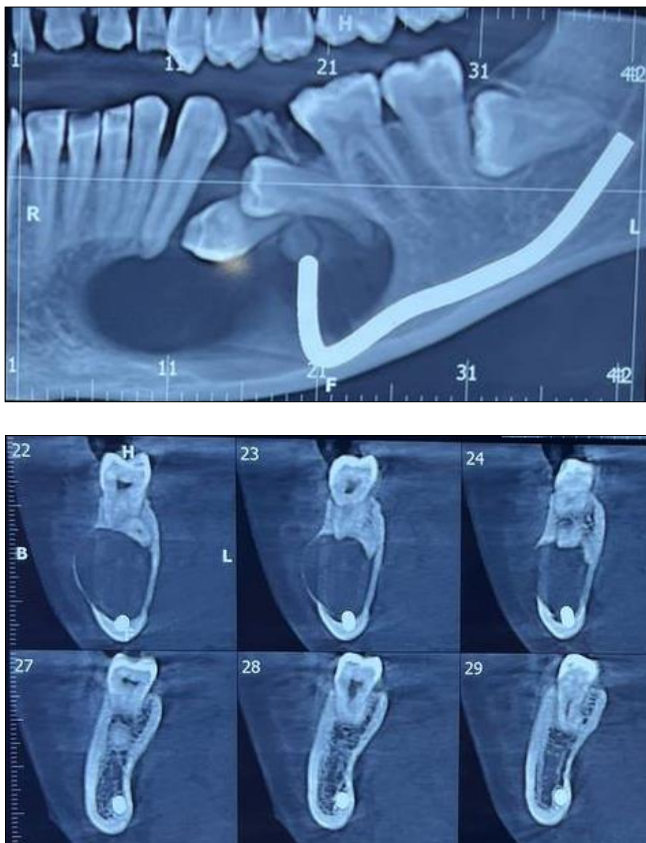


Fig 2: Preoperative panoramic and cross-sectional radiographic images demonstrating the mandibular radiolucent lesion

3. Fine-Needle Aspiration Cytology

Fine-needle aspiration cytology (FNAC) was performed as part of the diagnostic work-up. The cytological specimen was fixed in 95% alcohol and subjected to Papanicolaou

staining. On microscopic examination, the report described a moderate inflammatory infiltrate predominantly composed of macrophages and debris. The overall cytological features were interpreted as suggestive of an inflammatory lesion. The provisional diagnosis on the FNAC report was recorded as a radicular cyst.

This discrepancy between the clinical/radiographic suspicion and cytological interpretation reinforced the need for histopathological examination of the surgically removed lesion.



Fig 3: Fine-needle aspiration cytology procedure and cytopathological report showing inflammatory cells, macrophages and debris

Surgical Management

The patient underwent surgical treatment under local anesthesia. The operative procedure consisted of extraction of teeth 75, 34 and 35, followed by surgical enucleation of the cystic lesion.

Following adequate local anesthesia and preparation of the operative field, access to the lesion was obtained intraorally. The involved teeth were extracted, following which the cystic lesion was identified and carefully separated from the

surrounding tissues.

The cystic tissue was removed and submitted for histopathological examination. The intraoperative photographs demonstrate the surgical access, cystic tissue and extracted teeth. The cystic specimen was obtained in multiple fragments and was preserved for pathological assessment. After removal of the lesion and adequate surgical debridement, the operative site was irrigated and primary closure was achieved with sutures.



Fig 4: Intraoperative photographs showing surgical access, extraction of involved teeth, identification and removal of cystic tissue, and primary wound closure



Fig 5: Gross specimen consisting of excised cystic tissue and extracted tooth

Histopathological Examination

The excised tissue was submitted to the Department of Oral and Maxillofacial Pathology for histopathological examination. The specimen consisted of two bits of excisional biopsy tissue along with a tooth specimen (35). Histological sections were stained with hematoxylin and eosin.

Microscopic examination demonstrated a cystic lumen lined

by epithelium with an underlying connective tissue stroma. The connective tissue component consisted predominantly of collagen fibers with fibroblasts and vascular spaces. These microscopic features were consistent with a dentigerous cyst.

