

## CASE REPORT

# Traumatic Bone Cyst of the Mandible: A Case Report and Brief Review of the Literature

Ramnik Madan<sup>1</sup>, Saurabh Sharma<sup>2</sup>, Abhishek Balani<sup>3</sup>, Pankaj Rathod<sup>4</sup>, Usha Hathgain<sup>5</sup>, Minakshi Sharma<sup>6</sup>

## ABSTRACT

The traumatic bone cyst (TBC) is an uncommon non-epithelial lined cavity of the jaws. The lesion is mainly diagnosed in young patients most frequently during the second decade of life. The majority of TBCs are located in the mandibular body between the canine and third molar region. Clinically, the lesion is usually asymptomatic in majority of cases and is often accidentally discovered on routine radiological findings as a unilocular radiolucent area with “scalloping effect.” The definite diagnosis of traumatic cyst is invariably achieved during surgery. Since the material for histologic examination may be scant or non-existent, it is often very difficult for a definite histologic diagnosis to be achieved. In this article, we are reporting an unusual case of TBCs involving the mandible, accidentally discovered during routine radiographic evaluation for orthodontic reason. The literature is briefly reviewed.

**Keywords:** Bone Cyst, Mandible, Traumatic

**How to cite this article:** Madan R, Sharma S, Balani A, Rathod P, Hathgain U, Sharma M. Traumatic Bone Cyst of the Mandible: A Case Report and Brief Review of the Literature. *Int J Oral Care Res* 2018;6(2):117-120.

**Source of support:** Nil

**Conflict of interest:** None

## INTRODUCTION

Traumatic bone cyst (TBC) is an uncommon non-epithelial lined cavity of the jaws, first described by Lucas and Blum in 1929,<sup>[1]</sup> and reported in the literature under a variety of names such as solitary bone cyst,<sup>[2]</sup>

hemorrhagic bone cyst,<sup>[3]</sup> extravasation cyst,<sup>[4]</sup> progressive bone cavity,<sup>[5]</sup> simple bone cyst,<sup>[6]</sup> and unicameral bone cyst.<sup>[7]</sup> Term “TBC” is the most widely used today.<sup>[8,9]</sup> The lesion is mainly diagnosed in young patients during the second decade of life<sup>[3,10-12]</sup> with predominant male predilection.<sup>[3,11,13]</sup> The majority of TBCs are located in the body<sup>[3,11-13]</sup> and mandibular symphysis region. Clinically, the lesion is asymptomatic in majority of the cases and is often accidentally discovered on routine radiological examination.<sup>[3,11,13-17]</sup> Pain is the presenting symptom in 10–30% of the patients.<sup>[3,10,11]</sup> Expansion of cortical plate of the jaw bone is often noted, usually buccally, resulting in intraoral and extraoral swelling and seldom causing deformity of the face.

On radiological examination, TBC usually appears as an unilocular radiolucent area with an irregular but well-defined (or partly well-defined) outline with or without sclerotic lining around the periphery of the lesion. Characteristic for the TBC is the “scalloping effect” when extending between the roots of the teeth. Occasionally, expansion or erosion of the cortical plate is noted.<sup>[10]</sup> The definite diagnosis of traumatic cyst is invariably achieved during surgery when an empty bone cavity without epithelial lining is observed.<sup>[15]</sup>

The widely recommended treatment for TBCs 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.<sup>[3,9-11,13,14,18,19]</sup> It is also believed that, in some cases, there may be a spontaneous resolution.<sup>[20]</sup>

## CASE REPORT

An 18-year-old male patient reported to New Horizon Dental College and Research Institute, Bilaspur (C.G.), with a chief complaint of diffuse swelling in lower front teeth region for 4–5 months. The patient gave a history of trauma due to fall in lower front teeth region 5 years back. Extraoral examination showed no gross facial asymmetry. Intraoral examination revealed the slight expansion of the lingual cortical plate over that region [Figure 1]. Orthopantomograph revealed a well-defined unilocular radiolucent lesion which was extending from mesial of lower canine to canine [Figure 2].

