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Idiopathic bone cavity – A case report

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Abstract: Simple bone cyst, also called traumatic bone cyst, haemorrhagic bone cyst, solitary bone cyst, or idiopathic bone cavity, is a benign intra bony cavitation that most commonly occurs in the body of the mandible in patients between 10 and 20 years of age. No true epithelial lining exists, so idiopathic bone cavity (IBC) is the more appropriate term. Ibcs are usually incidental radiographic findings. IBC's can be large, multilocular, and exhibit impressive expansion but do not demonstrate radiographic features of local anatomic destruction such as displacement of teeth, resorption of tooth roots, creation of periodontal pathology, cortical bony erosion, or displacement of the inferior alveolar nerve.

Key words: Idiopathic bone cavity, traumatic bone cyst, Simple bone cyst Introduction

Tbcs are included in the group of bone-related lesions in the classification of the World Health Organization (WHO), together with the aneurysmal bone cyst, ossifying fibroma, fibrous dysplasia, osseus dysplasia, central giant cell granuloma and cherubism.

Different causal factors have been proposed for the development of Traumatic bone cyst or Idiopathic bone cavity: bone tumour degeneration, altered calcium metabolism, low-grade infection, local alterations in bone growth, venous obstruction, increased osteolysis, intramedullary bleeding, local ischemia, or a combination of such factors. It has been suggested that any form of trauma, including tooth extraction could give rise to a cyst of this kind.

Typically, the lesions are asymptomatic and are accidentally detected by panoramic radiography; they may resolve without treatment. The most widely accepted theory suggests bleeding within the bone is caused by trauma. Instead of the organization of a blood clot and healing, the clot liquefactive Ly necrotises or is resorbed in another way. The surrounding

bone is destroyed by enzymatic activity.

In this way the bone cavity enlarges, stimulated by the increased pressure of its content, which, at least partly, is caused by poor venous drainage. An investigation of 255 cases during the period 1955-1979 showed that TB occurred in the mandible in 89%, while it occurred in the maxilla in only 11%. In the mandible, only 25% of TBC occurred in the anterior segment, while as many as 67% occurred in the anterior part of the maxilla. Thus, tbcs occurs frequently in the mandible, mainly in the posterior segment, while in the maxilla, they are rare and mainly located in the frontal part ⁽³⁾. Discacciati et al.6 suggest differentiation from a lesion with other maxillofacial cystic or neoplastic pathologies can be

based on clinical and radiographical findings, but surgical exploration can serve as a definitive diagnostic tool. Its many names reflect the diverse clinical and radiological presentation of idiopathic bone cavity, and more extensive studies are needed to increase understanding of the lesion. The present study describes the clinical and radiological characteristics, and the surgical findings of traumatic bone cysts in one of our patients.

Case report

A 16-year-old male patient was referred from a private dental clinic to our department after having incidentally found the presence of a radiolucency in Orthopantomograph when the patient had consulted them with a chief complaint of irregularly placed teeth. After thorough clinical examination both extra-orally (fig 1) and intraorally (fig 2) there were no clinical findings that were suggestive of any pathology. Vitality test revealed the associated teeth were vital but radiological examination revealed presence of radiolucency bilaterally w.r.t body of mandible extending from periapical region of 35 till 37 and 44 till 47 with scalloped borders on right side and ill-defined borders on left side. No root resorption or displacement of teeth were seen. On correlating both clinical and radiological findings a provisional diagnosis of Idiopathic Bone Cavity was given. Haematological investigations revealed that Haemoglobin and coagulation profile were within the normal range.



Fig1: Clinical photograph shows no signs of pathology



Fig 2: Intraoral photograph

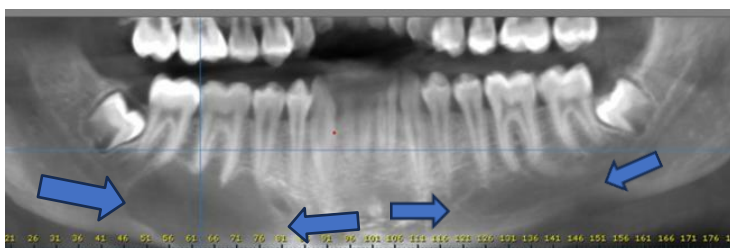


Fig 3: OPG reveals bilateral radiolucency extending w.r.t 34,35,36 and 44,45,46,47

