

An Intriguing Presentation of Dentigerous Cyst

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ABSTRACT

One of the most prevalent types of developmental odontogenic cysts is the dentigerous cyst, also known as the follicular cyst often discovered in connection with the crown of an impacted permanent or supernumerary tooth. According to a prevalence study of odontogenic cysts and tumors, the dentigerous cyst registered a substantial presence at 26.7%. In this particular case, a 34-year-old female patient sought consultation due to a distressing swelling leading to facial deformity localized in the mandibular anterior region. A comprehensive assessment encompassing clinical, histopathological, and radiographic examinations was diligently conducted, revealing findings consistent with the characteristic traits associated with a dentigerous cyst.

Keywords: dentigerous cyst; impacted tooth; odontogenic cysts

INTRODUCTION

The second most commonly presented odontogenic cysts are Dentigerous cysts after Radicular cysts, and regarded as the most common developmental cyst of the jaws.¹ It is also known as follicular cyst, is caused by fluid accumulation between the reduced enamel epithelium and the enamel surface of a formed tooth and originates by separation of the follicle from around the crown of an unerupted tooth.¹ The most frequently involved teeth are mandibular third molar and maxillary canine.² Young men are most commonly involved with a ratio of 1.6:1 usually associated with impacted or unerupted teeth.¹ Supernumerary teeth are associated with this cyst and constitutes only 5–6% of all dentigerous cysts. We hereby report a case of a 34-year-old female patient sought consultation due to a distressing swelling leading to facial deformity localized in the mandibular anterior region.

CASE DESCRIPTION

A 34 years old Nepalese female with a chief complaint of a hard swelling on her lower front tooth region presented to the department of Oral and Maxillofacial surgery. She was confronted with a slow progression of the swelling since past 1 year. There was negative history of trauma and no significant findings were delineated on her medical history.

Her extraoral inspection findings revealed facial deformity pertaining to mental region. The swelling was severe, hard in consistency, tender on palpation and was surrounded by normal skin.

According to intraoral examination, the swelling was

diffuse, solitary, soft, tender, pulsatile, fluid filled, oval in shape, measuring 2x2cm, located in mandibular vestibular region. No significant elevation in temperature or purulent discharge was observed. Deciduous teeth 73 and 83 were confirmed to be retained. Teeth 31, 32, 73, 41, 42 and 83 were associated with the swelling, displaying various grades of mobility. Tooth 73 exhibited the greatest degree of mobility (Grade III). Teeth 31, 32, and 41 displayed moderate mobility (Grade II), while teeth 42 and 83 presented with slight mobility (Grade I).



Figure 1: Extraoral view



Figure 2: Intraoral views

INVESTIGATIONS

A handful of investigations were performed beginning with a radiographic inspection, an electric pulp test of associated teeth, followed by an incisional biopsy. The panoramic radiograph, suggestive of a dentigerous cyst, disclosed a large, expanding, well defined, unilocular radiolucent lesion of size approximately 2X2cm, enclosed within a well-defined radiopaque border, in relation to the anterior region of the mandible and associated with teeth 31, 32, 73, 34, 35, 41, 42, 83 and 44. The lesion is seen extending from mid-root of the impacted 43 to the apex of 34. The two horizontally impacted mandibular permanent canines 33 and 43 were seen enveloped inside the lesion. Resorption of 31, 32, 73, 41, 42, 83 were also evident.

Electric pulp testing of the involved teeth revealed that tooth 31 exhibited a normal response (responded at 4), tooth 41 exhibited a delayed response (responded at 7) and teeth 35 and 45 responded at 5. However, teeth 32, 34, 42, and 44 were non-responsive to the vitality test.

Shortly thereafter, a fine needle aspiration cytology (FNAC) of the lesion was carried out to generate more clarity into reaching a diagnosis. The aspiration revealed a clear, strawcolored fluid. Scanty epithelium was also identified during the biopsy procedure, further suggesting the likelihood of a dentigerous cyst. The sample obtained from biopsy was then sent for a histopathological examination. Hematoxylin and eosin (H&E) staining of the incisional biopsy demonstrated the following at 10x magnification: a non-keratinized, stratified squamous epithelium with an underlying connective tissue. At 40x magnification, the epithelium appeared flattened, resembling reduced enamel epithelium. The underlying connective is composed of loosely arranged fibers with blood vessels.

Axial view of cone beam CT (CBCT) revealed horizontally impacted mandibular canines. Radiolucency appeared more pronounced labially, resulting in expansion and thinning of labial cortical bone, while lingual cortical bone remained intact.

