Osteochondroma of the Mandibular Condyle Mimicking TMJ Syndrome: Clinical and Therapeutic Appraisal of a Case

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This paper describes a patient in whom a huge osteochondroma of the mandibular condyle was mistakenly treated as temporomandibular joint syndrome for approximately 6 months before an accurate diagnosis was made. While clinical and pathologic features of this lesion are discussed, further emphasis is placed on the surgical management and immediate reconstruction with autogenous costochondral grafting.

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Osteochondroma, a mixed cartilaginous-bony tumor, is one of the most common tumors of the axial skeleton. It comprises 40% of all bony benign neoplastic lesions.[1] The distal metaphysis of the femur and the proximal metaphysis of the tibia are the most common locations for this condition. Osteochondroma of the facial bones is rare.[2,3]

The tumor usually affects younger age groups, ie, those in the second decade of life or younger. The majority of these lesions present as a solitary tumor, and only a small percentage of them have been reported as multiple with a familial pattern (osteochondromatosis).

Condylar osteochondroma should be differentiated from other tumors or tumor-like lesions, including condylar hyperplasia, osteoma, giant cell lesions, and malignant lesions.[4–13] In cases of multiple osteochondromas, the differential diagnosis of Gardner's syndrome should be considered. Osteochondroma usually presents, on gross examination, as a cartilage-covered bony tumor with an irregular or lobulated contour. Histologically this lesion is composed of a cancellous bony component with regular lacunar and bone marrow spaces. The osseous portion is covered by cartilaginous tissue showing different degrees of calcification.

This tumor grows slowly and therefore symptoms may develop over a long period. These symptoms may include occlusal disturbance, facial asymmetry, pain with varying intensity, restricted mandibular movement, clicking, popping, and crepitation in the affected joint.[5,7,8] Upon radiographic examination the tumor appears as an irregularly shaped, mixed density, expansile lesion of the condyle. Pathogenesis and etiology of this tumor are not known. However, some authors believe that osteochondroma is a developmental aberration (like exostosis) rather than a neoplasm, despite the neoplastic designation.[14] Treatment of the condylar osteochondroma involves primarily resection, and in large lesions where functional or cosmetic deformity results, immediate reconstruction.

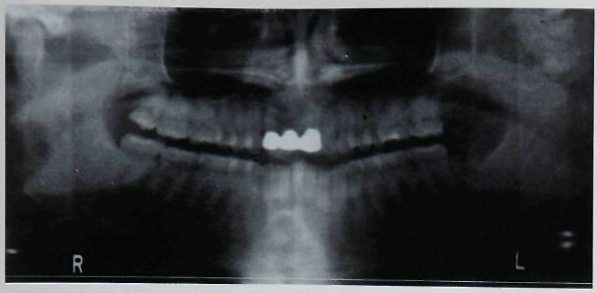

Fig 1 Panoramic radiograph shows a large lesion of the left mandibular condyle with mixed radiodensity.

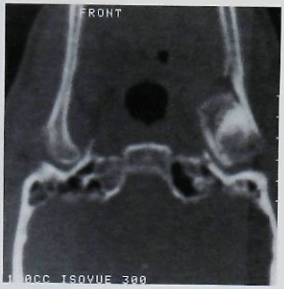

Fig 2 Computerized tomographic scan shows a huge mass with mixed radiodensity extending off the medial aspect of the left mandibular condyle and extending to the pterygoid plates of the maxilla.

Case Report

A 23-year-old white woman was referred by her otolaryngologist to the Department of Oral and Maxillofacial Surgery with the chief complaints of facial pain on the left side and inability to open her mouth. The otolaryngologist, while treating a concomitant middle ear infection, noted the marked deviation of the mandible to the left upon mouth opening. The medical and dental history showed that the patient was referred by her general medical practitioner to a temporomandibular joint (TMJ) treatment center 9 months earlier. There the patient was diagnosed as having "TMJ syndrome" and, in particular, internal joint derangement and myofascitis of the facial and cervical muscles. Oral occlusal splint therapy was started 3 weeks after the initial examination and continued for approximately 6 months. The examination done at the TMJ center revealed a maximum mouth opening of approximately 29 mm with a marked deviation of 11 mm to the left upon opening. There was no mention of radiographic interpretation. Treatment for TMJ syndrome was pursued for approximately 6 months without resolution. The remaining medical and dental history was unremarkable.

