ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service

Available Online at: www.ijdsir.com

Volume – 6, Issue – 4, July - 2023, Page No. : 90 - 95

A Case of a dentigerous cyst associated with A Mesiodens

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Citation of this Article: Dr. Anur Chavan, Dr. Praveenkumar, Dr. Nithya Sakthivel, Dr. Geethu Maria Jose, Dr. Navjeet Dhillon, “A Case of a dentigerous cyst associated with A Mesiodens”, IJDSIR- July - 2023, Volume – 6, Issue - 4, P. No. 90 – 95.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

The most prevalent jaw developing cysts are dentigerous cysts, often termed follicular cysts. The majority of cases are inadvertently identified on panoramic radiographs taken as part of normal dental care and are clinically asymptomatic. The cyst frequently develops around the crown of an unerupted tooth, a tooth that is impacted or superneumerary. The most frequently infected teeth are typically the third molars of the jaw, followed by the maxillary canine. Histologically, dentigerous cysts have a cystic epithelium made up of two to three layers of cells and an underlying fibrous capsule. The connective tissue capsule is collagenous contains fibroblasts, chronic inflammatory cells, extravasated RBCs, engorged blood vessels, and budding capillaries. The findings are typically classic and do not provide a diagnostic conundrum; it is advisable to make the diagnosis in the perspective of the proper clinical and radiological scenario. Therefore, although having simple characteristics, dentigerous cysts are frequently misidentified. A thorough clinical and radiographic evaluation of the oral cavity justifies the dental hygienist's consideration of dentigerous cysts. So, the purpose of presenting this case is to highlight the

analysis of a dentigerous cyst caused by a supernumerary tooth in conjuction with its clinical, radiographic and histopathological findings.

Keywords: Impaction,Mesiodens,Odontogenic cyst

Introduction

The most frequent odontogenic developing cysts that arise from the crowns of impacted, embedded, or unerupted teeth are dentigerous cysts. The precise origin of the cyst remains obscure. They are thought to originate from the unerupted tooth's follicle. These cysts are set on by the growth of dental follicles as a result of fluid accumulation between the tooth crown and epithelial elements. Dentigerous cysts, which make up about 24% of all actual cysts in the jaws, are the second most frequent odontogenic cysts after Radicular cysts.[1] The 'Mesiodens,' a tooth located in between the maxillary central incisors, is the most prevalent extra tooth. Mesiodens can be single or numerous, erupted or impacted with a general prevalence of 0.15- 1.9%. Mesiodens can occasionally cause a midline diastema, a delayed eruption of the permanent central incisors, a change in the alignment of the permanent incisors, and they are hardly ever observed in combination with a dentigerous cyst accounting for 5%.[2] Here, we present a case of palate swelling due to a dentigerous cyst associated with a mesiodens in a young patient.

Case Report

A female patient aged 20 years reported to the outpatient department with a chief complaint of swelling in the upper front tooth region for the past 20 days. The patient was apparently normal before, after which she developed the pain along with the swelling in the same region. The pain was gradual in onset causing difficulty in mastication. Past dental, medical and family history was non-contributory. On extra oral examination, a mild labial fullness was noted. An ill-defined swelling was noted on the middle third of the face which was present near the filtrum of the nose causing obliteration of the nasolabial fold. The swelling was soft in consistency, non-tender on palpation with local rise in temperature. No lymph nodes were palpable. (Figure-1)

On intra oral examination, a well-defined swelling measuring approximately 1.5 x 3 x 1 cm in size was seen on the buccal aspect extending from distal aspect of 11 and crossing the midline to distal aspect of 21.On palpation, the swelling was soft in consistency, non-tender and fluctuant. On examination the associated tooth was tender on palpation. (Figure-2). Radiographic investigation was made which revealed a well-defined radiolucenct area with a sclerotic border at the periapical region extending between the mesial aspect of 11 and 21. A radiopaque area was seen within the radiolucency which resembles a tooth like structure suggestive of an impacted mesiodens. The tilted 11 was also noted.(Figure-3)

Based on the chief complaint and correlating it with the clinical, radiographic findings provisional diagnosis of dentigerous cyst associated with the impacted mesiodens was made. The cystic content was aspirated, and a straw-coloured fluid was obtained.

The cyst enucleation was performed under local anaesthesia. The cystic lining, its contents along with the mesiodens which was present at the apex of 11 and 21 was removed. (Figure-4 &5). The total specimen was sent for histopathological examination.

