Solitary Bone Cyst - A Case Report

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Abstract

Solitary bone cysts are an uncommon lesion, usually occurring in long bones. A solitary bone cyst of the mandible also known as traumatic bone cyst of jaw, haemorrhagic cyst of the mandible, extravasation cyst, progressive bone cavity and unicameral bone cyst is an uncommon non-epithelial lined lucent mandibular lesion. Trauma has been suggested as the etiology along with other non-substantiated theories such as cystic degeneration of a preexisting tumor or of the fatty marrow in the area.

Clinically, the lesion is asymptomatic in the majority of cases and is often accidentally discovered on routine radiological examination, frequently during the second decades of life. The majority of solitary bone cysts are located in the mandibular body. This article presents a case report, successfully treated with good prognosis.

***Key words**: unicameral bone cyst ,non-epithelial lined, trauma.*

Introduction

Solitary bone cysts, also known as unicameral bone cysts, benign bone cysts or juvenile unicameral bone cysts, are an uncommon lesion and are benign neoformations which can affect all the skeletal bones. Over 90% of solitary bone cysts are located in long bones most commonly the proximal humerus and femur less than 10% that are found in the gnathic bones, the mandible is favored over 75%[1].Solitary Bone Cysts are uncommon, representing 1% of all jaw cysts In 1929, Lucas and Blum for the first time described Solitary Bone Cyst as a separate disease entity [2] .Later, in 1946 the diagnostic criteria of these cysts was established by Rushton [3]

A solitary bone cyst of the mandible also known as traumatic bone cyst of jaw, haemorrhagic cyst of the mandible, extravasation cyst, progressive bone cavity and unicameral bone cyst is an uncommon non-epithelial lined lucent mandibular lesion [4,5].

Trauma has been suggested as the etiology along with other non-substantiated theories such as cystic degeneration of a preexisting tumor or of the fatty marrow in the area, bone tumor 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 [6,7] . It has been suggested that any form of trauma, including tooth extraction could give rise to a solitary bone cyst[8].

Clinically, the lesion is asymptomatic in the majority of cases and is often accidentally discovered on routine radiological examination, frequently during the second decades of life [9] some reports suggest that it is more common in males while others report equal distribution between males and females. The majority of solitary bone cysts are located in the mandibular body between the canine and the third molar. The second most common site is the mandibular symphysis. Fewer cases are reported in the ramus, condyle and the anterior maxilla[9,10]. Traumatic bone cavity is not unique to the jawbones; it is also described in the long bones and is known as a simple solitary bone cyst occurring mostly in the humerus or femur, close to the epiphyseal plate. The long bone counterpart is more common in males by a ratio of 2.5:1[10]. This article presents a case of a solitary bone cyst, which was diagnosed on routine radiographic examination.

Case Report

A female patient aged 28 years , presented to the Department of Orthodontics with a chief complain of forwardly placed upper front teeth and desired orthodontic correction for the same .

On extra-oral examination, the face was grossly symmetrical, with competent lips. On intra-oral examination the upper anterior teeth were slightly proclined. There was no significant intra-oral finding The patient gave no history of any trauma and neither did she have offending teeth. All the teeth were vital. As part of the treatment plan , the patient was advised an Orthopantamograph (OPG).

Radiographic Findings

OPG revealed two multi-loculated radioluscent lesions on either side of the jaw in relation to premolars and molars. The superior border of the lesion appears to project up, or scallop,

between the roots. No root resorption was noted. Radiographically it appeared to be a cystic lesion with trabaculae passing through it. [FIGURE: 1].

Routine haematological investigations were advised and all the values were within normal limits. An aspiration was done, both the cavities yielded reddish serosanguinous fluid. Thus a differential diagnosis of Solitary Bone Cyst, aneurismal bone cyst and hemangioma was made.

A Biopsy was planned. The patient was prepared for biopsy in order to arrive at a final diagnosis. Bilateral buccal flaps were raised. The intra-operative presentation of the lesion was typical of a solitary bone cyst. Overlying bone was removed on both sides which revealed empty cavities with some connective tissue The cavity was thoroughly curetted and bleeding was induced into the lesion[FIGURE:2a,2b]. The flaps on either side were sutured back and the patient was recalled for follow up after 7 days. The connective tissue and the overlying bone was sent for histo-pathological evaluation.

Histopathology

Histological examination of hematoxylin and eosin stained slides demonstrated fragments of fibrovascular connective tissue, scant bone fragments and numerous extravasated red blood cells. The specimen was notable for the lack of epithelium [FIGURE:3] .The biopsy report confirmed the diagnosis of Solitary Bone Cyst.

