Buccal bifurcation cyst-mimicking a periodontal abscess

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Buccal Bifurcation Cyst (BBC) is a rare inflammatory odontogenic cyst that typically occurs at the buccal region of the first or second mandibular molars in younger patients. We report a rare case, of buccal bifurcation cyst mimicking a periodontal abscess in a 13-year-old female who complained of pus discharge from the right mandibular first molar region and was irresponsive to periodontal therapy. Treatment was done by simple enucleation without extraction of teeth. The patient has been under follow-up for about 2 years showing the normal bone repair. Although the BBC is uncommon, it is important for clinicians to recognize this entity, which will aid in early diagnosis and proper patient management.

Key words: abscess, buccal, cyst, mandibular, young

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INTRODUCTION Background

The Buccal Bifurcation Cyst (BBC) is a rare entity associated with the permanent mandibular first or second molar in children just prior to tooth eruption [1]. Stone and Worth in 1983 first documented its radiographic and clinical features [2]. The BBC has been described with several names, such as mandibular infected buccal cyst-molar area [1], circumferential dentigerous cyst [3] buccal bifurcation cyst [4] and juvenile paradental cyst. In 1992, it was included by the World Health Organization (WHO) in their histologic typing of odontogenic tumors listed in the category of "paradental cyst" and named "mandibular infected buccal cyst" by Pompura et al. [5].

Buccal bifurcation cyst may produce few or no clinical symptoms and minimal signs, but there may be discomfort, pain, tenderness, painful occlusion and, rarely suppuration. A common sign is the lack of delayed eruption of the associated tooth; however swelling is the most likely clinical presentation. The diagnostic features are the young age of the patients, the mandibular molar site, the buccal periostitis, the usually vital pulp and the radiographic preservation of the continuity of the apical lamina dura [5].

The radiographic presentation of the BBC may be subtle and easily overlooked unless the lesion is large or symptomatic [6]. The diagnosis of a BBC relies entirely on clinical and radiographic information because the histology of BBC is nonspecific and reveals non-keratinized stratified squamous epithelium [7].

Treatment of MBBC has been controversial: tooth extraction and curettage of the lesion, or enucleation and curettage without extraction of the involved tooth [1].

Clinical presentation

A 13-year-old otherwise healthy girl reported with the chief complaint of pus discharge from lower right back tooth region. On intraoral examination, there was localized swelling on the buccal aspect of permanent mandibular first molar (Figure 1) with frank pus discharge from the region. Hard tissue examination revealed a deep periodontal pocket (7 mm) on disto buccal surface of the tooth with a catch in furcation area using a naber's probe (Figure 2). Root canal treatment was done in relation to the same tooth 1 month back. An Intraoral periapical radiograph revealed horizontal bone loss with



Fig. 1. Swelling on the buccal aspect of 46 during the first visit



Fig. 2. Pocket probing the depth of 7 mm



Fig. 3. Radiograph at first visit with faint radiolucency in 46

furcation involvement in mandibular right first molar (Figure 3). A provisional diagnosis of the periodontal abscess was made.

Case management

The treatment was equivalent to the treatment of a periodontal abscess, during first visit thorough scaling was done after antibiotic prophylaxis (amoxicillin 500 mg tds, Flagyl 400 mg tds, chlorhexidine mouthwash 0% to 12%). During second visit subgingival scaling and curettage was done i.r.t 46.

During the third visit after 3 weeks, localized flap surgery was performed in 46; there was advanced grade II furcation (Figure 4); thorough root debridement was done along with the removal of granulation tissue. After debridement bone graft was placed (perio-glas) (Figure 5) and sutures were given.

After 2.5 months patient reported back with pus discharge

from the same region and there was no significant finding on the intraoral periapical radiograph.

The second surgery was planned after 3 days, the localized flap was raised in 45, 46, 47 regions with a vertical releasing incision at 47 regions. The graft was removed as it was rejected. After thorough debridement, we decided for distal root resection (Figure 6) as there was advanced grade II furcation. On root resection to our surprise, we found a huge hollow cavity (Figure 7) in the body of mandible behind the resected root, that cystic cavity extended 3-4 mms towards the ramus region. The cyst was enucleated and the sample was sent for histopathological examination. Bone graft was placed (Figure 8) membrane placed sutured back, the dressing was applied. Histopathological findings revealed parts of an odontogenic cyst (Figure 9). Based on clinical and histopathological findings, diagnosis of buccal bifurcation cyst was established.



