



ISSN: 0976-3376

Available Online at <http://www.journalajst.com>

ASIAN JOURNAL OF  
SCIENCE AND TECHNOLOGY

Asian Journal of Science and Technology  
Vol. 08, Issue, 05, pp.4752-4755, May, 2017

## RESEARCH ARTICLE

### TRAUMATIC BONE CYST OF RAMUS OF MANDIBLE: A CASE REPORT WITH REVIEW

Dr. Saraswathi Gopal, K. and <sup>2</sup>Dr. J.K. Singh Kshatri

<sup>1</sup>HOD, Dept of Oral Medicine and Radiology, Meenakshi Ammal Dental College and Hospital,  
Chennai, Tamilnadu, India

<sup>2</sup>Post graduate student, Dept of Oral Medicine and Radiology, Meenakshi Ammal  
Dental College and Hospital, Chennai, Tamilnadu, India

#### ARTICLE INFO

##### Article History:

Received 22<sup>nd</sup> February, 2017  
Received in revised form  
14<sup>th</sup> March, 2017  
Accepted 21<sup>st</sup> April, 2017  
Published online 27<sup>th</sup> May, 2017

##### Key words:

Traumatic Bone Cyst,  
Trauma,  
Mandible,  
Incidental,  
Asymptomatic,  
Slow Growing, Radiograph,  
Radiolucent.

#### ABSTRACT

Traumatic bone cyst (TBC) is an uncommon disorder of the jaw bones particularly the long bones. Traumatic bone cyst is an asymptomatic, slow growing lesion commonly diagnosed incidentally during routine radiographic examination of the jaw bones. Mandible is most commonly affected than the maxilla. The etiology is unclear and trauma cannot be definitely determined to be the cause. Surgical exploration of the cavity followed by curettage of the bony walls is the definitive treatment. It shows characteristic radiolucent areas on the radiograph and most frequently does not have any symptoms. Here we present a case of 28 year old female patient with traumatic bone cyst of the ascending ramus of right mandible.

Copyright©2017, Saraswathi Gopal and Singh Kshatri. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

#### INTRODUCTION

Traumatic bone cyst (TBC) is an uncommon cavity of the jaws which is devoid of epithelium. It was first described by Lucas in 1929 (Pradeesh Sathyan, 2015). Traumatic bone cyst is referred with various terminologies like Solitary bone cyst, haemorrhagic bone cyst, extravasation cyst, progressive bone cavity, simple bone cyst and unicameral bone cyst (Pradeesh Sathyan, 2015). Trauma is the most frequently discussed etiologic factor in the formation of TBC. The lesion is usually diagnosed in young patients during the second decade of life. Clinically, the lesion is asymptomatic in the majority of cases and is often accidentally discovered on routine radiological examination. Pain is the presenting symptom in 10% to 30% of the patients. On radiological examination, a traumatic bone cyst 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 (Surej Kumar, 2015).

The definite diagnosis of traumatic cyst is invariably achieved at surgery when an empty bone cavity without epithelial lining is observed (Paulo Ricardo Saquete Martins-Filho, 2012). Although, generally described as being empty, there have been reports that TBCs may rarely contain straw coloured fluid, blood, connective tissue or blood clot (Surej Kumar, 2015). Since material for histologic examination may be scanty or non-existent, it is very often difficult for a definite histopathological diagnosis to be achieved.

Most of the histological findings reveal fibrous connective tissue and normal bone, areas of vascularity, fibrin, erythrocytes and occasional giant cells adjacent to the bony surface (Arsinoi, 2006). There is usually no evidence of an epithelial lining and hence is described often as a pseudo cyst (Surej Kumar, 2015). The treatment of choice for Traumatic Bone Cyst is surgical exploration followed by curettage of the bony walls. The surgical exploration serves both as a diagnostic manoeuvre and as a definitive therapy by producing bleeding in the cavity, curettage of the lesion favours progressive bone regeneration, offering a good prognosis and very rare recurrence rate (Arsinoi, 2006; Sandev, 2001).

Corresponding author: Dr. Saraswathi Gopal, K.,  
HOD, Dept of Oral Medicine and Radiology, Meenakshi Ammal  
Dental College and Hospital, Chennai, Tamilnadu, India

## Case Report

A 28 year old female patient reported to the department of oral medicine and radiology with the chief complaint of pain and swelling in the right lower third region of the face for the past 10 days. History of presenting illness revealed continuous throbbing pain which was radiating to the right ear and right forehead region. The patient consulted a private dentist for the same and took medication which gave temporary relief. Patient gave a history of traumatic extraction before 10 days in relation to the right lower back tooth region due to caries following which a swelling developed. The size of the swelling increased rapidly in 5 days and regressed to the present size. Past medical and surgical history was non contributory. On extra oral examination a diffuse swelling was evident in the right lower third of the face measuring approx 3x4 cms in its greatest dimension (Figure 1). The surface over the swelling appeared to be normal with no secondary changes. The swelling was soft in consistency and tender on palpation. The skin over the swelling was pinchable with no evident secondary changes. On intra oral examination mouth opening was restricted to 8 mm and obliteration of the buccal vestibule extending from 46 to 48 region and the surrounding mucosa was erythematous. On palpation, Presence of a diffuse swelling evident in the right vestibular region adjacent to 47 was firm in consistency and tender on palpation.



