Osteoid Osteoma of the Mandibular Condyle: A Diagnostic Dilemma

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Abstract

Osteoma is benign osteogenic lesions characterized by proliferation of either cancellous or compact bone and can be central, peripheral, or extraskeletal. The most common site is in the skull. When affecting the facial bones, they are frequently found in the mandible, the most common locations being the posterior lingual surface and the mandible angle area. Here, we are presenting a rare case of osteoid osteoma of the mandibular condyle causing facial deformity in a 21-year-old male patient. On investigation, orthopantomogram revealed a solitary ill-defined homogeneous mixed radiopaque-radiolucency with a thin sclerotic border on the left mandibular condyle, cone-beam computed tomography showed a solitary irregular bony multilobulated overgrowth and the fusion imaging of positron emission tomography–computed tomography showed lobulated protuberance along medial margin of the left mandibular condyle with methylene diphosphonate bone scan showed well defined focal increased tracer uptake. The left side condylectomy was performed followed by shaving of inferior border with modified condyle formation by sliding osteotomy. Secondary surgery for correction of occlusion was done, and the patient was advised for orthodontic correction. The present case showed no recurrence after 18 months of follow-up.

Keywords: *Benign, condyle, cone-beam computed tomography, mandible, osteoid osteoma*

Introduction

Jaffe in 1935 described a specific entity type of nidus 2 cm in diameter, which appeared as a hard osseous core composed of densely set trabeculae of newly formed bone which was atypical.[1] It accounts for 3% of all primary bone tumors, and about 10% of benign bone tumors. About 80% of osteoid osteoma (OO) occur in long bones, while <1% occurs in jaws.[2-4] The lesion occurs predominantly in children, adolescents, and young adults between 10 and 25 years of age. It is distinctly rare in patients aged more than 30 years. The peripheral-type arises from the periosteum and is rarely seen in the mandible. The posterior lingual surface and lower border of the body are the most common locations of these lesions. Pain is very characteristic of this lesion and is accompanied by vasomotor disturbances, which occur long before characteristic radiographic and histopathology findings become evident.[5-7]

Case Report

A 21-year-old male patient reported to our department with a chief complaint of increased length of the left side of the face, for 6 months. He also complained of a reduction in mouth opening, which gradually reduced over a period of 6 months. The patient observed increase in the length of the left side as compared to right side of the face. According to the patient, initially, it was mild and gradually increased to the present size. Increased in jaw height was associated with pain and reduction in mouth opening. The pain was gradual in onset, mild, dull aching type, and intermittent in nature. The pain gets aggravated on chewing. The patient does not give any history of trauma. The patient's medical and dental history was noncontributory.

Extraoral examination revealed, on inspection, facial asymmetry with increased height on the left side of the face. The corner of mouth and chin appeared to be deviated to the right side with inferior border of mandible appears lowered, and angle of mandible appears steep. There was increased height of ramus and body of mandible on left side as compared to right side [Figure 1]. On temporomandibular joint (TMJ) examination, restricted mouth opening with interincisal distance of 19 mm

