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A Case Report: Unusual Osteochondroma of the Coronoid Process

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Abstract

Osteochondroma (OC) is considered the most common tumour of the axial skeleton, while it has been found to be relatively uncommon in the craniofacial region. The present study describes an unusual case of OC of the coronoid process which was operated in our hospital. The patient underwent coronoidectomy via an extraoral approach. The resected coronoid process measured 3.5x2.5x1.2 cm resembling the condylar process of the mandible, with its characteristic mushroom shape and cartilage-capped projection. The final histopathologic diagnosis confirmed the same.

Keywords: Osteochondroma, Coronoid process, exostosis, coronoidectomy

Introduction

Osteochondroma also known as osteocartilaginous exostosis, is one of the most common benign tumor of the bone. It commonly occurs in the metaphyseal region of the long bones, such as femur or tibia. [1] It rarely occurs in the maxillofacial skeleton. The coronoid and

condylar processes have been considered to be the most common sites of occurrence for osteochondroma of the facial skeleton. The embryonic development of the mandibular condyle from cartilaginous ossification makes it the most frequent facial site of this type of tumor.[2]

Enlargement of the coronoid process of the mandible was first described by Langenback in 1853, and the joint-like formation between the enlarged coronoid process and the zygoma was first described by Oscar Jacob in 1889 and thus known as "Jacob's disease" [1]

Case report

A 29-year-old male reported to the Department of Oral and Maxillofacial surgery with a complaint of difficulty in mouth opening in the last 1 year. There was no history of trauma or associated pain. There was gradually progressive restricted mouth opening. His mouth opening at the time of reporting was found to be 13 mm (Fig 1 a). There was no obvious facial asymmetry. A panoramic radiograph showed that the right coronoid process was slightly elongated when compared with the contralateral side (Fig 1 b). A computed tomography (CT) and Contrast Enhanced Computed Tomography(CECT)scan revealed well-corticated exophytic protuberance projecting anteriorly and superiorly from the hypertrophied right coronoid process (Fig 1 c and d). A provisional diagnosis of Osteochondroma was made. The patient was then planned for right coronoidectomy and excision of the exophytic mass (osteochondroma).

