

## Case Report

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# Osteosarcoma of mandible: A case report

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### Abstract

After plasma cell neoplasia, osteosarcoma is the most common primary bone tumor which accounts for 20% of all sarcomas. A malignant tumor is characterized by the formation of bone or osteoid by tumor cells. Long bones are the most common site of involvement. In the jaw bones, approximately 5% of involvement with an incidence of 1 in 1.5 million persons per year. It develops in a broad range of ages but is more common in the third and fourth decades. Slightly more often in the mandible than in the maxilla. In this case report, a 24 years old male patient reported a mass in the left mandible for the past 1 week which appeared after the third molar extraction. In the OPG, a loss of lamina dura and a change in the trabecular pattern was noted. Histopathological findings were suggestive of osteoblastic osteogenic sarcoma. The patient underwent a hemi mandibulectomy followed by chemotherapy. The main aim of this case report was to focus on the importance of early diagnosis of this tumor based on clinical and radiographic examinations, particularly taking into account the fast progression and aggressiveness of this neoplasm.

### Introduction

Osteosarcoma (OS) is a malignant tumor of bone that is characterized by the formation of the osteoid by tumor cells as opposed to adjacent reactive bone formation [1]. It accounts for 20% of all sarcomas. After plasma cell neoplasia, OS is the most common primary bone tumor. Common in long bones, but approximately 7% occur in the jaws, with an incidence of less than 1 case in 1.5 million persons per year [2-4]. OS occurs chiefly in young persons, more common in the third and fourth decades. Incidence is higher in males than females [4]. The most common presenting finding of osteosarcomas of the jaws is mass (85-95.5%) [5]. The mandible is more commonly affected than the maxilla in the maxillofacial region. The posterior mandible, especially the angle, and ramus is most commonly affected. Common clinical features are pain accompanied by swelling and trigeminal sensory disturbances. Additional symptoms associated with the intraosseous location are mobile teeth, toothache, and nasal obstruction. Radiographically it appears as radiopaque, radiolucent, and mixed appearance. Also, symmetric widening of the periodontal ligament space of the involved teeth might be seen [6]. The widening of the mandibular canal is another ominous sign. Microscopically, the proliferation of atypical osteoblasts, irregular osteoid, and bone formation. In the jaw, only a few cases have been reported of sarcoma arising from the extracted site. In this article, we report a case of

osteosarcoma of the mandible thereby emphasizing the importance of dentists in the early diagnosis and prognosis of oral malignancies.

### Case report

A 24-year-old male patient visited the Department of Oral Medicine and Radiology, The Oxford Dental College, Bangalore with a chief complaint of a growth in the lower left back tooth region for the past 1 week. The patient gave a history of paraesthesia for the past 2 weeks for which he consulted a general dentist and he was advised for the removal of his mobile lower left third molar. Later he underwent a non-surgical extraction of that tooth. According to the patient, 2 days later, a growth developed and was removed by the general dentist. Again, the growth reappeared after 4 days and the patient also expressed difficulty in chewing food on the affected side. The patient did not have any significant medical history and his personal history didn't reveal any history of debilitating habits.

On examination, there was a diffused swelling on the left lower half of the face extending Antero posteriorly approximately 1 cm from the left angle of the mouth to the left angle of the mandible and superior-inferiorly extending from a line, drawn from the left angle of the mouth to the tragus of the left ear, to the inferior border of the mandible (Figure 1) on palpation, the swelling was slightly firm, and tender, with a slight

raise in temperature. The left submandibular lymph node was palpable, which was mobile, tender, and soft to firm in consistency. Intraorally, an exophytic growth, measuring approximately 3x2 cms, extending from the lower left second molar to the retromolar region, with an irregular, erythematous, and sloughy surface was noted (Figure 2). Tooth 37 was tender and exhibited grade I mobility.

The radiographic examination included panoramic radiograph which revealed trabecular changes from the 35 to 38 region with loss of lamina dura i.r.t 35 and 36 and widening of PDL space i.r.t mesial root of 37 (Figure 3). Based on the clinical (young age, no habit history, and aggressiveness of the growth) and radiological findings, a provisional diagnosis of osteosarcoma of the left body of the mandible was given with a differential diagnosis of chondrosarcoma and non-Hodgkin's lymphoma. Contrast CT of the mandible (Figure 4) showed a heterogeneous enhancing lesion in the left retromolar trigone with local extension measuring 2.6x1.4x1.8 cms infiltrating left masseter muscle suggestive of a malignant lesion. Also, homogeneous enhancing nodes IA left IB and level II nodes are seen. Incisional biopsy showed subepithelial stroma showed a malignant mesenchymal tumor composed of neoplastic osteoblastic cells suggestive of osteoblastic osteogenic sarcoma. A PET scan was advised (Figure 5) which didn't show any distant metastasis. The patient was referred to an oral and maxillofacial surgeon and a wide surgical excision of the lesion with safe margins was done (Figure 6) followed by chemotherapy.

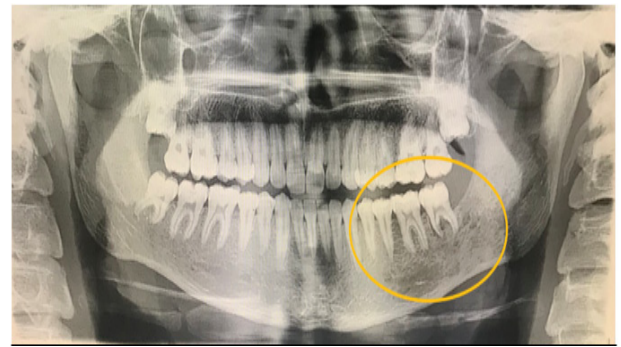


Figure 3: OPG shows trabecular changes from 35 to 38 region with a loss of lamina dura w.r.t 35,36 [distal aspect of distal root] and widening of periodontal ligament space w.r.t mesial root of 37.

