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Case Report

JPBMS

ISSN NO- 2230 – 7885
CODEN JPBSCT

OPEN ACCESS

JOURNAL OF PHARMACEUTICAL AND BIOMEDICAL SCIENCES

Solitary bone cyst of mandible

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Abstract: Solitary bone cyst (SBC) is an uncommon disorder of the jaw bones, as well as other skeletal bones, particularly the long bones. It usually occurs in the metaphyseal region of long bones comprising only around 2% of all bone cysts affecting this area. Solitary bone cyst is an asymptomatic, slow growing lesion commonly diagnosed incidentally during routine radiographic examination of the jaw bones. Its etiology is not clear and trauma has not been definitely determined to be the cause. It occurs mainly in children and young adults, and the body of the mandible is the most common site. We report a case of solitary bone cyst of the mandible in a 7 year old female child.

Keywords: Solitary bone cyst, trauma, mandible.

Introduction:

Solitary bone cyst (SBC) lesions were first recognized by Virchow[1] in 1876. Jaffe [1] and Lichenstein [1] provided a discussion of the topic in 1942. In dentistry, Blum [1] reported the first three cases in 1932. Solitary bone cyst of the jawbone is relatively rare, but it has frequently been reported in the dental literature but its pathogenesis is still not clearly understood. [1] Solitary bone cysts have been reported in the literature under a variety of names: Simple bone cyst, Hemorrhagic bone cyst, Progressive bone cavity and Unicameral bone cyst. [2]

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. The lesion is mainly diagnosed in young patients most frequently during the second decade of life with equal distribution between males and females. [3] Majority of them 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.[3] Differential diagnosis include ameloblastoma, aneurysmal bone cyst, odontogenic keratocyst and giant cell lesions. We report a case of solitary bone cyst of the mandible in a 7 year old female child.

Case report:

A 7-year-old female patient reported to the department of Oral and Maxillofacial surgery with a chief complaint of pain and swelling in the lower right posterior region of the jaw since 3 months. On extraoral examination evidence of facial swelling was present on the right angle of mandible and was approximately 3 × 2.5 cm in size, oval in shape, bony hard in consistency, nontender with normal overlying mucosa.***(Figure 1)*** Correlating with the history and clinical examination a provisional diagnosis dentigerous.

Figure 1: **Extraoral photograph showing slight obvious swelling on the right angle of the mandible**

cyst was given. Panoramic and lateral oblique view radiograph revealed an oval, partly well-defined unilocular radiolucency at the junction of mandibular angle and body region up to first molar anteriorly. There was no evidence of tooth displacement and resorption. ***(Figure 2 and 3)***

Figure 2: **Panoramic radiograph showing radiolucent lesion at the junction of body and right angle of the mandible.**

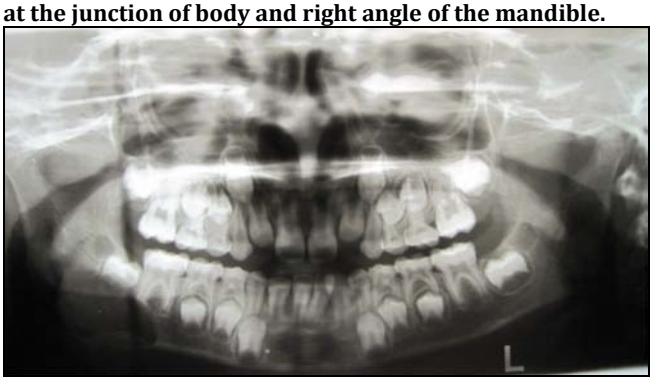
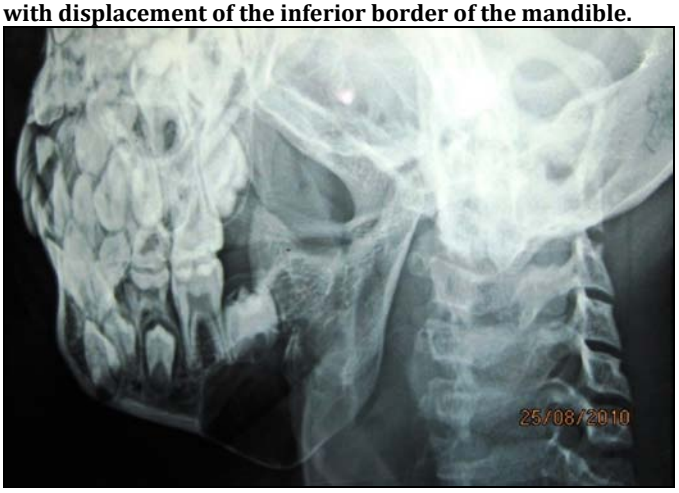
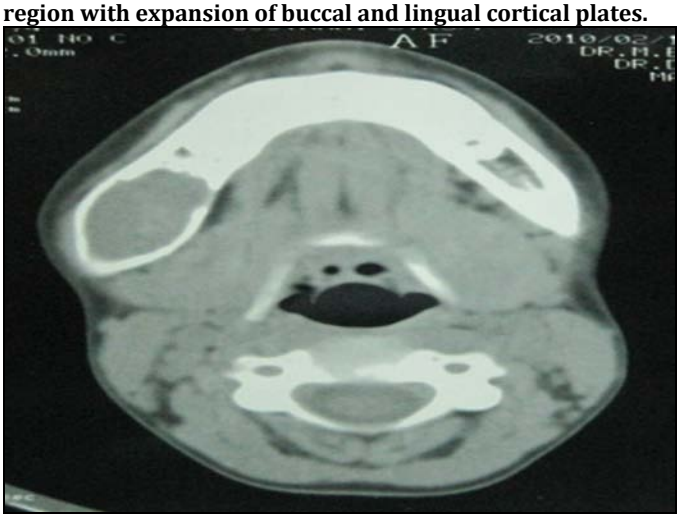


