International Journal of Medical and Health Research
ISSN: 2454-9142
www.medicalsciencejournal.com
Volume 4; Issue 2; February 2018; Page No. 144-147

Multilocular radiolucent lesion in anterior mandible

[*1] Pooja Siwach, [2] Supriya Girish Bhalchim, [3] Arush Thakur

[1] Assistant Professor, Department of Dentistry, Government Medical College and General Hospital, Dhule, Maharashtra, India
[2] Post-Graduate Student, Department of Oral Medicine and Radiology, Government Dental College and Hospital, Mumbai, Maharashtra, India
[3] Assistant Professor, Department of Oral Pathology and Microbiology, Government Dental College and Hospital, Mumbai, Maharashtra, India

Abstract
In radiographs, the multilocular pattern comprises about one third of cases, and may simulate a number of cysts and tumors in the jaws. Traumatic bone cyst (TBC) which comprise 1% of jaw cysts is usually unilocular but may show multilocularity on radiographs. Because of lack of unique clinical and radiographic features, it is important to establish the differential diagnosis between traumatic bone cysts and other bone lesions of the jaws. A case of multilocular radiolucent lesion involving anterior mandible in a 38 year old male has been discussed with possible differential diagnosis.

Keywords: multilocular, traumatic bone cyst, jaw

Introduction
A 38-year-old male reported with complaint of swelling and paresthesia in left anterior mandibular region, since 1 month. Patient also gave the history of a road-side accident, 1 year back, causing trauma to the anterior mandible.
On extra-oral examination, a diffuse swelling was noticed in the anterior mandibular region extending from symphysis to the left corner of mouth. (Figure 1A)

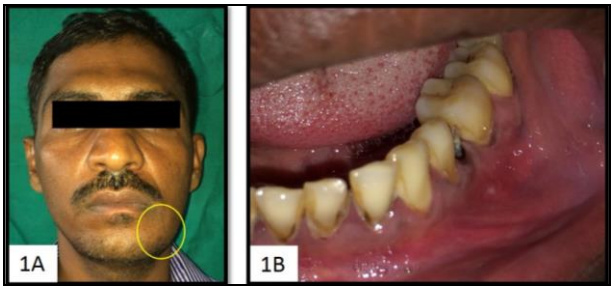

Fig 1

The swelling was bony-hard and non-tender to palpation. Intra-oral examination revealed a bony expansion extending from canine region to first molar region of left mandible. Expansion of buccal surface with slight expansion on lingual surface was apparent to palpation. (Figure 1B)
Overlying mucosa was intact and normal in color. Root piece of 35 was present. Also severe cervical abrasion was noticed on buccal surface of 33 and 34 and were tender on percussion. Generalized staining of teeth and calculus was present.

Radiographic Interpretation
OPG revealed a multilocular radiolucent lesion extending from left canine to first molar. Slight resorption of mesial root of 36 was seen. Root piece of 35 was superiorly displaced and not associated with the radiolucency. Inferior alveolar nerve canal was not traceable in that region. The borders were well defined but non-corticated. (Figure 2A)

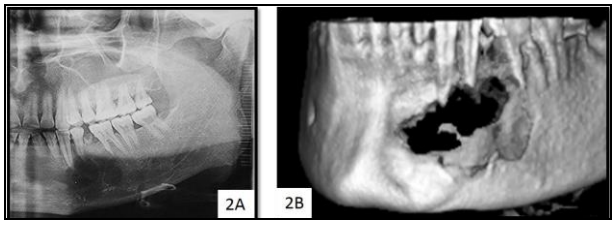

Fig 2

CBCT showed a well-defined hypodense lesion with few thin septae giving it a multilocular appearance. Borders of the lesion were irregular, extending from midline to the left mandibular first molar. Inferior border of the mandible was intact. Further, expansion of buccal cortical plate and perforation of both buccal and lingual cortical plates was seen. (Figure 2B)

Differential Diagnosis
A well-defined radiolucency with intact anatomic borders and slight root resorption, indicates toward a benign locally aggressive lesion. Considering the age of patient, site of lesion, history of trauma and multilocular radiographic presentation, lesions such as odontogenic (radicular cyst, keratocystic odontogenic tumor, ameloblastoma, odontogenic myxoma), reactive (CGCG) and fibro-osseous (central ossifying fibroma, idiopathic bone cavity and aneurysmal bone cyst) were considered in the differential diagnosis.

