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RESEARCH ARTICLE

SIMPLE BONE CYST OF THE MANDIBLE: A CASE REPORT AND LITERATURE REVIEW

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Abstract

Simple bone cyst is a benign pseudo cystic cavity in the bone that is less commonly associated in the maxillofacial region. The other synonyms are traumatic bone cyst or idiopathic bone cyst. These cysts are devoid of an epithelial lining and usually contain straw-colored fluid or is empty. Simple bone cyst is mainly seen in young individuals, frequently during the first and second decade of life. Here we report a case of simple bone cyst of a mandibular anterior region in a 21-year-old patient.

Introduction:-

Simple or solitary bone cyst (SBC) is a less common pseudocyst of jaws, representing approximately 1% of all jaw cysts[1]. Lucas and Blum in 1929 for the first time described SBC as a separate disease entity[2]. According to WHO this cyst is defined as an unusual, benign, asymptomatic, slow growing, nonexpansile, intra-osseous, empty or fluid filled cavity having a tenuous lining of connective tissue with no epithelium[3].Rushton[4] adopted the following criteria for establishing diagnosis: i) a single lesion; ii) no epithelial lining; iii) no infection; iv) no perforation of the bony walls and no contents or fluid or connective tissue in the lesion. Afterwards, Hansen[5] added another criterion i.e. upon surgery, the lesion is essentially empty and occasionally the cavity may contain some fluid and/or small amount of tissues.

SBC is mainly seen in young individuals, frequently during the first and second decade of life, and equally affecting both genders with a slight predominance to males[1]. The majority of SBCs are seen in long bones (90%) and far less frequently in jaw bones (10%). However body of the mandible between the canine and the third molar is the most common site (75%) in head and neck region followed by mandibular symphysis.1 Very few cases are reported in the maxilla[5,6]. Definite diagnosis of SBC is inevitably reached during surgery when a cavity lacing epithelial lining is either empty or with content or filled with serous or sanguineous fluids[7].

The world health organization's (WHO) International tumor histological classification accepted the term simple bone cyst in 1971, and the term solitary bone cyst in 1992 so as to differentiate this lesion from other cystic lesions of the jaws. In the 1997 WHO classification, solitary bone cyst is included in the group of bone related non neoplastic diseases along with aneurismatic cysts, ossifying fibroma, fibrous dysplasia, bone dysplasia, giant cell central granuloma and cherubism. This article presents a case of simple bone cyst presenting the anterior mandible.

Case report

A 21 year old, female patient reported with a chief complaint of dull pain in the front lower region of jaw since 3 months. The patient's medical history did not reveal any trauma to the jaw. Clinical examination showed no facial swelling and asymmetry. Intraoral examination minimal localized gingival recession seen in relation to 41, 42 & 43 region.

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Patient was advised to undergo panoramic radiography in order to assess the periodontal status and to look for any pathology. OPG revealed a unilocular radiolucency, roughly ovoid in shape, seen the 33 to 44 region (fig.1). It was located in between the right and left mental foramen in the apical region, with well – defined margins measuring approximately 5*2 cm in dimension. Slight tenderness was elicited by the patient on palpation on the labial side in the mandibular anterior region, and the pathology could not be palpated by bi-digital palpation.

Fig 1:- Orthopantomagram of simple bone cyst.

It was then planned for aspiration under local anesthesia. A straw color cystic fluid aspirated (fig.2).

Fig 2:- Straw color cystic fluid.

An intra oral incision, full thickness enveloped flap was placed in relation to 33 to 44 region. The bony thinning was identified in the bilateral parasymphysis region.

Fig 3:- Debridement of bony cavity.

During exploration, macroscopically, a very thin friable epithelial lining could be identified.After debridement of bony cavity (fig.3), the wound was closed in layers. Healing was uneventful (fig.4).

