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Mandibular Infected Buccal Cyst (Buccal Bifurcation Cyst). A Case Report

SUMMARY

The mandibular infected buccal cyst or mandibular bifurcation cyst is a cystic lesion that occurs on the buccal surface of the permanent mandibular first or second molar in children aged around 6-8 years. We report the clinical, radiographic, and histological features and the treatment of a mandibular infected buccal cyst of the first molar in a 7-year old child. 1 year follow up after the enucleation of the cyst without extraction of the adjacent tooth there has not been occurrence. The differential diagnosis of mandibular infected buccal cyst is fundamental to lead in its appropriate treatment.

Keywords: Cyst, odontogenic; Buccal Bifurcation Cyst; Paradental Cyst

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CASE REPORT (CR)
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Introduction

According to the new classification of the World Health Organization[1], a new entity of lateral inflammatory cyst is recognized in relation with a vital tooth: the paradental cyst. This cyst is defined as an inflammatory odontogenic cyst that occurs adjacent to the cervical margin of the lateral aspect of the root of a vital tooth, secondary to inflammation in the periodontal pocket. Two subtypes of the lesion are distinguished clinically: either a lesion that occurs on the buccal surface of the partially erupted permanent third mandibular molar in an adult[2-5], or a buccally located lesion involving the mandibular first or second permanent molar in children[6-9].

Main[10,11] described the entity of paradental cyst using the term "inflammatory collateral cyst". Graig[12] first reported a clinicopathological analysis of 49 cases, suggesting the term "paradental cyst" and considered that is the same as the cysts described by Main[10,11]. Stoneman and Worth[13] described the clinical, radiological and histological features of one subtype of paradental cyst that occurs in the first and second molars as site of location and age of patients were characteristics that differentiate this cyst from the cyst that occurs in the third molar region, and introduced the term "mandibular infected buccal cyst". Recently, some authors proposed the term "buccal bifurcation cyst"[14-16].

The mandibular infected buccal cyst (MIBC) presents distinct clinical and radiographic features that include the involvement of a vital mandibular first or second molar tooth in children with tilting of the adjacent tooth[15,16], radiolucency on the buccal tooth aspect covering the roots with normal width, density of the periodontal ligament and lamina dura, high gingival bleeding index[16-19], suppuration of a periodontal pocket, and periosteal reaction[14,15,17]. There were usually unilateral, although in some cases bilateral[17-20]. The histology of the cyst is not specific[14,16,18] and identical to that of radicular cyst[2]. Its aetiology is still debated[18].

Treatment of these cysts has been controversial: curettage with extraction of the involved tooth[9,13,18-24] or enucleation of the cyst without tooth extraction[1,5-8,10,19-21]. Preferable treatment of choice is enucleation or marsupialization of the cyst and maintenance of the involved tooth[15,17,18].

Case Report

A 7-year old girl presented with a swelling at the left buccal area. The intraoral examination revealed a fluctuant swelling corresponding to the buccal surface of the roots of the tooth 36. A dilated gingival sulcus and a deep periodontal pocket (up to 10 mm) were found at the buccal side of the tooth 36 (Fig. 1). Teeth 37 and 75 were vital. In the panoramic radiograph, a radiolucency was visible involving roots of the 36 tooth (Fig. 2). Under local anaesthesia a crevicular gingival incision with vertical releasing incision was performed on purpose to raise a triangular-shaped gingival flap. The mucoperiosteal flap was reflected and the buccal cortex was found to be expanded by a cystic lesion lying on the bifurcation area

of the tooth 36, extending apically 1-2mm superiorly to the apices (Fig. 3). After enucleation of the cyst and mild curettage of the bifurcation area, the triangular gingival flap was returned in its anatomic position and sutured with 4/0 interrupted silk suture.

