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## CASE STUDY

### TRAUMATIC BONE CYST- AN INCIDENTAL FINDING!!

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#### ABSTRACT

Traumatic bone cyst is an intraosseous lesion and forms an important aspect of the differential diagnosis of radiolucent lesion of the jaws. The lesion has a better prognosis but a definitive diagnosis can be achieved only upon surgical intervention of the lesion. Here we present a case of traumatic bone cyst which was diagnosed as an incidental finding. The varied aspects of the lesion has been reviewed.

##### Key words:

Traumatic bone cyst, Intra-osseous lesion, Solitary bone cyst, Pseudocyst.

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## INTRODUCTION

In the dental practice sometimes we come across rare and challenging situations among which one of its kind is to find a sudden existence of a lesion in the jaw when a radiograph has been taken for some other routine investigative purpose. The moment the patient becomes aware of it, their anxiety level goes high. The attending dentist is faced with the challenge to correctly diagnose and act accordingly to alleviate the lesion and also the mental agony of the patient. One such lesion that is frequently diagnosed as an incidental finding is Traumatic bone cyst. (An *et al.*, 2014) This entity forms an important part of the differential diagnosis especially when any radiolucent lesions are encountered incidentally in an apparently normal person. If the lesion happens to be this entity instead of any other benign or malignant condition the patient can be relieved of the psychological trauma as the lesion has a better prognosis. Here we present one such case report where it was diagnosed as an incidental finding. The varied aspects of the lesion has been given a serious thought in the discussion.

## Case report

A 50 year old male patient reported to a private dentals clinic with an intention to replace the upper missing teeth with implants. An OPG was advised and a radiolucent lesion was noticed in the right angle of the mandible as an incidental finding. The patient was asymptomatic. A CBCT was taken to know the extent of the lesion (Figure 1). The lesion was surgically explored and found that it was an empty cavity and there was no solid mass or cystic fluid in it (Figure 2). Several attempts to curettage the cavity yielded a small soft tissue bit and one small hard tissue bit. The histopathologic evaluation of the soft tissue sample showed a connective tissue stroma with numerous adipose tissue and blood vessels. There was no evidence of any lining epithelium. The decalcified hard tissue section showed normal appearing cortical bone (Figure 3). Correlating the clinical, radiographic, intraoperative and histopathologic features a diagnosis of traumatic bone cyst was established.

## DISCUSSION

Traumatic bone cyst is an uncommon lesion occurring in the jaws with 1% incidence. (Saia *et al.*, 2012) It is a pseudocyst due to the absence of any lining epithelium.

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### Traumatic bone cyst- an incidental finding!!