Postoperative recovery was uneventful. At follow-up period clinical and radiographic examination showed evidence of normal healing . The patient was followed up for a period of 1 year. The post-operative OPG showed evidence of bone regeneration in the lesion [FIGURE:4]

Discussion

A solitary bone cyst is a benign cavity in bone that is either empty or contains fluid. Despite its name, epithelium is not found. It is known by numerous other names, which include: traumatic bone cyst, traumatic bone cavity, simple bone cyst, idiopathic bone cyst, and hemorrhagic bone cyst . The etiology is unknown, with proposed causes ranging from trauma to developmental.

Over 90% of solitary bone cysts are located in long bones, most commonly the proximal humerus and femur. Less than 10% that are found in the gnathic bones, the mandible is favored over three quarters of the time [1, 2]. In either the maxilla or mandible, the posterior,

premolar-molar area, is the most common location. Rare multifocal lesions are occasionally encountered in the literature [1]. Solitary bone cyst of the mandible is uncommon, representing approximately 1 % of all jaw cysts. Our case showed bilateral presentation of the lesion. There have been very few cases of bilateral involvement reported previously [11,12,13] . The clinical and radiographic appearances are mostly rather typical, but in some cases there are some variations such as occurrence in older age group, can be symptomatic and may appear in different regions such as ramus or condyle[9,14]. Reports show that males appear to be affected slightly more frequently than females [3]. The mean age of those affected is 20 years, with the lesion being decidedly less common after the end of the third decade [4]. Solitary bone cysts are generally asymptomatic and are usually detected on routine dental radiographs. Our case was a female patient aged 28years who was asymptotic and the cyst was diagnosed on a routine examination for the purpose of orthodontic intervention.

Radio graphically, solitary bone cysts are variably sized radiolucent lesions with smooth well-defined to poorly defined borders. The lesion is classically said to scallop, or push up, around associated roots. Root resorption is uncommon and associated teeth should test vital. Larger lesions may have a vague multilocular appearance and even occasionally cause bone expansion. There is evidence to support that those solitary bone cysts that are multilocular, expansile and associated with root resorption may resolve slower with standard treatment [5].

The etiology of the cyst in this case is not known. Various hypotheses have been proposed for the pathogenesis of the traumatic bone cyst. The most frequently proposed theory for the development of these lesions involves a traumatic event inciting medullary hemorrhage and a subsequent failure of the hematoma to organize and be replaced with tissue [14] .Jacob et al supported the theory that the content of the cavity depends on the length of time that the cyst has existed [4,15] . When discovered early, the lesion usually contains blood or serosanguineous fluid. The amount of fluid diminishes with the age of the lesion and eventually becomes empty.

Histologically, the solitary bone cyst is remarkable for its lack of tissue. Generally, the submitted tissue consists of scant fragments of fibrovascular connective tissue, extravasated red blood cells and pieces of reactive vital bone. No cystic epithelium is identified. Very often the scarcity of tissue makes a diagnosis difficult, but the intra-operative finding of an empty or fluid filled space is supportive of a solitary bone cyst. The location of the cyst in this case was in the body of the mandible. This is the most common site of occurrence for solitary bone cyst [7,9,15] . Histopathological reports of our the case demonstrated fragments

of fibrovascular connective tissue, scant bone fragments forming oven bone and multinucleated giant cells and numerous extravasated red blood cells (Fig 2). The specimen was notable for the lack of epithelium.

Treatment of solitary bone cysts of the gnathic bones is surgical. Curettage of the boney walls, and often the biopsy procedure itself, will incite healing. Resolution generally takes about 6 months; larger lesions may take longer [4]. Follow up is indicated, however, the prognosis is excellent.

The radiographic, histopathological and operative findings of the cases are evident with the review of literature review[9,12,14,16] . It has been suggested that Solitary bone cysts undergo spontaneous resolution, however failure to provide treatment may lead to additional complications such as pathological mandibular fracture[17] . In our patient, treatment consisted of careful curettage of the bone walls, with satisfactory results consisting of progressive bone regeneration and the absence of relapse. Other alternative treatments such as filling of the cavity with bone substitutes, may be of considered in patients where conventional management fails[18] .

Conclusion

Solitary Bone Cysts are uncommon lesions that often respond to treatment by surgical curettage. Recurrence may be attributed to incomplete removal of the lesion. The solitary bone cyst is usually asymptomatic with occasional findings, and its etiology, is unknown in majority of the cases. The cavity is usually seen to be empty and without epithelial lining. Careful curettage of the lesion favours progressive bone regeneration, with a good prognosis and an almost negligible relapse rate.

