Case Report

Traumatic Bone Cyst in the Mandibular Ramus – A Diagnostic Dilemma

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Received: 07-Dec-2021;
Revision: 13-Apr-2022;
Accepted: 19-Apr-2022;
Published: 16-Aug-2022

ABSTRACT

Traumatic bone cysts (TBCs) are uncommon, nonneoplastic lesions occurring more commonly in the metaphysis of the long bones and contribute to only 1% of the cysts occurring in the jaws. Seen more commonly in the mandible between the canine and third molar, their occurrence in the ramus-condyle region is very rare. The radiographic appearance of this lesion is like odontogenic keratocyst (OKC) or ameloblastoma and, therefore, extremely challenging to diagnose. Misdiagnosis often results in aggressive treatment for an otherwise innocuous entity. The purpose of this article is to encourage the surgeon to consider the possibility of a TBC when encountering asymptomatic large lytic lesions in the ramus of the mandible especially in younger individuals to avert an extensive radical surgery.

KEYWORDS: *Bone cyst, lytic lesions, mandible ramus*

INTRODUCTION

Traumatic bone cysts (TBC) s are nonneoplastic lesions and an uncommon occurrence contributing to only 1% of the cysts occurring in the jaws.[1] Often encountered as an incidental finding in radiographs, these lytic lesions occur more commonly in the mandible between canine and the third molar region,[2,3] with occasional extension into the ramus.[4] The reports of cases located entirely beyond the angle are few and atypical lesions located in the mandibular ramus, condyle or both, are rare.[3-5] The possibility of these lesions mimicking other lytic lesions that warrant more aggressive definitive treatment, such as resection, cannot be understated. As radiographic findings and even incision biopsy is inconclusive, decision making is a challenge for the surgeon. The widely recommended treatment for TBCs is surgical exploration followed by curettage of the bony walls, which serves as both a diagnostic and definitive therapy.[6]

The purpose of this case report is to emphasize that, though rare, TBC should also be considered as a possible differential diagnosis of asymptomatic lytic jaw lesions in the angle and ramus region when it presents in younger individuals to minimize radical treatment for what maybe, an innocuous entity.

CASE REPORT

A 19-year-old patient presented with concerns of mild pain and altered sensation in the lower right side of the jaw of 2-weeks duration. Clinical examination revealed impacted mandibular third molar. There was no history of trauma that the patient could recall.

The medical and dental history were unremarkable. Clinical examination was mostly unremarkable with impacted third molar associated with mildly inflamed peri-coronal flap.

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How to cite this article: Thelekkat Y, Basheer SA. Traumatic bone cyst in the mandibular ramus – A diagnostic dilemma. Niger J Clin Pract 2022;25:1382-5.

Access this article online

Quick Response Code:

Website: www.njcponline.com

DOI: 10.4103/njcp.njcp_1994_21

As part of routine investigations, an orthopantomogram (OPG) was requested. The OPG [Figure 1] revealed a large radiolucent lesion associated with the root apices of 48 extending to the ramus of the mandible, while the CBCT [Figure 2] revealed a well-defined, unilocular mildly expansile osteolytic hypodense lesion with scalloped borders distal to 48 extending into ramus, with thinning of lingual plate distal to 48. There was significant thinning of the anterior border of the ramus with areas of bone erosion evident compromising the inferior border in one area.

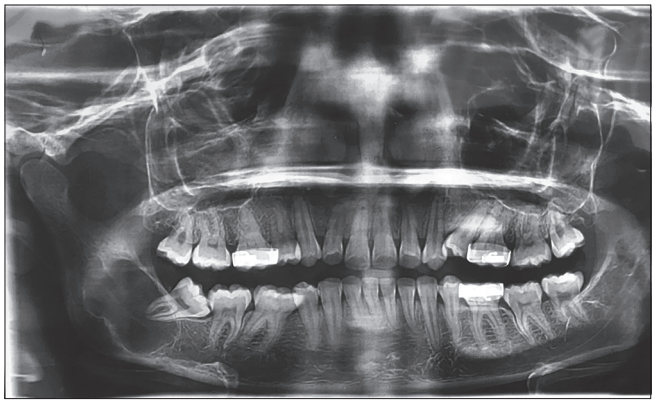

Figure 1: Orthopantomogram OPG that shows a radiolucent lesion associated with the root apices of 48 extending to the ramus of the mandible

