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RESEARCH ARTICLE

HAEMORRHAGIC BONE CYST OF THE MANDIBLE: PSEUDOCYST OR TRUE CYST CASE REPORT AND BRIEF LITERATURE REVIEW

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ABSTRACT

The haemorrhagicbone cyst (HBC) is an uncommon nonepithelial lined cavity of the jaws. The lesion is mainly diagnosed in young patients most frequently during the second decade of life. The majority of HBCs are located in the mandibular body between the canine and third molar region. Clinically, the lesion is usually asymptomatic in majority of cases and is often accidentally discovered on routine radiological findings as aunilocular radiolucent area with "scalloping effect". The definite diagnosis of haemorrhagiccyst is invariably achieved during surgery. Since material for histologic examination may be scant or non-existent, it is often very difficult for a definite histologic diagnosis to be achieved. In this article, we are reporting an unusual case of Haemorrhagic bone cysts involving the mandible, accidentally discovered during routine radiographic evaluation for orthodontic reason. The literature is briefly reviewed.

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INTRODUCTION

Haemorrhagic bone cyst (HBC) is an uncommon nonepithelial lined cavity of the jaws, first described by Lucas in 1929 and reported in the literature under a variety of names like Solitary bone cyst (Rushton, 1946), Traumatic bone cyst (Howe, 1965), extravasation cyst (Boyne, 1956), progressive bone cavity (Whinery, 1955), simplebone cyst (Pindborg, 1971) and unicameral bone cyst (JAFFE, 1942). Term "Haemorrhagic bone cyst" is the most widely used today (DeTomasi, 1985; Xanthinaki, 2006). The lesion is mainly diagnosed in young patients during second decade of life (Howe, 1965; Hansen *et al*., 1974; Huebner *et al*., 1971; Forssell *et al*., 1988) with predominant male predilection (Howe, 1965; Huebner *et al*., 1971; Beasley, 1976). The majority of HBCs are located in the body (Howe, 1965; Huebner, 1971; Forssell *et al*., 1988; Beasley, 1976) and mandibular symphysis region. Clinically, the lesion is asymptomatic in majority of the cases and is often accidentally discovered on routine radiological examination (MacDonald-Jankowski, 1995; Howe, 1965; Huebner, 1971; Beasley, 1976; Hansen, 1974). Pain is the presenting symptom in 10% to 30% of the patients (Howe, 1965; Hansen *et al*., 1974; Huebner *et al*., 1971).

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Expansion of cortical plate of the jaw bone is often noted, usually buccally, resulting in intraoral and extraoral swelling and seldom causing deformity of the face. On radiological examination, HBC usually appears as anunilocular radiolucent area with an irregular but well defined (or partly well defined) outline, with or without sclerotic lining around the periphery of the lesion. Characteristic for the haemorrhagicbone cyst is the "scalloping effect" when extending between the roots of the teeth. Occasionally, expansion or erosion of the cortical plate is noted. The definite diagnosis of haemorrhagiccyst is invariably achieved during surgery when an empty bone cavity withoutepithelial lining is observed (MacDonald-Jankowski, 1995). The widely recommended treatment for HBCs is surgicalexploration followed by curettage of the bony walls. Thesurgical exploration serves as both a diagnostic manoeuvre and as definitive therapy by producing bleeding in the cavity. Haemorrhage in the cavity forms a clot which is eventually replaced by bone (Howe, 1965; Xanthinaki *et al*., 2006; Huebner *et al*., 1971; Beasley, 1976; Kuttenberger, 1992; Ruprecht, 1975; Feinberg, 1984). It is also believed that in some cases there may be a spontaneous resolution (Szerlip, 1966).

Case Report

An 18-year old male patient reported to New Horizon Dental College & Research Institute, Bilaspur (C.G.) with a chief

complaint of diffuse swelling in lower front teeth region since 4-5 months.Patient gave history of trauma due to fall in lower front teeth region 5 years back.Extra-oral examination showed no gross facial asymmetry. Intra-oral examination revealed slight expansion of the lingual cortical plate over that region. (Figure 1). Orthopantamograph revealed a well defined unilocularradiolucent lesion which was extending from mesial of lower canine to canine (Figure 2). Computerized tomography showedwell defined unilocular cystic lesion approximately measuring 1.6cm X1cm X0.9 cm involving symphysismenti of mandible. There were no Intralesional tooth content or root of tooth observed suggestive of non-odontogenic cyst (Figure 3).