Figure 1. FACIAL PROFILE

Based on the clinical features a provisional diagnosis of post extraction trismus in relation to 48 region was given. A differential diagnosis of fracture of the mandible and root stump of extracted tooth with secondary infection was suggested. The patient was subjected for OPG.

## OPG

OPG revealed missing 46 and 48. There was no evidence of fracture in the mandibular region and no evidence of root stump in 48 region. An incidental finding of a well defined unilocular radiolucent lesion surrounded by cortical boundary evident in the right ascending ramus measuring approx 2.5x3cms (Figure 2) suggestive of cyst /tumour.

## Treatment

Post extraction trismus was treated with heister mouth gag, anti-inflammatory drugs and muscle relaxant following which the patient was subjected for surgical enucleation, the walls were curetted and the excised specimen was sent for histopathological examination.



Figure 2. well defined cortical boundary evident in the right ramus

## Histopathology

The histopathology of the excised specimen showed extensive areas of RBC interspersed with foci of dead bone and connective tissue infiltrated with chronic inflammatory cell predominantly lymphocytes and plasma cells were also evident suggestive of traumatic bone cyst (Figure :3)

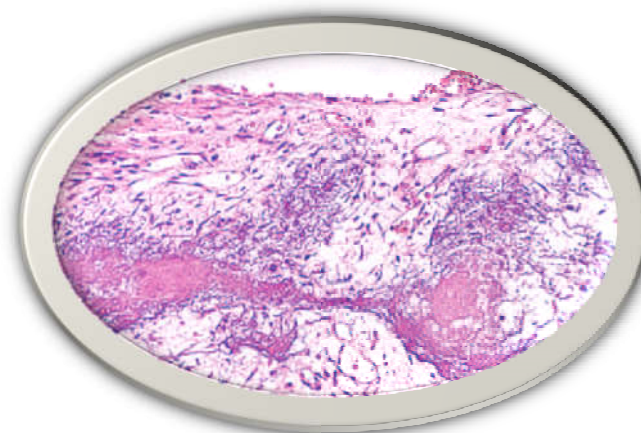


Figure 3. H & E Section Shows Rbc Interspersed With Dead Foci Of Bone

## DISCUSSION

The traumatic bone cyst (TBC) is an uncommon cavity of the jaws which is devoid of epithelium. It was first described by Lucas in 1929 (Pradeesh Sathyan, 2015; Kramer, 1992; Lucas, 1929). Traumatic bone cyst has various terminologies like Solitary bone cyst, hemorrhagic bone cyst, extravasation cyst, progressive bone cavity, simple bone cyst and unicameral bone cyst. The variability in the nomenclature of the lesion attributes to the difficulty in understanding the true etiology and pathogenesis. Trauma is the most frequently discussed etiological factor in the formation of TBC<sup>4</sup>. The most widely accepted hypothesis in the mechanism of pathogenesis was evaluated by Howe in 1965 and it involves microtrauma sufficient to precipitate intramedullary hemorrhage with osteoclastic activity and elimination of trabeculae within cancellous bone compartment. Failure of the hematoma to undergo organization and tissue replacement is usually seen. According to Olech et al, degeneration of the hematoma results in cavitation. Other theories that have been put forward to explain the pathogenesis of the condition which includes:

- Infection of bone marrow
- Loss of blood supply to hemangioma or lymphoma
- Cystic degeneration of existing bone tumor
- Changes and reduction in the osteogenic activity
- Faulty calcium metabolism as a result of systemic disease (parathyroid diseases)
- Ischemic necrosis of the fatty bone marrow
- Low grade chronic infection
- Imbalance between the osteoclastic and osteoblastic activity due to trauma
- Developmental defect
- Failure of mesenchymal tissue to form bone and cartilage and instead it forms immature multiple bursa-like synovial cavities (Surej Kumar, 2015).

The lesion is usually diagnosed in young patients frequently during the second decade of life. Though there is no sex predilection reported, men are most commonly affected. The majority of TBC's 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 maxilla. Clinically, the lesion is asymptomatic in the majority of cases and is often accidentally discovered on routine radiological examination. Pain is the presenting symptom in 10% to 30% of the patients. Other symptoms include tooth sensitivity, paresthesia, fistulas, delayed eruption of permanent teeth, displacement of the inferior dental canal and pathological fracture of the mandible<sup>2</sup>. Expansion of the cortical plate of the jaw bone is often noted buccally, resulting in intraoral and extraoral swelling and seldom causing deformity of the face. The adjacent teeth are usually vital and there is no mobility, displacement or resorption of their roots.