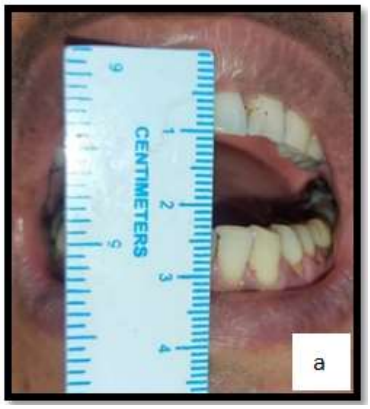

Figure 1 a: Mouth opening pre operatively-13mm

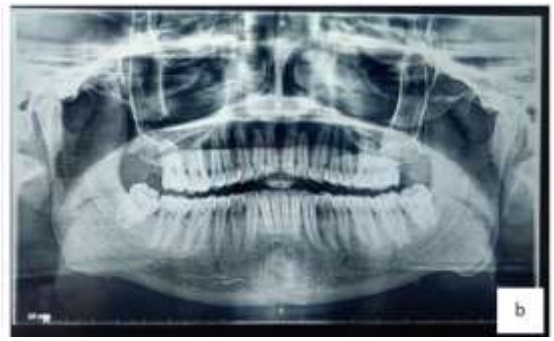

Figure 1 b: preoperative OPG

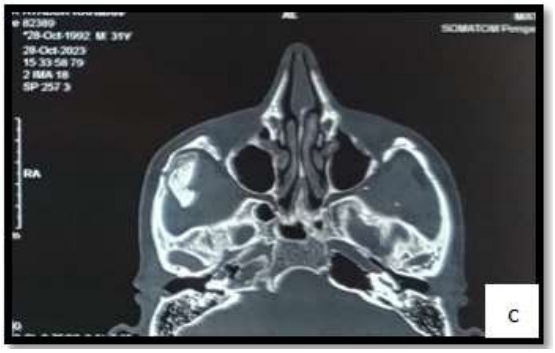

Figure 1 c: CT axial

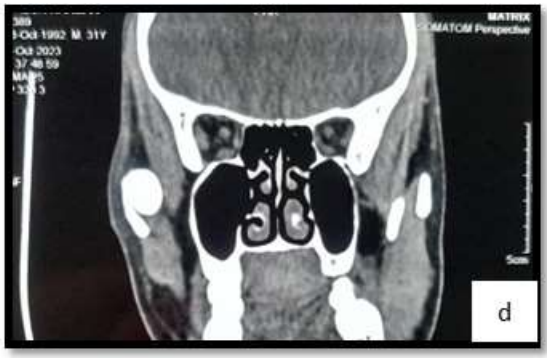

Figure 1 d: CECT Coronal Showing Reveals Bony Enlargement Continuous With the Tip of the Right Coronoid Process

Surgical procedure

Under all aseptic and antiseptic conditions intubation was done through the left nostril facing North pole. Extraorally, right side Popowich and Crane modification of Alkayat and Bramley incision was made(Fig.2a) Dissection was carried out through the skin, subcutaneous tissue, temporoparietal fascia, and flap elevation was done(Fig.2b). An incision was made about 2cm above the zygomatic arch through the fascia at a 45 degree angulation and dissection was carried out inferiorly to reflect the superficial fascia (preserving the facial nerve). Subperiosteal dissection was carried out to expose the zygomatic arch, further dissection was carried out inferiorly and laterally. The superficial temporal artery was identified and ligated. The coronoid process was exposed. The temporalis muscle insertion was thoroughly stripped from the coronoid process, and was sectioned with a bur. The resected coronoid process measured about 3.5x2.5x1.2 cm and had the shape of a mushroom (Fig 2c, d). The mouth opening at the time of surgery was 38 mm. A no.12 closed suction drain was placed in the operated site, closure was done with 3-0 ethilon. After an uneventful postoperative course, the interincisal distance increased to 37 mm after two weeks (Fig 5). The patient was able to open his mouth without difficulty up to 40 mm and had experienced no further disturbances in jaw movement. The post-operative panoramic radiograph showed that the tumor and the right coronoid process were totally excised (Fig 4)

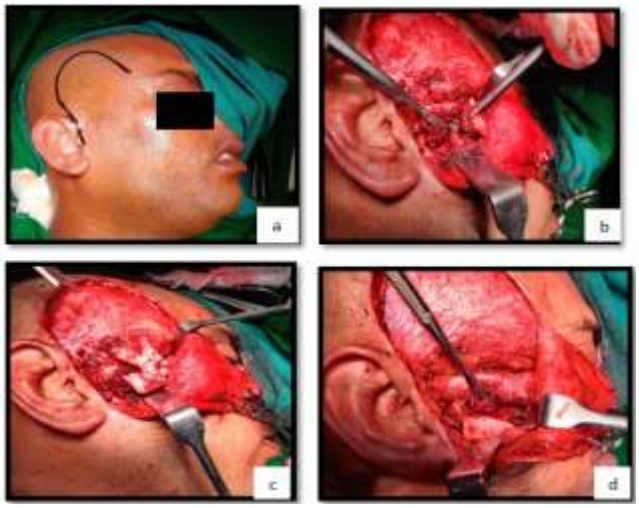

Figure 2 a. Incision marking and the resected coronoid process, (b, c, d) exposure, resected coronoid, surgical defect

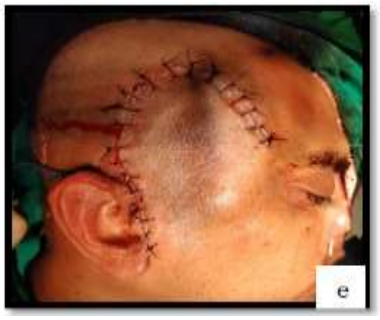

Figure 2 e: final closure

Figure 2 f: Intra operative mouth opening achieved-37mm and

Figure 2 g: the excised coronoid-mushroom shaped

The final histopathologic diagnosis confirms osteochondroma of the coronoid process (Fig. 3). The lesion composed of stalk of cancellous bone with intervening marrow covered by a cap of mature hyaline cartilage. The resected coronoid process measured 3.5x2.5x1.2 cm resembling the condylar process of the mandible, with its characteristic mushroom shape and cartilage-capped projection.