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was observed with deviation of mandible on right side. On palpation, bilateral smooth synchronous movement was absent with tenderness present on all movements. Intraoral examination revealed midline was shifted to right side and premature contact on right side with open bite on the left side [Figure 2]. Correlating history, clinical examination, a provisional diagnosis of hemifacial hypertrophy were made. On investigation, the patient was subjected to radiographic examination. The panoramic radiograph revealed a solitary ill-defined homogeneous mixed radiopaque-radiolucency with a thin sclerotic border on the left mandibular condyle. It is approximately 4.5 cm × 3 cm in dimension with irregular borders. On left side, zygomatic arch is displaced superiorly, angle and body of mandible appears to be at lower level as compared to right side. The sigmoid notch is deepened, the height and width of body of mandible appears to be increased on the left side [Figure 3]. On further investigation, cone-beam computed tomography (CBCT) showed a solitary irregular bony multilobulated overgrowth over the left condylar head and joint space is reduced with reconstruction image [Figure 4a and b]. The fusion imaging of positron emission and computed tomography (PET-CT) axial image showed lobulated protuberance along medial margin of left mandibular condyle with amorphous sclerosis measuring 25 mm × 33 mm. The bony outgrowths with weakly metabolic sclerosis were seen in fluorodeoxyglucose (FDG) uptake along the left mandibular condyle. Methylene diphosphonate (MDP) bone scan showed well-defined focal increased tracer uptake on left mandibular condyle [Figure 5a and b]. Correlating history, clinical examination, and radiographic findings, a differential diagnosis of a condylar hyperplasia, osteochondroma, osteoblastoma, and exostoses were made. On further investigations, excisional biopsy was done with left mandibular condelectomy [Figure 6a and b], and the sample was sent for histopathological examination. The gross specimen consisted of a globular irregular mass of tissue measuring 3.5 cm × 2 cm × 2 cm in size and hard in consistency. The histological findings showed irregular foci woven bone without any atypia or mitosis in osteoblasts [Figure 7]. Based on the clinical, radiographic and histologic findings, a final diagnosis of OO of the left condyle of mandible was made. The patient was advised surgery and was operated on under general anaesthesia. Surgical left condelectomy was performed as a part of the treatment followed by shaving of inferior border with modified condyle formation by sliding osteotomy. Secondary surgery for correction of occlusion was done followed by intermaxillary fixation and patient was further advised for orthodontic correction [Figure 8a and b]. The present case showed no sign of recurrence after 18 months of follow-up.

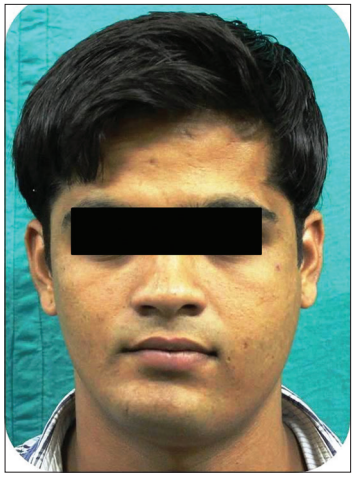

Figure 1: Extraoral photograph shows facial asymmetry on the left side

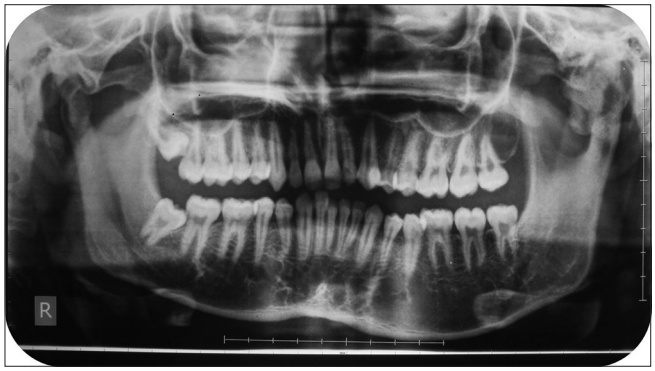

Figure 3: Panoramic radiograph showing a mixed radiopaque-radiolucency with a thin sclerotic border in left condyle with increased height and width of body of mandible on left side

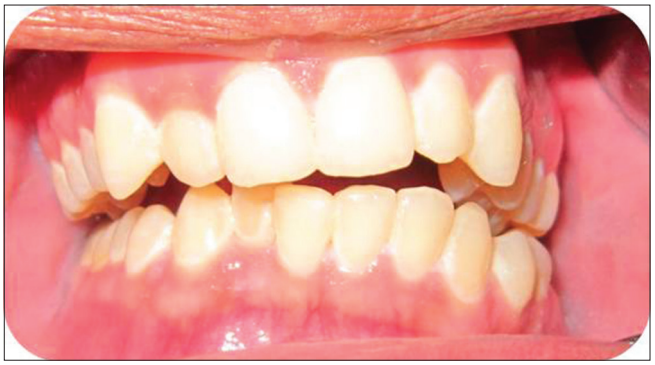

Figure 2: Intraoral view showing premature contact on right with open bite on left side

