



Case Report

Dentigerous Cyst on a Mesiodens

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Abstract

A dentigerous cyst is a true cyst that originates in the bone of the jaw and is covered by epithelium. The cyst envelops the crown of an unerupted tooth and is fixated on the cemento-enamel junction of the tooth. A dentigerous cyst is derived from the reduced enamel epithelium and expands by fluid accumulation in the cyst. The presence of the unerupted tooth associated with the cyst is the key feature in diagnosing a dentigerous cyst. We present a case report of the rare occurrence of a dentigerous cyst developing around a mesiodens. The discussion is focused on the role of surgical removal of the mesiodens in impeding the enlargement of a dentigerous cyst preventing complications later in life.

Keywords: Dentigerous Cyst; Mesiodens

Introduction

Historically, a cyst was defined by Kramer in 1974 as ‘a pathological cavity having fluid, semifluid or gaseous contents and which is not created by the accumulation of pus’ [1]. This definition has been widely accepted and used since then. There are many different classification systems to differentiate cysts residing in the oral and maxillofacial tissues. In general, a distinction is made based on the presence of an epithelial layer (a) which implies a true cyst. In contrast, a pseudo cyst lacks an epithelium. Odontogenic or non-odontogenic pathology (b) and developmental or inflammatory origin (c). A dentigerous cyst is a true cyst that originates in the bone of the jaw and is covered by epithelium. The cyst envelops the crown of an unerupted tooth and is fixated on the cemento-enamel junction of the tooth. A dentigerous cyst is derived from the reduced enamel epithelium and expands by fluid accumulation in the cyst. The presence of the unerupted tooth associated with the cyst is the key feature in diagnosing a dentigerous cyst [2]. Although the term follicular cyst is frequently used, dentigerous cyst is the most appropriate and correct. This was proposed by Browne et al. in 1991, stating that follicular cysts

may introduce the misconception that it is derived from the tooth follicle, which is aberrant [3]. Dentigerous cyst is preferred as it literally means ‘tooth bearing cyst’ and refers to the true origin of the cyst.

Overall, dentigerous cysts are the most common type of developmental odontogenic cysts [4,5]. A large distribution of 7121 odontogenic cysts were classified by Jones et al. in 2006 [2]. According to the author, 1292 dentigerous cysts were diagnosed, representing 18.1% of all odontogenic cysts. Similar percentages were found in other studies [6,7]. This cyst is mostly discovered in the second or third decade of life and is more seen in men than women, with a ratio of 1.6 to 1.1. Although not as prevalent as radicular cysts (52.3% by Jones et al. in 2006) that imply an inflammatory origin; dentigerous cysts may be inflamed or infected coincidentally. As for supernumerary teeth, mesiodens are the most common with an overall prevalence of 1.9% [8]. A mesiodens is a supernumerary tooth that is located in the maxilla between the central incisors on the midline of the palate [9]. Although dentigerous cysts and mesiodens are common, both occurring simultaneously is far less prevalent. A number of cases were presented in literature in the last 30 years that report on dentigerous cysts in association with supernumerary teeth, only

a few of which discussing mesiodentes [10,11,12] Approximately 5% of all dentigerous cysts involve supernumerary teeth and 95 % comprising the permanent teeth [9,13] Most often these cysts are associated with impacted lower third molars or maxillary canines [2]. In extremely rare cases, dentigerous cysts are seen in association with deciduous teeth or odontomas [13] Studies have shown that the presence of dentigerous cysts as a complication of a mesiodens occurs in 6%, corresponding with an overall incidence of 1:1000 approximately [8,14].

Mostly, dentigerous cysts are completely asymptomatic and diagnosed on radiological examination to determine the cause of an unerupted tooth. Enlargement of the cyst may cause cortical expansion which can evolve into significant intra-oral swelling leading to facial asymmetry, pain when concomitantly infected, teeth displacement, root resorption and malignant dysplasia [2]. Most dentigerous cysts present as a unilocular radiolucency with a sclerotic border, always in association with an unerupted tooth. As the cyst expands, it may appear multinodular due to irregular resorption of the medulla and preservation of trabeculae of the bone. Based on the location of the cyst in relation to the unerupted tooth, three types are distinguished in literature. A central type (a) envelops and remains limited to the crown of the tooth, a lateral type (b) envelops the crown and appears to expand to one side of the tooth, and a circumferential type (c) may grow to expand in all directions and envelop the whole tooth. Dentigerous cysts should be removed by excision and total enucleation of the cyst. Histopathological examination should always be performed to confirm the diagnosis and to disprove possible differential diagnoses. Dentigerous cysts may be distinguished from nasopalatine duct cysts, ameloblastoma, keratocystic odontogenic tumours or inflammatory odontogenic cyst. Making the correct diagnosis can be challenging as reported by Gopal et al. in 2015. They illustrated the case of an 18-year-old adolescent who presented with an infected nasopalatine duct cyst associated with a mesiodens and a history of trauma on the front upper teeth [15]. Only a combined approach with clinical, radiological and anatomopathological examination enabled a correct diagnosis.