Fig 4:- Wound closure

Histologically, the biopsy material showed spicules of bone with an adjacent cyst wall composed of proliferating fibroblasts, chronic inflammatory cells composed of lymphocytes and plasma cell. Hence a final diagnosis of simple bone cyst was made(fig.5).

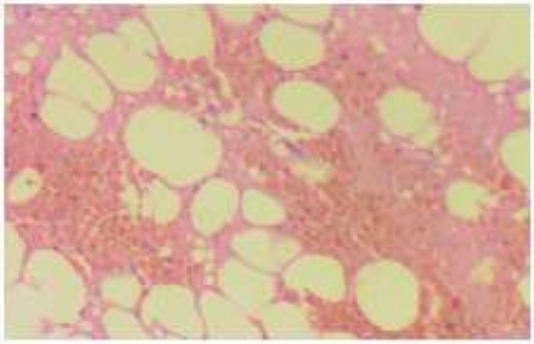

Fig 5:- Histopathology (Simple bone cyst).

Discussion:-

A simple(traumatic) bone cyst is not a true cyst because it lacks an epithelial lining. The cause of simple bone cyst is unknown, although some believe that it developes in response to trauma. These lesions are usually discovered in the second decade of life. Their most common site of occurrence is the mandible. Simple bone cysts are usually asymptomatic and are incidental radiographic findings. The lesions are typically unilocular, lucent defects that often have a characteristics scalloped superior margin extending between the roots of teeth. There may be attendant thinning of the mandibular cortex with osseous expansion. Multiple lesions occur in some usual cases. The differential diagnosis includes vascular lesions, central giant cell granuloma, and ossifying fibroma.

When taking into consideration many of the presented theories, and regardless of location, three theories prevail: 1. Bone growth anomaly 2. Process of tumor degeneration and 3. A particular triggering factor for hemorrhagic trauma.

The main characteristic of SBCs is scalloping when they extend towards the dental roots; this scalloping is also described in edentulous areas[8,9,10]. Another radiographic feature of SBCs is the broad extension of the lesion without causing bone expansion; the cortical bone tends to be thinned due to intraosseous erosion. This characteristic can be observed in the CT images.

The etiology and pathogenesis of these bone cavities are not well established. Trauma can be an important factor in their development, although its mode, intensity, frequency, and pathogenesis must be determined before any firm conclusions can be reached[8]. In the case presented here, the patient did not recall any major trauma.

Since the material available for histological study is often scarce, it may be difficult to obtain sufficient evidence for a definitive diagnosis[11]. Peñarrocha-Diago et al.[12] agreed that teeth with apexes involved in the lesion should not

undergo endodontic treatment, since prognosis is favorable and normal healing occurs without any further complications.

The present case fulfilled these criteria at the time of surgical intervention leading to a diagnosis of SBC which was later confirmed by histopathology. Various treatment modalities are suggested for SBC:[13,14] i) Keeping the case under observation and waiting for spontaneous regression, if it is asymptomatic; ii) Aspiration of the contents; iii) Surgical exploration and curettage to stimulate bleeding, healing, and initially to confirm the diagnosis; iv) Packing with gel foam saturated with thrombin and penicillin; v) Endodontic intervention alone; vi) Injection of methyl prednisolone acetate solution for treatment of long bone cases; vii) Injection of autogenous blood with bone graft or hydroxyapatite to stimulate the osteogenic activity; and viii) Bone grafting. Widely accepted and recommended treatment option for this cyst is surgical exploration and curettage of bony walls[15,16]. Careful curettage of the lesion helps progressive bone regeneration, offering a good prognosis and reduces relapse. Recurrence of the lesion is not commonly encountered.

The most frequently recommended treatment for SBCs is surgical exploration followed by curettage of the bony walls. Surgical exploration is a diagnostic maneuver which can also be considered as therapeutic since it causes the walls of the cavity to bleed. In fact, the induction of bleeding in the cavity allows the formation of a clot which is eventually replaced by bone. Some authors have also reported cases of spontaneous resolution[8,17].

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