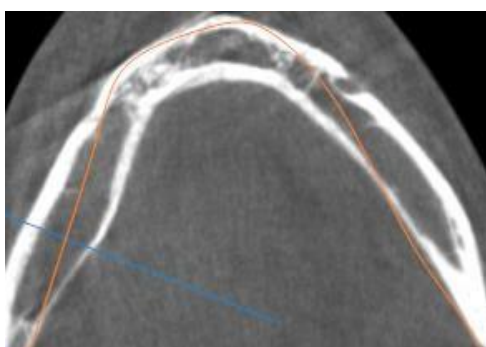


Fig 4: CBCT reveals radiolucency bilaterally and thinning of lingual cortices

Surgical exploration under local anesthesia of the involved area revealed cavity filled with blood without epithelial lining. The body cavity has been agitated and primary closure was done.

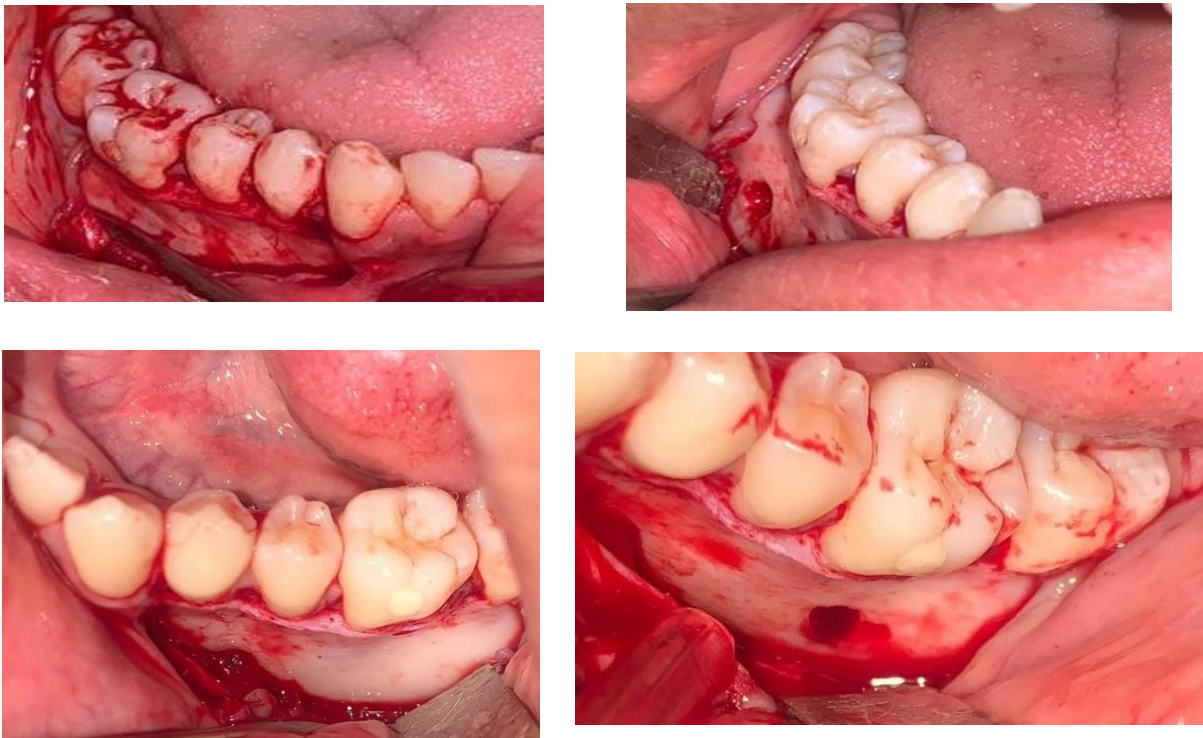


Fig 5: surgical exploration of the involved area bilaterally



Fig 6: aspirated blood

Patient follow-up is being done till now to see the healing of the cavity by taking CBCT, post op 8months CBCT reveals complete bone formation both the sides.