The patient is on regular follow-up and showed no signs of any recurrence at two months.

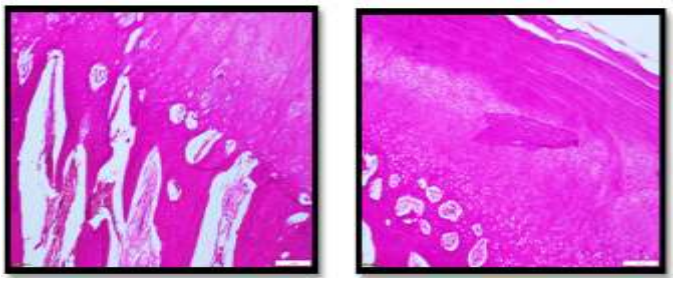

Figure 3: Microscopic histology of osteochondroma, showing mature and immature cells and cartilage cap

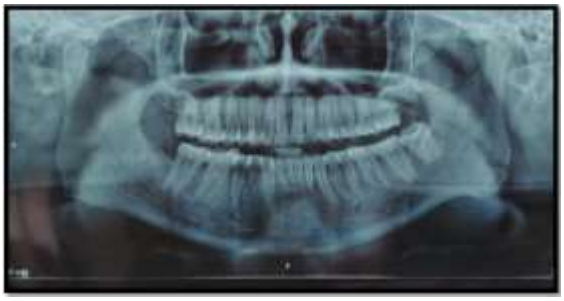

Figure 4: Post operative OPG

Figure 5a: 1-week post-operative mouth opening: 25mm

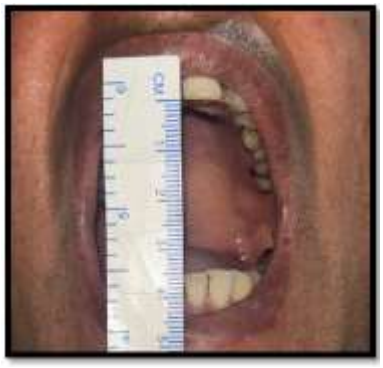

Figure 5 b: 2 months follow up MO-35mm

Discussion

Osteochondroma is a common tumour of the axial skeleton, but only about 1% occur in the maxillofacial region.

Pain is not a feature of this disease [3],[5],[6]. No symptoms occur in the early stage, so patient usually presents when the tumour is big enough to hamper the normal activities of the jaws. [9] In this case, the patient did have restricted mouth opening. There may be tightness within the joint area and deviation toward the affected side during mouth opening [1]. The exact etiology is not known, it is assumed that the ectopic formation of metaplastic cartilage is led by the periosteal hyperactivity [1]. Also, a possible explanation is temporalis muscle hyperactivity leads to a hyperplastic development of embryogenic cartilage cells differentiation, which can explain the fact that the predilection sites of osteochondroma are commonly the tendious insertions. Osteochondroma of the coronoid process should be kept in mind as a cause of mandibular hypomobility. [6] Osteochondroma of the coronoid can be mistaken for temporomandibular disorder (TMD), which could lead to faulty treatment.

Panoramic radiography is a simple and affordable investigation for the patients, which allows a good outline of jaws and adjacent tissue and is used for investigation of morphological changes in coronoid

process. The routine uses of CT or CBCT can be used for establishing a clinical diagnosis of any "suspected mass of the coronoid process" [6], [7], [8], [9]

After complete resection of osteochondroma of coronoid process the recurrence rate has been found to be only about 2%. [3],[4]. Histopathological differential diagnosis of osteochondroma includes benign osteoblastoma, osteoma, chondroblastoma, chondroma, and bony hyperplasia. [4]

The treatment of Jacob's disease is coronoidectomy and excision of the tumor. There has been variable number of surgical approaches for the resection of the osteochondroma of the coronoid process, in which both intraoral as well as extraoral techniques can be used. [4] In our case, we used extraoral approach.

Conclusion

There are many anomalies which could cause hypomobility of the TMJ. Osteochondroma being a rare occurrence in the maxillofacial region can also be considered to be the cause in these cases. Early diagnosis and timely treatment is advised to avoid any further complications. The prognosis is good, however the patient should be kept on follow up.

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