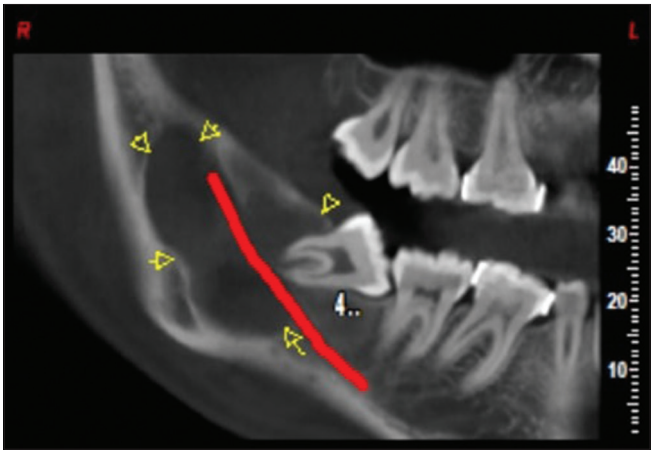

Figure 2: The CBCT shows a well-defined, unilocular mildly expansile osteolytic hypodense lesion with scalloped borders distal to 48 extending into ramus, with thinning of lingual plate distal to 48

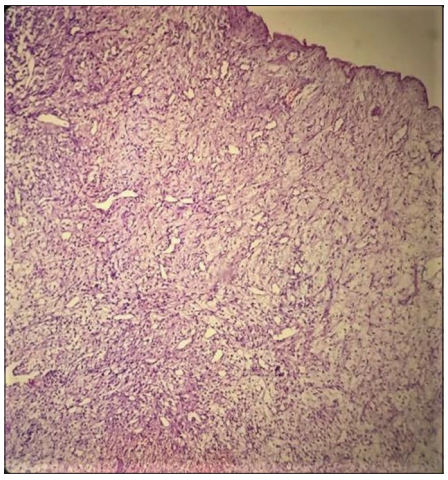

Figure 3: Photomicrograph of incision biopsy showing granulation tissue with collagen fibrils, numerous blood vessels, and diffuse inflammatory cell infiltrate

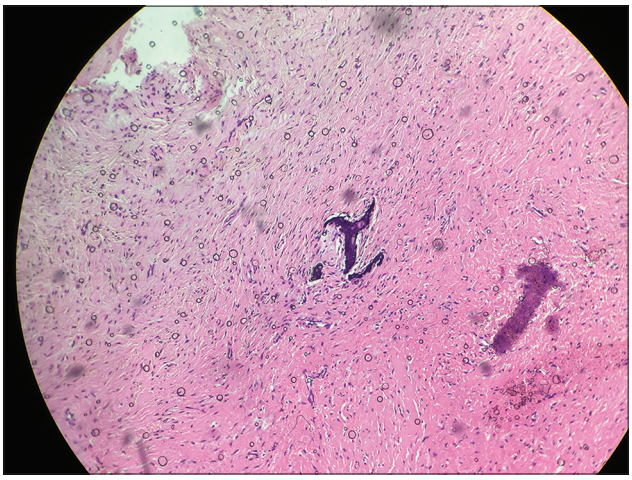

Figure 4: Photomicrograph after surgical curettage showing fibrous connective tissue with proliferating fibroblasts, many proliferating vascular channels, and fragments of bone and calcification

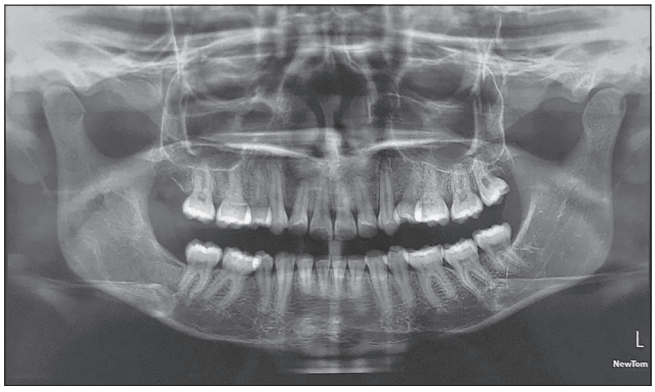

Figure 5: Orthopantomogram at 9 months follow up with evidence of bone formation

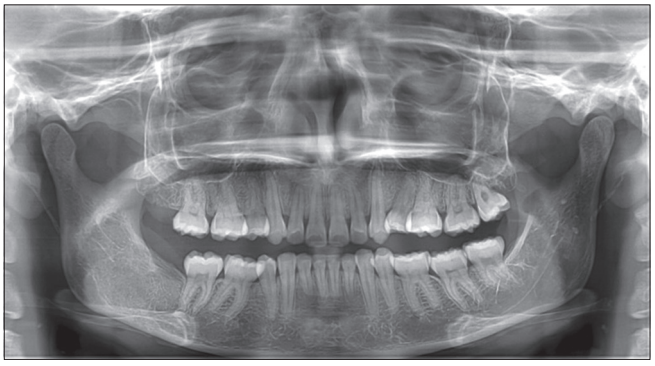

Figure 6: Orthopantomogram at 3 years follow up with evidence of good bone formation

There was, however, no evidence of cortical expansion or root resorption.