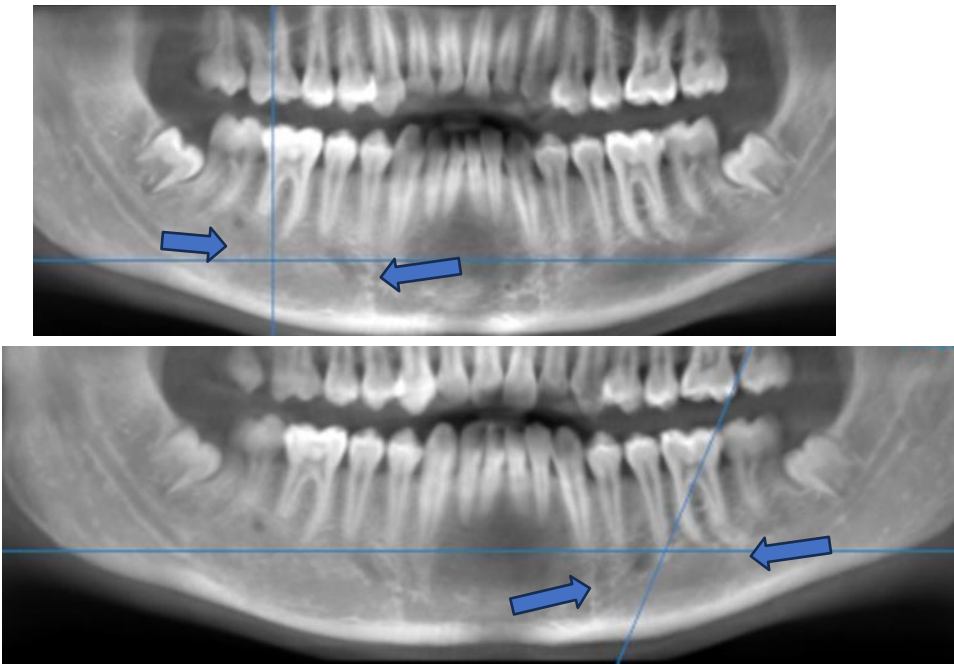


Fig: 8 months post op CBCT

Discussion

The pathogenesis of the TBC still remains a matter of conjecture; several theories have been suggested. Trauma is the most frequently discussed etiologic factor in the formation of a TBC. The presence of a history of trauma is extremely variable in the reported series of cases from 17% to 70% ⁽¹⁾. Trauma leads to intraosseous hematoma formation. After trauma, the blood clot liquefies, and adjacent bone is destroyed by enzymatic activity. Blum and Thoma believed that a previous traumatic episode to the jaws contributes to the development of most of tbc's ^(4, 5).

Thoma suggested that trauma initiates a subperiosteal hematoma that causes a compromised blood supply to the area, leading to osteoclastic bone resorption ⁽⁵⁾. Traumatic bone cysts are generally detected in patients in the second and third decades of life, though they can also be found in older age groups ⁽⁶⁾.

The mandibular body is the frequent site of TBC; however, cases involving the mandibular symphysis, ramus, condyle and even anterior maxilla have been reported ^(7, 8, 9, 10).

Clinically, the soft tissues are without any change. There is no increased mobility of the teeth or changes in their colour. The teeth are rarely sensitive to percussion. There is rarely a sensation of pain or even paraesthesia. The blood count is unchanged. There is usually no bone expansion, particularly in the early phases, while in the later phase; it is possible to perceive bone expansion in 18-50% of patients. It can be said that the asymptomatic nature of the disease is the reason why TBC is occasionally detected accidentally on a radiograph, performed for completely different reasons and because of other diseases ⁽²⁾.

On imaging, the TBC appears as a radiolucent area with scalloped borders and sometimes with slight cortication. Scalloping of the border was prominent in the present cases; this feature is suggestive, but not diagnostic, of TBC, because several other odontogenic lesions have scalloped borders. Compete et al. Reported scalloping pattern in 68% of tbc's occurring between and away from teeth ⁽¹¹⁾. Most of the cases are asymptomatic and are diagnosed in the routine radiological investigations. The lamina dura may or may not be lost, and occasionally root resorption is seen. Treatment of solitary bone cysts is surgical exploration and curettage of the bone wall. However, the recurrence rate was found to be greater than 20%.

There is no consensus on treatment modalities for ibcs of the jaw. Some researchers have reported that ibcs regress spontaneously without surgical intervention ⁽⁹⁻¹¹⁾. Others have claimed that bone graft is unnecessary because the presence of blood within the lesion cavity after an operation, from curettage or injection of autologous blood, triggers mesenchymal cell differentiation and bone production. On the contrary, others have suggested that the lesions require surgical interventions.

Conclusion

Like the many synonyms for idiopathic bone cavity, its etiology remains unclear. The diagnosis of idiopathic bone cavity relies primarily on radiographic interpretation and the surgical finding of an empty bone cavity with a lack of epithelial lining.

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