Upon clinical examination, the patient was found to be pleasant, cooperative, and in no acute distress. Facial examination in anterior, posterior, and lateral dimension was essentially unremarkable. Palpation of the left TMJ did not elicit pain or swelling; however, there was decreased translation of the condyle in the fossa. The right condyle exhibited hypermobility. The maximum mouth opening was approximately 33 mm, measured between the maxillary and mandibular incisors, with deviation to the left of approximately 10 mm. Right lateral jaw motion was decreased; left lateral motion was within normal limits. Protrusion of the mandible produced marked deviation to the left. There was no noise upon palpation over the TMJs. Oral examination revealed a Class I occlusion and a healthy dentition. Neurologic examination was essentially normal; the facial and trigeminal nerves in particular were unremarkable. Finally, the external auditory canal was found to be within normal limits.

Tomograms and a panoramic radiograph revealed a large, lobulated mixed-density mass of the mandibular condyle (Fig 1). Computerized coronal and axial projections through the TMJs showed a huge mixed-density mass projecting off the medial aspect of the left mandibular condyle and extending to the maxillary pterygoid plates (Fig 2). The mass extended anteriorly into the sigmoid notch, stopping 4 mm superior to the lingula of the mandible in an inferomedial direction. The superior joint space and the glenoid fossa were enlarged. There was no posterior extension into the auditory canal. The mass appeared to be well circumscribed.

The remaining components of the physical examination were essentially unremarkable. Laboratory data, which included a complete blood count, urinalysis, differential diagnosis, and electrolyte, calcium, and phosphorus analyses were within normal limits.

A preliminary diagnosis of osteoma or osteochondroma of the left mandibular condyle was

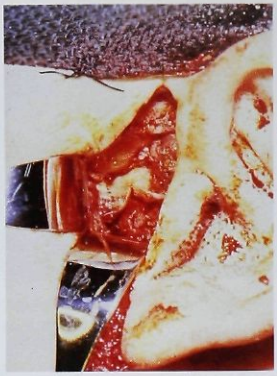

Fig 3 A combination of preauricular and retromandibular incisions are used.

rendered. Included in the differential diagnosis were osteosarcoma, osteoblastoma, and metastatic lesions. Other less common tumors would include a giant cell tumor, myxoma, an ameloblastoma, or fibro-osseous disease.

Surgical Management

Removal of tumor. A fiber-optic nasal tracheal intubation was performed without difficulty for resection of the tumor through a combination of preauricular and retromandibular incisions (Fig 3). Arch bars were applied to the maxillary and mandibular dentition in the usual fashion. A nerve stimulator was used during the entire surgical procedure to identify the facial nerve where necessary. The preauricular incision was approximately 3.5 cm long and extended from the superior portion of the helix to the inferior portion of the left ear lobe. The surgical dissection to expose the left TMJ and tumor was fairly standard and was similar to the approach described by Dolwick[15] to perform meniscus surgery for correction of internal joint derangement. A 5-cm incision in the retromandibular area immediately parallel with and approximately 2 cm posterior to the posterior ramus, as described by Hinds,[16] was used for resection of the inferior aspect of the tumor and immediate reconstruction with a costochondral rib graft.

The marginal mandibular nerve was identified in the inferior portion of the dissection, and it was easily undermined, retracted, and preserved. The retromandibular dissection involved the posterior tail of the parotid gland; however, once the dissection was completed through the tail of the gland, the gland was retracted superiorly and anteriorly and the dissection was carried directly anteriorly to the posterior ramus of the mandible. This incision provided excellent reconstructive access to the mandible and placed the incision in an esthetically favorable location. The main branch of the facial nerve was therefore preserved in a 3-cm block of soft tissue between the two incisions. A mandibular distraction clamp was placed upon the angle of the mandible for mobilization. Maxillomandibular fixation was established only after the tumor had been resected and the reconstructed rib had been anatomically contoured and was ready for final stabilization.