Figure 1. Dilated gingival sulcus at the buccal side of the tooth 36

Figure 2. Radiolucency surrounding the roots of the tooth 36

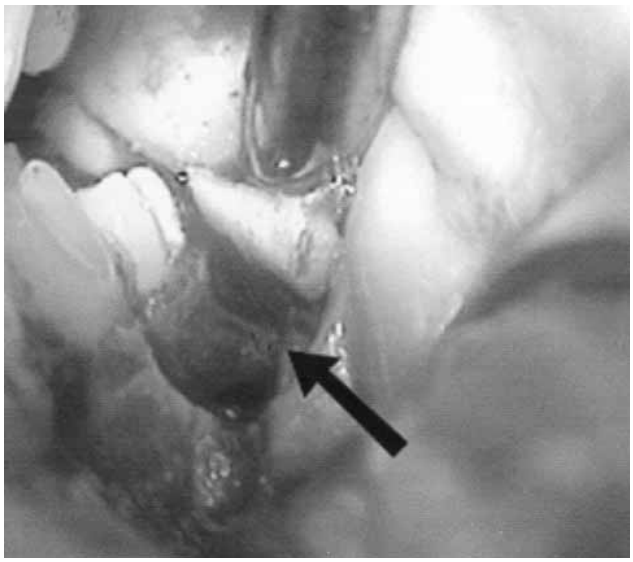

Figure 3. Appearance of the cyst after partial removal of the expanded cortical bone

Histological examination of sections stained with haematoxylin and eosin showed a cyst lined by non-keratinized epithelium that was surrounded by loose connective tissue with plenty of capillaries (Fig. 4). The inflammatory infiltrated epithelium focally protruded into the stroma, forming arcades (Fig. 5). Increased number of plasma cells, neutrophils and lymphocytes were present in the stroma where foci of haemorrhages and hyaline were also present (Fig. 6). The results were compatible with mandibular infected buccal cyst.

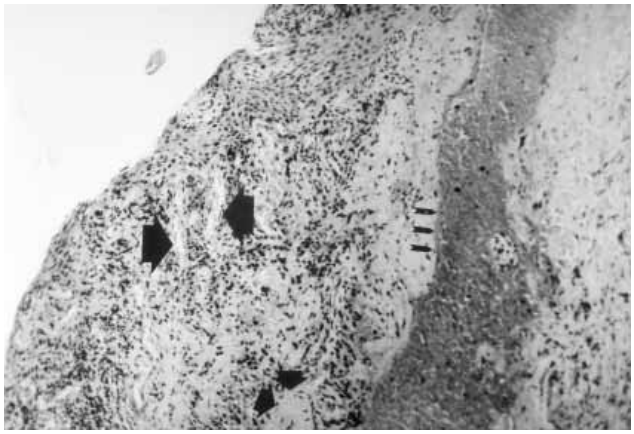

Figure 4. Microphotograph of the epithelial lining of the cyst and surrounding stroma. Capillaries are located just underneath the epithelium (arrows). An extensive haemorrhage (arrowheads) and small areas of hyaline (small arrows) are present (H&E x 33)

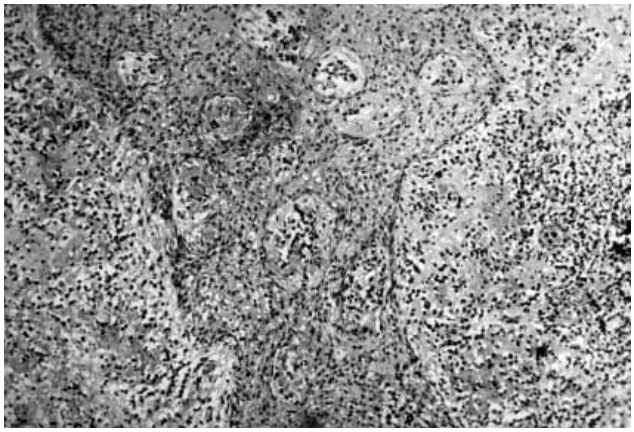

Figure 5. Microphotograph of the proliferating epithelium that forms arcades. Heavy inflammatory infiltration of the surrounding connective tissue (H&E x 33)

6 months postoperatively, the filling bone in cavity appeared to be normal and the periodontal ligament was in an acceptable depth (Fig. 7). Electrical stimulation and cold test showed vitality of the tooth 36.

