CASE REPORT

A diagnostic dilemma: an unusually large osteochondroma of the mandibular condyle and temporo-mandibular dysfunction

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Abstract

Osteochondroma is a benign bone tumour which is rarely appreciated in the oral and maxillofacial region. This case report illustrates on a 42-year-old male with osteochondroma affecting his left mandibular condyle and presenting with temporo-mandibular dysfunction-related symptoms. The authors of this paper hope to emphasise the need for vigilance and the value of using modern imaging techniques in the diagnostic work-up for pain associated with the temporo-mandibular joint.

Introduction

Osteochondroma is a benign, slow-growing, cartilage-forming tumour of the bone, most typically seen in the axial skeleton. It generally affects the metaphyseal regions of long bones and accounts for approximately 30% of benign bone tumours. Osteochondroma of the mandibular condyle is a rare entity. The coronoid process of the mandible appears to be one of the common sites affected in the maxillofacial region. Most patients will have a solitary osteochondroma while less than 10% will have multiple lesions usually with a hereditary basis. Multiple osteochondromas are associated with a syndrome known as osteochondromatosis or hereditary multiple exostosis.

Temporo-Mandibular Dysfunction (TMD) represents a set of musculoskeletal disorders of the masticatory system routinely managed by dental clinicians. It is a prevalent problem affecting around 33% of individuals within a lifetime. Osteochondroma of the mandibular condyle may give rise to similar symptoms to those seen in TMD such as pain, trismus, and clicking of the joint which may occur individually or in combination. Malocclusion and facial asymmetries have been reported in the literature. The similarity of their clinical presentations demand the diligent diagnostic work-up in patients presenting with commonly encountered TMD-like symptoms.

Case report

A 42-year-old man presented with the complaint of left temporo-mandibular joint (TMJ) pain. He reported that it had persisted for 2 years and was experiencing pain during late night, early morning and at meal times. His past medical history was unremarkable. There was no history of recent facial trauma and he denied any parafunctional habits. Clinically, the mandible deviated slightly to the right during opening. Mouth opening was limited to 32 mm. He had no cross-bites nor excessive wear
patterns on teeth. There was soft clicking upon opening and the left masseter was tender on pressure. A diagnosis of left TMJ internal derangement with recapture of the meniscus on opening was made. He was prescribed a soft acrylic bite-splt and became completely pain-free over a period of 3 months. He was subsequently discharged from the TMJ Clinic.

He presented to the Maxillofacial Clinic with his chin deviated to the right 14 years later (Fig. 1). There was no tenderness over the TMJ’s and clicking was absent. The mandible deviated to the right on opening. Protrusive and lateral movements were restricted. A posterior cross-bite was observed on the right. An orthopantomogram (OPG) revealed a radiopaque mass in the left mandibular condylar head (Fig. 2). A smaller lesion was seen in the same location when the OPG taken 14 years ago was examined (Fig. 3). A contrast CT showed a well-circumscribed, corticated mass with internal trabeculation extending from the medial margin of the left condylar head. It measured $3.5 \text{ cm} \times 2.0 \text{ cm}$ in maximum antero-posterior and medio-lateral directions (Fig. 4). It was seen to displace the condyle inferiorly from the glenoid fossa. The scan findings were suggestive of an osteochondroma due to the defined margins and absence of bone destruction. A $^{99}$Tc bone scan revealed a “hot spot” in the patient’s frontal bone, which was attributed for a hamartoma (birth mark) surgically removed during early childhood. Multiple osteochondromas were ruled out in the rest of the body.

The left TMJ was accessed using a pre-auricular approach under general anaesthesia. The capsule was incised to enter the joint. Titanium mini plates were contoured and fixed to the condylar neck with screws. They were removed and kept aside for later repositioning of the condyle. An osteotomy at the condylar neck facilitated the delivery of the condylar head with its attached mass (Fig. 5). The tumour was resected off the condyle and the remaining condylar head was repositioned into the glenoid fossa using the pre-contoured plates and screws.

