Soft Tissue Osteochondroma of the Articular Disc of the Temporomandibular Joint: A Case Report

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Soft Tissue Osteochondroma of the Articular Disc of the Temporomandibular Joint: A Case Report

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Abstract

The authors report a rare soft tissue osteochondroma, a common benign bone tumor, of the articular disc of the temporomandibular joint (TMJ). The histopathological findings were analyzed. The most important is that this is an unusual location of the tumor, not yet described in the English literature.

Introduction

Osteochondroma (OC) is one of the most common benign neoplasms; it usually develops in long bones and very rarely occurs in craniofacial region[1,2]. It represents approximately 35% to 50% of all benign tumors, and 8% to 15% of all primary bone tumors[3]. It is defined as an osteocartilaginous exostosis with cartilage-capped bony protrusion on the external surface of a bone[4]. It has been described in the head, cranial base, jaw, maxillary sinuses, condyle, ramus, body, coronoid process and symphyseal mandibular region[5].

The etiology of OC remains controversial; neoplastic, developmental and reparative origins have been discussed[1,6].

The most common symptom in the craniofacial region is limited mouth opening and facial deformity; due to the slow development of the disease, patients with complaints of pain and limited mouth opening may be treated for a misdiagnosis of temporomandibular (TMJ) disorder[7].

Soft tissue or extraskeletal OC are rather unusual osteocartilaginous lesions that arise in the soft tissues adjacent to the joint with no bony continuity. Their recognition is important to avoid unnecessary aggressive surgical management as marginal excision is adequate. Most reported lesions affected the hands and feet and presented as small discrete calcified masses rarely exceeding 2cm[8].

Histologically, the tumor includes endochondral ossification regions enclosed by hyaline cartilage. Growth of an OC is similar to that occurring at the epiphysis, with the cartilage cap acting as the epiphyseal plate. Chondrocytes migrate to the center to form cancellous bone[9].

Radio graphically, the lesion is radiopaque and easily identified on computed tomography (CT). Due to their distinct borders, these lesions can be easily followed radiographically with CT as well as plain radiography[1].

Case Report(s)

A 46-year-old white man was assisted by the Maxillofacial Surgery Group at Albert Einstein Hospital, São Paulo, Brazil, for evaluation of asymptomatic unilateral enlargements of the right TMJ region. The patient also presented with complaints of a progressively changing bite and had an associated mild facial asymmetry. On physical examination, he did not present limited mouth opening, yet he had right posterior and anterior crossbite. His mandible was slightly deviated to the left side (Illustration 1 A). On palpation, a palpable mass was observed in the soft tissues at the upper portion of the articular disc of the TMJ. The mass had appeared spontaneously 6 months previously and had grown in recent months. There was no history of trauma and any crepitation and pain in the TMJ was observed.

A maxillofacial computed tomography (CT) was made to assess the lesion and its relationship to the adjacent structures. On CT, the right TMJ showed the articular disc enclosed by a dense well-defined calcified mass with defined borders but not attached to the mandibular condyle. It was confirmed by oblique lateral radiography of the mandible (Illustration 1 B, C and D).

The mass was surgically removed via a slightly extended preauricular-temporal incision with exposure of the lesion area. The exophytic lesion was approximately 3cm to 4cm in size and had a cartilaginous appearance. No clear association with facet joints was demonstrated and it was confirmed during surgery that the mass was totally extraskeletal. After surgery, the coronoid process and mandibular condyle were preserved (Illustration 2 A and B).

Histological examination was undertaken at the Oral Pathology Department at the Dental School of University of São Paulo. The sections showed that the bulk of the lesion was made up of mature bony trabeculae located beneath the well-formed mature hyaline cartilage with isogenic groups and single chondrocytes, surrounded by the fibrous capsule at
the periphery. Active endochondral ossification was observed at the interphase between cartilage and bone (Illustration 2 C, D and E). There was no chondroblastic or chondrogenic differentiation and no cellular pleomorphism or nuclear atypia were observed. Based on the gross and histological features, a diagnosis of soft tissue osteochondroma was confirmed.

No recurrence was recorded after 6-month follow-up.

Discussion

We presented a rare case of soft tissue osteochondroma of a 46-year-old white man, located in the articular disc of the temporomandibular joint, not described in the English literature so far. The tumor showed clinical, histological and radiographic characteristics of osteochondroma, yet the etiology of this lesion in the articular disc is not yet clear. OC is a benign neoplasm commonly arising from the ends of long bones, demonstrating mature bone with cartilaginous cap and continuation of the medullary cavity with that of the long bone. Infrequently, osteochondral neoplasms arise in soft tissues, but the cause of their origin in soft tissues remains controversial[10]. The concept of soft tissue OC was first introduced in 1958 by Jaffe, who used the synonymous terms para-articular chondromas and intracapsular chondromas to describe osteochondral metaplasia occurring in fibrous joint capsule or soft tissue adjacent to the joint[11]. Reith et al.[12] suggested the following criteria for a lesion to be diagnosed as soft tissue OC: (1) the lesion presents as a single, dominant mass, both radiographically and grossly; (2) the mass consists histopathologically of both bone and cartilage, organized in a similar manner as conventional osteochondromas; and (3) the lesion is not intra-articular, that is, it does not arise within the synovial lining of a joint. Extraskeletal OC can arise from fibroblasts in the connective tissue distant from bones and joints due to unknown stimuli. The tumors typically occur in adults, usually without antecedent trauma[13,14].

The literature presents different possibilities for the pathogenesis of OC, including neoplastic, developmental or reparative origins[1,15]. Identifying the origin poses obvious difficulties. The tumor in this case was located in the articular disc of the TMJ, without history of trauma; no obvious continuity was found with the mandibular condyle in all images or during the procedure itself. Differential diagnoses such as synovial osteochondromatosis, chondrosarcoma, myositis ossificans, pseudomalignant osseous tumor, ossifying fibromyxoid tumor, and extraskeletal osteosarcoma are reserved for discrete soft-tissue masses that contain mature ossification. Anatomopathological features of the present case excluded the possibility of these lesions and it is essential to avoid unnecessary aggressive surgical procedures.

References

Illustrations

Illustration 1

Preoperative photograph. Mandible with slight deviation to the left side (A); Computed tomography scan showing irregular bony outgrowth at the right articular disc (B and C); Oblique radiography showing the unaffected mandibular condyle (D).
Illustration 2

Preauricular-temporal incision (A); Lesion area showing the unaffected and preserved mandibular condyle (B); Endochondral ossification regions enclosed by hyaline cartilage - hematoxylin and eosin staining, original magnification 80X (C and D); Low-power magnification 400X showing endochondral ossification (E).
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