INTRODUCTION

Osteochondroma (OC) is also known as osteocartilaginous exostosis.\(^1\)\(^-\)\(^4\) It arises from the bone cortex as an exophytic lesion with a hyaline cartilaginous cap. It is one of the most common benign tumors of the axial skeleton.\(^2\) It accounts for approximately one-third of benign bony lesions. OC may arise in any bone that develops from endochondral ossification and it is rare in maxillofacial region as most of the craniofacial skeleton develops from intramembranous ossification.\(^3\) Embryonic development of temporomandibular joint by endochondral ossification predisposes coronoid and condylar process. The other reported sites are mandibular symphysis, body of mandible, in the soft tissues at the angle of the mandible, maxillary sinus and posterior maxilla.\(^3\)\(^-\)\(^4\) OC is usually seen in younger individuals with male predominance.\(^6\) OC may present in a solitary fashion or as multiple OCs seen in autosomal dominant syndrome known as osteochondromatosis.\(^5\)\(^-\)\(^6\) OC occurring in the angle of the mandible is extremely rare and according to literature search, this is the only case at the angle of mandible. Majority of cases are reported in condyle followed by coronoid process, four cases in symphysis region and one case is reported in angle region in the soft tissue not attached to mandible.

CASE REPORT

A 18-year-old male presented to a private hospital with a chief complaint of painless slow-growing swelling since 10 years in the right side of the lower jaw. There was no significant medical history. On examination, face was asymmetric due to swelling at the angle of mandible. It was a solitary swelling, well-localized, measuring 4 × 3 cm at the angle of mandible. On palpation it was not tender and hard. It projected from lower border of mandible, measuring anteroposteriorly 4 cm and superoinferiorly 3 cm, buccolingual expansion was 3 cm with a broad base. Orthopantomogram showed mixed radiolucent and radiopaque lesion in the angle of the mandible [Figure 1]. Computed tomography (CT) showed an irregular bony outgrowth at angle of mandible, measuring 27 × 25 × 22 mm in size, with a small irregular area of sclerosis. There were no cystic or destructive changes identified and no adjacent extrasosseous soft tissue swelling or fluid collection seen [Figure 2]. The three-dimensional CT showed margin of the lesion to be continuous with the margins of the mandible [Figure 3]. Radiological diagnosis of benign OC was made. Under general anesthesia, through extraoral approach, the lesion at the angle of mandible was exposed [Figure 4]. The lesion had a broad base and an irregular surface, excision of the lesion was done along with a margin of normal bone all around. Bony margin were smoothened and closed in layers. Pressure dressing was placed. Postoperative wound healing was uneventful. Histology revealed features of OC: Cancellous bone proliferation and a cartilaginous cap [Figure 5]. There was a hyaline cartilage with cellular connective tissue stroma [Figure 6]. Marrow spaces were filled with chondroid tissue, producing trabecular ossification [Figure 7].

DISCUSSION

OC is a benign tumor exhibiting features of chondroma and osteoma together. OC is the most common osteogenic tumor of the axial skeleton constituting up to 50%. OC accounts for 35.8% of benign bony tumors and 8.5% of bony tumors. About 1% of these occur within the head and neck region.
Osteochondroma at the angle of mandible

The growth of tumor is slow and is in coordination with the growth of the skeleton. The tumor may be sessile or pedunculated and is usually asymptomatic. Solitary OC are exophytic lesions of bone arising from the cortex and covered by periosteum that is continuous with that of the adjacent bone and this accounts for 75% of the OCs. Multiple OCs are associated with a syndrome known as osteochondromatosis.

Figure 1: Orthopantomogram showing mixed radiolucent and radio-opaque lesion in the angle of the mandible

Figure 2: CT image showing bony outgrowth at the angle of the mandible, with a small irregular area of sclerosis. CT = Computed tomography

Figure 3: Three-dimensional CT showing, irregular bony outgrowth that is continuous with the mandibular bone

Figure 4: Intraoperative view of the tumor, at the angle of the mandible

Figure 5: Photomicrograph showing a cancellous bone with a cartilaginous cap (H&E stain, x40). H&E = Hematoxylin and Eosin

Figure 6: Photomicrograph showing a hyaline cartilage with cellular connective tissue stroma (H&E stain, x100)
or hereditary multiple exostosis (HME), an autosomal dominant disorder, this account to the rest 25% of OCs.[2] OC is frequently seen in distal metaphyseal region of long bones and also in ribs, scapulas, clavicles, vertebrae, femur and proximal metaphysis of tibia.[4,5] In craniofacial region mandibular condyle, coronoid and symphysis have cartilage precursors. Remnants of these cartilage precursors can give rise to OC at these regions. In the other intramembranous bones of maxillofacial skeleton, the etiology is controversial. It may be developmental, neoplastic, reparative or traumatic. It may also arise from the heterotrophic remnants of Meckel’s cartilage.[2] It is suggested by Lichtenstein that pluripotent periosteum can undergo induced or spontaneous metaplasia to produce osteoblast and chondrocytes with subsequent endochondral ossification resulting in OC.[2,4,7] The other possibility is somatic mutation in chromosome 8 and 11.[7]

Histologically, OC can be diagnosed by the presence of bony trabeculae covered with a cartilaginous cap. OC should be differentiated histologically from osteoma which consists of hard dense compact lamellar bone; benign osteoblastoma containing well-vascularized connective tissue stroma and widely dilated capillaries with active production of osteoid and woven bone; chondroma consisting of lobules of hyaline cartilage with chondrocytes within well-formed lacunae and chondroblasticoma consisting of broad areas of chondrocytes.[8] OPG is routinely used for the detection of lesions but CT, cross-sectional and three-dimensional images are of greater value which shows anatomy of lesion and surrounding area. Complete resection with surrounding periosteum is curative. Recurrences of OC are rarely reported.[9] Malignant transformation of OC is about 2% in solitary OC and 11% in osteochondromatosis.[10]

A computerized literature search using MEDLINE was carried out. The phrases used in search were OC, Mandible, Angle. The search showed two case reports at the angle of mandible, one case was present on the lingual surface of mandible attached with a stalk,[11] the other reported OC was at the angle of Mandible in the soft tissue and was not in continuous with the Mandible.[12] Our case is unique as this OC was at the angle in continuous with the Mandibular bone.

CONCLUSION

This paper describes the details of a very rare case of OC arising in the angle of the mandible. CT along with histopathological examination confirmed the diagnosis. OC are benign slow growing tumors. They have a low risk of recurrence and malignant transformation. Regular clinical and radiological follow-up is required.

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