Odontogenic lesions
Radicular cysts are the most common cystic lesions in the jaw. As, root-piece of 35 was present in the lesional area on clinical examination, a provisional diagnosis of radicular cyst was given. However, on OPG the root-piece of 35 was superficially placed and not in contact with the radiolucency, radicular cyst due to 35 was ruled out. Further, severe cervical resorption was seen in 33 and 34 and apices of these teeth

were involved within the radiolucency, which may lead to periapical infection and radicular cyst formation. Radicular cyst commonly show labial or buccal cortical plate expansion with rare lingual plate expansion. Diffuse radiographic margins without cortication had been reported in infected or rapidly enlarging cysts. Root resorption is not often seen but it may occur. Peak frequency is third decade with large number of cases reported in fourth and fifth decades, with slight male predilection. However, radicular cyst most commonly present as unilocular radiolucency, case reports of multilocular radiolucent radicular cyst had been reported [1]. However, 33 and 34 were positive on vital tests and also, irregular borders on CBCT and complaint of paresthesia donot favour this diagnosis.

Among the multilocular radiolucent lesions, Keratocystic odontogenic tumor (KCOT) was considered most likely. It had been reported most commonly in second-third decade and more frequently in males. [2]About half of all KCOTs occur at angle-ramus region of mandible, reports of number of studies indicated that they may occur anywhere in jaws. Occasionally, paresthesia of lower lip has been reported. KCOT tends to extend in medullary cavity and clinically observable expansion of bone occurs late. Perforation of bone has been reported in 25-39% of the cases. Slight root resorption has also been reported. Radiographic presentation may vary from unilocular to multilocular radiolucency [2].

Another common multilocular radiolucent lesion in 3-5th decade is solid multicystic ameloblastoma (SMA). Although, the most common site of occurrence in SMA is molar-ramus area of mandible, cases in anterior mandible have also been reported. It clinically presents as a slow-growing, painless swelling with expansion of the cortical plates [3]. Desmoplastic ameloblastoma is most likely to occur in the anterior or premolar region of the jaws, however, radiographic appearance usually is that of a mixed radiolucent-radiopaque lesion. Unicystic Ameloblastoma tends to occur in a younger population (average age in a large study, 22.1 years) compared with that of conventional ameloblastoma. Predominantly it show unilocular appearance on radiographic presentation. However, multilocular lesions have also been reported [4].

Patients afflicted with an odontogenic myxoma generally notice a painless, slowly enlarging expansion of the jaw with possible tooth loosening or displacement. Commonly occur in 2nd -4th decade with molar and premolar region of mandible and maxilla being the site of most common occurrence. Radiographically, odontogenic myxomas appear most commonly as multilocular radiolucencies with ill-defined borders [5].

Reactive Lesions

Central giant cell lesion is a locally destructive benign lesion; commonly seen in patients younger than 30 years. Etiopathogenesis of CGCG of the jaw bones has not been clearly established; it has been suggested that it occurs as a result of an unusual exacerbated reparative process related to previous trauma and intraosseous hemorrhage which triggers the reactive granulomatous process. It is more common in females. It is frequently reported that lesions of CGCGs are located anterior to the mandibular first molar and often cross the midline. Usually, CGCG presents as a well-defined unilocular or multilocular radiolucent lesion. Although CGCGs are considered as benign osseous lesions, some authors divides CGCG into two categories based on its clinical and radiographic features: (a) Non-aggressive lesions which are usually slow growing and asymptomatic and do not show cortical perforation or root resorption with less chances of recurrence, (b) aggressive lesions are usually seen in younger patients, are painful, grows rapidly, larger overall, often cause cortical perforation, root resorption and have a tendency to recur [6]. Radiographic findings in the present case indicated more toward the aggressive type of CGCG.

Fibro-osseous lesions

Central ossifying fibroma in initial stages may show completely radiolucent picture [7]. Among fibro-osseous lesions, cortical plate expansion and perforation and well circumscribed radiolucency was more in the favour of a neoplastic lesion i.e ossifying fibroma. Bearing in mind the age of the patient and site of lesion, conventional type of ossifying fibroma was considered in differential diagnosis of the above lesion.

Cystic degeneration or secondary cyst formation within fibro-osseous lesions had also been reported. Also, along with the history of trauma, aneurysmal bone cyst and idiopathic bone cavity were also considered in the differential diagnosis [8]. Aneurysmal bone cyst (ABC) commonly occur in the first three decades of life with a peak in the second decade. It is slightly more common in females and most common location is posterior mandible. Radiographically, it may show unilocular or soap-bubble appearance. Teeth may be displaced and root resorption has been described [9]. Idiopathic bone cavity (Traumatic bone cyst) is often accidentally discovered on routine radiological examination, usually unilocular, non-expansile (~75%) and radiolucent, typically above the alveolar canal and in many cases with a scalloped superior border spreading between the roots of vital teeth. Large, expansile and multilocular traumatic bone cavities have been rarely described [10].

