Osteochondroma of the mandibular condyle: A case report

**Jayakumar K., Soumithran C.S., Manoj Joseph Michael,
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ABSTRACT

Introduction: Osteochondromas or osteocartilaginous exostoses are the most common benign tumors of the bones. It is characterized as a type of overgrowth that can occur in any bone where cartilage forms bone. It is uncommon in this part of body because of intramembranous origin of craniofacial bones. Osteochondromas do not result from any injury and the exact cause remains unknown. Recent research has indicated that multiple osteochondromas is an autosomal dominant inherited disease. The treatment choice for osteochondroma is surgical removal of solitary lesion or partial excision of the outgrowth when symptoms cause motion limitations or nerve and blood vessel impingements. Osteochondroma of the mandibular condyle is extremely rare.

Case Report: A 45-year-old female presented to our department with diffuse swelling in her left side of face and pain in her left ear while opening the mouth since last six months. Clinically, mouth opening was limited with deviation of mandible towards right side while opening mouth. There was unilateral posterior crossbite on the right side. Protrusive movement and lateral excursions of mandible were restricted. The lesion appeared to be benign bony lesion and complete surgical excision of the whole tumor mass along with condylectomy was performed under general anesthesia.

Conclusion: As osteochondroma is a benign neoplasm, various treatment modalities include resection of tumor along with condylectomy, condylectomy with reconstruction of the resected condyle if indicated or selected tumor removal without condylectomy. The prognosis of osteochondroma is usually excellent after adequate excision. This case showed no recurrence after the treatment. Malignant transformation of the lesion is exceedingly rare.

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CASE REPORT

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of face and pain in her left ear while opening the mouth since last six months. Clinically, mouth opening was limited with deviation of mandible towards right side while opening mouth. There was unilateral posterior crossbite on the right side. Protrusive movement and lateral excursions of mandible were restricted. The lesion appeared to be benign bony lesion and complete surgical excision of the whole tumor mass along with condylectomy was performed under general anesthesia. **Conclusion:** As osteochondroma is a benign neoplasm, various treatment modalities include resection of tumor along with condylectomy, condylectomy with reconstruction of the resected condyle if indicated or selected tumor removal without condylectomy. The prognosis of osteochondroma is usually excellent after adequate excision. This case showed no recurrence after the treatment. Malignant transformation of the lesion is exceedingly rare.

Keywords: Condyle, Mandible, Osteochondroma, Temporomandibular joint

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INTRODUCTION

Osteochondroma, also known as osteocartilaginous exostosis is a benign, cartilage capped osseous lesion that projects from the surface of the bone, usually near its growth center [1–4]. The affected bone may be abnormally wide and somewhat deformed at the level of the lesion.

The appearance is similar to that of an epiphyseal plate before closure. Although osteochondroma is predominantly an osseous lesion, still it is considered as one of the cartilaginous tumors because bony mass is produced by progressive endochondral ossification of its growing cartilaginous cap. Osteochondroma is one of the most common benign tumors of the axial skeleton [4–8] representing 35–50% of all benign bone tumors and 8–15% of all primary bone tumors [4, 7]. Only 1% of these occur in head and neck region. In 2014, Erdem et al. revealed literature and mentioned that only 72 cases of osteochondroma of mandibular condyle has been reported till now.

It is rarely found in the facial bones, because most of the craniomaxillofacial bones develop by intramembranous ossification [5–8]. When present, the tumor is most often reported to affect the mandibular coronoid process as it is of the embryonic cartilaginous origin [6]. The other sites where osteochondroma have been reported are at the skull base, in the posterior maxilla, maxillary sinus, ramus, body and symphyseal region of the mandible [7–10]. Osteochondroma of the mandibular condyle is extremely rare [9]. Osteochondroma of the mandibular condyle is a slow growing lesion. Therefore, symptoms may develop over a long period. These symptoms include occlusal disturbances, facial asymmetry restricted mandibular movements, pain with varying intensity, clicking, popping, and crepitation of the affected joint and changes in the condylar morphology. The treatment of a condylar osteochondroma involves primarily resection and in large lesions where functional or cosmetic deformity results, immediate reconstruction is indicated.

CASE REPORT

A 45-year-old female presented to our department with diffuse swelling in her left side of face and pain in her left ear while opening the mouth since last six months (Figure 1). She gave a history of slowly progressing facial asymmetry with difficulty in chewing. There was no significant family history, no one in her family had the same problem earlier. On clinical examination, deviation of mandible was present towards right side and mouth opening was limited to 20 mm (Figure 2). There was a unilateral posterior crossbite on the right side. Protrusive movement and lateral excursions of mandible were restricted. On palpation there as a firm swelling over the left side of the face in front of the tragus extending along the ramus of mandible towards temporal area crossing the zygomatic arch. There was tenderness over masseter muscle and at the lateral and dorsal aspects of the left condyle. On palpation of cervical lymph nodes no enlargement was present and were normal in consistency. Panoramic radiographic examination showed pedunculated lesion originating from anterior part of left condyle. On the coronal and axial CT images, it was clearly distinguished that there was a cartilaginous

or bony lesion attached to the anteromedial surface of the left condyle and extending medially to involve left parapharyngeal space and masticatory space displacing the lateral pterygoid muscle anteriorly. Superiorly the lesion is causing thinning and erosion of greater wing of sphenoid (Figure 3).

The surgery was performed under general anesthesia. Preauricular incision was given and extended from the superior portion of helix to the inferior portion of the

Figure 1: Preoperative picture of patient with deviated mandible towards right side.