The lateral capsule of the joint was then split, and the dissection was carried from the condyle neck, running superiorly and communicating with the superior joint space. The meniscus was identified and preserved. Although enlarged, the meniscus is usually in relatively normal anatomic relationship, and preservation provides a more functional reconstructed joint. The residual meniscus provides an excellent barrier, preventing the development of fibrous or bony ankylosis, and is easily repaired at the time of the reconstruction.

The subperiosteal dissection was carried inferiorly and medially around the neck of the condyle, although total soft tissue protection with retractors was not possible because of the large medial extension of the tumor. The tumor was then cut in multiple locations using a combination of saws, chisels, and burs. Finally, the inferior extent of the tumor, which was just above the lingula, was resected from the retromandibular incision. Clinically the tumor extended to the pterygoid plates of the sphenoid, where there was an indentation on the medioanterior aspect of the tumor. In spite of the difficulty in resecting the tumor, there was no unusual hemorrhage or violation of other soft tissue structures. The tumor mass was well encapsulated. The tumor was delivered for histopathologic evaluation.

Reconstruction. The second surgical team harvested a 6-cm costochondral graft from the right sixth rib in the standard fashion. The lateral overlying periosteum at the costochondral junction was preserved to prevent separation during surgical manipulation and under eventual function of the mandible. The chest incision was closed in the standard fashion. No pneumothorax was identified. The rib was custom-fashioned and mortised so that it could be placed on the posterior border of the mandible, with the cartilaginous cap seated against the residual meniscus in the superior aspect

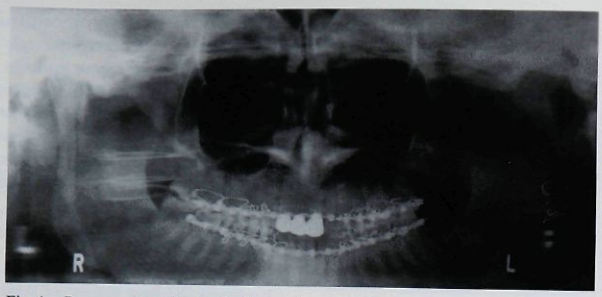

Fig 4 Panoramic radiograph shows the autogenous costochondral graft and maxillomandibular fixation.

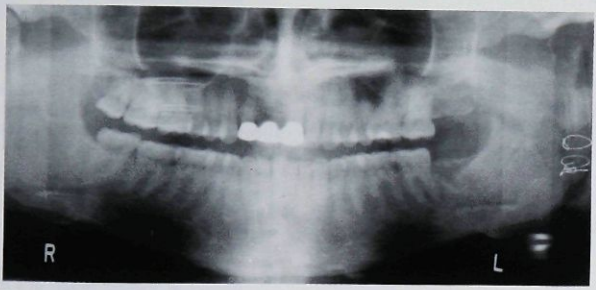

Fig 5 Postoperative radiograph. Fixation has been removed, and the graft is in excellent condition.

of the glenoid fossa. A 3-mm cartilaginous cap was left upon the osseous strut. The posterior border of the mandible was contoured to allow for the bulk of the rib in a posterior direction. Three transosseous wires were passed, and the rib was positioned and secured after maxillomandibular fixation had been established (Fig 4). A suction drain was placed at the area of the resection. The meniscus and capsule were repositioned and repaired. The remaining soft tissues were closed in their appropriate layers. Estimated blood loss was approximately 900 mL.

The patient was discharged approximately 4 days later. The only post-operative surgical complication was partial paralysis of the entire branch of the left facial nerve, which resulted from surgical stretching and manipulation. The frontal branch was approximately 90% paralyzed, while the zygomatic branch was approximately 70% paralyzed. The buccal and marginal mandibular branches exhibited approximately 50% paralysis. Ophthalmic ointment and an eye patch were provided for patient comfort.