In summary, central giant cell granuloma and keratocystic odontogenic tumor, conventional ossifying fibroma topped our differential diagnosis list, followed by ameloblastoma, aneurysmal bone cyst, odontogenic myxoma, central ossifying fibroma, idiopathic bone cavity and radicular cyst.

Diagnosis and Management

On aspiration, 1.6 ml of clear, blood tinged fluid was obtained. (Figure 3A)

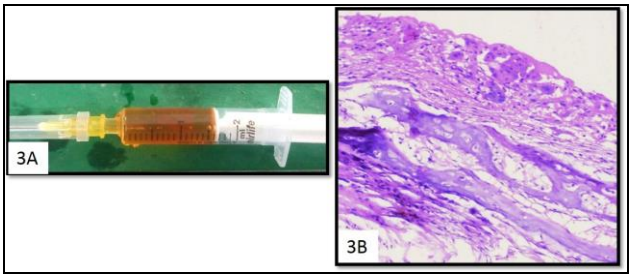

Fig 3

Microscopic examination of the incised specimen revealed a cystic cavity, without any epithelial lining and the surrounding

connective tissue capsule was fibro-cellular with few peripheral bony trabeculae. Few giant cells were also noted within connective tissue capsule at one place. (Figure 3B) Since the incised tissue was very scanty, a definite histologic diagnosis was difficult to be achieved and hence, enucleation of the lesion was planned. However, cystic lesions such as idiopathic bone cavity, ABC, radicular cyst and keratocystic odontogenic tumor were considered for differential diagnosis. But absence of frank blood on aspiration and large blood filled cavernous spaces on histopathology ruled out aneurysmal bone cyst.

On enucleation, to our surprise, instead of a cystic lesion, a solid mass of tissue was obtained. The excised mass was brownish-black in color and soft to firm in consistency. (Figure 4A)

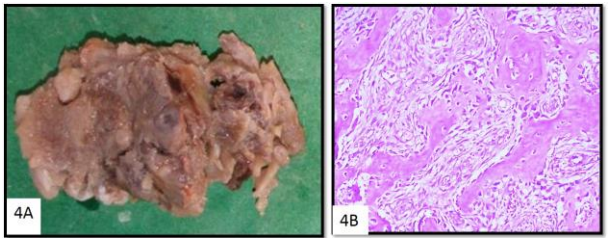

Fig 4

Further, microscopic examination revealed fibrovascular connective tissue stroma with numerous immature bony trabeculae showing osteoblastic rimming. (Figure 4B) This type of picture can be seen either during healing of a bony lesion or fibro-osseous lesion. Considering cystic cavity on incisional biopsy and quite vascular stroma, and further, keeping in mind the differential diagnosis of traumatic bone cyst, this seems to more in favour of a healing cyst. Hemorrhage either due to surgical curettage or during the explorative procedure had been reported to induce a reparative process. Thereby, a final diagnosis of traumatic bone cyst was made. 3 months follow-up of the patient showed uneventful healing and fine bony trabeculae were appreciated on the follow-up radiograph, suggestive of new bone formation.

Discussion

Traumatic bone cyst (TBC) which comprise 1% of jaw cysts, occur more frequently in association with osseous dysplasias than as isolated jaw lesions. Traumatic bone cyst (TBC)of the jaw were initially described as an entity in 1926 by Lucas and Blum and later qualified in 1946 by Rushton as a single cyst that has no epithelial lining, has an intact bony wall, is fluid filled and has no evidence of acute or chronic inflammation [11].

TBCs of the jaw, also labeled as solitary bone cyst, simple bone cyst, idiopathic bone cavity or unicameral bone cyst is a relatively uncommon benign intraosseous lesion of unknown etiology. The most widely used terminology for this lesion in the literature is “traumatic bone cyst,” despite the fact most lesions have no documentation of trauma and no epithelial lining [12]. Other hypotheses for the etiology include a blockage of lymphatic drainage from venous sinusoids leading to resorption of bony trabeculae, developmental anomalies resulting in synovial fluid being incorporated intraosseously, and osteolysis secondary to altered bone metabolism [11]. According to Marx and Stern the idiopathic bone cavities represent a disturbance in the remodeling of trabecular bone related to biochemical or hormonal changes during the peak incidence of the teen years [13].

Although IBC has not been universally accepted as the recognized classification of this lesion, it is a more accurate descriptive term because of the lack of a true epithelial lining. Much of the literature suggests IBCs are not commonly found in adults, but when diagnosed in older patients, they are typically associated with fibro-osseous disorders [1f].

These lesions are usually an incidental finding discovered during routine radiographic examination, most commonly in a patient's second and third decade of life. There is no gender predilection [11].

