

Progressively Enlarging Case of Osteosarcoma of Mandible: A Case Report

Dr. Hari Ram¹, Dr. Deepika Kumari Jain², Dr. Reading Well Kharmawlong³, Dr. Ravi Katrolia⁴, Dr. S. Ezhilarasi⁵, Dr. Meleti Venkata Sowmya⁶, Dr. Geeta Singh⁷

¹Professor, Dept of Oral & Maxillofacial Surgery, King George's Medical University, Lucknow

²Dr. Deepika Kumari Jain (Corresponding author) (Senior Resident)

³Dr. Reading Well Kharmawlong (Junior Resident)

⁴Dr. Ravi Katrolia (Senior Resident)

⁵Dr. S. Ezhilarasi (Junior Resident)

⁶Dr. Meleti Venkata Sowmya (Junior Resident)

⁷Dr. Geeta Singh Professor, Dept of Oral & Maxillofacial Surgery, King George's Medical University, Lucknow

Corresponding Author

Dr. Deepika Kumari Jain

Senior Resident, Dept of Oral & Maxillofacial Surgery, King George's Medical University, Lucknow
deepikajain7219@gmail.com

ABSTRACT

Osteosarcoma of the jaws is a rare entity and most common primary malignant bone tumour in children and adults. A case of osteosarcoma in 19 years old girl manifesting in form of a rapidly growing swelling reported to the Department of Oral & Maxillofacial Surgery, King George's Medical University, Lucknow. After examination, evaluation and investigations Management was done by Resection and Reconstruction with reconstruction plate.

INTRODUCTION

Osteosarcoma (OS) is the most common primary malignant bone tumour in children and adults¹ and accounts for about 20% of all sarcomas.² It commonly affects the appendicular skeleton, whereas the maxillofacial region is a rare site seen in only around 6.5% of cases.³

Osteosarcoma of the jaws is a rare entity, accounting for 4 to 6 % of all intraoral malignant tumours and 1 % of all head and neck malignancies.

The tumor occurs about twice as frequently in the mandible as in the maxilla, and is also seen very rarely in the extraosseous soft tissues of the face and the oral cavity.^{5,6}

In the Mandible, most common site is body of mandible followed by symphysis and Ramus and in the Maxilla, most common site is Alveolar ridge followed by Maxillary Antrum.

Radical excision with negative margins followed by Reconstruction remains the main treatment modality of Osteosarcoma of jaws. Neoadjuvant and Adjuvant Chemotherapy is showing promising results but the Chemotherapy formulations are yet to be standardised. Radiotherapy remains as an adjuvant protocol in case of proven positive margins or in case of recurrences.

but its role as mainstay modality is still remains controversial. Mesodiencephalic modulation therapy, as a part of post operative stress control protocol is also advised by some centers.⁷

Here we present a case of osteosarcoma in 19 years old girl manifesting in form of a rapidly growing swelling.

CASE REPORT

A 19- Years Old Female reported to the Department of Oral & Maxillofacial Surgery, King George's Medical University Lucknow ,India with a chief complaint of pain and swelling in right back region of her lower jaw since 2 months . The patient had underwent extraction of tooth in same region after which swelling had grown to its current size with proportionate increase in pain.

Clinical Examination :

Extraoral examination revealed a diffuse swelling causing facial asymmetry, extending from midline of chin to right retromandibular region & supero-inferiorly from ala-tragus line to 2 cm below the lower border of mandible .The approximate size of the swelling was 9 x 8 cm .The overlying skin was tense, erythematous and warm . Left side lymphnodes were palpable of size 1 x 1 cm, fixed, nontender. Paraesthesia was present in lower half of the face suggesting of neural compression .