Figure 3: **Lateral oblique radiograph showing radiolucent lesion at the junction of body and right angle of the mandible with displacement of the inferior border of the mandible.**



CT axial section of the mandible showed radiolucent lesion in the right mandibular angle and body region with expansion of buccal and lingual cortical plates. ***(Figure 4)***

Figure 4: **CT axial section of the mandible showing radiolucent lesion in the right mandibular angle and body region with expansion of buccal and lingual cortical plates.**



FNAC of the lesion was performed which yielded negative aspiration. The patient was posted for surgical exploration under general anesthesia and the lesion was found to be an empty cavity, with no evidence of epithelial lining and containing very little amount of fluid mixed with blood. ***(Figure 5)***

Figure 5: **Intraoral photograph showing empty cavity after surgical exploration.**

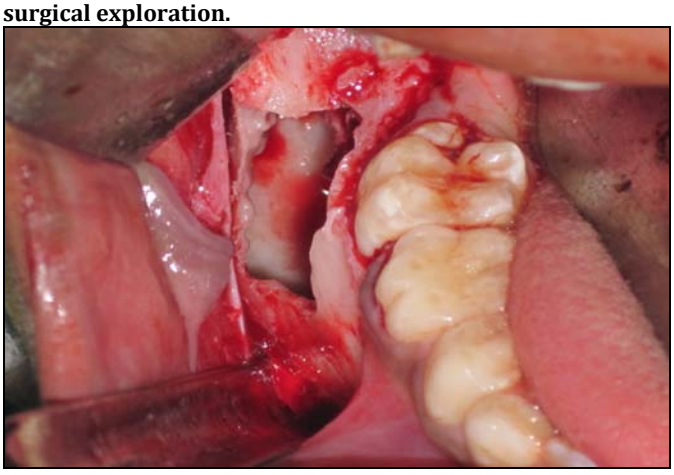


Figure 6: **Postoperative panoramic radiograph showing normal bone deposition at the junction of body and right angle of the mandible.**

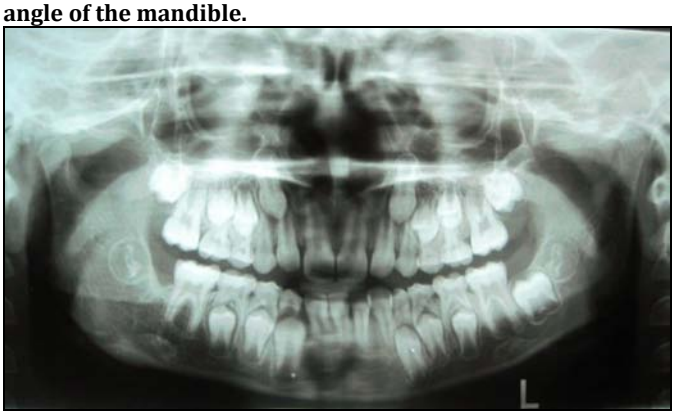
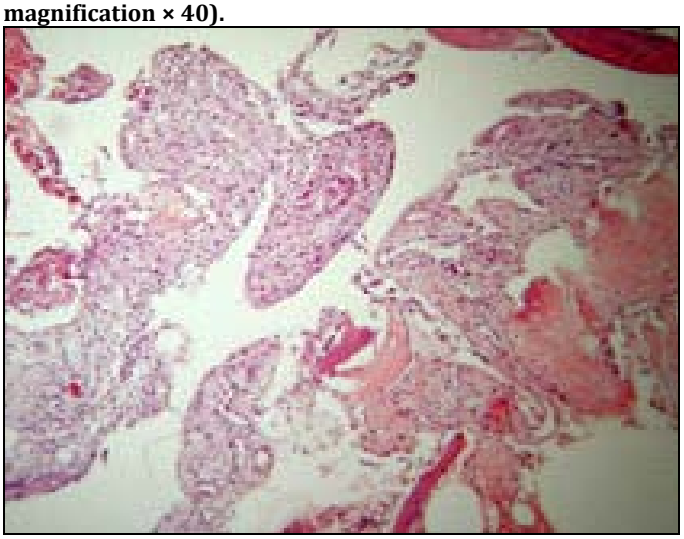