The final histopathological diagnosis was: Dentigerous cyst. The diagnosis was established by clinicopathological correlation.

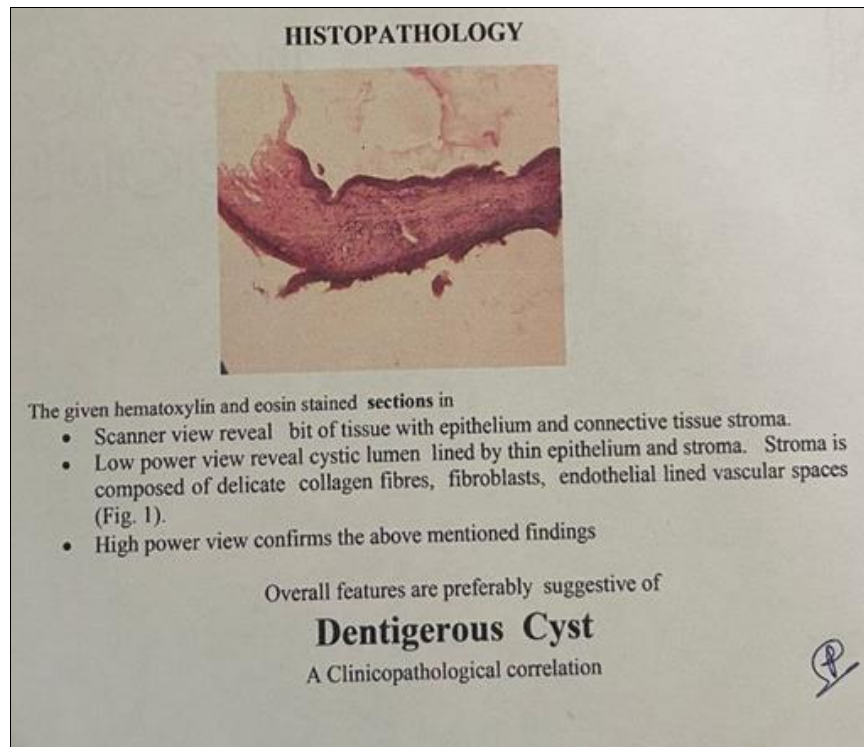


Fig 6: Histopathological examination demonstrating cystic lining and connective tissue stroma consistent with a dentigerous cyst

Follow-up

The patient was reviewed postoperatively. On follow-up on 29th April 2026, clinical photographs demonstrated satisfactory postoperative healing of the surgical site without obvious extraoral complications.

The postoperative photographs demonstrated progressive resolution of the surgical wound and satisfactory mucosal healing with fabrication of functional obturator.



Fig 7: First postoperative follow-up demonstrating satisfactory healing with functional obturator

Discussion

Dentigerous cysts are developmental odontogenic cysts that develop in association with unerupted teeth. They are generally characterized by attachment of the cystic lining to the cervical region of the associated tooth. Their clinical importance is related not only to their frequency but also to their potential to attain considerable size before becoming symptomatic.

The present patient was a 23-year-old male who presented with pain and swelling in the mandibular left posterior region for 15–20 days. This relatively acute symptomatic presentation may have been related to secondary inflammatory changes within the lesion. The clinical presentation was therefore not entirely characteristic of an asymptomatic developmental cyst.

An important feature of the present case was the discrepancy between the initial cytological interpretation

and the final histopathological diagnosis. FNAC demonstrated inflammatory cells, macrophages and debris and was interpreted as an inflammatory lesion, with a provisional diagnosis of radicular cyst. However, histopathological examination of the excised tissue demonstrated a cystic epithelial lining and connective tissue wall consistent with a dentigerous cyst.

This highlights a significant principle in the diagnosis of odontogenic cysts: cytological findings should be interpreted in conjunction with clinical and radiographic findings, and histopathological examination remains essential for definitive diagnosis when the lesion is surgically removed.