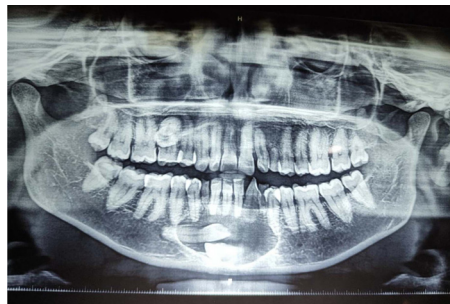


Figure 3: Orthopantomogram revealing a large radiolucent lesion associated with horizontally impacted permanent mandibular canines

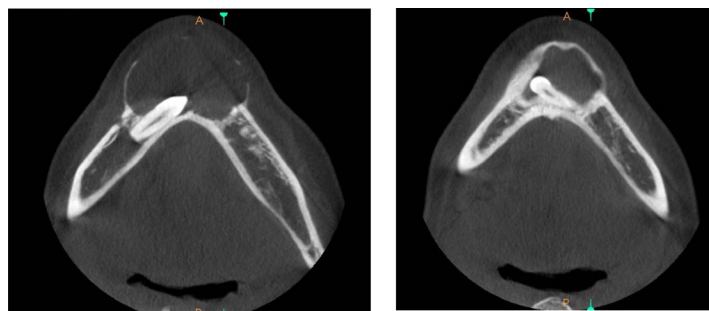


Figure 4: Axial section of CBCT identifying lesion pronounced more labially along with the impacted mandibular canines



Figure 5: Frontal view of CBCT of mandible



Figure 6: Specimen of Incisional Biopsy



Figure 7: Surgical site closure of incisional biopsy

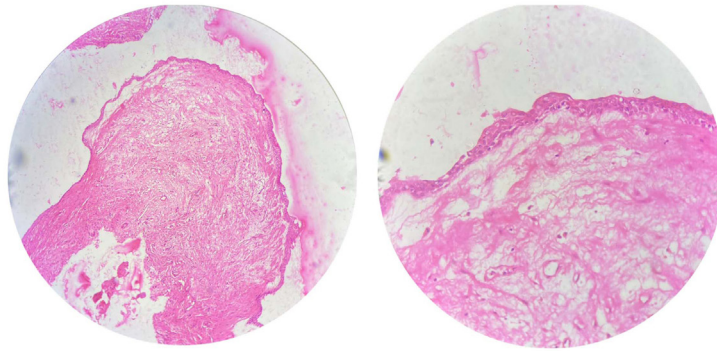


Figure 8: Histopathological examination of incisional biopsy specimen at low (10x) and high (40x) magnification

TREATMENT

Correlating clinical presentation with results of subsequent investigations, final diagnosis was established as a dentigerous cyst associated with impacted canines and retained deciduous teeth.

Therefore, enucleation of the cyst followed by extraction of the associated teeth were carried out. While teeth 34 and 44 could potentially have been preserved, the patient declined root canal therapy, necessitating their extraction as well.

Surgically enucleated specimens were further sent for a definitive histopathological examination. The microscopic evaluation under 10x revealed a non-keratinized, stratified squamous epithelium with an underlying dense bundle of connective tissue. High-power microscopic examination (40x) confirmed epithelium composed of 2-8 layers of flattened cells with areas of hyperplasia and an underlying connective tissue suggestive of dentigerous cyst.



Figure 10: Surgical wound closure following enucleation and extraction

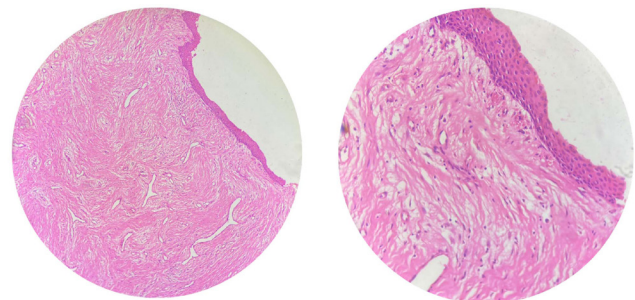


Figure 11: Histopathological examination of excisional biopsy specimen at low (10x) and high (40x) magnification