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LEGENDS FOR PICTURES:

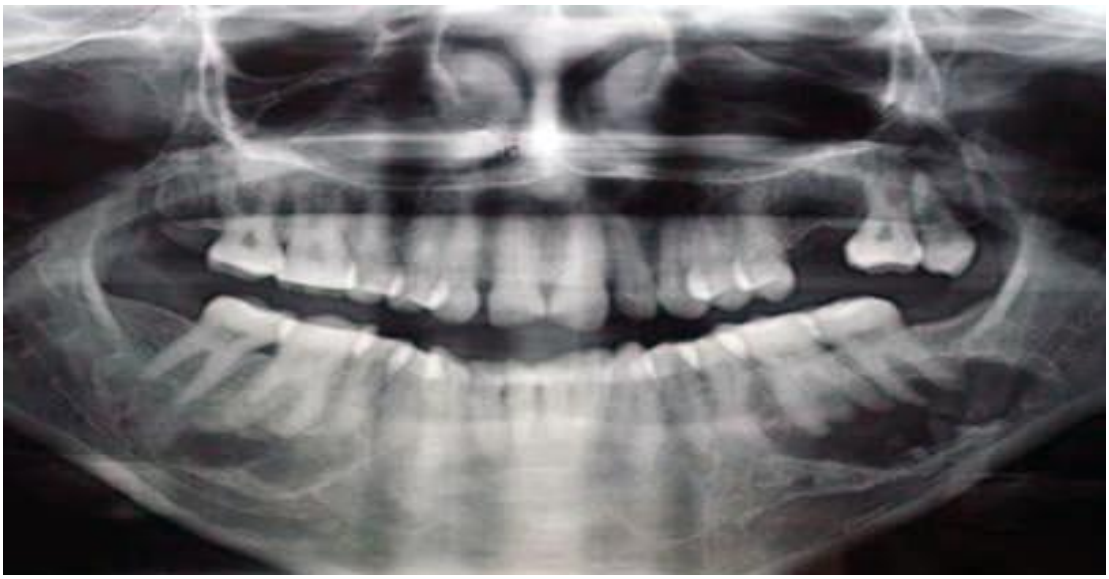

Figure 1: Pre-operative OPG showing radioluscent lesions on either side of the jaw.

