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Dentigerous Cyst in Anterior Maxillary Region in a 9-Year-Old Child: A Case Report

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ABSTRACT

Aim and background: The aim of this case study is to highlight the diagnosis of dentigerous cyst in anterior maxillary region in a child which is an infrequent occurrence. Dentigerous cysts represent developmental odontogenic lesions that exhibit a benign and gradually progressive nature. They commonly develop in association with impacted teeth, most often affecting the mandibular arch, especially the third molar area, and are infrequently observed during the first decade of life.
Case description: This case reports discusses the occurrence of dentigerous cyst in anterior maxillary region of a 9-year-old female patient.
Conclusion: This case highlights the successful diagnosis and treatment of a dentigerous cyst in a 9-year-old female patient through radiological and pathological evaluation.
Clinical significance: This case signifies the early detection and early intervention of dentigerous cyst's unusual site of occurrence in anterior maxillary region.

Keywords: Dentigerous cyst, Mixed dentition, anterior maxilla, maxillary sinus, enucleation

INTRODUCTION

Dentigerous cysts are benign, developmental odontogenic cysts that arise from follicle surrounding an unerupted tooth's crown.[1] They account for 20-24% of jaw cysts and typically occur in the 2nd-3rd decades of life, with a higher female incidence.[1] Commonly involved teeth include mandibular and maxillary third molars.[2]
These cysts are usually asymptomatic but can become large, causing cortical expansion and erosion. Radiographically, they appear as well-defined, unilocular radiolucencies around the crown of an unerupted tooth.[3] Treatment involves surgical removal or decompression to save the involved tooth.[4] Complications can include pathologic bone fracture, tooth loss, and development of squamous cell carcinoma or ameloblastoma.[1]

CASE DESCRIPTION

A 9 year old female patient reported to the department of pediatric and preventive dentistry, with a chief complaint of painless

swelling on left side of face which gradually increased in size over a period of 2 months. Past medical and dental history was non contributory. On general examination, patient was apparently healthy. Extra-oral examination revealed gross asymmetry of left side of face due to diffuse swelling seen extending superoinferiorly from lower border of orbit till 0.5 cm below ala tragus line, and anteroposteriorly from ala of nose till line joining outer canthus of eye (Fig. 1).The size of swelling was approximately 4 x 3.5 cm and color was similar to adjacent skin. On palpation, Swelling was afebrile, hard in consistency, non-tender, non-compressible and non-pulsatile. On intra-oral examination, a diffuse, soft, compressible swelling, obliterating upper front labial vestibule in the region of 21, 62, 63, 64 was seen with approximately 2.5 x 1.5 cm size and color similar to adjacent mucosa (Fig.2) . On palpation, swelling was afebrile, soft, non-tender and non-pulsatile. The teeth present in 2nd quadrant were 21, 62, 63, 64, 24, 65 and 26 out of which 62 and 64 were root stumps. Based on history and clinical findings, a provisional diagnosis of infected periapical cyst was given. Differential diagnosis given were dentigerous cyst, adenomatoid odontogenic tumor and calcifying odontogenic cyst. The investigations performed to confirm diagnosis were FNAC, OPG, CBCT and Incisional biopsy (Fig.3 and 4). The FNAC revealed straw colored aspirate which histologically reported as cystic fluid. The OPG showed a well defined radiolucency involving left maxillary sinus enclosing 22 and 23 with evident displacement of 23 . CBCT showed well defined hypodense lesion in maxillary left anterior region extending into and covering entire left maxillary sinus. The lesion was attached to tooth 22, measuring approx. 21.91 x 26.61 x 32.80 mm.The displacement of left permanent canine was seen into maxillary sinus near infraorbital margin, it's orientation was anteroposteriorly with crown facing anteriorly and root posteriorly. The lesion was displacing lateral wall of nose medially. Incisional biopsy was performed and single soft tissue bit measuring about 18 x 8 x 6 mm in size was sent for histopathological examination which revealed infected dentigerous cyst. Based on the performed investigations a final diagnosis of infected dentigerous cyst was made. Thereafter, the treatment performed for this case was enucleation of cyst with extraction of 22, 62, 63 and 64. Whereas, 23 was preserved.The excised tissue histopathologically was confirmed as dentigerous cyst. At the 6th month follow up, 23 was seen to be erupting spontaneously.(Fig. 6,7)

