

## Asymptomatic Osteoblastoma of the Mandible: A Rare Case Report

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### Abstract

Osteoblastoma is a rare solitary osteoblastic bone neoplasm. It is characterized by proliferation of osteoblasts forming trabeculae within a vascular fibrous stroma. There is a variety of jaw bone lesions with very close clinical, radiological and microscopic interrelations, which make diagnosis more challenging. Familiarity with these rare bony lesions is vital for oral pathologists. This report presents a new case of asymptomatic mandibular osteoblastoma occurring in a 43-year-old male

**Keywords:** Osteoblastoma, Bone, Benign, Neoplasm, Mandible.

### Introduction

Osteoblastomas are rare neoplasms and represent about 1% of all primary bone neoplasms (1, 2). Vertebral column is the commonest location involved. Among gnathic lesions, there is a tendency for posterior mandible (1). Most cases occur in the 2nd and 3th decades of life (2). Some authors have mentioned that there is a male predilection (2-6) while others have found slight female tendency (1, 7). The majority of gnathic osteoblastoma cases present as a slow-growing, painful swelling with sizes variable between 2 and 4 cm (1-3); asymptomatic cases also have been reported (1, 7). Tooth mobility may occur in some cases as well (2). Radiographically, the lesion varies from completely radiolucent to densely radiopaque (7). However, the classic finding is a well or ill-defined, round to oval radiolucency with patchy areas of mineralization (1, 2, 7). Complete surgical excision is the treatment of choice and recurrence rate is 13.6% (1, 5). Because of its rarity and great similarity between the clinical, radiologic and histopathologic features of bony lesions, reporting more of such cases is beneficial. The present study reports an uncommon case of asymptomatic mandibular osteoblastoma in a 43-year-old male.

### Case report

A 43-year-old male was referred by his dentist to Department of Oral and Maxillofacial Pathology, Shahid Beheshti University of Medical Sciences (Tehran, Iran) for evaluation of the posterior right mandibular lesion incidentally detected in a panoramic radiograph. Extra and intraoral clinical examinations disclosed no bony expansion or deformity. Panoramic radiograph revealed a well-defined, round, unilocular

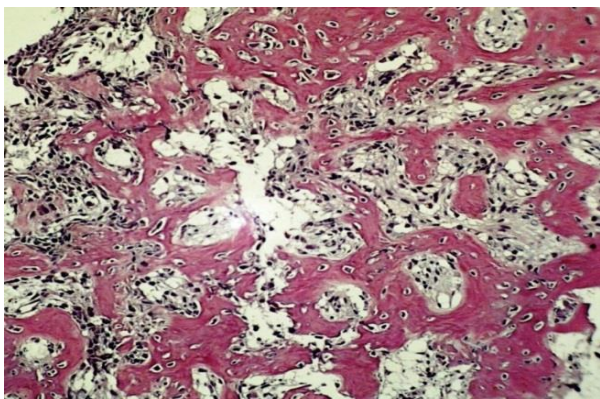
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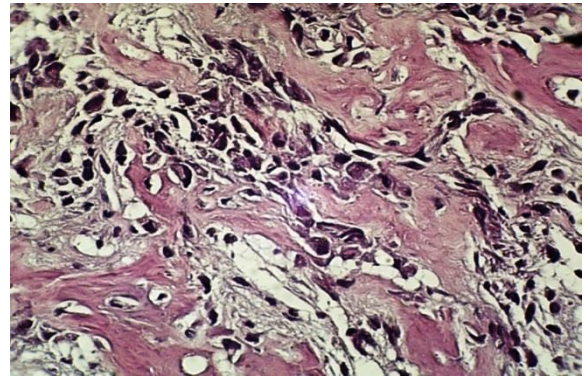
radiolucency with patchy areas of mineralization in the edentulous first molar area measuring 2 cm × 2 cm (Fig.1). His medical history was noncontributory. The patient stated that his right first molar was extracted about 2 years ago because of dental caries. There was not any cervical lymphadenopathy. Considering both clinical and radiographic features, bony lesions such as cemento-osseous dysplasia and benign neoplasms such as ossifying fibroma and osteoblastoma were mentioned in the differential diagnosis. To make final diagnosis, excisional biopsy was performed under local anesthesia. Microscopic evaluation showed irregular trabeculae of osteoid and woven bone, which were surrounded by numerous osteoblasts and scattered osteoclasts within a fibrovascular stroma. Mitotic figures or atypical cells were not found (Fig. 2-4). No sign of recurrence was observed 12 months postoperatively and he is now on an annual follow up program.