Histopathological examination revealed cystic epithelium that was non-keratinized and consists of two to three layers of cells and the underlying fibrous capsule. The connective tissue capsule is moderately collagenous with collagen fibres, fibroblasts, chronic inflammatory cell infiltrate consisting of lymphocytes, plasma cells, macrophages, extravasated RBCs,

engorged blood vessels, and budding capillaries.(Figure-6) Based on these findings, along with the clinical and radiographic features a confirmatory diagnosis of dentigerous cyst associated with the mesiodens was given.

The postoperative course was uneventful and was asymptomatic. (Figure-7) The patient was kept for one-month regular follow-up.

Discussion

The dentigerous cyst is always associated to the crown of an impacted, embedded, or otherwise unerupted tooth. It is the second most frequent type of odontogenic cyst after radicular cyst. [1] Pitts initially identified dentigerous cysts as developing in conjunction with extra teeth in 1924, and Lustman and Bodner first noticed this relationship in 1988. The mesiodens of the maxillary arch, which was present in our patients, is the distinguishing feature of cyst spaces with unerupted teeth. The word "dentigerous" refers to something that contains teeth, and the cyst satisfies this definition. [3]

Three possible theories for the histogenesis of dentigerous cysts were proposed by Benn and Altini. Dental follicle produces a developmental dentigerous cyst, which normally develops from a non-vital tooth and becomes secondary inflammatory. The second type develops when a developing permanent tooth contacts a nonvital deciduous tooth with a radicular cyst. Dentigerous cyst with extra follicular origin develops as the permanent tooth emerges into the radicular cyst. Inflammatory exudates, typically from periapical irritation from a nonvital deciduous tooth or another source, cause the third type to emerge. [4]

Males are more affected than females, with an incidence rate of 1.6:1, and the cyst typically affects people between the ages of 10 and 30. The first four decades of life are typically affected by dentigerous cysts brought on by extra teeth. [3] Dentigerous cysts are most frequently found in the maxillary canines and mandibular third molars. They rarely affect deciduous teeth and are occasionally linked to odontomas. [5] According to studies, the incidence rate of dentigerous cysts involving the mandibular third molar is 45.7%, compared to 1.5% for the maxillary central incisor. [6] Dentigerous cysts are typically solitary, asymptomatic, and can be large, destructive [1], and can cause tooth displacement, or in a small number of cases, they can remain relatively small [5]. Multiple cysts may be present with syndromes like Gardner's syndrome, mucopolysaccharidosis, Maroteaux-Lamy syndrome, and Basal cell nevus syndrome, though these are rare. [3] The 20-year-old female patient who was seen by our team had an asymptomatic swelling near her maxillary anterior tooth.

Supernumerary teeth have an unknown cause. [6] According to one school of thought they arise from a third tooth bud that emerges from the dental lamina close to the permanent tooth bud or most likely from the permanent bud itself separating. A supernumerary tooth typically closely resembles the teeth of the group to which it belongs, which lends support to this theory. The 'Mesiodens,' a tooth located in between the maxillary central incisors, is the most prevalent extra tooth. It is a rare condition with a documented prevalence of 0.15 to 1.9%, and although there is a small male predominance, the patient in our case is a woman. [1]. Mesiodens are infrequently found in combination with a dentigerous cyst and can be one or many, erupted or impacted, and single or multiple. The direction of the mesiodens' crown might be horizontal, inverted, or normal. It is well known that mesiodens have a short root and a cone-shaped crown. For the diagnosis of mesiodens, radiological tests are recommended. It is important to

carefully assess their placement, number, crown orientation, impact on neighbouring teeth, resorption of neighbouring roots, and potential for dentigerous cyst formation. The majority of mesiodens are situated palatally next to the permanent incisors. There are only a few that are labial to the permanent incisors or in the dental arch. [6]

Asaumi et al. estimate that 11% of cases involve the development of dentigerous cysts as a result of extra teeth. Dentigerous cyst development was documented by Von Arx et al to occur in 2.7% of cases. According to Lastmann et al., dentigerous cysts connected to extra teeth are uncommon, making up about 5-6% of all dentigerous cysts, with the majority—roughly 90%—being connected to a maxillary mesiodens. Mesiodentes are more susceptible to developing dentigerous cysts when they have been impacted for a long time. [7]