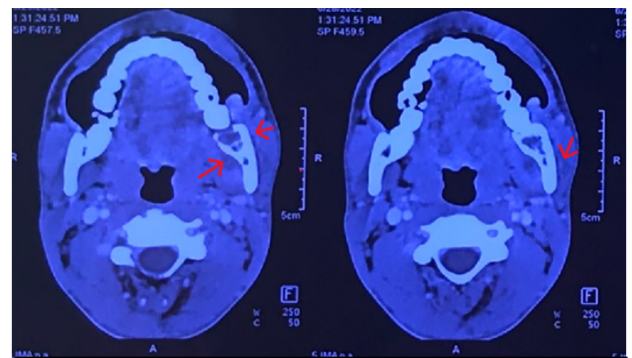


Figure 4: CT shows a heterogeneous enhancing lesion on the left retromolar trigone measuring 2.6x1.4x1.8 cms infiltrating the left masseter and there is the involvement of hyoglossus muscle.



Figure 1: Extraoral photograph: A diffused swelling over the left body and angle of mandible

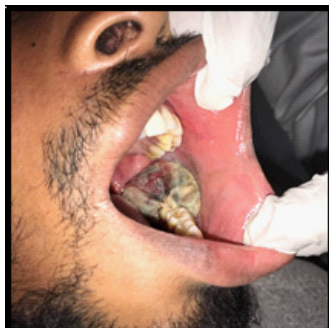


Figure 2: Intraoral photograph showing the exophytic growth

### Discussion

Primary bone cancers are extremely rare neoplasms, accounting for less than 0.2% of all cancers. Osteosarcoma (35%), chondrosarcoma (30%) and Ewing's sarcoma (16%) are the three most common forms of bone sarcoma. The exact cause of osteosarcoma is unknown. However, a number of risk factors are apparent, rapid bone growth with increased incidence

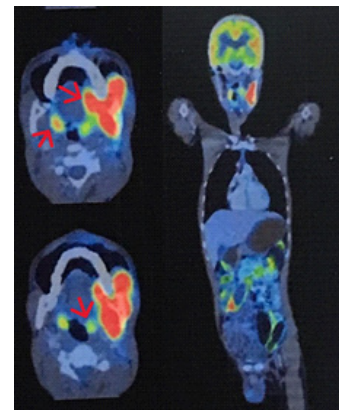


Figure 5: PET CT shows a large lobulated heterogeneously enhancing metabolically active soft tissue mass lesion with irregular margin in the left retromolar trigone and masticator space involving ramus with evidence of cortical erosion representing primary malignant lesion. A few prominent mildly metabolically active left upper cervical nodes

during the adolescent growth spurt, and environmental factors such as radiation, radiation-induced osteosarcoma is a form of secondary osteosarcoma, and Genetic predisposition bone dysplasias, including Paget disease, fibrous dysplasia, enchondromatosis, and hereditary multiple exostoses and retinoblastoma (germ-line form) are risk factors [7].

In this case, the lesion was considered primary, as the patient did not have any predisposing factors known in the literature, such as Paget's disease, previous exposure to radiation, or fibrous dysplasia. Males in the third and fourth decades and



**Figure 6:** Post-surgical photograph.

posterior mandible among jaw lesions are more commonly affected which was in accordance with our case. The most common presentation of osteosarcomas of the jaw was the presence of mass, paraesthesia, and mobility of teeth which was the major clinical findings of our case.

Clark et al. classified the radiographic pattern of osteosarcoma of the jaw into lytic, sclerotic, and mixed lesions [8]. In our case also radiographically the lesion appeared as a change in trabecular pattern with partial loss of lamina dura and widening of the PDL space. CT showed a heterogeneous enhancing lesion in the left retromolar trigone region infiltrating the left masseter muscle, with the erosion of the adjacent ramus and alveolar process of the left maxilla suggesting a malignant lesion. An incisional biopsy confirmed the diagnosis.

According to Forteza et al [9], the use of chemotherapy in osteosarcoma was treated primarily with surgical resection along with a margin of normal surrounding tissue and which was in accordance with the treatment done in the present case. Mandibular osteosarcomas have a better prognosis than maxillary osteosarcomas [9]. Metastasis of sarcoma is usually via the bloodstream and often occurs within 1-2 years [10]. However, in our case, the PET scan didn't reveal any distant metastasis. The general 5-year survival rate for people of all ages is 74% if osteosarcoma is diagnosed and treated before metastasis, and the 5-year survival rate is 66% if cancer has spread to the surrounding tissues or organs and/or the regional lymph nodes. If cancer has spread to distant parts of the body, the 5-year survival rate is 27% [11]. So, a regular follow-up is mandatory for such aggressive lesions.

### Conclusion

Taking into account the fast progression and aggressiveness of this neoplasm, proper clinical and radiographic examinations are required for the early diagnosis and treatment of this tumor. The oral physician plays an important role in the early diagnosis of such aggressive lesions which often helps the oncologist to provide effective treatment so that the patient's mortality and morbidity rate can be reduced.

### Declarations

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On behalf of all the contributors, I will act as guarantor and will correspond with the journal from this point onward

**Conflict of interest:** NA.

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