Maxillomandibular fixation was released 5 weeks subsequent to the operation. Physical therapy was instituted immediately after the operative procedure for stimulation of the facial musculature and then, upon release of maxillomandibular fixation, to gain range of motion. Elastic traction was used for approximately 6 weeks to guide and restore proper dental occlusion. All fixation apparatus was removed 12 weeks subsequent to the operative procedure; facial nerve function had totally returned by this time. The maximum mouth opening was approximately 35 mm, with 4-mm deviation to the left. Dental occlusion was excellent. Postoperative radiographs showed excellent consolidation of the rib graft (Fig 5). The patient was placed on regular recall.

Pathology Report

The tumor fragments were fixed in formalin and processed for histologic evaluation. They consisted of bony and cartilaginous tissues. The bony por-

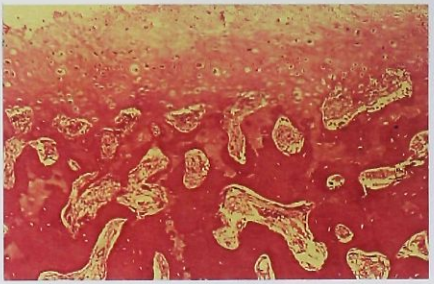

Fig 6 This photomicrograph shows a cartilage-capped bony lesion. Note the cancellous bone and cartilage showing normal cellular structure.

tion of the tumor was made of cancellous structure containing lacunar areas and few fatty tissue marrow spaces. The bone was covered by cartilage that showed a normal cellular component with different degrees of calcification (Fig 6). No malignant cellular feature was evident in the tumor, and the diagnosis of osteochondroma was made.

Discussion

Because TMJ syndrome appears to affect a large percentage of the American female population, complacency in the clinical and radiographic examination may ensue. When a patient presents with clinical features of TMJ syndrome, other disease processes must be suspected as well. Radiographic evaluation in these cases should be mandatory, and it is usually helpful in detection of neoplastic lesions.

After differential diagnosis of a benign tumor of the mandibular condyle (such as osteochondroma) is made, surgical excision of the lesion should be done as soon as is prudently possible to prevent any craniofacial deformity or, in the case of a neoplasm, malignant transformation. Immediate reconstruction with autogenous costochondral grafting to restore condylar articulation should be considered. However, delayed reconstruction has been suggested as a viable alternative in cases of small lesions. Condylar reconstruction can be performed at a later date, although with difficulty, if function is not adequate and the occlusion cannot be corrected via osteotomies, as indicated.

The patient presented in this report is free of tumor postoperatively and has not presented with any significant problems concerning function or esthetics of the reconstructed area.

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Resumen

Evaluación clínica y terapeútica de un caso de osteocondroma del cóndilo mandibular que imitaba a un síndrome de la articulación temporomandibular

Este artículo describe el caso de un paciente que tenía un osteocondroma enorme en el cóndilo mandibular, el cual fue tratado erróneamente como un síndrome de la articulación temporomandibular por aproximadamente 6 meses, antes de hacerse un diagnóstico correcto. Aunque se discuten las características clínicas y patológicas de esta lesión, se enfatiza el manejo quirúrgico y la reconstrucción inmediata con injertos autógenos costocondrales.

Zusammenfassung

Kiefergelenksstörung vorgetäuscht durch ein Osteochondrom des Kondylus: Klinische und therapeutische Bewertung eines Falles

Dieser Bericht beschreibt einen Patienten, der irrtümlicherweise etwa 6 Monate lang wegen einer Kiefergelenksstörung behandelt wurde, bevor die zutreffende Diagnose eines grossen Ostechondroms gestellt wurde. Klinische und pathologische Besonderheiten dieses Krankheitsbildes werden besprochen und die chirurgische Sofortrekonstruktion des Kondylus mit einem autogenen kostochondralen Transplantat wird besonders erörtert.