The dentigerous cyst commonly shows up on radiographs as a precisely outlined, unilocular, and typically symmetric radiolucency around the crown of an impacted tooth. The fact that this cyst connects at the cementoenamel junction is crucial for diagnosis. [1] Radiographical descriptions of three different varieties of dentigerous cysts include: (A) the central variety, in which the tooth crown protrudes into the cystic lumen and is surrounded by radiolucency. (b) The lateral kind, when the cyst develops laterally along the tooth root and partially encircles the crown. (c) The circumferential variation occurs when the cyst not only encircles the crown but also descends along the surface of the root. This gives the appearance that the tooth is contained within the cyst. [3] Except for the crown of the afflicted tooth, the cyst's interior is entirely radiolucent. Hyper-plastic follicle is one of the most challenging diagnoses to distinguish from the other conditions. [1] Our case had a typical circumferential presentation on radiography. A dentigerous cyst can be distinguished from a healthy dental follicle on radiographs only based on size. Infected cysts have irregular borders. [5] Skull radiography, panoramic radiography, and water's radiography are practical, low-cost techniques. Panoramic radiographs clearly show the tooth's structural integrity. Although panoramic radiographs can clearly show a tooth's structure, they are ineffective for locating maxillary ectopic teeth because of their intrinsic ghost image and less sharp image. [1]

The following are some of the suggested treatments for dentigerous cysts: (a) surgical removal of the cyst. It should be kept in mind not to harm the permanent tooth that is adjacent. (b) Cyst removal and tooth extraction in combination with the affected tooth. (b) Marsupialization procedure incorporates cyst removal. The sort of surgical surgery needed to remove the dentigerous cyst will depend in large part on the tooth that is the problem. The majority of treatment for cysts connected to a wisdom or extra tooth is complete enucleation of the cysts together with tooth extraction. Larger lesions can, however, be marsupialized.[3]

The cystic lumen often contains a thin, watery yellow fluid, however it can occasionally have a bloody tint, as was the case in our case. [5]

Histologically, dentigerous cysts are lined by a nonkeratinized stratified squamous epithelium layer; with a thin connective tissue wall surrounding them that occasionally contains sebaceous cells and odontogenic epithelial remnants. The definitive diagnosis is made through a histological examination. [3] The dentigerous cyst has more potential for growth, differentiation, and degeneration than a radicular cyst since it originates from follicular epithelium. [1]

Occasionally, it transforms to squamous cell carcinoma, mucoepidermoid carcinoma or ameloblastoma from or in

association with a dentigerous cyst. Dentigerous cysts have a propensity to grow quickly, which might result in pathological fractures of the jaw bones. The majority of dentigerous cysts with histological diagnosis have favourable prognoses, with recurrence being a rare finding [5]

Conclusion

Dentigerous cyst is a common developmental odontogenic cyst and is usually asymptomatic and this delays the diagnosis. Although this lesion associated with impacted teeth is common, such development as a result of an impacted supernumerary tooth might be rare. Therefore, supernumerary teeth should be examined carefully to prevent harmful effects on the adjacent regular teeth and possible cystic development to prevent dreadful complications.

Acknowledgement and Disclosures: The authors report no conflicts of interest related to this report.

Figure 1: Photograph showing the extra oral swelling.

Figure 2: Photograph showing the intraoral swelling in upper front tooth region

Figure 3: Orthopantomograph showing cyst with impacted mesiodens.

Figure 4: Photograph showing surgical enucleation of the cyst.

Figure 5: Photograph showing the gross specimen showing cystic lining.

Figure 6: Photomicrograph of haematoxylin and eosin-stained soft tissue section showing cystic lining epithelium with its underlying connective tissue capsule(H&Ex100)

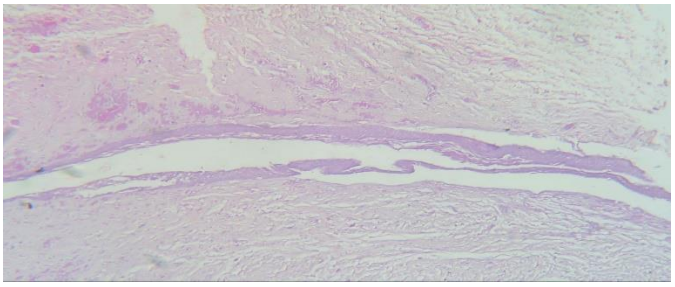

Figure 7: Postoperative intraoral photograph.

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