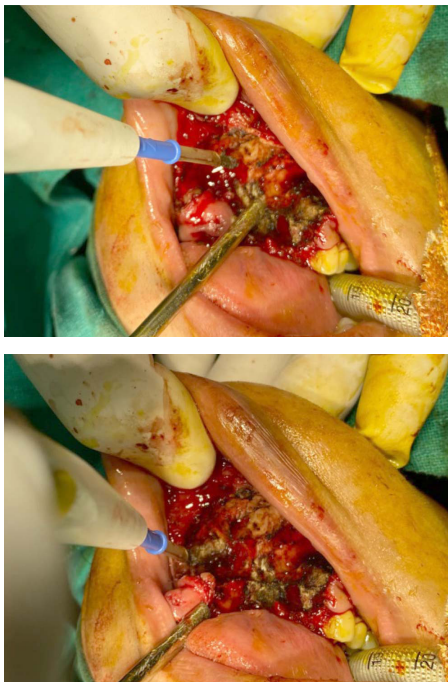


Figure 9: Cyst enucleation with concomitant extraction of associated and impacted teeth

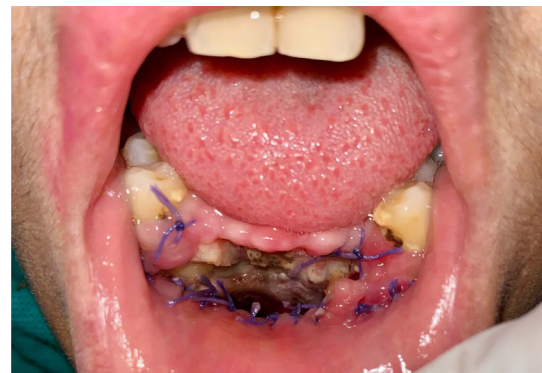


Figure 12: Follow up after 3 weeks

DISCUSSION

Cysts of jaws often manifest as a jaw swelling and are subclassified into odontogenic, non-odontogenic and pseudocysts.¹⁻³ Dentigerous cysts are developmental

odontogenic cysts that circumscribes and encases crown of an unerupted tooth. The cyst attaches at cemento-enamel junction (CEJ) where tooth's root and crown meet. Dentigerous cyst comprises approximately 20% of all odontogenic cysts, typically developing around 10-30 years of age. The lesion exhibits a predilection for males, especially in mandibular third molar region.⁴

In the case described in this report, probable cause of dentigerous cyst could be the horizontally impacted permanent mandibular canines. The dentigerous cyst originates from the accumulation of inflammatory fluid, a byproduct of obstructed follicular veins associated with an unerupted tooth. This fluid collects between the reduced enamel epithelium and crown of the tooth. Due to hydrostatic pressure of its contents, the cyst enlarges by a unicentric expansion.⁵

Dentigerous cysts are easily identified on radiographs due to their well defined radiolucent appearance. While X-rays offer a preliminary assessment, A CT scan proves invaluable in not only precisely pinpointing cyst's pathology and location of the impacted tooth, but also in delineating lesion's entire scope and revealing any cortical bone erosions or infiltration into neighboring soft tissues. This comprehensive information significantly helps in formulating an appropriate treatment plan.⁶

Radiographic examination reveals three distinct presentations of dentigerous cysts. The most common, the central variant, features a radiolucent area encircling solely crown of the involved tooth, with crown itself protruding into cyst cavity. In lateral variant, cyst develops alongside root of tooth, partially enveloping crown.

Finally, the circumferential variant manifests as a complete encasement of tooth by cyst, encompassing both the crown and extending down root surface such that the entire tooth resides within the cyst. This case exhibited a presentation of the circumferential variant.

Majority of dentigerous cyst require enucleation along with extraction of impacted teeth as treatment.⁷ In this case, teeth associated with the swelling necessitated extraction due to their poor prognosis. Marsupialization is advocated for larger cysts when a solitary drainage procedure may prove inadequate and complete excision of adjacent structures isn't deemed preferable.⁸ In case of large cyst, Scolozzi et. al recommended enucleation followed by immediate implantation of bone graft materials.⁹ On rare occasions, dentigerous cyst may undergo malignant transformation into squamous cell carcinoma, mucoepidermoid carcinoma or even ameloblastoma.¹⁰ Cysts that are diagnosed histopathologically usually bear an excellent prognosis, with recurrence manifesting infrequently.¹¹

CONCLUSION

The management of dentigerous cyst epitomizes a multidisciplinary approach, consisting of precise diagnosis, meticulous surgical intervention achieved through enucleation and removal of the involved impacted and non-salvageable affected teeth alongside a proper histopathological confirmation. Long term follow up is crucial to monitor for potential recurrence and to ensure a sustained oral health.



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