Print ISSN: 2321-6379
Online ISSN: 2395-1893
DOI: 10.17354/SUR/2018/6

Original Article

Benign Osteoblastoma of the Mandible: A Case Report

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Abstract

Osteoblastoma, a rare osteoblastic tumor, constitutes approximately 1% of all primary bone tumors. It is characterized by osteoid and bone formation with the presence of numerous osteoblasts. A 24-year-old female presented with a chief complaint of a painless swelling beneath the mandible, which was growing during the past 3 years. Radiological picture disclosed a well-circumscribed lesion with patchy radiopaque internal structure. After complete excision, the histopathological diagnosis was a benign osteoblastoma of the mandible. Differential diagnosis and immunohistochemical features potentially useful for refining diagnosis of osteoblastoma.

Key words: Bone tumors, Mandible, Osteoblastoma

INTRODUCTION

Osteoblastoma is a benign neoplasm of the bone, accounting for approximately 1% of all primary bone neoplasms. This tumor was first described by Jaffe and Mayer, in 1932.[1] Usually, benign osteoblastoma occurs in the second and third decades of life, but the age range is 5–78 years. As to sex incidence, there is male predominance 2–3:1. Benign osteoblastoma in facial bone is characterized by pain and swelling. However, the lesion can be discovered on routine clinical examination with no signs or symptoms. This tumor may have a different clinical potential due to the propensity for recurrence, locally aggressive behavior, and, in rare cases, malignant transformation.[2] Histologically, it shows numerous trabeculae of immature bone and osteoid lined by active osteoblasts, in the background of highly vascularized fibrocellular stroma. In the maxillofacial region, the diagnosis of osteoblastoma is often difficult and careful clinicopathological correlation may be needed since many jaw lesions may present similar overlapping demographic, clinical, radiographic, and histopathological features.

Access this article online

www.surgeryijss.com

Month of Submission : 01-2019
Month of Peer Review: 02-2019
Month of Acceptance : 03-2019
Month of Publishing : 04-2019

CASE REPORT

A 24-year-old female reported with the complaint of extraoral swelling, involving mandibular body on the left side for 3 years. Clinical examination revealed the presence of a firm palpable, well-circumscribed tumor mass measuring approximately 1.5 cm in greatest diameter. Overlying skin was intact and normal in color. Initially, the swelling was small, which had gradually increased in size, attaining the present dimensions. The patient never experienced any pain but had problems in chewing and swallowing. The systemic and family history was non-contributory. All the maxillofacial lymph nodes were normal. No abnormality detected on intraoral examination. Based on the patient history and clinical findings, a provisional diagnosis of cementoblastoma, osteoblastoma, and ossifying fibroma was given. Orthopantomogram showed a round to oval radiopaque mass with a radiolucent border at the lower border of mandible [Figure 1]. Computerized tomography scan shows a well-defined lobulated homogenously dense sclerotic lesion arising from outer cortex of posterior aspect of body of mandible on the left side [Figure 2]. It measures approximately 1.5 cm × 1.6 cm. No obvious destruction of the body of mandible is seen. The lesion was excised under general anesthesia

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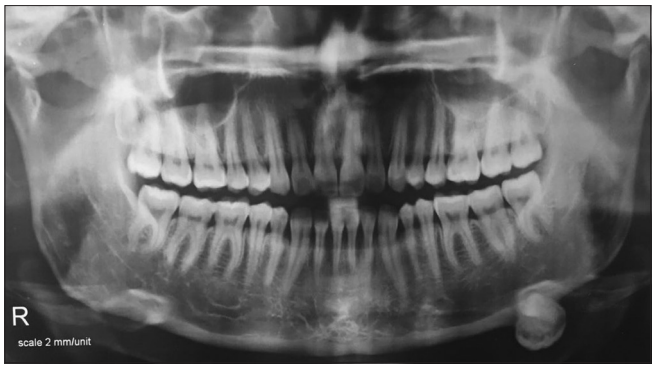

Figure 1: Orthopantomogram of patient

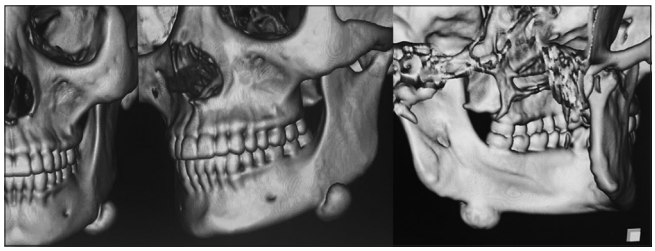

Figure 2: Computerized tomography scan of patient

and the surgical specimen comprised hard tissue mass [Figure 3].

Histologically, sections revealed interanastomosing trabeculae of woven bone with vascularized stroma surrounded by dense cortical bone. Sections also showed the presence of plump osteoblasts, osteoid tissue with varying degree of mineralization. The collagenous stroma contained osteoclast, multinucleated cells, and loosely aggregated fibroblast-like cells [Figure 4]. Based on the histomorphologic characteristic of the tumor, the clinical facts, and the radiologic findings, the diagnosis of a benign osteoblastoma mandible was established.