Figure 1a) OPG showing radiolucent lesion in the right lower jaw

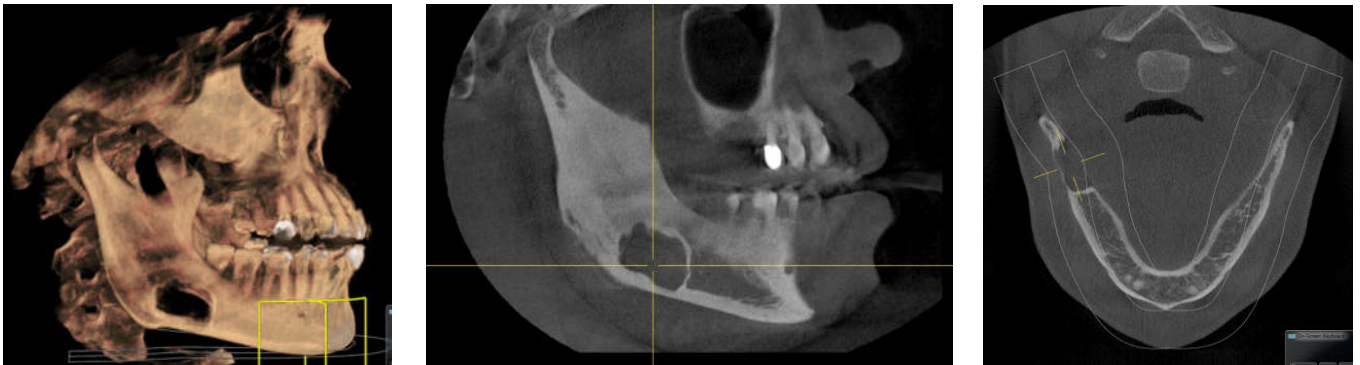


Figure 1b) CBCT image showing the radiolucent lesion in the body of the mandible

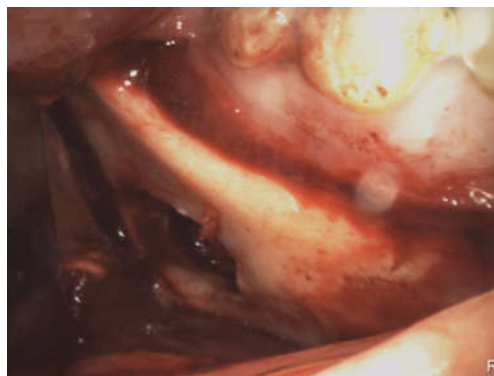


Figure 2. Intraoperative photograph showing empty cystic cavity

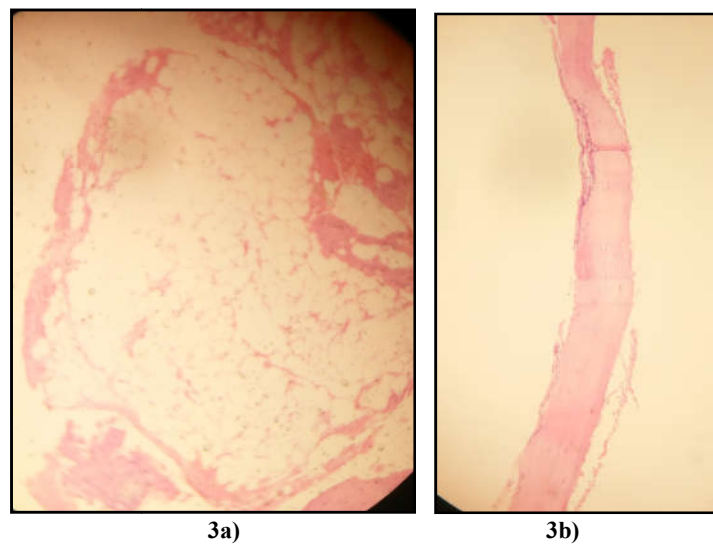


Figure 3. H&E (x100) stained soft tissue section (3a) showing connective tissue lining, (3b) decalcified section showing normal appearing bone

Lucas was the first to describe this lesion and Rushton was the first to define it. (Kuhmichel and Bouloux, 2010) Other synonyms for traumatic bone cyst are solitary bone cyst, hemorrhagic bone cyst, unicameral bone cyst, simple bone cyst etc. (Hatakeyama *et al.*, 2012) The term solitary bone cyst was recommended by WHO in 1992 and it is considered as a bone related lesion by WHO in 2005. (Aakarsh V. Jhamb *et al.*, 2012) It can be solitary or multifocal in nature. Most commonly it is seen in second decade of life though our patient was in his 5<sup>th</sup> decade. There is no definitive gender predilection. (Salem *et al.*, 2013) Posterior mandible is the most common site though cases have been reported in condylar region and very rarely in maxilla too. (An *et al.*, 2014; Magliocca *et al.*, 2007) It is also known to occur at other sites like long bones. Jaw lesions are mostly found as an incidental findings whereas at other sites like long bones the existence of lesion is known only following pathologic fractures. (Hatakeyama *et al.*, 2012) The definitive etiology till date is not known. Many theories have been proposed, the most commonly accepted theory is the Trauma Hemorrhage theory. Normal sequelae following trauma is the organisation of the clot followed by the replacement of connective tissue and bone. According to this theory, trauma to the jaw causes rupture of thin walled sinusoids resulting in intramedullary hemorrhage. This leads to necrosis of bone marrow and its associated endosteum, causing failure of the primary hematoma to organize due to lack of contact with viable connective tissue, resulting in its break down and cyst formation. The breakdown products of hematoma increase the osmotic pressure resulting in transudation of fluid and cyst expansion. On long standing lesion when no further bleeding happens the serous fluid undergoes gradual reabsorption and empty cavity ensues. (Shear and Speight, 2007) Thus the lesion is self limiting. When a fresh bleeding is initiated within the lesion, organisation of the new clot commences by the contact with the viable connective tissue of the flap and the lesion resolves. (Shear and Speight, 2007) However this theory is not completely accepted as the all diagnosed cases of traumatic bone cyst do not give a history of trauma.

Previously it was thought the occurrence of the cyst was due to the accumulation of the interstitial fluid due to the blockage of lymphatic drainage resulting in cyst formation and expansion by bone resorption. (Kuhmichel and Bouloux, 2010) However not all cases of traumatic bone cyst shows evidence of intracystic fluid. The developmental nature of the lesion has also been considered. The fact that the lesion is most common in the second decade of life and in posterior mandible, the time and site where most of the developmental lesion of the jaw manifest. It is thought to be formed due to intraosseous entrapment of synovial tissue with secretory features during the developmental stages. However it doesn't explain the late appearance of the lesion in elderly people. (Mirra *et al.*, 1978) Other theories have also been considered like degeneration of bone tumours leading to cyst formation, deranged calcium metabolism as in hyperparathyroid state, fatty marrow undergoing ischemic necrosis, chronic persistent low grade infection etc. (An *et al.*, 2014; Hatakeyama *et al.*, 2012) The lesion is usually self limiting and stops expanding once cortical bone is reached. This explains the lack of clinical manifestation of the lesion. Sometimes the lesion may be extensive with scalloping of the margins mimicking a keratocyst. (An *et al.*, 2014) Sometimes we misdiagnose it for a periapical lesion owing to its location but the associated tooth in most instances is vital unlike periapical lesion. Sometimes the lingual salivary

gland depression may mimic the traumatic bone cyst. However it most commonly occurs below the mandibular canal and the traumatic bone cyst is found above it. (Shear and Speight, 2007) Differential diagnosis of the lesion is very important to rule out any benign or malignant lesions of odontogenic origin etc. If the patient is completely asymptomatic and the size of the lesion is small, the patient can be kept on a regular follow up. If there is any change in the size of the lesion or patient present with any clinical symptoms biopsy is advised for definitive diagnosis and appropriate early intervention. In some instances spontaneous resolution of the lesion has also been reported. Sometimes the cavity is surgically opened, a fresh bleeding is initiated for a clot to form and organise. Healing occurs by formation of connective tissue and bone over a period of six months to one year. Gelfoam, allogenic grafts with platelet rich plasma have also been reported to give good result. (An *et al.*, 2014) Intralesional steroid injections have been attempted with better incidence of cure and lower recurrence compared to surgical intervention. The anti-inflammatory property along with its efficiency to modulate the cellular metabolism may be the reason for the greater success reported. (Kuhmichel and Bouloux, 2010)

## Conclusion

Traumatic bone cyst per se has a better prognosis but it is essential to rule out any other significant underlying pathology through biopsy in suspicious lesion before arriving at a conclusion.

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