

SIMPLE BONE CYST: UNCOMMON CYST OF JAW

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ABSTRACT

Simple bone cyst (SBC) of the jaws is uncommon, representing approximately 1% of all jaw cysts. It is often accidentally discovered on routine dental examination as it is asymptomatic in most cases. In this report, we discuss a case of SBC in a 16 years old female who presented in our department for correction of her mal-aligned teeth. On routine x-ray for orthodontic treatment, a well defined, unilocular radiolucent area approximately 3x1cm in size with scalloped borders on the left body of mandible expanding from the distal surface of 34 to distal surface of 37 was discovered. Surgical exploration was required for both diagnostic and definitive treatment. The operative finding was a hollow cavity without any epithelial lining.

KEYWORDS

Curettage, mandible, radiolucent, simple bone cyst



INTRODUCTION

Simple bone cyst (SBC) is generally a single lesion without an epithelial lining, surrounded by bony walls and either lacking contents or containing liquid and/or connective tissue.¹ SBC of the jaws is uncommon, representing approximately 1% of all jaw cysts.² It is mostly seen during the second decade of life and body of the mandible is the most common site.³ It is often accidentally discovered on routine dental examination as it is asymptomatic in most cases. Surgical exploration acts both as diagnostic and definitive treatment.

CASE REPORT

A 16 years old female presented to the department of Dental Surgery of Birat Medical College and Teaching Hospital for the treatment of her mal-aligned teeth. She was examined and advised for Orthopantomogram (OPG) and lateral cephalogram. Her OPG revealed well defined, unilocular radiolucent area approximately 3x1cm in size with scalloped borders on the left body of mandible expanding from the distal surface of 34 to distal surface of 37. (Figure 1) There was no displacement and resorption of the surrounding teeth. On intraoral examination, overlying mucosa appeared normal, there was no mobility of teeth, no area of tenderness and no buccal and lingual expansion on palpation. Patient's medical history was not significant and she had no history of trauma to jaw. Her computed tomography (CT) scan of mandible revealed that both buccal and lingual cortex were intact and there was no buccal and lingual expansion. (Figure 2)

Differential diagnosis of SBC, odontogenic keratocyst was made and was planned for surgical exploration. Preoperative investigations were done and patient was operated under general anesthesia. A crevicular incision was given from 33 to 38 with anterior releasing incision at 33. Full thickness mucoperiosteal flap was elevated and dissection of left mental nerve bundle was done to facilitate retraction. There was no buccal cortex expansion and no perforation. Buccal cortex corticotomy was done with 703 bur followed by flame shaped bur. Hollow cavity without any epithelial lining was revealed. (Figure 3) Curettage of bony walls was done which lead to profuse bleeding that could not be controlled by pressure packing and cauterization alone. Bleeding from site was controlled by applying bone wax and placing absorbable gelatin powder (Gelfoam) and oxidized regenerated cellulose (Surgicel). Once, bleeding was controlled, closure was done with 3-0 Vicryl suture. Histopathological examination could not be done as tissue collected was very less for that purpose. Once osteogenesis was observed in the radiograph after 6 months, her orthodontic treatment was initiated. Extraction of 14, 24, 34 and 44 was done and she still comes to the department for her Orthodontic treatment. It has been 16 months since her surgery and she have no complaints. Most of defect have been filled with bone however it is not completely filled. (Figure 4)



Figure 1: Orthopantomogram at first visit with radiolucent area on the left body of the mandible



Figure 2: Computed tomography scan at first visit showing intact buccal and lingual cortex



Figure 3: Intraoperative hollow cavity



Figure 4: Orthopantomogram at 16 months follow up

DISCUSSION

SBC is also known by various names such as traumatic bone cyst, solitary bone cyst, hemorrhagic cyst, extravasation cyst, unicameral bone cyst, idiopathic bone cavity.⁴ Several theories of etiology of SBC have been given such as (1) The theory of traumatic-hemorrhagic cyst, (2) The theory that bone cysts represent bone tumors which have undergone cystic degeneration, (3) The theory that cysts are a result of faulty calcium metabolism, (4) The theory of marrow necrosis due to ischemia, (5) The theory that these cysts are the end result of low-grade infection and (6) The theory of osteoclasts resulting from a disturbed circulation (not hematoma), caused by trauma creating an unequal balance of osteoclasts and repair of bone.⁵ Most commonly accepted theory is traumatic hemorrhagic theory. According to Olech et al after trauma, only a failure of an early organization of the clot and the subsequent liquefaction of the clot can give rise to the eventual formation of a traumatic cyst.⁶ The etiology of the solitary bone cyst is unknown, so was in our case as the patient didn't have history of trauma. Study done by Ballester et al had five of the patients (23.8%) with a clear antecedent of trauma in childhood, without associated fractures or loss of teeth.⁷ SBC are generally detected in patients in the second and third decades of life, though they can also be found in older age groups with female predominance.⁷ Most of patients are asymptomatic but some may present with swelling, pain, discharge from oral cavity and paresthesia as well.³ On radiographic examination, SBC may be well-defined to an ill-defined, usually with well-defined scalloped border

between the roots of the teeth. It is unilocular radiolucent lesion but occasionally may be multilocular.⁸

Finding empty cavity or blood on surgical exploration is a diagnostic for SBC as there may not be tissue enough to be sent for histopathological examination in most cases. Histologically, the submitted tissue consists of scant fragments of fibrovascular connective tissue, extravasated red blood cells and pieces of reactive vital bone without cystic epithelium.⁹ Curettage after surgical exploration induces bleeding and new blood clot that fills the cystic cavity is in contact with healthy connective tissue of the periosteum from which the organization of the clot Commences, bone is formed.⁶

Spontaneous resolution of SBC have been reported.¹⁰ However, failure to diagnose or delay in treatment may lead to pathological fracture of mandible.¹¹ Recurrence rate is very less as shown by Huebener et al (2 out of 155 cases) which is in contrast to study by Suei et al with recurrence rate of 26% (34 out of 132 cases).^{3,12} Resolution usually takes about 6 months or longer, depending on the size of the lesion. Healing or recurrence should be confirmed within 3 years of treatment.¹²

CONCLUSION

SBC is a rare and mostly discovered during the routine radiographic examination. Surgical exploration is required for both diagnostic and definitive treatment.

CONFLICT OF INTEREST

None

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