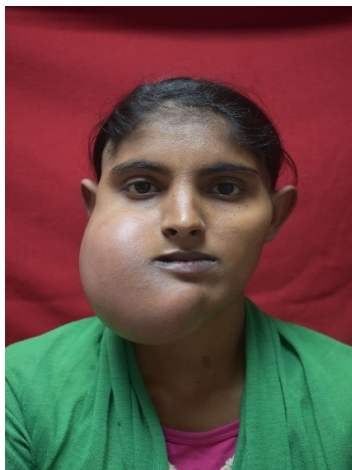


Figure:1 Pre-operative image of the Patient



Figure 2 : Intra Oral View of the patient

On intraoral examination, initially swelling was of 6 x 4 cm in size involving the right posterior mandibular alveolobuccal & vestibular region extending from central incisor to retromolar region .Obliteration of buccal vestibule wrt 45,46,47 was present . Swelling was proliferative in nature ,later it involved both upper and lower right buccal sulcus ,also extending to the right lingual sulcus from retromolar region to mandibular right central incisor

.Intraoral mass was firm & slightly tender on palpation without any sign of active bleeding & it had inflamed margins & covered with slough .Grade I mobility was present wrt 44, 45 ,46. Swelling was extending superior-inferiorly from upper buccal sulcus to lower buccal sulcus .

The patient was referred to pain clinic for severe pain where opioid analgesics (Tab. Morphine 10 mg 4 hourly for 1 week) was prescribed .History of painful rapid progressing swelling suggesting diagnosis towards malignancy .

All blood investigations were in normal limit except for raised serum alkaline phosphatase.It denotes general health of the patient was quiet normal , raised serum alkaline phosphatase levels are suggestive of either because of growing age or any bony pathology .

Radiographic Examination

Orthopantomogram revealed patchy distribution of radiolucent & radioopaque areas ,denoting irregular area of osteolysis .Periodontal ligament widening in lower right quadrant and horizontal bone loss wrt to right lower posterior teeth.

Cone-beam computed tomography of mandible revealed buccal & lingual plate resorption was present perpendicular bony trabecular pattern originating from the outer cortical plate giving “sunburst appearance” .



(a) 3D Reconstruction (b) Axial section at the level of Mandible
Figure 3 : Pre operative Radiograph of the patient



Figure4: Contrast-Enhanced Computed Tomography of the patient

Contrast-Enhanced Computed Tomography of Face was done to see the Hard soft tissue extension of lesion

To make the final diagnosis ,an Incisional biopsy was done .Histopathological examination revealed proliferative ovoid or mildly elongated cells dispersed diffusely .The cells enclose round or ovoid nuclei and eosinophilic cytoplasm .A number of mitosis and occasional giant

cells were seen .Osteoid tissue with new bone formation was also discernible .In few areas, tumour shows degenerative changes with several thin walled blood vessels .These histological features were suggestive of Osteosarcoma .

After getting the final diagnosis ,patient was advised to get Contrast-Enhanced Computed Tomography Thorax to see any metastasis , as osteosarcoma have a high chance of metastasis via hematogenous route and lung is the most common site for metastasis .

On Contrast-Enhanced Computed Tomography Thorax examination ,no metatstatic foci or any other abnormality was present .

Management was done by Resection (wide local excision of tumour with 3-4 cm safety margin and right Subtotal Hemi Mandibulectomy with Disarticulation) and Reconstruction with stainless steel reconstruction plate under General Anaesthesia (Figure -5) and further planned for vascularised free flap at a later date.

Healing was uneventful and patient is being followed up for every 3 months (Figure -6)

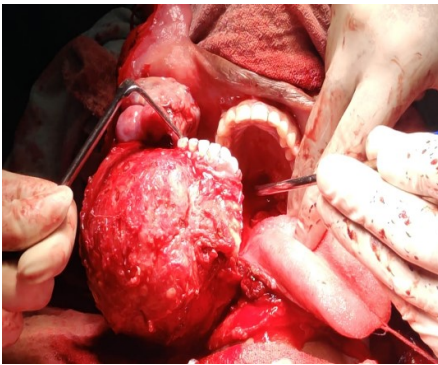


Figure 5 : Intra operative image



Figure 6: Post operative image of the patient.