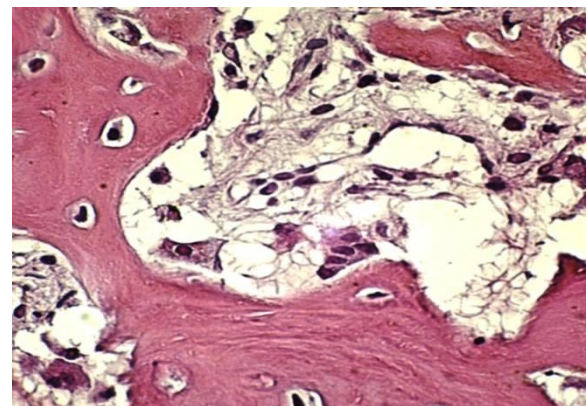
**Figure1.** Panoramic radiograph showing a well-defined, round unilocular radiolucency with patchy areas of mineralization in edentulous first molar area



**Figure 2.** Microscopic section shows trabeculae of woven bone in a cellular fibrous stroma. (Hematoxylin-eosin stain, original magnification×100)



**Figure3.** Trabeculae of woven bone are lined by plump osteoblasts. (Hematoxylin-eosin stain, original magnification×400)



**Figure 4.** Bony trabeculae and osteoclastic giant cells (hematoxylin-eosin stain, original magnification×400)

## Discussion

Benign osteoblastoma is a rare solitary bone tumor with limited growth potential (4, 5). Trauma, inflammation, abnormal local response to tissue injury and local change in bone physiology have been described as etiologic factors (6). It typically occurs in young adults, with a mean age of 20 years (3, 8). Our case was in his 5<sup>th</sup> decade of life. Although the majority of cases show a painful expansion of jaw (2, 3), our patient was completely asymptomatic. In Jones et al (1). Case series, about 50% of osteoblastomas were painless and nearly 16.7% of the cases were thoroughly asymptomatic. Aggressive osteoblastoma is a small subgroup of this neoplasm which tends to be greater than 4 cm (4, 5, 9). Cytogenetic studies have recognized recurrent alterations on the long arm of chromosome 22 in some aggressive osteoblastomas (10, 11). Microscopically, osteoblastomas show interlacing trabeculae of osteoid that are lined by plump osteoblasts. Moreover, in fibrovascular connective tissue, there is a proliferation

of osteoblastic and occasional osteoclast-like giant cells (2). The microscopic features in our case fulfilled the criteria for osteoblastoma. Histopathologic differential diagnosis includes osteoid osteoma, cementoblastoma, fibro-osseous lesion and low grade osteosarcoma (1, 2, 4). Osteoblastoma and osteoid osteoma are closely related benign neoplasms of bone that originate from osteoblasts which show very similar microscopic features. Classically, distinction relies on lesion size; radiographically, the nidus involved in osteoid osteoma are below 1 cm, while an osteoblastoma is more than 2 cm in its greatest dimension (1). Unlike osteoid osteoma, the pain usually is not relieved by nonsteroidal anti-inflammatory drugs (2). Jones et al (1) stated that there is no need to separate gnathic osteoblastoma and osteoid osteoma from each other. They mentioned that small osteoid osteomas of jaws most likely represent the earliest stage of a benign osteoblastic proliferation that may eventually result in formation of osteoblastoma (1). Moreover, cementoblastoma bears a close microscopic resemblance to osteoblastoma and the distinguishing factor is fusion to the root. Fibrous dysplasia shows irregularly shaped trabeculae of woven bone in a cellular fibrous stroma. Unlike osteoblastoma, osteoblastic rimming is usually absent or minimal, and peritrabecular clefting is common. Ossifying fibroma and cement-osseous dysplasia demonstrate cellular fibrous tissue with a variable admixture of osteoid, woven and lamellar bone and cementum-like spherules. In cement-osseous dysplasia, the old lesions show thick and curvilinear bone trabeculae, similar to the shape of ginger roots (10). Stroma of ossifying fibroma is more fibrous and less vascular and lacks the large number of plump, proliferating osteoblasts (5). Aggressive osteoblastoma comprises plump epithelioid- appearing osteoblasts surrounding the osteoid trabeculae. In addition, some cases have more osteoclasts and more abundant atypical osteoid. Osteosarcoma shows high mitotic activity and atypical mitoses, infiltrative margins, lace-like osteoid, cartilage formation and sheets of malignant cells without osteoid production (4). In problematic cases, expression of MDM2 and CDK4 may help to differentiate low-grade osteosarcoma from benign bone neoplasms (10). In addition, a higher rate of MIB-1 (ki-67) may be beneficial in differential diagnosis (6). Complete surgical excision is commonly accepted as the best treatment for gnathic osteoblastomas (1, 3, 4, 8). Recurrence was associated with incomplete excision of the lesion rather than its biological behavior (4). Lesions greater than 4 cm and in anatomical locations that make surgical access difficult, may show aggressive behavior (7). For aggressive subtypes, radical surgery is recommended

(5, 9). The surgical defect can be reconstructed by variable procedures such as autogenous and homogenous grafts, alloplastic implants, bone morphogenetic protein, osteogenic distraction and several other materials associated with growth factors (9). Proliferating cell nuclear antigen (PCNA) labeling index and p53 may be helpful in predicting the rate of recurrence (12). Long term follow up of the patient is recommended (1, 4).

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