<sup>1</sup>Professor and Head, <sup>2</sup>Managing Director & Senior consultant, <sup>3</sup>Consultant Maxillofacial surgeon, <sup>4</sup>Reader, <sup>5</sup>Junior Resident, <sup>6</sup>Senior Oro-dental Surgeon

<sup>1,4,5</sup>Department of Oral and Maxillofacial Surgery, New Horizon Dental College and Research Institute, Bilaspur, Chhattisgarh, India

<sup>2</sup>Oro Dental Surgeon and Cranio facio Maxillary Surgeon, Sai Care Oro Dental & Surgical Centre, Janjgir Champa, Chattisgarh, India

<sup>3</sup>Consultant Dental & Maxillofacial Surgeon, Balani Hospital, Bilaspur, Chhattisgarh, India.

<sup>6</sup>Shree Sai Care Oro Dental Implant and Surgical Centre, Vivekanand Marg, Janjgir, Chhattisgarh, India

**Corresponding Author:** Dr. Saurabh Sharma, H. No. 547, Ashrward Bhawan, Opposite Civil Court, Vivekananda Marg, Janjgir, Janjgir Champa, Chhattisgarh, India. Phone: +91-9425230592. e-mail: drsaurabhsharmaomfs@gmail.com

Computerized tomography showed well-defined unilocular cystic lesion approximately measuring 1.6 cm × 1 cm × 0.9 cm involving symphysis menti of mandible. There was no intralesional tooth content or root of tooth observed suggestive of non-odontogenic cyst [Figure 3].

After obtaining consent from both the patient and his parents, curettage of cyst was planned under general anesthesia. An intraoral vestibular incision was made from the lower left canine region to the lower right canine region. The mucoperiosteal flap was raised, and the lesion was exposed [Figure 4]. Bony window was created using postage stamp pattern with the help of No. 8 round surgical bur [Figure 5]. The drilled holes were joined using a straight fissure bur, and the overlying buccal bone was removed [Figure 6]. The cavity was thoroughly curetted and the excised specimen was sent for histopathological examination; a thorough irrigation of bony cavity was done and hemostasis was achieved. Closure was done with 3-0 vicryl sutures. The patient was followed up for 6 months and the healing was uneventful [Figure 7].

**Intraoperative Pictures**

Histopathologically, the lesion showed thin inflamed connective tissue lining the cavity composed of collagen

fibers, chronic inflammatory cells, and fibroblasts. and also showed bony chips with lacunae filled with osteocytes. Some lacunae were empty (Howship's lacunae). Based on histopathological report, it was diagnosed as TBC [Figures 8 and 9].

**DISCUSSION**

The SBC is an uncommon lesion that affects the facial bones and the mandible in particular.<sup>[21]</sup>

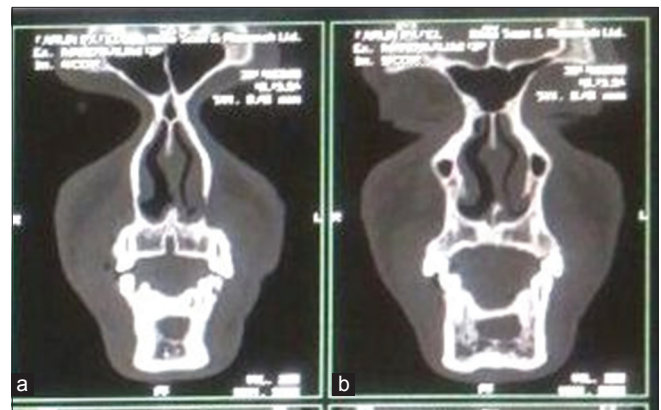
The most common pathogenesis of TBC is trauma which leads to intraosseous hematoma formation. The blood clot liquefies, and adjacent bone is destroyed by enzymatic activity.<sup>[22]</sup> Blum<sup>[23,24]</sup> believed that a previous traumatic episode or trauma initiates a subperiosteal hematoma that causes compromised blood supply to the area, leading to osteoclastic bone resorption. Other etiological theories include the incapacity of interstitial fluid to leave the bone because of inadequate venous drainage, local disturbances in bone growth, ischemic necrosis of bone marrow, and altered bone metabolism resulting in osteolysis, in addition to intraosseous vascular deformities, benign neoplastic degenerative lesions, altered calcium metabolism, low-grade infections,