A few authors have reported the occurrence of multiple TBC and their association with fibrous/bony lesions, such as florid cemento-osseous dysplasia especially in older patients. Wakasa et al. (2002) have suggested that the florid cemento-osseous dysplasia may precede TBC when these two conditions are associated, which suggests that disordered production of trabeculae in the former may obstruct lymphatic drainage and induce TBC formation. On radiological examination, a traumatic bone cyst usually appears as a unilocular radiolucent area with an irregular but well defined or partly well defined outline, with or without sclerotic border around the periphery of the lesion. Characteristic radiographic feature of the traumatic bone cyst is the "scalloping effect" or the typical festooned pattern when extending between the roots of the teeth. The scalloped outline is frequently found in the edentulous areas<sup>3</sup>. Occasionally, expansion or erosion of the cortical plate is noted (Arsinoi, 2006). The definite diagnosis of traumatic cyst is invariably achieved at surgery when an empty bone cavity without epithelial lining is observed. Although, generally described as being empty, there have been reports that TBCs may rarely contain straw coloured fluids, blood, connective tissue or blood clot. Since material for histological examination may be scanty or non-existent, it is very often difficult for a definite histologic diagnosis to be achieved. Most of the histological findings reveal fibrous connective tissue and normal bone, areas of vascularity, fibrin, erythrocytes and occasional giant cells adjacent to the bony surface. There is usually no evidence of an epithelial lining.

Central giant cell lesions, odontogenic keratocyst, ameloblastoma and other destructive bone cysts and tumors should be taken into consideration in differential diagnosis<sup>5</sup>. The treatment of choice for Traumatic Bone Cysts is surgical exploration followed by curettage of the bony walls. The surgical exploration serves both as a diagnostic manoeuvre and as definitive therapy by producing bleeding in the cavity. Haemorrhage 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. Careful curettage of the lesion favours progressive bone regeneration, offering a good prognosis and negligible recurrence rate. Filling of cavity with blood, bovine lyophilized bone, autologous blood with bone from patient or synthetic bone materials or single bone grafting without blood were mentioned as possible treatment options, if the surgical exploration is ineffective. Although, these materials have been used rarely, its efficacy and efficiency are yet to be studied further. Osseous regeneration can be verified after some months by radiographic evaluation (Surej Kumar, 2015; Sandev, 2001; Kramer et al., 1992). One school of thought postulates that aspiration of idiopathic bone cavities return blood in some cases not because the cavity is filled with blood, but the disturbance of the tip of the needle to capillaries and negative pressure in the marrow space consequently.

## Conclusion

Generally all maxillofacial lesions present with a standard set of clinical or radiographic presentations. In the present case, a history of traumatic extraction followed by an insidious development of swelling led to the incidental finding of traumatic bone cyst in the right ascending ramus of mandible with a validatory radiograph and histopathology. Although devoid of complications, if left untreated, it may result in pathological fracture as a result of the hollowing out of the affected bone. Hence, Traumatic bone cyst should be a differential diagnosis in any case with an asymptomatic occult, cystic space especially with a history of trauma.

## REFERENCES

- Arsinoi, A. Xanthinaki, Konstantinos I Choupis 2006. Traumatic bone cyst of the mandible of possible iatrogenic origin: a case report and brief review of the literature; *Head & Face Medicine*, 2:40.
- Harnet, J.C., Lombardi, T., Klewansky, P., Rieger, J., Tempe, M.H., Clavert, J.M. 2008. Solitary bone cyst of the jaws: a review of the etiopathogenic hypotheses. *J Oral Maxillofac Surg*. 66(11):2345-8.
- Kramer, I.R., Pindborg, J.J., Shear, M. 1992. The WHO histological typing of odontogenic tumours. A commentary on the 2nd ed. *Cancer*, 70(12):2988-2994.
- Lucas, C., Blum, T. 1929. Do all cysts of the jaws originate from the dental system. *J Am Dent Assoc*, 16:659-661.
- MacDonald-Jankowski, D. 1995. Traumatic bone cysts in the jaws of a Hong Kong Chinese population. *Clinical Radiology*, 50:787-791.
- Paulo Ricardo Saquete Martins-Filho, 2012. Thiago de Santana Santos; Traumatic bone cyst of the mandible: a review of 26 cases; *Braz J Otorhinolaryngol*. 78(2):16-21.
- Pradeesh Sathyan et al. 2015. Traumatic Bone Cyst of the Jaws: A Report of Two Cases and Review; *Oral and Maxillofacial Pathology Journal*, January-June 6(1):589-593

- Rushton, M. 1946. Solitary bone cysts in the mandible. *Br Dent J.*, 81:37-49.
- Sandev, S. et al. 2001. Traumatic Bone Cysts; *Acta Stomatol Croat*, Vol. 35, br. 3.
- Surej Kumar, Khaleel Ahamed Thaha, 2015. Traumatic Bone Cyst of Mandible; *J. Maxillofac. Oral Surg.* (Apr–June) 14(2):466–469.

\*\*\*\*\*