Figure 2: Clinical picture with limited mouth opening.

ear lobe. After the skin incision was done, the underlying subcutaneous tissue, temporal fascia and muscle were carefully dissected. In the temporal region the incision was up to the superficial layer of the temporalis fascia. At the root of the zygomatic arch, the superficial layer of temporalis fascia was incised anterosuperiorly. The periosteum was then elevated to expose the zygomatic arch and then subperiosteal dissection was carried further downwards to expose temporomandibular joint region. After getting a wide exposure of the area zygomatic arch was sectioned; leaving it attached to the masseter muscle, and was put aside. Excision of the whole tumor mass was performed on the table with condylectomy (Figure 4). Zygomatic arch was placed back and rigid fixation was done with interosseous wires.

On histological examination, an outer lining composed of a broad layer of partially loose periosteal collagen tissue was found, attached by small amounts of cartilaginous differentiated tissue. Adjacent cancellous bone with trabeculae of variable size and surrounded by cartilaginous tissue was visible. Chondrocytes of the cartilaginous cap were arranged in clusters parallel to lacunar spaces. On the basis of histological findings definitive diagnosis of osteochondroma was established (Figure 5A–B). Postoperative course was uneventful. Follow-up at second month, the patient's maximum mouth opening had increased to 35 mm. On two years follow-up patient is asymptomatic and there is no deviation of mandible towards opposite side (Figure 6). Till now there is no recurrence reported.

Figure 4: Intraoperative view of lesion being excised.

Figure 5: (A, B) Histological view confirming the diagnosis.

Figure 3: Computed tomography scan image of the lesion involving left condyle.

Figure 6: Postoperative, after two years, view of patient with improved mouth opening.

DISCUSSION

Cartilage-capped tumor like, exophytic growths of bone, termed osteochondroma, has been subjected to many debates regarding their origin and have been considered as developmental malformations, hyperplasia, or neoplastic disorders. Langenskiöld postulated that osteochondroma occurs when limited portions of the undifferentiated cell layer of the growth cartilage are displaced peripherally towards the metaphysis [11]. Lichtenstein's theory favored a neoplastic origin, but did not attribute it to the growth cartilage [12]. He suggested that periosteum had a potential to form chondroblasts and osteoblasts, and a perverted activity of the periosteum to form metaplastic cartilage may give rise to osteochondromas. A relatively high frequency of osteochondromas around the temporomandibular joint can be easily explained embryologically when it is considered that the region from the mandibular lingula to the anterior process of the malleus is derived from the part of Meckel's cartilage not replaced by mandibular bone and that remnants of this embryonic tissue may still persist and give rise to tumor growth [13]. This theory is also applicable to the occurrence of osteochondromas or other chondrogenic tumors in the tongue, where remnants of brachial arch cartilage may potentially persist [14].

Trauma and inflammation have been specifically implicated either as initiating or as predisposing factors for mandibular condyle osteochondromas". Porter and Simpson suggested that a genetic component might also be involved in the neoplastic pathogenesis due to somatic mutations found in chromosomes 8 and 11. Osteochondromas are frequently seen in 2nd and 3rd decades of life. They are more common in men, with a male to female predilection of 1.6 to 1. The clinical findings associated with osteochondromas of the mandibular condyle usually develop over the course of several months to years. Patients most commonly present with the facial asymmetry, disturbed occlusion: posterior apertognathia (open bite) on the affected side, crossbite on the unaffected side, palpable painless temporomandibular area mass, together with limitation of mouth opening and mandibular movement. The differential diagnosis includes osteoma, chondroma, condylar hyperplasia, giant cell tumor, myxoma, fibro-osteoma, fibrous dysplasia, fibrosarcoma, chondrosarcoma and metastatic disease. Several methods have been suggested for the treatment of condylar osteochondromas. These include resection of tumor along with condylectomy, condylectomy with reconstruction if indicated or selected tumor removal without condylectomy. By providing extra space and exposure, condylectomy enables easier and safer removal of the lesion when the medially located vascular structures (for example, internal and external maxillary arteries) are concerned. Approximately, 75% of the patients with osteochondroma develop solitary lesions and 25% have multiple lesions. The solitary lesions develop sarcomatous changes in approximately 1% of the cases.

However, all reported condylar osteochondromas have been histologically benign and malignant transformation has not been observed. The general recurrence rate of osteochondromas is approximately 2% and there is only one recurrence of condylar osteochondroma reported in literature, which occurred one year after its excision in multiple pieces [15].

CONCLUSION

As osteochondroma of mandibular condyle is extremely rare and benign neoplasm, patients with this tumor present mandibular movement deviation and alterations in dental occlusion, with a slow and asymptomatic growth of the lesion. Various treatment modalities include resection along with condylectomy, condylectomy with reconstruction of the resected part if indicated or selected tumor removal without condylectomy. The prognosis of osteochondroma is usually excellent after adequate excision. Imaging techniques are the valuable aid for accurately diagnosing neoplasm like condylar osteochondroma. Diagnosis is only confirmed by histopathological examination. Even though the recurrence of the tumor is rare, it is always better to follow-up the patient for the recurrence risk.

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Author Contributions

Jayakumar K. – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Soumithran C.S. – Substantial contributions to conception and design, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Manoj Joseph Michael – Substantial contributions to conception and design, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

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Tushar Lamsoge – Substantial contributions to conception

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Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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