Histological examination confirmed the diagnosis of an osteochondroma. Despite some resorption in the first 3 years, the condylar head stabilised over the following 2 years showing no further radiographically evident resorption. Good facial symmetry and proper occlusion was achieved. Maximal incisal opening was restored to $32 \text{ mm}$ with mild deviation to the left side during opening. The patient was extremely satisfied with the outcome and has been attending annual follow-up clinics for the past 6 years with no signs of recurrence.

**Discussion**

A number of signs and symptoms may be overlapped between condylar osteochondroma and TMD. Osteochondroma may cause a combination of pain, limited mouth-opening and occlusal derangements, such as unilateral posterior open-bites and cross-bites. Large lesions may cause significant displacement of the condylar head from the glenoid fossa to cause a marked deviation of the chin prominence and an accompanying facial asymmetry. If kept
untreated, this may lead to compensatory changes in occlusion leading to a cant in the occlusal plane. Some confusion may also arise between osteochondroma and other conditions like unilateral condylar hyperplasia, osteoma, chondroma, chondroblastoma and fibrosarcoma. To a large extent, this can be resolved with careful examination of diagnostic imaging which should reveal an exophytic mass attached to the condyle. The histology will confirm the diagnosis of an osteochondroma. Histologically, the osteochondroma somewhat resembles the appearance of the mandibular condyle prior to the cessation of endochondral ossification. Periosteum may become thickened, covering a sheet of dividing chondroblasts to form a cartilaginous cap with a zone of ossification producing cancellous bone.

The commonality of the symptoms with TMD at the initial stages of lesion may result in the tumour being overlooked and solely diagnosed as TMJ-related pain and dysfunction. Upon retrospect, it is probable that this patient had both acute TMD and osteochondroma; his initial symptoms may be associated with TMD which masked the presence of the growing lesion. This was further consolidated by the resolution of symptoms with the use of a bite-splint. The authors feel that it was unfortunate that the early lesion went undetected in the initial OPG.

Panoramic radiographs are a great screening tool for osteochondroma. It may appear as a nodular or mushroom-shaped bony enlargement, which can be either a well-defined radiopaque lesion or an exophytic mass of mixed density. A CT scan is mandatory once the presence of the lesion is suspected which provides good imaging for delineating osseous lesions and demonstrating calcified cartilage with excellent bony margins. MRI scan at the initial stage for this patient may have been beneficial as it could have disclosed tumour changes as well as the condition of the disc. Bone scintigraphy is recommended to exclude co-existing multiple lesions in other sites. In our patient, the “hot spot” in the frontal bone was most likely a hamartoma removed when he was an infant and no further action was taken.

The functional and cosmetic deficits caused by mandibular condylar osteochondroma usually merits surgical excision. Earlier case reports frequently employed condylectomy as the procedure of choice to ensure a complete removal of the lesion, including the surrounding periosteum. This approach requires a complex surgical reconstruction to restore...
TMJ function to an acceptable level. Recently, there has been a trend towards employing more conservative excisions, attempting to preserve as much as possible of the unaffected part of the condyle. The authors selected the surgical method of table-ostectomy: delivering the condyle with the attached mass and resecting the tumour on the table before replacement of the remaining condyle. Other surgeons have used this approach to ensure a complete removal of the tumour under direct vision, thereby preventing possible recurrence.

**Conclusion**

Osteochondroma of the mandibular condyle may be a diagnostic challenge. Clinicians must maintain vigilance in their clinical examination and utilise three-dimensional imaging to aid in the diagnostic work-up for TMD-like symptoms. The table-ostectomy appears to be a useful alternative to conventional condylectomy to achieve successful disease control with minimal disturbance to surrounding tissues and TMJ functions. Regular follow-up of the patient is necessary to rule out recurrence of the lesion.

**Conflict of Interest**

Authors of this paper declare no conflict of interest.

**References**


Figure 5: Excised mass attached to the lateral pole of the left mandibular condylar head prior to separation and reattaching of the condylar segment to the ramus stump.