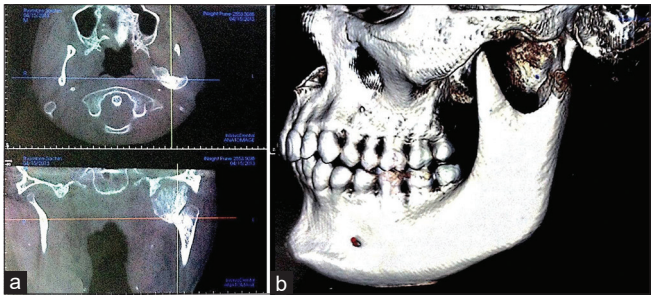

Figure 4: (a) Axial cone-beam computed tomography image showing a solitary irregular bony multilobulated overgrowth over the left condylar head with reduced joint space. (b) Shows cone beam computed tomography reconstructed image

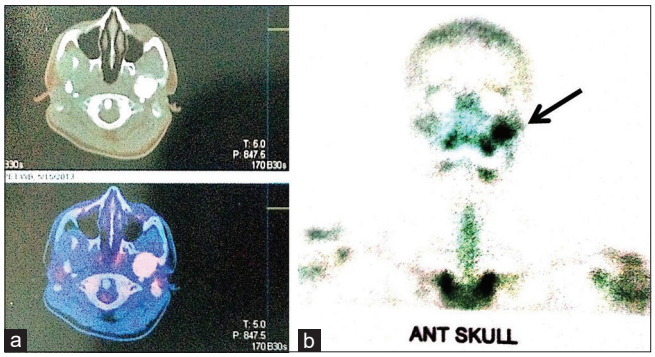

Figure 5: (a) Axial positron emission tomography–computed tomography image showing a lobulated protuberance along medial margin of the left mandibular condyle. (b) Positron emission tomography–computed tomography showing amorphous sclerosis with fluorodeoxyglucose uptake

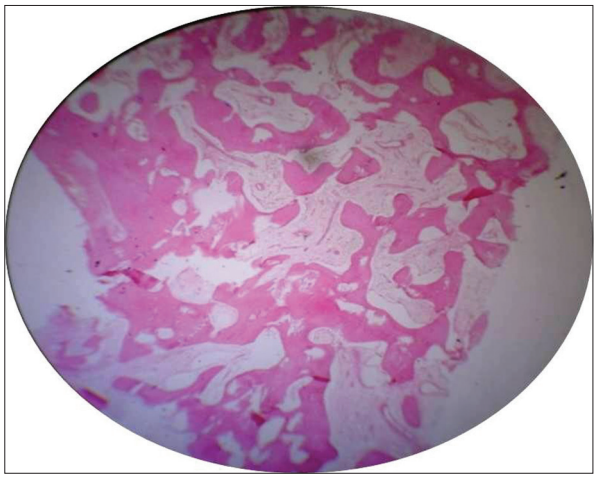

Figure 7: A photomicrograph of the resected specimen shows irregular foci of woven bone without any atypia or mitosis in osteoblasts (H and E × 40)

Discussion

Jaffe was the first to describe OO as a specific entity in 1935. OO has been described as a benign osteogenic tumor which has seldom been described in the jaws. Lichtenstein defined OO as a "small, oval or roundish tumor-like nidus which is composed of osteoid and trabeculae of newly formed bone deposited within a substratum of highly vascularized osteogenic connective tissue."[8,9] The pathogenesis of osteoma is not completely known. They are referred to developmental anomalies, true neoplasms, or reactive lesions triggered by trauma, muscle traction, or infection,[10-12] but in our case, there was no history of trauma. OO usually occurs predominantly in children, adolescents, and young adults between 10 and 25 years of age and shows a 2 and 3 times male predilection.[12] The gender and the age of the patient we described in this paper are consistent with the literature. It appears as an asymptomatic lesion of mandible, with most common locations being the posterior lingual surface and the mandible angle area.[13] Unlike in our case, the lesion was present in left mandibular condyle with facial asymmetry with elongation of the mandible and reduced mouth opening

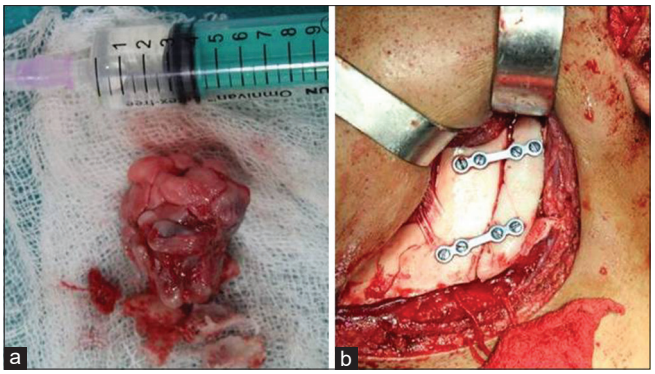

Figure 6: (a) A excised specimen. (b) Intraoperative view showing condelectomy done with fixation with mini plates