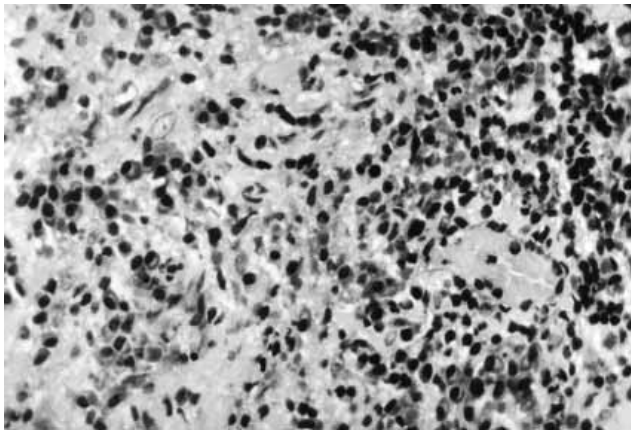

Figure 6. Microphotograph of the connective tissue that is infiltrated by plasma cells and lymphocytes (H&E x 132)

Figure 7. Periapical radiograph 6 months postoperatively. The newly formed bone that fills the bifurcation area appears to be mature. Probing of the bifurcation area is in normal depth

Discussion

Main10 was first who pointed that an inflammatory cyst may be found attached to the roots of a vital tooth. The term "mandibular infected buccal cyst" (MIBC) and the specific characteristics of this entity, such as its occurrence at the mandibular first and second molars of children old around 7 years were credited by Stoneman and Worth13.

Pathogenesis of MIBC was initially directed to developmental causes. Enamel projections at the bifurcation area of mandibular molars, known as "enamel spurs", have been considered by Shear[22] to be implicate in pathogenesis of MIBC. Incidence of the cyst in children's permanent mandibular molars, as well as the frequency of bilateral cases[8,9,17,21-24], supported the developmental theory for pathogenesis and the aspect that is a self existing entity for more than 20 years. Inflammation of epithelial remnants of Malassez were considered as the certain causative factor and appearance of the mandibular infected buccal cyst at the first and second molar of a child aged around 7 years reflects simply the dates of eruption of the involved teeth[5,13-15]. Thus MIBC and the inflammatory collateral cyst, usually arising from the distal periodontium of a wisdom molar, are subcategories of the paradental cyst. The relative more impressive clinical picture of MIBC, accompanied with swelling, buccal periostitis and pain have been attributed to the fact that collateral inflammatory cyst drains spontaneously through the dilated gingival sulcus of a partially erupted third molar. Moreover, some episodes of pericoronitis may be due to an inflamed collateral cyst, which after a conservative management, drains, shrinks and is coexisted with the responsible tooth raising no interest for histological examination. Probably some cases of inflammatory collateral cysts with similar clinical intense as MIBC are misdiagnosed through this course.

Histological features of the cyst appear to be common in all studies[5,9,14,16,18]. Non-keratinized squamous epithelium lines the cyst and inflammatory reaction in epithelium and stroma were found in all examined cases. Hyaline is also a usual finding, and some authors[5,9] reported giant cells reactions, foam cells and cholesterol clefts. However, none of these findings is specific and histology alone cannot be diagnosed in most cases[14].

Differential diagnosis from the developmental collateral periodontal cyst with secondary infection is difficult based on the non specific histological criteria alone. Appearance of this developmental cyst, usually at the canine and premolar area in older group of patients, is helpful in the discrimination of these 2 cysts. Lateral radicular cyst is also among the lesions that have to be distinguished from MIBC: negative electrical pulp test of the adjacent teeth, patient's age and integrity of the enamel point that paradental cyst should be considered as a result of the periodontal destruction[24]. Appicectomy should be avoided; there is lack of information whether endodontic treatment should also be avoided initially, until a certainty of the vitality is readable.

The usual presence of the MIBC in the bifurcation of first permanent molar led some authors[13,14] to consider

the name "buccal bifurcation cyst" as more descriptive for this cyst. However, after WHO1 classification in 1992, the term "mandibular infected buccal cyst" has been established. Since then 4 studies[6,8,19,24] (4 patients with MIBC) have been reported under this headline. 3 of them were bilateral cases[6,19,24]. Due to the origin of MIBC, it is expected for the cystic cavity to communicate with a periodontal pocket in most cases. Frequency and clinical importance of this relationship remains unclear despite its potential consequences in periodontal health of the involved tooth. In our case, the deep periodontal pocket completely healed, which is probably related to the age of the patient and the short history of periodontal involvement. Regeneration of the ligament reported in most published cases[3,5,14,18,21] may limit the need for root sealing. A mild curettage that efforts to remove epithelial remnants from the root surface may be sufficient management of the periodontal defect. Some of these cysts resolved without surgery either with no treatment at all or by daily irrigation of the buccal pocket with saline and hydrogen peroxide[15,25].

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