DISSCUSSION

Osteosarcomas have been considered to be a group of neoplasms with considerable variation, not only in clinical and histologic appearance but also in the course of the disease and in prognosis.

The median age of such patients is between 34 and 36 years, which is greater than the median age of patients of Osteosarcoma of the long bones by about 15 years. These tumors have a slight predilection toward the male sex, and they are sometimes also referred to as gnathic Oss.⁴ In our case, the patient was younger than the mean age of occurrence for jaw osteosarcomas. Also, the tumor had a very aggressive biologic course, a feature uncommon for gnathic lesions.⁹ The progress of the neoplastic growth in this case was so rapid that in contrast to the literature, the time span between diagnosis and death was barely six weeks. Probably the swelling had been present for a longer time but went unnoticed by the patient due to lack of any

appreciable clinical symptoms. The patient got aware of its presence only when it grew large enough to be of aesthetic concern.

The prognosis of osteosarcoma of the jaws is better than that of long bones, with a 5-year-survival rate of 25.8 percent for the maxilla and 34.8 percent for the mandible. The median survival time for the maxilla is 2.9 years and 6.5 years for the mandible .¹⁰ Usually, the prognosis of a jaw osteosarcoma gets better as the age at which it occurs increases. Older patients are reported to have increased resistance to the tumor, thus increasing the chances of a better prognosis.

In case presented in this report, even though presentation of osteosarcoma was consistent with what has been reported in the existing literature ,rate of progression was atypically rapid.

The numbness due to compression or infiltration of the inferior alveolar nerve in the mandibular canal of the affected area has been well documented in osteosarcoma and could be an indication of poor prognosis. In this case, even though numbness was not a presenting complaint of the patient, she was having the tingling sensation much before the swelling become apparent. Numbness or paresthesia of the affected area as an early diagnostic feature of osteosarcoma is thus highlighted by our case.⁷

The radiographic picture of the case revealed widening of the periodontal ligament space of either the affected or the adjacent teeth. The circumscribed bilateral centrifugal cortical plate expansion could mimic a central benign neoplasm, although ossifying fibroma is a slow growing benign lesion and does not cause numbness of the affected area or pathological fracture of the bone.

The characteristic sunray appearance and Codman's triangle seen in osteosarcoma of the long bones is less commonly encountered in jaw lesions.⁸ However it was clearly visible in our case.

Local recurrence and metastasis occur frequently in patients with osteosarcoma. Rate of metastasis in jaw osteosarcomas is lower than those of the long bones But metastasis is relatively higher in case of post radiation osteosarcoma of the jaws. Metastasis is usually via the bloodstream and in most cases occurs within 2-3 years. The absence of any metastatic spread seen in this case could be attributed to the very rapid rate of growth of the tumor and short clinical course.

Many factors determines the prognosis of osteosarcoma .Prognosis of jaw osteosarcoma is extremely poor if untreated ,so the surgery is a mainstay treatment protocol for the radical cure

of this disease and to increase the survival rate.¹² As in this case there was no metastasis present so we can expect for the better prognosis in future

Early diagnosis and complete tumour resection are the most important factors in increasing prognosis of jaw osteosarcomas.¹¹ Treatment of osteosarcoma is radical surgery. This usually is accompanied by radiotherapy or chemotherapy. Anatomic limitations in the orofacial region cause difficulties in achieving uninvolved margins and for this reason local recurrence of the lesions is high between 33% and 39%. Tumor-free margins in surgery, chemotherapy with multidrug, and radiotherapy after surgery have effects in the prognosis of osteosarcoma.¹³

CONCLUSION

The case reported here emphasizes the importance of histopathology in the diagnosis and predicting prognosis of osteosarcomas of the jaws.

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