

# Osteochondroma (Cartilagenous Exostosis) of the Mandible: A Case Report

## MANDİBULADA OSTEOKONDROMA (KARTİLAJİNÖZ EKZOSTOZ): BİR OLGU BİLDİRİMİ

Ümit K. AKAL\*, Selahattin OR\*, Rana NALÇACI\*\*, Kaan ORHAN\*\*, Ömer GÜNHAN\*\*\*

\* University of Ankara Faculty of Dentistry Department of Oral and Maxillofacial Surgery,

\*\* University of Ankara Faculty of Dentistry Department of Radiology,

\*\*\* Gülhane Military Medical School, Department of Pathology, Ankara, TURKEY

### Summary

**Purpose:** Osteochondromas (cartilagenous exostoses) are considered to be the most common tumor of the skeleton. Cartilagenous exostoses are tumors comprised of spogy bone capped by hyaline cartilage. They are attached to the underlying bone by either a pedicle or a broad base. Exostoses grow by proliferation of the cartilage and endochondral ossification. These lesions have the potentiality of malignant transformation with the formation of a chondrosarcoma. The coronoid process, being of embryonic cartilagenous origin, is a relatively common site for one of the lesions. Because mandibular body involvement is a rare condition, this case is presented here.

**Case Report:** In this report, a case of osteochondroma of the mandible will be presented. The tumor was located in the left mandibular border, under the mental foramen. It was removed totally. There was no recurrence during one year.

**Conclusion:** The clinical, radiographical, histological features and applied treatment were parallel with the findings of the literature. Because osteochondroma is usually asymptomatic and it may reach great sizes, early diagnosis and surgical treatment are important.

**Key Words:** Osteochondroma, Cartilagenous exostosis, Mandible, Jaw

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### Özet

**Amaç:** Osteokondromalar (kartilajinöz ekzostozlar) iskelet sisteminin en yaygın tümörleridir. Kartilajinöz ekzostozlar, hiyalin kartilaj ile kaplı spongiöz kemikten oluşan tümörlerdir. Bu tümörler, alttaki kemiğe ya bir pedikülle ya da geniş bir tabanla bağlıdır. Büyümeleri kartilajın proliferasyonu ve endokondral ossifikasyonla gerçekleşir. Bu lezyonların kondrosarkom gelişimi ile malign transformasyon yapma potansiyeli vardır. Embriyonik kartilajinöz orijini nedeniyle koronoid proses, bu lezyonların nispeten en yaygın görüldüğü bölgedir. Mandibuler korpus tutulumu nadir görülen bir durum olduğundan bu olgu sunulmaktadır.

**Olgu Raporu:** Bu raporda, mandibulada osteokondroma olan bir olgu sunulmaktadır. Sol mandibula alt kenarında, mental foramenin altında lokalize olan tümör tümüyle eksize edilmiştir. 1 yıldır takipte olan hastada herhangi bir nüks görülmemiştir.

**Sonuç:** Tümörün klinik, radyografik, histolojik özellikleri ve uygulanan tedavi, literatür verileri ile uyumludur. Osteokondroma genellikle asemptomatik olduğu ve büyük boyutlara ulaşabildiği için, erken tanı ve cerrahi tedavi önemlidir.

**Anahtar Kelimeler:** Osteokondroma, Kartilajinöz ekzostoz, Mandibula, Çene kemiği

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**Yazışma Adresi:** Dr. Ümit K. AKAL

Ankara Üniversitesi Dişhekimliği Fakültesi  
Ağız, Diş, Çene Hastalıkları ve Cerrahisi AD  
6500 Beşevler, ANKARA

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One of the most common bony lesions of the axial and appendicular skeleton is the osteochondroma, also known as cartilagenous exostosis or osteocartilagenous exostosis. This cartilage-capped growth accounts for 35.8% of benign bony tumors and 8.5% of bony tumors overall (1). The osteochondroma and chondroma are closely

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related, the former representing a situation when the tumor forms bone as well as cartilage. Because of this relationship, osteochondromas generally are found in the same sites as chondromas. The coronoid process, being of embryonic cartilaginous origin, is a relatively common site for one of these lesions (2). Although the average osteochondroma is predominantly osseous, the bony mass is produced by progressive endochondral ossification of its growing cartilaginous cap. They may occur in or on any bone in which endochondral ossification develops, and commonly arise at the site of tendon insertions, with the direction of growth along the line of the tendinous pull. Growth of this tumor usually parallels that of the patient, and the lesion often becomes quiescent when the epiphyses have closed (3). Many osteochondromas are asymptomatic and therefore escape detection (4).