The differential diagnosis of a mandibular radiolucent lesion in a young adult includes radicular cyst, residual cyst, odontogenic keratocyst, unicystic ameloblastoma and other odontogenic lesions [3, 5, 10]. The relationship of the

radiolucency with an unerupted tooth, its margins, internal characteristics and anatomical location are important diagnostic considerations.

Treatment selection for dentigerous cysts is individualized. Enucleation is a definitive treatment that permits removal of the entire cystic lining and provides tissue for histopathological evaluation [6, 8, 9]. In the present case, extraction of teeth 75, 34 and 35 was followed by enucleation of the lesion under local anesthesia.

The postoperative follow-up demonstrated satisfactory clinical healing. The first postoperative assessment was performed on 03 April 2026, followed by a second follow-up on 10 May 2026, at which satisfactory soft-tissue healing was documented.

An additional point of clinical interest is the location of the lesion. Dentigerous cysts are frequently associated with mandibular third molars and maxillary canines, while involvement of mandibular premolars is also recognized and may be clinically important because of its potential relationship with developing permanent teeth [3, 4, 7]. Consequently, careful evaluation of the radiographic relationship between the lesion and the associated tooth is particularly important in such cases.

Conclusion

Dentigerous cysts can occasionally present with atypical clinical and cytological features, making diagnosis challenging. In the present case, a young adult male presented with pain and swelling in the mandibular left region, and the initial investigations produced an inflammatory/radicular cystic impression. However, definitive histopathological examination established the diagnosis of a dentigerous cyst.

The case emphasizes the importance of integrating clinical examination, radiographic findings, aspiration cytology and histopathological examination in the diagnosis of odontogenic cystic lesions. Surgical enucleation following appropriate management of the involved teeth resulted in satisfactory postoperative healing during the documented follow-up period.

References

1. Shear M. Developmental odontogenic cysts. An update. *J Oral Pathol Med*,1994;23(1):1–11.
2. Mourshed F. A roentgenographic study of dentigerous cysts. I. Incidence in a population sample. *Oral Surg Oral Med Oral Pathol*,1964;18:47–53.
3. Zhang LL, Yang R, Zhang L, Li W, MacDonald-Jankowski D, Poh CF. Dentigerous cyst: a retrospective clinicopathological analysis of 2082 dentigerous cysts. *Oral Dis*,2010;16(1):40–45.
4. Meningaud JP, Oprean N, Pitak-Arnnp P, Bertrand JC. Odontogenic cysts: a clinical study of 695 cases. *J Oral Sci*,2006;48(2):59–62.
5. Jones AV, Craig GT, Franklin CD. Range and demographics of odontogenic cysts diagnosed in a UK population over a 30-year period. *J Oral Pathol Med*,2006;35(8):500–507.
6. Motamedi MH, Talesh KT. Management of extensive dentigerous cysts. *Br Dent J*,2005;198(4):203–206.
7. Martinez-Perez D, Varela-Morales M. Conservative treatment of dentigerous cysts in children: report of four clinical cases. *J Oral Maxillofac Surg*,2001;59(3):331–333.

8. Hyomoto M, Kawakami M, Inoue M, Kirita T. Clinical conditions for eruption of mandibular premolars associated with dentigerous cysts. *J Oral Maxillofac Surg*,2003;61(6):653–657.
9. Ertas U, Yavuz MS. Interesting eruption of impacted permanent teeth after marsupialization of a dentigerous cyst: a case report. *J Oral Maxillofac Surg*,2003;61(6):728–731.
10. Mosqueda A, Irigoyen ME, Diaz MA, Torres-Tejero MA. Odontogenic cysts. Analysis of 856 cases. *Med Oral*,2002;7(2):89–96.
11. Ochsenius G, Escobar E, Godoy L, Peñafiel C. Odontogenic cysts: analysis of 2,944 cases in Chile. *Med Oral Patol Oral Cir Bucal*,2007;12(2)–E91.
12. Koseoglu BG, Atalay B, Erdem MA. Odontogenic cysts: a clinical study of 90 cases. *J Oral Sci*,2004;46(4):253–257.