DISCUSSION

Benign osteoblastoma is a rare osteoblastic tumor of bone. Jaffe and Lichtenstein stated this lesion to be a true neoplasm of osteoblastic derivation. Trauma, inflammation, abnormal local response of the tissues to injury, and local alteration in bone physiology are few of the other reasons cited in literature pertaining to the etiology of this tumor. This benign neoplasm of bone is characterized by proliferation of osteoblasts forming trabeculae set in a vascularized fibrous connective tissue stroma.[3] Reviewing 67 cases of osteoblastoma of the jaws, Capelozza *et al.* (2005) showed that 61% of the patients were male and 39% of female, with average age of 20.97 years at diagnosis. Mandible was more commonly affected than maxilla. Majority of the lesions (35%), radiographically, showed a mixed aspect, with radiolucent areas entangled with radiopaque ones. In this series, 7.2% of cases were noted as recurrent.

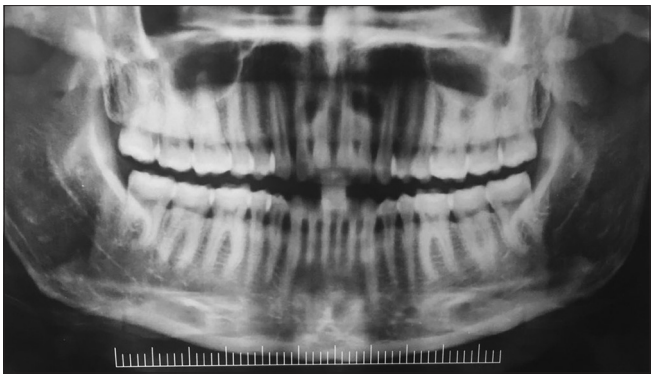

Figure 3: Post-operative orthopantomogram

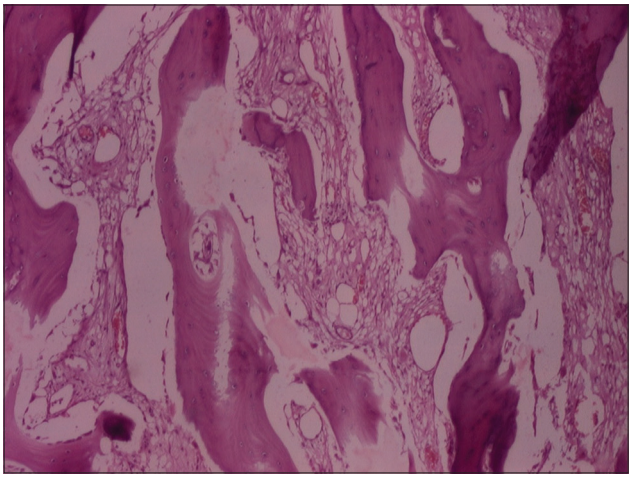

Figure 4: Histopathological section

Osteoblastoma may be classified into cortical, medullary, and periosteal types. Osteoblastomas of jaws are either medullary or periosteal and not cortical which are common in extragnathic sites.[4] The differential diagnosis of benign osteoblastoma is osteoid osteoma, central ossifying fibroma, fibrous dysplasia, chondroblastoma, cementoblastoma, and giant cell granuloma.

Abrams *et al.* reported that the histologic similarities of cementoblastoma, osteoid osteoma, and benign osteoblastoma suggesting a close relationship among these three conditions.[5] The attachment of the tumor to the roots of teeth should not be used as a hallmark for the diagnosis of cementoblastoma as osteoblastoma in the tooth-bearing area may envelop the roots of the involved teeth. However, the broad trabecular regions with limited cellularity seem to be a prominent feature, possibly unique to cementoblastoma. Furthermore, reversal lines that may impart a mosaic pattern to the calcified portion are a feature of cementoblastoma. At microscopic examination, the bony trabeculae of osteoblastoma are slightly wider than those of osteoid osteoma, and there is less irregularity in their arrangement; the number of osteoblasts is much greater in osteoblastoma, but osteoma lacks giant cells and is not

as well vascularized as osteoblastoma.[6] Radiographic picture of osteoblastoma is not very consistent and varies from case to case depending on the duration.[7] A combination of radiopaque and radiolucent patterns, depending on the degree of calcification and the absence of perilesional sclerotic border, is a general radiographic finding for benign osteoblastomas.

Surgical excision is the only treatment. The lesion can be removed with intralesional curettage or wide resection depending on the clinical situation, location within the bone, and suspicion of malignancy. A more conservative approach of surgical curettage has been suggested in literature. Nowparast *et al.* stated that benign osteoblastoma has a good prognosis and is best treated by curettage or conservative surgical excision.[8] Recurrence rates vary with the surgical approach and wide resection is associated with lower recurrence rates. Radiation therapy or chemotherapy to treat osteoblastoma is controversial. Marsh *et al*. stated that radiotherapy should be employed only in cases of incomplete surgical excision or if there is any evidence of continual growth or recurrence of the lesion.[9] Long-term follow-up is required due to the possibility of recurrence and malignant transformation. Long-term follow-up is recommended, of at least 2 years, not only to minimize the risk of undiagnosed recurrence but also to guarantee the grafts' survival and integration.

CONCLUSION

Benign osteoblastoma involving jaw bones is a rare tumor. A correct diagnosis is very important as osteoblastoma presents a clinical, radiographic, and microscopic similarity to other bone lesions including malignant tumors. Complete surgical excision is only treatment available for osteoblastoma with an overall good prognosis.

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How to cite this article: Bumb SS, Dodamani A, Jain V. Benign Osteoblastoma of the Mandible: A Case Report. IJSS Journal of Surgery. 2019;5(2):22-24.

Source of Support: Nil, **Conflict of Interest:** None declared.