An incision biopsy was carried out and on raising a mucoperiosteal flap, a large bony cavity was revealed that was devoid of fluid and had very scant tissue without obvious lining. The biopsy photomicrograph showed evidence of granulation tissue with collagen fibrils, numerous blood vessels, and diffuse inflammatory cell infiltrate suggestive of TBC [Figure 3].

The patient was taken for surgical removal of 48 and curettage under general anesthesia with lesion accessed intraorally. On raising the mucoperiosteal flap, there was no evidence of any cortical expansion. The bone cavity was filled with what looked like a consolidating hematoma, no obvious lining was obtained. Curettage was done sparing the nerve, along the walls and as high up as possible into the ramus.

The final histopathology report was consistent with fibrous connective tissue, proliferating fibroblasts, many proliferating vascular channels, and fragments of bone and calcification [Figure 4].

At 9 months follow up, OPG showed good bone formation [Figure 5]. The patient is symptom free with evidence of good bone formation at 3 years follow up [Figure 6].

Discussion

TBCs are more common in the metaphyseal regions of long bones and are more common in the mandible when they occur in the maxillofacial region. The term "traumatic bone cyst" originated from the "trauma-hemorrhage theory."[7] Although the etiology and pathogenesis are still uncertain, the most widely accepted explanation suggests that liquefactive necrosis or resorption of blood clot following intramedullary hemorrhage due to trauma results in the destruction of the surrounding bone by enzymatic activity, thereby causing enlargement of the bone cavity.[8] The presence of history of trauma is extremely variable[9] and the time interval between the trauma and the discovery of a TBC has been found to vary from 1 week to 20 years.[6] There was no history of trauma that the patient could recall in the case presented, and it was an incidental finding on the radiograph as consistent with other cases reported in literature.[1,5,10,11]

Radiographic features of TBC are similar to some odontogenic and nonodontogenic radiolucent jaw lesions. TBC usually presents as an isolated unilocular radiolucency with a well-defined border that can be either scalloped or irregular However, multifocal and multilocular cases of TBC have also been reported.[9,11] A radiolucent lesion showing smooth border, unilocular shape, no adjacent tooth displacement, no root resorption, with mild or no bone expansion is likely to be an OKC.[12] The presence of a sclerotic border, especially in the posterior segment, is more frequent in OKCs than in TBCs.[9,13] Most ameloblastomas show a scalloped border and multilocular appearance with tooth displacement and root resorption on the radiograph.[12] When TBC occurs in the dentate region and extends into the interdental bone, it presents the characteristic scalloping effect[11] like ameloblastoma but dome like projections between the roots are characteristic of TBC.[13] The case presented had radiographic features suggestive of both OKC and ameloblastoma. The absence of an obvious lining and the presence of granulation tissue with collagen fibrils, numerous blood vessels, and diffuse inflammatory cell infiltrate histologically can make it difficult to diagnose an OKC given the nature of its fragile lining. If the representative site has not been obtained during the incision biopsy, a histopathological diagnosis of a cystic ameloblastoma can also be missed and conclusive diagnosis would have to be made by obtaining surgical access to the bony cavity.[14]

A definitive histopathological diagnosis[6] is difficult for someone less versed in oral lesions as TBC lacks an epithelial lining and material obtained is scant or even nonexistent. Most of the histologic findings reveal fibrous connective tissue and normal bone with some lesions exhibiting areas of vascularity, fibrin, erythrocytes, and occasional giant cells adjacent to the bone surface. There is never any evidence of an epithelial lining.[2,3,6,9]

Conclusion

The finding of asymptomatic lytic lesions in the ramus of mandible in the first two decades should prompt the surgeon to consider a differential diagnosis of a TBC despite reports of uncommon occurrence of these lesions. As radiographic features and even incision biopsy are inconclusive, decision making is a challenge for the surgeon. Surgical curettage of the bony walls is the treatment of choice, and diagnosis of a TBC is confirmed intraoperatively and will depend largely on the clinical experience of the operating surgeon. Strict follow-up is therefore mandated. Recurrence is rare.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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