Figure 1a, 1b and 1c: Extra-oral pre-operative photographs

Figure 2: Intra-oral pre-operative photograph

Figure 3: Fine Needle Aspiration Cytology

Figure 4: Pre-operative Orthopantomogram

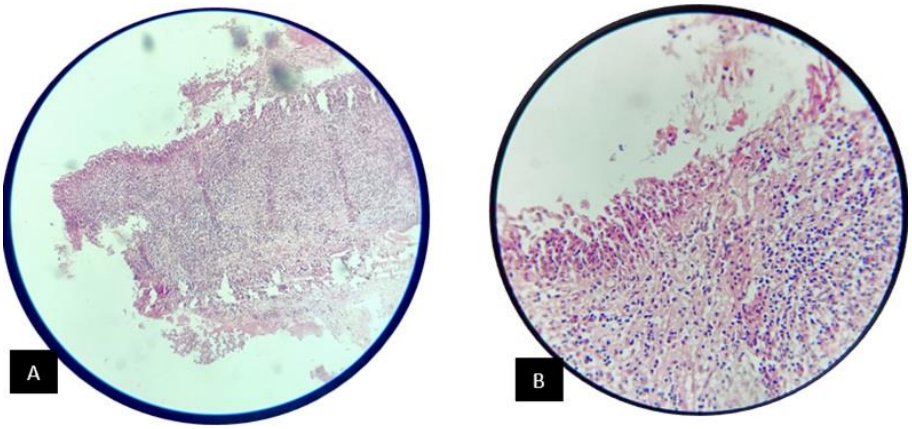

Figure 5: Histopathology slides in a) 10x and b) 40x

Figure 6a, 6b and 6c: Extra-oral post-operative photographs

Figure 7: Intra- oral post operative photograph showing spontaneous eruption of permanent left maxillary canine

DISCUSSION

Dentigerous cyst ranks second among the most frequently encountered odontogenic cysts and is typically associated with an impacted or unerupted tooth. It arises when fluid collects between the enamel surface of the developing tooth and the surrounding reduced enamel epithelium, leading to enlargement of the dental follicle.[1,5]

Dentigerous cysts account for more than 24% of jaw cysts.[1] The substantial majority of dentigerous cysts involve the mandibular third molar and the maxillary permanent canine, followed by the mandibular premolars, maxillary third molars and rarely the central incisors. Studies have shown that the incidence rate of dentigerous cysts involving the maxillary central incisor was 1.5% as compared to 45.7% involving the mandibular third molar.[6] Dentigerous cysts involving the permanent central incisor are rare.[7,8] Dentigerous cysts most commonly occur in the 2nd and 3rd decades of life. These lesions can also be found in children and adolescents with male : female ratio of 1.5:1.[6] Dentigerous cyst are usually solitary but they can be multiple and bilateral when associated with syndromes like Gorlin–Goltz syndrome, cleidocranial dysplasia and Maroteaux–Lamy syndrome.[1]

This fluid accumulation occurs as a result of the pressure exerted by an erupting tooth on an impacted follicle, which obstructs the venous outflow and thereby induces rapid transudation of serum across the capillary wall.[9,10] The resultant periapical inflammation will spread to involve the follicle of the unerupted permanent successor; an inflammatory exudate ensues and results in dentigerous cyst formation.[1] A follicular space of more than 5 mm can be suspected as dentigerous cyst.[11]

The aspirate is usually straw colored, except in cases of infection it gives a blood tint appearance. The total protein content is usually 4-8g/100mL. [12,13]

The cyst usually does not cause any symptoms initially. Because of this, it can grow quite large before it is diagnosed. It only causes discomfort when it becomes big. If it is found early, it is usually because of a routine radiographic examination. [14]

Although the definitive diagnosis of cystic lesions requires histopathological analysis, clinical and radiological examinations are of

paramount importance in establishing the differential diagnosis.[5]

Dentigerous cyst shows certain radiographic features which are particular to its diagnosis like the attachment of lesion to the CEJ and enveloping of tooth within the cystic cavity due to its origin from reduced enamel epithelium. It usually is unilocular and displaces the associated tooth in an apical direction along with resorption of adjacent tooth. It usually expands the outer cortical boundary of involved jaw. [5,15]

CBCT is of paramount importance as it gives a precise report of location, size, relation to adjacent structures and extent of cortical expansion. Dentigerous cyst appears as a uniform hypodense structure. [5]

The radiographic features which favoured the diagnosis of Dentigerous cyst in this case were presence of corticated borders of the lesion and impacted 22 within the lesion boundaries.

Histopathologically, dentigerous cysts have a thin, stratified squamous non-keratinized epithelial lining, approximately 2-4 cell layers thick, surrounding a fluid-filled sac containing clear or amber-colored fluid rich in cholesterol. Rarely, the lining can undergo neoplastic transformation, potentially giving rise to tumours like ameloblastoma or squamous cell carcinoma. [14,15]

The treatment of dentigerous cysts depends on individual case factors such as cyst size and site, patient age, dentition involved, and involvement of vital structures. Treatment options include total enucleation of the cyst with primary closure or marsupialization. [15,16] Another treatment modality is decompression, which involves inserting a tube for drainage to reduce cyst size and promote bone apposition

In growing children and adolescents, cyst enucleation without extraction of the impacted tooth and decompression are indicated to salvage the involved dentition. In extensive lesions, surgery or marsupialization is commonly recommended due to potential complications such as blocked tooth eruption, bone destruction, and pathologic fracture.[15]

CONCLUSION

This case highlights the successful diagnosis and treatment of a dentigerous cyst in a 9-year-old female patient through radiological and pathological evaluation. Prompt intervention allowed for the spontaneous eruption of permanent left maxillary canine. Emphasizing the importance of early detection and conservative management in pediatric patients to ensure optimal outcomes and minimize the long-term sequelae.

Declaration by Authors

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