Fig. 4. Advanced-grade II furcation



Fig. 5. Placement of bone graft



Fig. 6. Distal root resection i.r.t 46

Clinical outcome

The patient was recalled after 1 week, apparently healthy, the dressing was removed and was instructed to follow up after 3 months. After the 3-month follow up appointment, the patient was asymptomatic, all probing depth of tooth 46 were<mm (Figure 10). The patient has been under follow-up for approximately 2 years, demonstrating normal bone healing (Figure 11).

DISCUSSION

The etiology of buccal bifurcation cyst is still uncertain; however, it is postulated that the tooth breaks the oral mucosa during the eruption, thereby causing inflammation and activating the proliferation of epithelial cells, which ultimately forms a cyst [2]. Several other theories have been proposed by different authors for its development. It is also speculated that



Fig. 7. Hollow cavity after root resection



Fig. 8. Cyst enucleated and membrane placed



Fig. 9. Photomicrograph depicting an odontogenic cyst



Fig. 10. Three months follow up visit



Fig. 11. Pre and post-treatment radiograph with 2 years follow up depicting normal bone healing

the tilted mesiobuccal cusp and deep periodontal pockets as in the present case may be the origin of the inflammation. Other local predisposing factors include enamel projections from the cementoenamel junction into the furcation and covered by reduced enamel epithelium that leads to cyst formation. Genetic factors could be involved and may explain the occurrence of MBBC in identical twins [1]. Diagnosis of MBBC is made by its distinctive clinical and radiographic features [8, 9]. The term 'mandibular buccal bifurcation cyst' is useful to identify this lesion. Although this lesion is considered to be a variation of the paradental cyst, its age- (6 to 13 years) and site-specific (usually the first and occasionally the second molar) features to warrant the descriptive term of MBBC.

Currently, to the best of our knowledge, Pubmed database for the last four decades was reviewed using keywords: buccal bifurcation cyst, paradental cyst there are only 18 manuscripts published in the English-language literature describing 56 cases of BBC. The largest series was reported by Stoneman and Worth [2] where 17 cases were described. The treatment of buccal bifurcation cyst has changed over the years Santos et al. While in first descriptions therapy of choice was extraction of the tooth [2]. Infected lesions have to be treated surgically. In recent articles treatment used was enucleation of the cyst without extraction as in the present case (Table 1).

The majority of dental abscesses in children results from caries or trauma. A minority originate from unusual conditions. However, knowledge of these conditions will enable the dentist to diagnose and easily treat these entities. The mandibular buccal bifurcation cyst; can be treated successfully by simple enucleation without extraction of the associated tooth.

S. No.	No of cases	Treatment	Follow up	Year	Authors
1	1	Marsupialization	2 years	1970	Stanback
2.	3	NA	NA	1979	Fantasia
3.	2	Enucleation	6 months	1980	Swerdloff
4.	17	Enucleation/tooth extraction	0	1983	Stoneman and Worth [2]
5.	1	Enucleation/tooth extraction	0	1985	Trask et al. [10]
6.	5	Enucleation	1-6 years	1989	Vedtofte and Praetorius [11]
7.	2	Enucleation	5 years	1989	Camarda et al. [12]
8.	5	Enucleation	6 months	1990	Packota et al. [13]
9.	2	Enucleation	8 months	1992	Bohay et al. [14]
10.	2	Enucleation/tooth extraction	0	1995	Martinez-Condeet al. [15]
11.	3	No procedure/Irrigation with saline and hydrogen peroxide in 1 case	1-2 years	1998	David et al. [7]
12.	5	Enucleation/tooth extraction	2 years	2003	Sohat et al. [1]
13.	1	Enucleation	1 year	2007	Gallego [16]
14.	4	Enucleation	WD	2009	latrou [17]
15.	2	Enucleation	1 year	2010	Borgonov
16.	1	Enucleation	6 months	2011	Corona-Rodriguez et al.
17.	2	Enucleation/without extraction	1 year	2012	Ramos et al. [3]
18.	1	NA		2016	Omami G et al.
19.	1	Enucleation/without extraction	2 years		Present case

Tab. 1. Pubmed database for buccal bifurcation cyst

CONCLUSION

- Why is this case new information: One of the rare cases
- What are the keys to successful management of this case: Meticulous treatment planning, well-coordinated interdisciplinary approach and excellent patient compliance

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