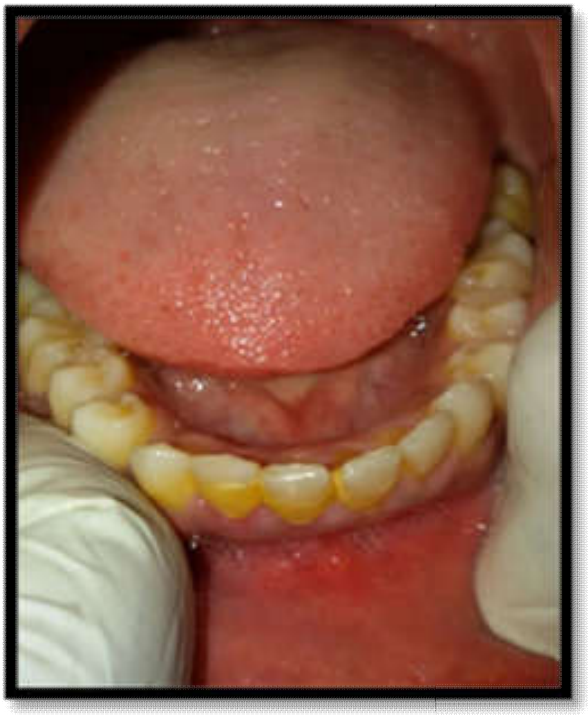

Figure 1. Preoperative Intraoral Image

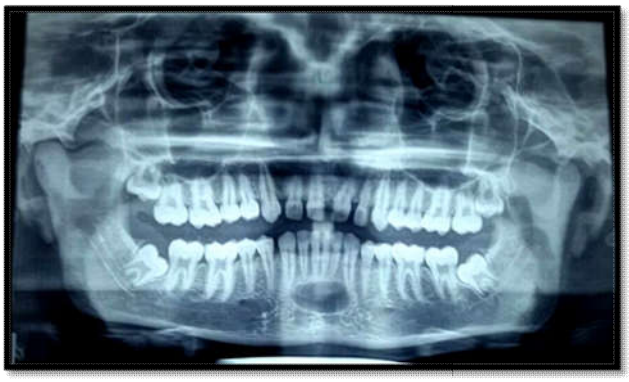

Figure 2. Preoperative OPG

After obtaining consent from both the patient and his parents, curettage of cyst was planned under general anesthesia. An intraoral vestibular incision was made from the lower left canine region to the lower right canine region. The mucoperiosteal flap was raised and lesion was exposed (Figure 4). Bony window was created using postage stamp pattern with the help of No. 8 round surgical bur (Figure 5). The drilled holes were joined using a straight fisuure bur and the overlying buccal bone was removed (Figure 6).