Figure 7: **Histopathology showing normal appearing bone spicules with parts of vascular connective tissue (H & E, magnification × 40).**



Curettage of the cavity was performed and the excised bone done to enter the bony cavity was sent for histopathological examination which yielded normal appearing bone spicules with parts of vascular connective tissue. Thus, on the basis of clinical, radiological and histopathological findings a final diagnosis of Solitary bone cyst was made.

Discussion:

Solitary bone cyst has been classified by the World Health Organization as a nonneoplastic lesion related to bone. It is defined as "an intraosseous cyst having a tenuous lining of connective tissue with no epithelium". [3] Solitary bone cyst in the jaws may affect patients between the ages of 2 and 75 years, but 56 to 70% of the cases present in the second decade of life and only 15% of the patients are more than 40 years old. Men are affected more than women (M: F-3:2), but one series reported that they were more common in women in the older age group.[4,5] In the maxillofacial region, most solitary bone cysts occur in the molar region of the mandible, with estimates varying from 68 to 100%. [6] Most of the others occurred in the maxilla, with only a single case in the zygoma. [7] Although these cysts are generally asymptomatic, one study reported symptoms in 30% of the patients. The commonest symptom was pain, but sensitivity of the teeth, or tenderness have been reported in 12 to 14% of patients. [7] The etiology of solitary bone cyst is unknown and many hypotheses have been proposed. The most widely accepted explanation,

though far from being based on evidence, is that trauma is followed by intramedullary hemorrhage that fails to organize leaving an empty cavity proposed by Olech et al. [8] In published cases, the figures for a history of trauma vary widely from 12 to 81% and the nature of injury is rarely defined. [8] Other theories for the pathogenesis included—(1) infection of bone marrow; (2) loss of blood supply to a hemangioma or lymphoma; (3) cystic degeneration of existing bone tumor; (4)changes and reduction in the osteogenic activity; (5) faulty calcium metabolism as a result of systemic disease, such as parathyroid diseases; (6) ischemic necrosis of the fatty bone marrow; (7) low grade chronic infection; (8) imbalance between the osteoclastic and osteoblastic activity due to trauma; (9)developmental defect; (10) failure of mesenchymal tissue to form bone and cartilage, and instead becomes immature as multiple bursa-like synovial cavities. [9] On radiological examination, between 61 and 79% of solitary bone cysts are radiolucent. However, 21% have radiopaque foci, and 7% may show cloudiness. The border, although irregular, can vary from well-defined to a complete absence of cortical outline. Scalloping or interdigitation between the roots of teeth was a common feature in 44 to 68% of the cases. Loss of lamina dura is predominantly in patients over 30 years of age and there is minimal involvement in younger people.[9] Displacement of teeth and root resorption are rare although in one series they were reported in 9 and 22% of the cases, respectively. The definite diagnosis of traumatic cyst is invariably achieved at surgery when an empty bone cavity without epithelial lining is observed, leaving very little except normal bone and occasional fibrous tissue curetted from the cavity wall for the histopathologist. Sometimes, the cavity contains a straw-colored fluid of bright blood. Most of the histologic findings reveal fibrous connective tissue and normal bone. There is never any evidence of an epithelial lining. The lesion may exhibit areas of vascularity, fibrin, erythrocytes and occasional giant cells adjacent to the bone surface. The widely recommended treatment for SBC is surgical exploration followed by curettage of the bony walls.

The surgical exploration serves as both a diagnostic maneuver and as definitive therapy by producing bleeding in the cavity. Hemorrhage in the cavity forms a clot which is eventually replaced by bone. It is believed that in some cases there may be a spontaneous resolution. [9 , 10] The clinical data in our case is basically in agreement with previous literature. The patient was young and upon surgical exploration the cavity was empty without the cystic lining thus correlating the radiographic and operative findings to diagnose it as solitary bone cyst of mandible.

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Conflict of Interest: - None
Source of funding: - Not declared

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