We present a case report of the rare occurrence of a dentigerous cyst developing around a mesiodens. The discussion is focused on the role of surgical removal of the mesiodens in impeding the enlargement of a dentigerous cyst preventing complications later in life.

Case Report

A 52-year-old man was referred to the department of Oral and Maxillofacial Surgery by the dentist after a coincidental

finding on radiological investigation. The orthopantomography showed an extensive radiolucent lesion located near a mesiodens in the maxilla. There was no intra- or extra-oral swelling noticeable. The patient was completely pain-free and had no other symptoms. A cone beam-CT was ordered to determine the exact location and extent of the cyst prior to surgical removal under general anaesthesia [4]. A sulcular incision was made from canine to canine in the upper jaw to reveal the underlying bone of the maxilla. The cyst was revealed using a bur, after which the cyst and mesiodens were removed in total. The bone cavity was filled with Bio-Oss (Bio-Oss®, Geistlich Biomaterials, Wolhusen, Switzerland) mixed with Leukocyt-platelet rich fibrin (L-PRF) to accelerate healing. The cyst and tooth were completely removed and fixated on a formol solution. Histopathological investigation was exerted to determine the origin of the lesion, which proved to be a non-keratinizing odontogenic cyst. Based on these findings and correlated to anamnesis, clinical and radiological examination, the definitive diagnosis of a dentigerous cyst on a mesiodens was made (Figure 1-7).



Figure 1: Orthopantomography showing a radiolucent well-defined lesion located near a mesiodens in the maxilla. The cyst stretches from the left to right lateral incisors. The mesiodens is superimposed on the apex of the root of the central upper incisor.



Figure 2: Intra-operative photograph of the cyst after removal of overlying maxillary bone.



Figure 3: Intra-operative photograph showing the location of the mesiodens after removal of the cyst. The mesiodens was also removed.



Figure 4: Intra-operative photograph of the removed tissue (cyst left, mesiodens right). The specimen was then fixed on formol solution and histologically examined.

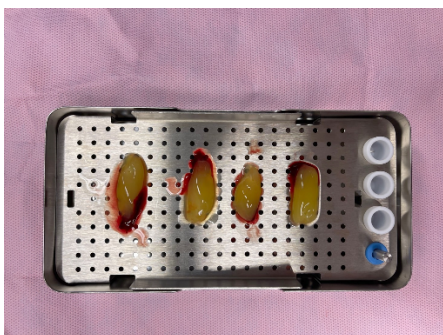


Figure 5: Leukocyt-platelet rich fibrin (L-PRF) after centrifugation of blood samples from the patient taken intra-operatively.



Figure 6: The L-PRF was mixed with BioOss (Bio-Oss®, Geistlich Biomaterials, Wolhusen, Switzerland) to form a bone substitute with which the void in the maxilla was filled, after removal of the cyst and mesiodens.

Six months after surgical removal of the cyst and mesiodens, a control CBCT was taken to evaluate bone healing. Satisfactory bone healing was achieved. The present follow-up period of 1 year went uncomplicated.

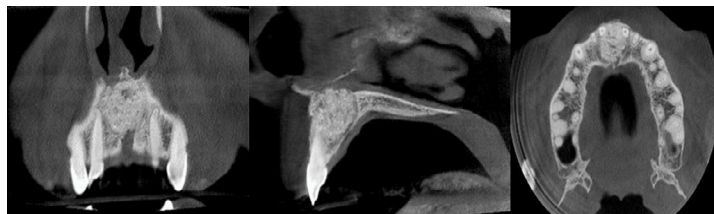


Figure 7: CBCT coronal, sagittal and axial slices of the restored bony defect in the apical frontal region of the maxilla.

Discussion

This case demonstrates that a cyst may expand asymptotically without any visible intra- or extra-oral changes. Mostly, a persisting central diastema between the permanent upper central incisors or delayed eruption of these teeth may suggest the presence of a mesiodens. In rare cases, no visible signs are present which may result in formation and expansion of a dentigerous cyst on a mesiodens. In most patients however, panoramic imaging will be carried out at some point in adolescence or adult life, which is

why most cases are discovered before the age of 30. Patients who do not visit the dentist on a regular basis may be in higher risk of presenting with asymptomatic large cysts. When a mesiodens is present and having a clinical impact on facial esthetics and oral function, removal is generally carried out. When a mesiodens is impacted deeply in the bone and not causing any problems, treatment is sometimes postponed. However, if follow-up is not performed, patients may present with largely expanded cysts associated with these supernumerary teeth. In light of these findings, removal of mesiodentes should not be postponed although the development of dentigerous cysts remains rather low.

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