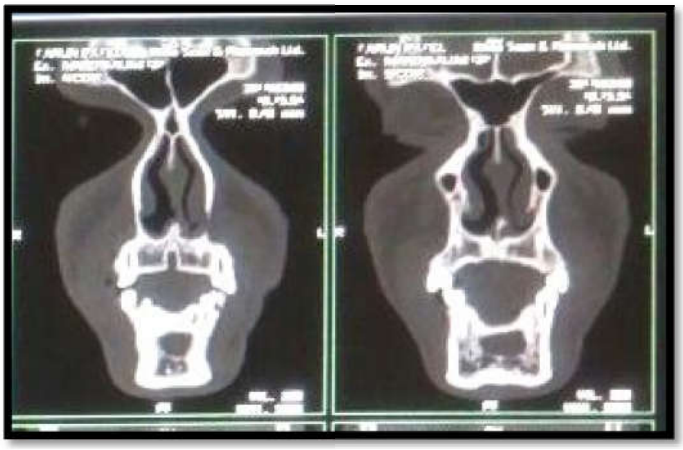

Figure. Preoperative CT Images

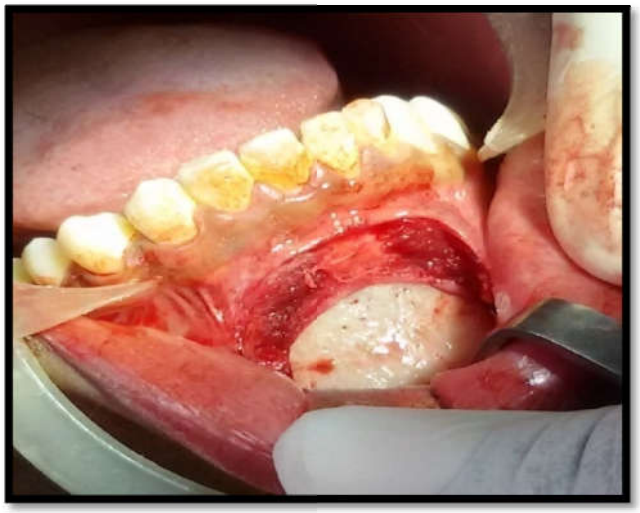

Figure 4. Incision and flap elevation

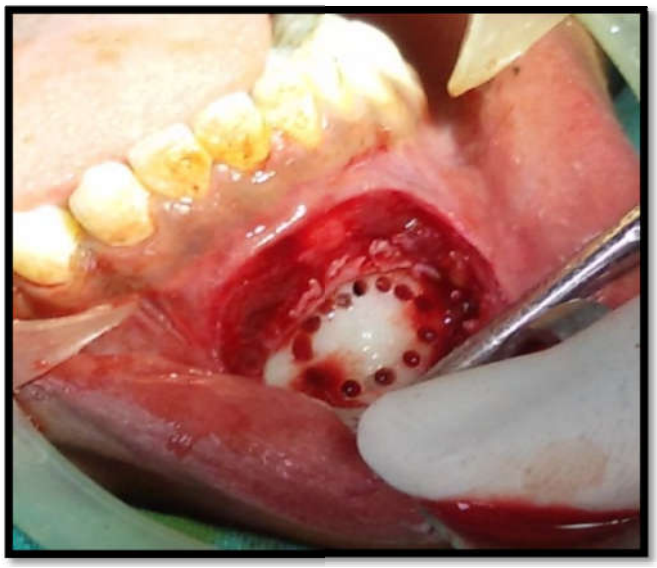

Figure 5. Bony window created using postagestamp pattern

Thecavity was thoroughly curetted and the excisedspecimen was sent for histopathological examination, a thorough irrigation of bony cavity was done andhaemostasis was achieved. Closure was done with 3-0 Vicryl sutures. Patient was followed up for 6 months and the healing was uneventful (Figure 7).