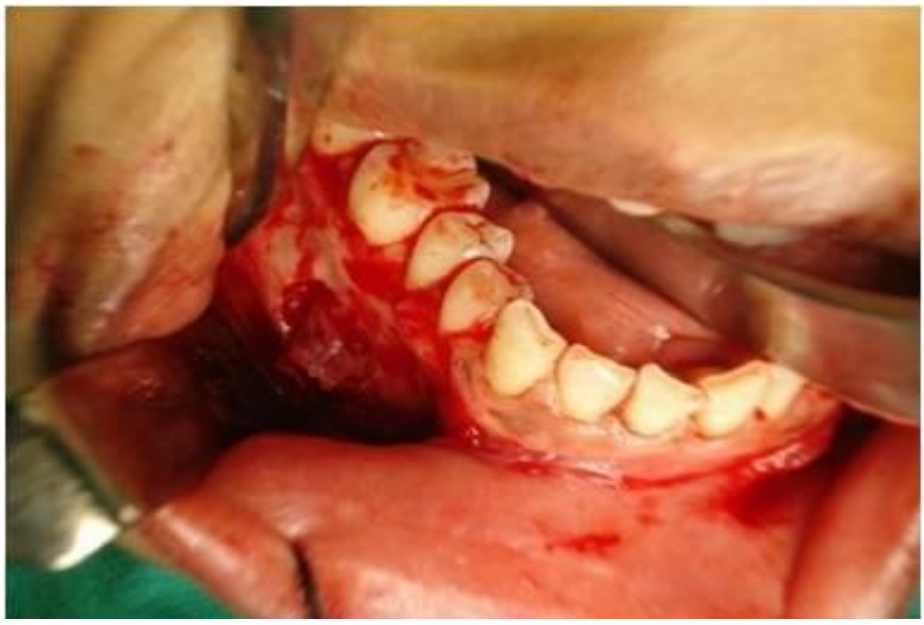

Figure 2a: Surgical exposure of the lesion

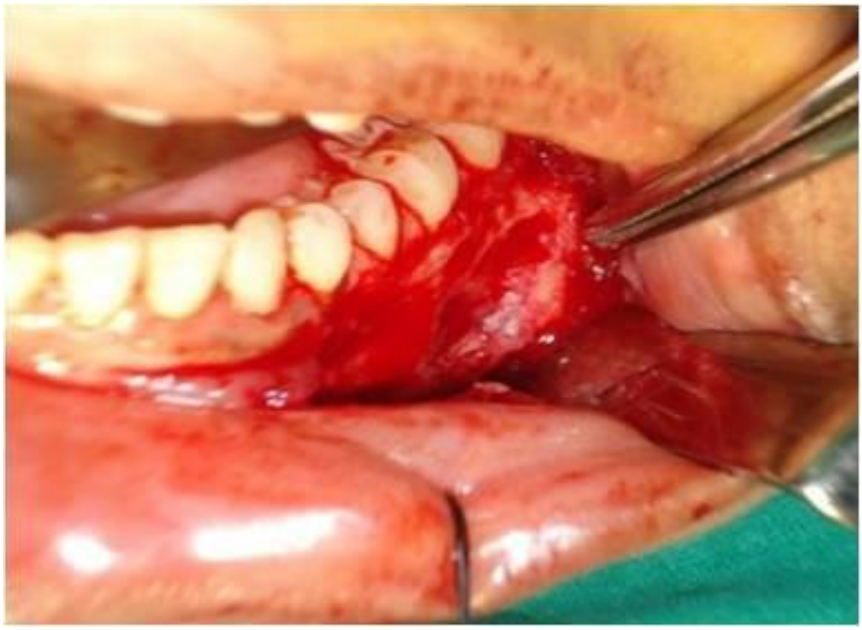

Figure 2b: Surgical exposure of the lesion

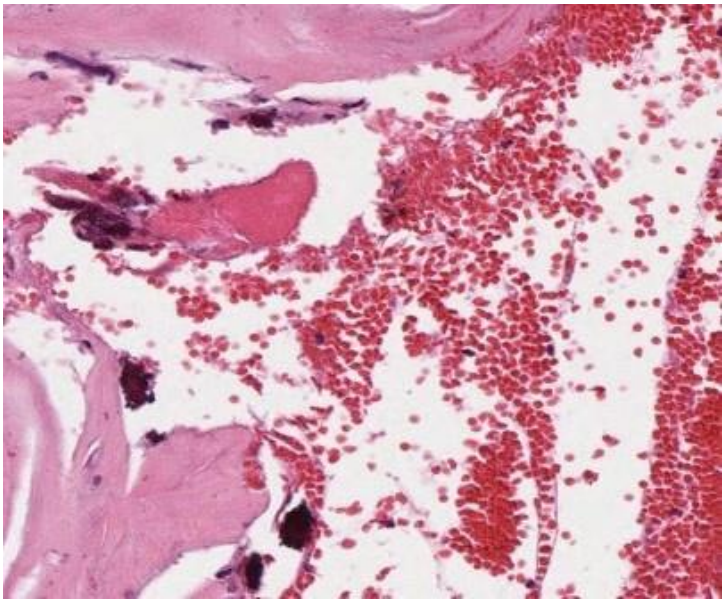

Figure 3: Photomicrograph of the Solitary bone cyst showing fragments of fibrovascular connective tissue, calcified material and red blood cells.

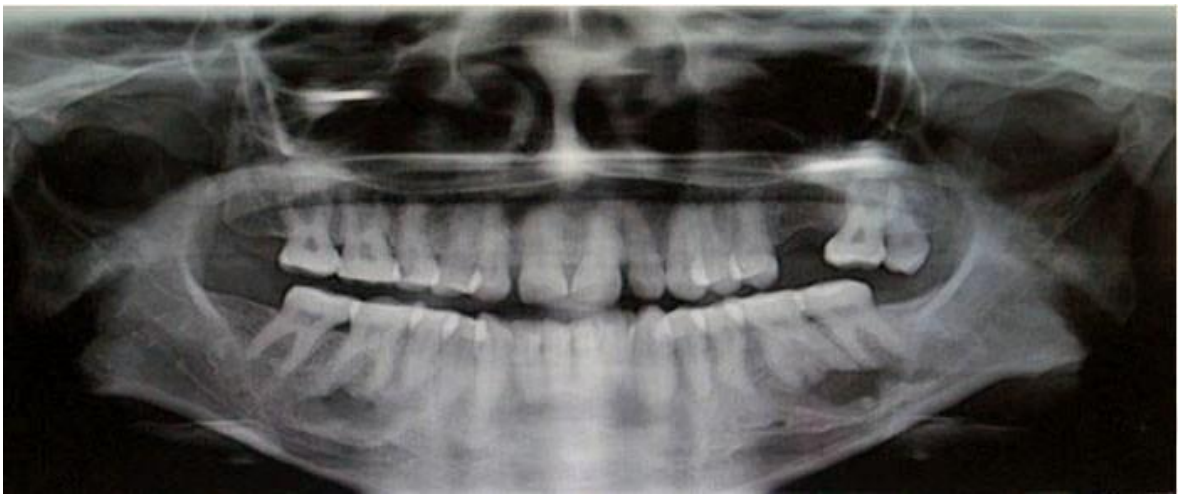

Figure 4: Post-operative OPG showing evidence of bone regeneration in the lesion.