**Figure 1:** Pre-operative intraoral image



**Figure 2:** Pre-operative orthopantomograph



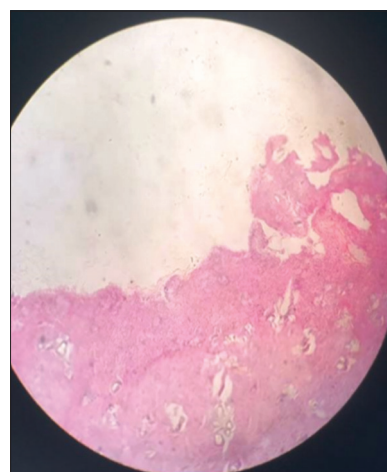
**Figure 3:** Pre-operative computed tomography images



**Figure 4:** Incision and flap elevation



**Figure 5:** Bony window created using postage stamp pattern



**Figure 8:** Histopathological Image



**Figure 6:** Curettage of cavity



**Figure 9:** Post-operative 3 months follow-up orthopantomograph



**Figure 7:** Closure with 3-0 vicryl suture

venous obstruction, and bone tumors undergoing cystic degeneration.<sup>[25]</sup>

The radiographic features of the present case agree with those reported by most investigators who characterize a TBC as a predominantly round or oval well-delimited radio transparent lesion with regular or irregular margins but well-defined by a delicate cortical layer.

The lesion may extend between the roots of the erupted teeth, producing a characteristic jagged contour.<sup>[26,27]</sup>

Although of rare occurrence, the TBC can cause expansion or thinning of the cortical bone. A CT scan can confirm the phenomenon and show whether the cavity is empty or fluid-filled, which helps the differential diagnosis.<sup>[28]</sup>

Successful treatment of TBC depends on its correct diagnosis, given that it can be mistaken by several other lesions, such as ameloblastoma, central giant cell lesion, florid cemento-osseous dysplasia (Chadwick *et al.*, 2011), odontogenic myxoma (Velez *et al.*, 2010), aneurysmal bone cyst, and odontogenic keratocyst (Magliocca *et al.*, 2007).

The ultimate diagnosis of TBC is dependent on surgical exploration, excisional biopsy, and findings of histopathology. The cyst wall is then carefully curetted in order not to damage the roots or the inferior alveolar nerve. As this surgical exploration causes bleeding, a blood clot is formed, and consequently, bone healing is stimulated. Spontaneous regression of TBCs is possible, with no need for surgical intervention. For non-surgical treatment of TBC, anamnesis and intraoral examination

are essential, given that on palpation the cortical bone is usually intact and the condition is asymptomatic.