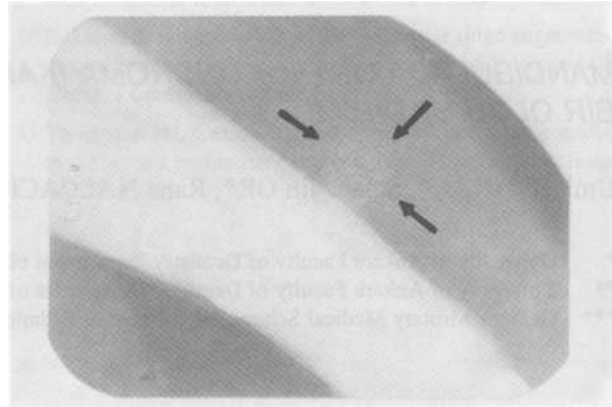
Osteochondromas are usually found in young patients. Approximately 60% to 80% of patients with these tumors are under 21 years of age. There is no sex predilection with this tumor (3,4).

Osteochondromas should be surgically removed. Because they are less aggressive tumors than the chondromas, the treatment need to be as radical. However, care must be taken to avoid confusion with an osteogenic sarcoma (2).

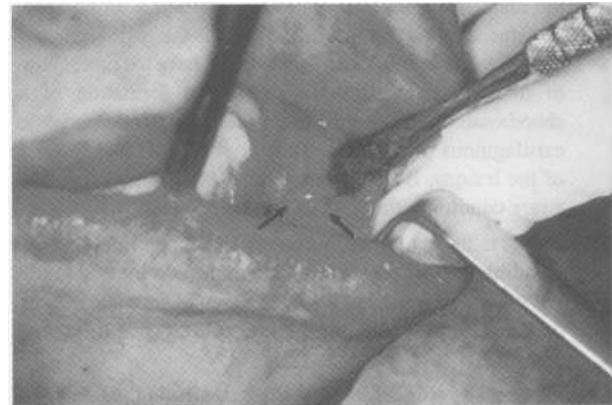
In this article, a 19-year-old male with an osteochondroma of the left posterior border of the mandible is presented.

### Case Report

A 19-year-old male went to University of Ankara, Faculty of Dentistry because of a hard swelling on the left posterior border of the mandible. He indicated that the lesion was slow growing and painless and he complained with a bad sense on palpation. Intraoral and extraoral examinations revealed a smooth nodular-shaped lesion on the left posterior border of the mandible between the second premolar and first molar teeth. Radiographically there was a pediculated, slight radiolucent, ovoid-shaped lesion on the same location (Figure 1). In the local anesthesia

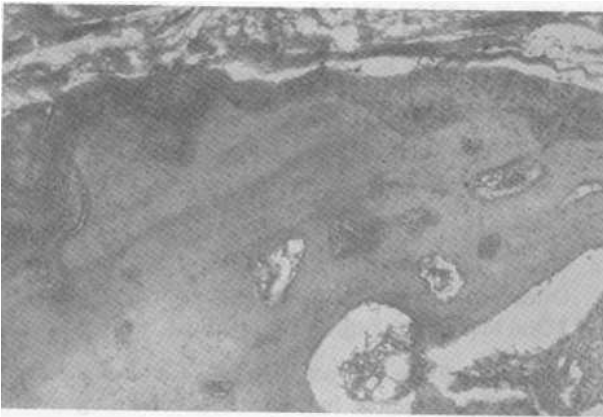


**Figure 1.** The radiographical appearance of the tumor on occlusal radiograph.



**Figure 2.** Intraoperative appearance of the tumor after elevation to the level of mental foramen.

the hard mass was excised totally by intraoral approach. The tumor was attached to the underlying bone by a pedicle. For that reason, the excision was done easily. Because the lesion was under the mental foramen, care was taken for preservation of mental nerve (Figure 2). Gross examination described a nodular piece of gray-white tissue that measured 0.7 x 0.6 x 0.6 cm. Histopathologically, the lesion was characterized by bone trabeculae that had partially cortical and partially medullar features capped by thin hyalin-



**Figure 3.** Histological appearance of the tumor (H.E.x 100).

ized cartilage layer (Figure3). The histopathological diagnosis was "osteochondroma". The post-operative period was uneventful and there was no recurrence in 1 year.