Traumatic bone cysts generally show up as unilocular radiolucent areas in the posterior portion of the mandible; its margins are scalloped among dental roots. This radiographic pattern, however, may vary – the cyst may be multilocular, associated with unerupted/impacted teeth, and several cysts may be present in the same patient [14]. In our case, it showed a multilocular radiolucent appearance.

The histology of traumatic bone cysts reveals only a connective tissue membrane lining the pathologic cavity, characteristic of pseudocysts. Cholesterol crystals, hemorrhagic foci, and osteoclasts may be found [15].

The treatment of choice for traumatic bone cysts is surgery for curettage of the bone walls, which generally results in short-term healing [16].

Suei *et al* found an overall recurrence rate of 26% in 132 cases and an even higher recurrence in patients with multiple lesions that were associated with cement-osseous dysplasia (71% and 75%, respectively) [12].

Conclusion

Because of a lack of unique clinical and radiographic features, it is important to establish the differential diagnosis between traumatic bone cysts and other bone lesions of the jaws – especially translucent lesions. In radiographs, the multilocular pattern comprises about one third of cases, and may simulate tumors in the jaws. Therefore, traumatic bone cyst should be considered in the differential diagnosis of multilocular radiolucencies of oral cavity.

References

1. Shear M, Speight P. Cysts of the Oral and Maxillofacial Regions. 3rd ed. Blackwell Munksgaard. 2007; pp. 123-142.
2. Rajendran R, Sivapathasundharam B. Shafer’s Textbook of Oral Pathology. 7th Edition. Elsevier Publication. 2012; 265.
3. Brierley DJ, Hunter KD, Odontogenic tumours, Diagnostic Histopathology, 2015. http://dx.doi.org /10.1016/j.mpdhp.2015.07.003
4. Reichart PA, Philipsen HP. Odontogenic Tumors and Allied Lesions. London, Quintessence; 2004; pp. 43-80.
5. Brannon RB, Central odontogenic fibroma, myxoma (odontogenic myxoma, fibromyxoma), and central odontogenic granular cell tumor. Oral Maxillofacial Surg Clin N Am. 2004; 16:359-374.

6. Hongal BP, Joshi P, Kulkarni V, Baldawa P. "Central giant cell granulomas of the jaws: A review of literature with its emphasis on differential diagnosis on related lesions". Int J Contemp Dent Med Rev. 2015, Article ID: 010115, 2015.
7. Eversole, Su, Elmofty. Benign Fibro-osseous of the Craniofacial Complex – A Review. Head and Neck Pathol. 2008; 2:177-202.
8. Edward F. McCarthy. Fibro-Osseous Lesions of the Maxillofacial Bones. Head and Neck Pathol. 2013 7:5-10.
9. Neville BW, Damm DD, Allen CM, Bouquot JE. Bone pathology. Oral and Maxillofacial Pathology. 3rd ed. Philadelphia: Saunders. 2009; pp. 551-552.
10. Rajendran R, Pillai H, Anil S. Solitary Bone Cyst: Traumatic Cyst, Hemorrhagic Cyst, Extravasation Cyst, Unicameral Bone Cyst, Simple Bone Cyst, and Idiopathic Bone Cavity. Oral Maxillofac Pathol J. 2016; 7(2):720-725.
11. Joy ET, Raghupathy LP, Sherubin JE, Kiran MS. A rare presentation of a simple bone cyst. J Pharm Bioallied Sci. 2015; 7(Suppl 2):823-826.
12. Noffke CE, Raubenheimer EJ, MacDonald D. Fibro-osseous disease: harmonizing terminology with biology. Oral Surg Oral Med Oral Pathol Oral Radiol. 2012; 114:388-392.
13. Marx RE, Stern D. Conditions of Developmental Disturbance. In: textbook of Oral and Maxillofacial Pathology. 2nd ed. Quintessence Publishing Co. 2012; pp. 209-211.
14. Tong AC, Ng IO, Yan BS. Variations in clinical presentations of the simple bone cyst: report of cases. J Oral Maxillofac Surg. 2003; 61(12):1487-91.
15. Harnet JC, Lombardi T, Klewansky P, Rieger J, Tempe MH, Clavert JM. Solitary bone cyst of the jaws: a review of the etiopathogenic hypotheses. J Oral Maxillofac Surg. 2008; 66(11):2345-8.
16. Martins-Filho PRS, Santos TDS, de Araujo VLC, Santos JS, Andrade ESS, da Silva LCF. Traumatic bone cyst of the mandible: a review of 26 cases. Braz J Otorhinolaryngol. 2012; 78(2):16-21.