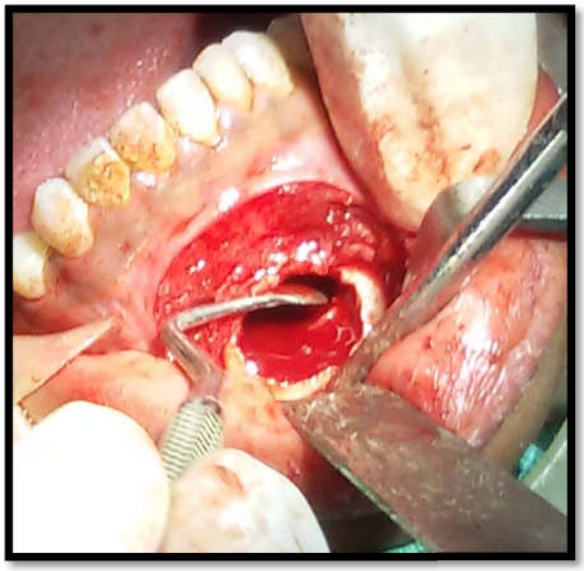

Figure 6. Curettage of cavity

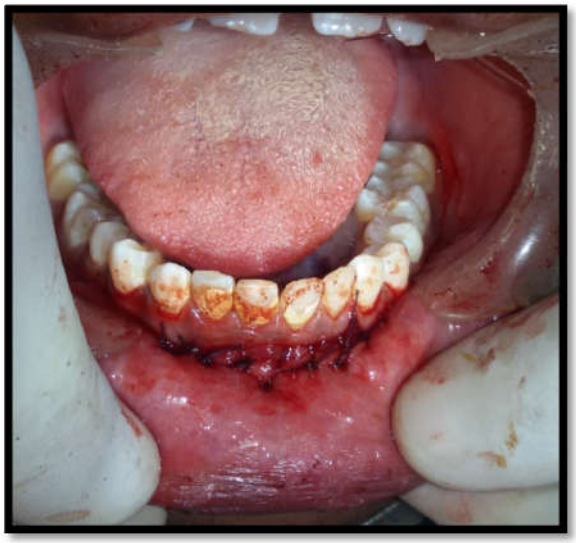

Figure 7. Closure with 3-0 vicryl suture

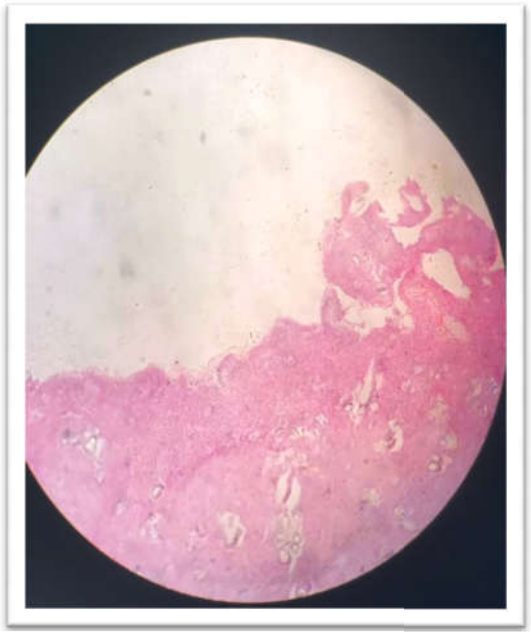

Figure 8. Histopathological Image

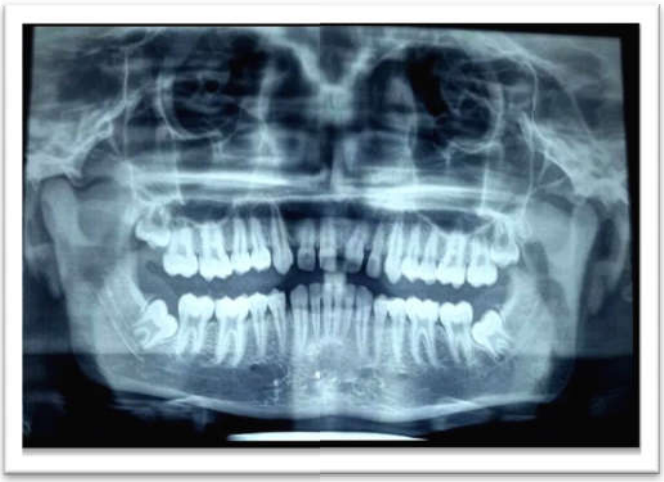

Figure 9. Post-Operative 3 months follow-up OPG

Intraoperative pictures

Histopathologically, the lesion showed thin inflammed connective tissue lining the cavity composed of collagen fibres, chronic inflammatory cells and fibroblasts. Also showed bony chips with lacunae filled with osteocytes. Some lacunae were empty (howship's lacunae). Based on histopathological report it was diagnosed as Haemorrhagicbone cyst (Figure 8).

DISCUSSION

The SBC is an uncommon lesion that affects the facial bones and the mandible in particular (Xanthinaki *et al*., 2006). The most common pathogenesis of HBC is Trauma which leads to intraosseous hematoma formation. The blood clot liquefies and adjacent bone is destroyed by enzymatic activity (Olech, 1951). Blum (Cohen, 1984) and Thoma (Blum, 1955) believed that a previous haemorrhagicepisode or trauma initiates a subperiostal hematoma that causes compromised blood supply to the area, leading to osteoclastic bone resorption.Other etiological theories include the incapacity of interstitial fluid to leave the bone because of inadequate venous drainage, local disturbances in bone growth, ischemic necrosis of bonemarrow and altered bone metabolism resulting in osteolysis,in addition to intraosseous vascular deformities, benign neoplastic degenerative lesions, altered calcium metabolism,low-grade infections, venous obstruction and bone tumors undergoing cystic degeneration (Iwaki *et al*., 2016). The radiographic features of the present case agree with those reported by most investigators who characterize a haemorrhagicbone cyst as a predominantly round or oval well-delineated radiotransparent lesion with regular or irregular margins but well-defined by a delicate cortical layer. The lesion may extend between the roots of the erupted teeth, producing a characteristic jagged contour (Matsumura *et al*., 1998; Dias *et al*., 2012). Although of rare occurrence, the HBC can cause expansion or thinning of the cortical bone. A CT scan can confirm the phenomenon and show whether the cavity is empty or fluid-filled, which helps the differential diagnosis (Castro, 2002). Successful treatment of HBC depends on its correct diagnosis, given that it can be mistaken by several other lesions, such as ameloblastoma, central giant cell lesion, florid cemento-osseous dysplasia (Chadwick *et al*., 2011), odontogenicmyxoma (Velez *et al*., 2010), aneurysmal bone cyst, odontogenickeratocyst (Magliocca *et al*., 2007).

The ultimate diagnosis of HBC is dependant on surgical exploration, excisional biopsy and findings of histopathology. The cyst wall is then carefully curetted in order not to damage the roots or the inferior alveolar nerve. As this surgical exploration causes bleeding, a blood clot is formed and, consequently, bone healing is stimulated. Spontaneous regression of HBCs is possible, with noneed for surgical intervention.For non-surgical treatment of HBC, anamnesis and intraoral examination are essential, given that on palpation the cortical bone is usually intact and the condition is asymptomatic.

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