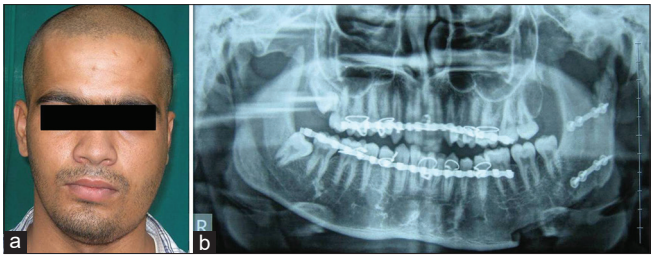

Figure 8: (a) Postoperative profile picture. (b) Postoperative panoramic radiograph after surgery

and which was rare according to its site. Severe and constant pain is a distinguishing feature of this lesion and is accompanied by vasomotor disturbances,[14] but in our case, the patient presented asymptomatic increased height of left side of the face which eventually became painful. The pain was gradual in onset, mild, dull aching type, and intermittent in nature. The pain gets aggravated on chewing food only. Jaffe emphasized that the roentgenographic features of the OO were most important in the definitive diagnosis of the lesion. Radiological examination showed that the OO is more radiolucent than radiopaque and that it is surrounded by a reactive radiopacity that extended a variable distance from the nidus.[15,16] In our case, a solitary ill-defined mixed radiopaque-radiolucency was seen with sclerotic border on left mandibular condyle, which was approximately 4.5 cm × 3 cm in dimension with irregular borders. OO should be distinguished from exostoses which are thought to be developmental or reactive in origin; histopathological they are found to be similar, hence not believed to be true neoplasm. Osteochondroma is one of the most common tumors which involve the condyle, but it appears as ill-defined cyst-like radiolucencies with irregular calcifications which is not evident in OO. On the basis of the size of the lesion, OO may be differentiated from osteoblastoma. Lesions with a maximum diameter of <1.5–2 cm are classified as OO, and those larger than this as osteoblastoma.[17,18] Intra-articular lesions can be difficult to image on conventional radiographs, so additional techniques, such as radioisotope scanning are often used to identify them. CBCT has been suggested

to be one of the most useful modalities to diagnose TMJ bone tumors in the complex anatomical site of the jaws.[19] CBCT showed a solitary irregular bony multi-lobulated overgrowth over the left condylar head and joint space is reduced. The fusion imaging was carried out in this case in which PET-CT showed lobulated protuberance along medial margin of left mandibular condyle with amorphous sclerosis measuring 25 mm × 33 mm. The bony outgrowth with weakly metabolic sclerotic was seen in FDG uptake along the left mandibular condyle. MDP bone scan (Tc-99 m is usually attached to medronic acid) showed well defined focal increased tracer uptake on left mandibular condyle. Histologically, the specimen showed irregular foci woven bone without any atypia or mitosis in osteoblasts and it was diagnosed as OO of the left mandibular condyle. Surgical resection is the treatment of choice. After the nidus is removed in OO, the pain is usually relieved.[19] However, incomplete removal may lead to pain. Sometimes, reconstruction is necessary to reestablish the TMJ, which can be achieved with either autogenous costochondral or sternoclavicular grafting or an alloplast.[19] In the present case, surgical left condelectomy was performed as a part of the treatment followed by shaving of inferior border with modified condyle formation by sliding osteotomy. Secondary surgery for correction of occlusion and patient was advised for orthodontic correction. The present case showed no sign of recurrence after 18 months of follow-up.

Conclusion

OO is a rare tumor of the jaw bones. In the delineation of differential entities, the clinical facts and radiologic findings are very important in the diagnostic evaluation of the lesion and must be considered along with the histologic findings. At the same time, adequate representative sections of the entire lesion must be submitted to ensure adequate histologic diagnosis for better prognosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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