## REFERENCES

1. Lucas CD, Blum T. Do all cysts of the jaws originate from the dental system. *J Am Dent Assoc* 1929;16(4):647-61.
2. Rushton MA. Solitary bone cysts in the mandible. *Br Dent J* 1946;81:37.
3. Howe GL. 'Haemorrhagic cysts' of the mandible—II. *Br J Oral Surg* 1965;3:77-91.
4. Boyne PJ. Treatment of extravasation cysts with freeze-dried homogenous bone grafts. *J Oral Surg* 1956;14:206.
5. Whinery JG. Progressive bone cavities of the mandible: A review of the so-called traumatic bone cyst and a report of three cases. *Oral Surg Oral Med Oral Pathol* 1955;8:903-16.
6. Pindborg JJ. Histological Typing of Odontogenic Tumours, Jaw Cysts, and Allied Lesions. International Histological Classification of Tumours. Vol. 5. Geneva: World Health Organization; 1971.
7. Jaffe HL, Lichtenstein L. Solitary unicameral bone cyst: With emphasis on the roentgen picture, the pathologic appearance and the pathogenesis. *Arch Surg* 1942;44:1004-25.
8. DeTomasi D, Hann JR. Traumatic bone cyst: Report of case. *J Am Dent Assoc* 1985;111:56-7.
9. Xanthinaki AA, Choupis KI, Tosios K, Pagkalos VA, Papanikolaou SI. Traumatic bone cyst of the mandible of possible iatrogenic origin: A case report and brief review of the literature. *Head Face Med* 2006;2:40.
10. Martins-Filho PR, Santos Tde S, Araújo VL, Santos JS, Andrade ES, Silva LC, et al. Traumatic bone cyst of the mandible: A review of 26 cases. *Braz J Otorhinolaryngol* 2012;78:16-21.
11. Huebner GR, Turlington EG. So-called traumatic (hemorrhagic) bone cysts of the jaws: Review of the literature and report of two unusual cases. *Oral Surg Oral Med Oral Pathol* 1971;31:354-65.
12. Forssell K, Forssell H, Happonen RP, Neva M. Simple bone cyst: Review of the literature and analysis of 23 cases. *Int J Oral Maxillofac Surg* 1988;17:21-4.
13. Beasley JD. Traumatic cyst of the jaws: Report of 30 cases. *J Am Dent Assoc* 1976;92:145-52.
14. Kuttenger JJ, Farmand M, Sto H. Recurrence of a solitary bone cyst of the mandibular condyle in a bone graft: A case report. *Oral Surg Oral Med Oral Pathol* 1992;74:550-6.
15. MacDonald-Jankowski DS. Traumatic bone cysts in the jaws of a Hong Kong Chinese population. *Clin Radiol* 1995;50:787-91.
16. Hansen LS, Sapone J, Sproat RC. Traumatic bone cysts of jaws: Report of sixty-six cases. *Oral Surg Oral Med Oral Pathol* 1974;37:899-910.
17. Sharma JN. Hemorrhagic cyst of the mandible in relation to horizontally impacted third molar. *Oral Surg Oral Med Oral Pathol* 1983;55:17-8.
18. Ruprecht A, Reid J. Simple bone cyst: Report of two cases. *Oral Surg Oral Med Oral Pathol* 1975;39:826-32.
19. Feinberg SE, Finkelstein MW, Page HL, Dembo JB. Recurrent "traumatic" bone cysts of the mandible. *Oral Surg Oral Med Oral Pathol* 1984;57:418-22.
20. Szerlip L. Traumatic bone cysts: Resolution without surgery. *Oral Surg Oral Med Oral Pathol* 1966;21:201-4.
21. Xanthinaki AA, Choupis KI, Tosios K, Pagkalos VA, Papanikolaou SI. Traumatic bone cyst of the mandible of possible iatrogenic origin: A case report and brief review of the literature. *Head Face Med* 2006;2:40.
22. Olech E, Sicher H, Weinmann JP. Traumatic mandibular bone cysts. *Oral Surg Oral Med Oral Pathol* 1951;4:1160-72.
23. Cohen MA. Hemorrhagic (traumatic) cyst of the mandible associated with a retained root apex. *Oral Surg Oral Med Oral Pathol* 1984;57:26-7.
24. Blum T. An Additional report on traumatic bone cysts: Also a discussion of Dr. John G. whinery's paper, "progressive bone cavities of the mandible". *Oral Surg Oral Med Oral Pathol* 1955;8:917-39.
25. Iwaki LC, Iwaki-Filho L, Takeshita WM, Chicarelli M, Preis LD, Bragatto FP. Solitary bone cyst: An analysis of 12 cases. *Acta Sci Health Sci* 2016;38:103.
26. Matsumura S, Murakami S, Kakimoto N, Furukawa S, Kishino M, Ishida T, et al. Histopathologic and radiographic findings of the simple bone cyst. *Oral Surg Oral Med Oral Pathol Oral Radiol Endodontol* 1998;85:619-25.
27. Dias SL, de Freitas Silva L, Vieira TS, Matos G, Paraguassú PL, Falcão AF, de Azevedo RA. Simple bone cyst: A case report and review of the literature. *J Health Sci Inst* 2012;30:295-8.
28. Castro AL, Paro ML. Cisto ósseo traumático em mandíbula. *Rev Fac Odontol Univ Passo Fundo* 2002;2002:39-42.