### Discussion

Cartilagenous exostoses (osteochondromas) are tumors comprised of spongy bone capped by hyaline cartilage. They are attached to the underlying bone by either a pedicle or a broad base. In the present case, the tumor was attached to the underlying bone by a pedicle. Exostoses grow by proliferation of the cartilage and endochondral ossification. When totally ossified, they have been termed "osteomas" (5). Because many osteochondromas are asymptomatic, therefore escape detection and they may be diagnosed in the later stages, one can be considered that osteochondromas are rare tumors and osteomas are the more common tumors. Slow expansion of osteochondroma does not cause symptoms for a long time; therefore they may reach an impressive size (5). In the present case, because the patient complained with a bad sense on palpation due to the location of the tumor on the mandibular border, the early diagnosis could be established.

Osteochondromas can occur singly or as part of an autosomal dominant syndrome known as osteochondromatosis. This distinction is important because although solitary osteochondroma has a low incidence of sarcomatous transformation (ap-

proximately 1%), patients with osteochondromatosis have an 11% risk of sarcomatous change. Scintigraphy is useful in identifying multiple lesions (1). But, osteochondromas are usually solitary tumors (5).

Although osteochondroma is considered the most common tumor of skeletal bones, it is relatively rare in the maxillofacial region (6). In addition, of the reported cases of this tumor in the maxillofacial region, most have been located in the mandible, primarily in the condylar region or at the tip of the coronoid process (1, 7-16). However, ca-ses have been reported in the posterior maxilla, maxillary sinus, mandibular symphysis, mandibular angle, parasymphyseal area and zygomatic arc (4-6,17,18). In the present case, the location is very rare; for these reason this case is interesting.

The origin of osteochondroma has been controversial. One early theory stated that herniation of cartilagenous precursor cells through defects in the epiphysial periosteal cuff allowed eventual formation of such lesions. Another theory stated that precursor cells were displaced from the epiphysis to the metaphyseal area. Some are of the opinion that hyperplasia of cartilagenous cells occurs because of tensional forces at points of tendonous insertion, giving rise to the lesion, whereas others believe that pleuripotential cells exist in periosteum that form chondroblasts and give rise to an osteochondroma. None of these theories is sufficient to explain all cases of osteochondroma(1). It is still uncertain whether this lesion is developmental, neoplastic, or reparative (5). As a reflection of the degree of tissue activity, this lesion has been termed "osteocartilagenous exostosis" by some authors (19,20), whereas others have termed it "osteochondroma" (5,21). The tumor-like lesion develops in a type of tissue that resembles perichondral matrix (5). Thus, it is likely that residues of embryonic cartilage from the cartilagenous precursors of the cranial bones, i.e., the cartilagenous primordial cranium, are the basic tissue in which the growth starts. However, not only those parts of the mandible that are derivatives of cartilage, such as articular cartilage and the coronoid process, but also persisting parts of the

embryonic skeleton can be the origin of these lesions (5).

As in the present case, with the persistent growth potential of Meckel's cartilage, one can explain the development of osteochondromas in this area embryologically. Kermer et al. (5) prefer this hypothesis to that of pluripotential periosteal cells being the origin of the lesion.

The microscopic appearance of an osteochondroma in many ways resembles that of a condyle prior to cessation of endochondral ossification. There is a distinct cap of fibrocartilage containing active nests of chondrocytes overlying well-formed trabeculae of lamellar bone (6). The histological features of the present case was same. Histopathologically, the lesion was characterized by bone trabeculae that had partially cortical and partially medullar features capped by thin hyalinized cartilage layer.

In these tumors surgical removal must be carried out. Depending on size and location, the extent of excision may vary. The lesion presented here exhibited characteristics of benign neoplasia, and indicate that the surgical technique selected should ensure complete removal to prevent recurrence. Osteochondroma, if benign, is usually cured by complete excision, Dahlin and Unni (3) consider the presence of an osteocartilaginous exostosis insufficient reason for surgical extirpation because malignant transformation occurs in only about 1% of clinically recognized osteochondromas. Removal is indicated if the tumor is unsightly, is producing pain or disability, has radiological features suggestive of malignancy, or shows an abnormal increase in size (3).

As a result; the clinical, radiographical, histological features and applied treatment were parallel with the findings of the literature. Because osteochondroma is usually asymptomatic and it may reach great sizes, early diagnosis and surgical treatment are important.

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