Osteoblastoma of the Hyoid Bone

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**CASE REPORT**

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**Osteoblastoma of the Hyoid Bone**

**SUMMARY:** Osteoblastoma is a rare bone tumor that usually affects the vertebrae. We present the first known case of osteoblastoma arising in the hyoid bone, in a patient who presented with a neck mass and dysphagia. The radiographic appearance of the tumor is similar to that of low-grade chondrosarcoma, with well-defined expansion of the bone and central chondroid matrix.

**ABBREVIATIONS:** NSAIDs = nonsteroidal anti-inflammatory drugs

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do primary tumors of the hyoid bone are exceedingly rare. Reported cases have included chondrosarcoma, plas
macytoma, osteosarcoma, giant cell tumor, aneurysmal bone
cyst, and benign osteoma.1 Patients with hyoid bone tumors
usually present with dysphagia and may have a palpable neck
mass. The goal of imaging is to distinguish benign from ma-
lignant causes and to assist in surgical planning.

Osteoblastoma is a rare benign bone tumor first described
in 1956. In the head and neck, osteoblastoma may arise in
the maxilla, mandible, temporal bone, and, very rarely, in the
larynx.2 Surgical excision, when feasible, is usually curative. We
present the first known case of an osteoblastoma arising in the
hyoid bone.

**Case Report**

A healthy 51-year-old man presented with a mass in the left side of the
neck, which he had noticed 3 weeks earlier. He reported pain in the
contralateral neck for the past 5 years and mild dysphagia of recent
onset, but his voice was unchanged. Thirty years ago the patient had
undergone chemoradiation and surgery for a fibrosarcoma in the soft
tissues in his posterior neck. Physical examination was remarkable for
a hard nontender left-sided neck mass at the level of the hyoid bone.
This mass was freely mobile and moved up and down with swallow-
ing. The overlying skin was intact. Flexible transnasal laryngoscopy
showed indentation of the left lateral pharyngeal wall at the level of the
hyoid bone.

CT revealed a 3-cm well-defined spheric mass with a calcified ring
and a partially calcified central matrix, arising within the left hyoid
bone, causing extrinsic compression of the hypopharynx (Fig 1). On
the basis of these imaging features, a diagnosis of low-grade chondro-
sarcoma of the hyoid bone was proposed. Differential considerations
included bony tumors such as osteosarcoma, enchondroma, and oss-
sifying fibroma.

The patient underwent resection of the left hyoid bone, from
which he recovered uneventfully. The pathologic diagnosis was a
3-cm hyoid osteoblastoma with a secondary aneurysmal bone cyst
component. Focally, the tumor broke through the cortex into the
adjacent soft tissue, but the surgical margin in this area appeared free.
A specimen radiograph showed the internal calcified matrix in greater
detail (Fig 2).

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**Discussion**

Solid primary tumors of the hyoid bone are exceedingly rare, and reported cases have included plas
macytoma, osteosarcoma, giant cell tumor, aneurysmal bone cyst, and osteoma, and reported cases have included
plasmacytoma, osteosarcoma, giant cell tumor, aneurysmal bone cyst, osteoma, and chondrosarcoma.1

Osteoblastoma is a rare bone tumor first described by
Lichtestein and Jaffe as a distinct neoplasm in 1956. This
disease accounts for 1%2,4 or less5 of all bone tumors and
most commonly involves the spine and sacrum of young
individuals.2 The second most common location is the
mandible, followed by other craniofacial bones.3 Other
more rare locations in the head and neck include the tem-
poral bone, where 10 cases have been reported.4 Osteoblas-
tomas of the larynx are also extremely rare, with only 4 cases
reported up to 2008. Presumably most of these laryngeal
osteoblastomas arose within ossifying cartilage, but one of
them was thought to be extraosseous.6

Clinically, osteoblastomas present mainly with pain, swell-
ing, and expansion of the bone cortex.2 An osteoid osteoma is
histopathologically similar but is smaller and is associated with
pain that is often nocturnal and relieved with the use of aspirin
or other NSAIDs.7 These typical symptoms occur in approxi-
mately 80% of the patients.3 Unlike osteoid osteoma, the pain
of osteoblastoma usually does not respond to NSAIDs and is
not generally more severe at night.3

Radiographic features of osteoblastoma are variable, usu-
ally showing a combination of radiolucent and radiopaque
patterns, depending on the degree of lesional calcification, but
without a sclerotic border or periosteal reactions.2 An osteoid
osteoma should demonstrate a radiographic nidus of <1 cm,
whereas an osteoblastoma should measure >2 cm in greatest
dimension. Neoplasms that measure between 1 and 2 cm fall
into an arbitrary zone in which classification is determined by
individual preference.3

The radiographic differential diagnosis for osteoblastoma
includes other benign bone tumors. If a central calcified ma-
trix is present, chondrosarcoma or enchondroma is an impor-
tant consideration. If the lesion is lucent, aneurysmal bone
cyst or other bone cysts should be considered. Other calcifica-
tion patterns may suggest diagnoses such as ossifying fibroma
or fibrous dysplasia.

Histologically, osteoblastoma is considered benign.5 It is a
bone-forming tumor characterized by osteoid and woven
bone deposition and abundant osteoblasts that are frequently
in close association with newly formed bone. Occasionally,
osteoblastomas may appear richly cellular, contain an abun-
dant osteoclast-like component, and show plump osteoblasts
that may evoke a diagnosis of osteosarcoma, thus leading to
unnecessary overtreatment.2 The histopathologic features are

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similar to those described for osteoid osteoma,3 and such resemblance is a particular challenge to the pathologist.5

In summary, this is the first report of a proved osteoblastoma of the hyoid bone. The radiographic appearance is most easily confused with low-grade chondrosarcoma or other benign calcifying bone tumors.

References

Fig 1. Hyoid osteoblastoma. Contrast-enhanced neck CT in axial (A), coronal (B), and sagittal (C) planes demonstrates a well-defined mass (arrows) arising from the left side of the hyoid bone. The enhancement pattern of the mass is heterogeneous, and there is a calcified central tumor matrix. The relationship to the hyoid bone is most clear on the sagittal image (C).

Fig 2. Specimen radiograph demonstrates more clearly the central chondroid matrix of the tumor.