

Osteochondroma of the distal humerus: A rare location

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ABSTRACT

Osteochondroma of the medial condyle of the humerus is rare; hence, diagnosis can be challenging as it may be confused with other causes of swelling around the elbow joint. This can lead to compression of neurovascular structure. We present a case of left medial condyle humerus osteochondroma with ulnar nerve involvement and conduct a literature review of this rare condition. A 25-year-old male patient presented with swelling around the left elbow joint for 1 year and tingling and numbness along ulnar nerve distribution for the last 3 months. He underwent an X-ray, magnetic resonance imaging, electromyography, and nerve conduction velocity that confirmed the diagnosis of an osteochondroma with ulnar nerve involvement. An excisional biopsy was subsequently done. In conclusion, the case is an atypical location of osteochondroma. The history, clinical presentation, diagnostic imaging, and management outlined may help in the early identification and management of this rare but complicated condition.

Key words: Elbow, Electromyography, Excisional, Magnetic resonance imaging, Osteochondroma

Osteochondromas represent the most common bone tumor accounting for 20–50% of all benign osseous tumors [1,2]. Almost half of them are located around the knee [3]. Long bones are the preferred site, particularly the distal femur 30%, proximal tibia 15–20%, and humerus 10–20%, followed by feet and hands 10%. In these bones, osteochondromas are situated at the metaphysis and grow away from the joint [4]. Long bones of the lower extremities are at higher risk for the development of these tumors. Even though the two top locations are the same (distal femur and proximal tibia) the proximal fibula ranks third place for osteochondromas instead of the humerus [5]. Flat bones such as sternum, scapula, ribs, and hips are involved in <5% of cases [6]. Solitary osteochondromas are rarely located at the spine [7], whereas 68% of patients with HME have spinal osteochondromas [8]. Although any part of the vertebral column can be affected, the cervical spine is involved in 50% of the cases [6], especially the C2 vertebra followed by C3 and C6 [9,10]. The second most frequent location is the thoracic spine, particularly the T8 vertebra followed by T4, whereas the lumbar spine is the least common site [6,8,11]. Grossly, osteochondroma is a lobulated sessile or pedunculated lesion arising from the surface of the bone with a somewhat cauliflower-like appearance. The cartilage cap has a shiny glistening bluish to gray appearance.


There is a thin fibrous capsule or perichondrium which shows continuity with the periosteum of the underlying bone. The thickness of the cartilage cap of 1–3 cm is considered normal in children due to the ongoing growth process. The cartilage cap is either absent or only a few millimeters in thickness in the fully mature skeleton. Cap thickness exceeding 2 cm in an adult should raise suspicion for malignancy. Varying degrees of mineralization may be present within the cartilage cap.

There has not been a single reported case of osteochondroma of the medial condyle of the distal humerus. This is a case of a 25-year-old man who underwent surgery for an osteochondroma of the medial condyle of the distal humerus.

CASE PRESENTATION

A 25-year-old male student by occupation presented with swelling around their left elbow for 1 year. He also presented with tingling and numbness along the ulnar border of the forearm and hand for the past 3 months. The swelling was gradual in onset, and slowly increased in size over the past 1 year. The swelling was associated with mild pain but not with fever. There was no history of trauma.

On admission, his vitals were stable. He had a single swelling over the posteromedial aspect of the left elbow of size approximately 4 × 3 cm, hard in consistency, fixed to the underlying bone. The overlying skin was normal. There was

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no transillumination and no fluctuation. The margins of the swelling are well-defined. The patient had restricted extension (ROM 20–110°). The neurovascular examination was normal. There was no lymphadenopathy or organomegaly.

His blood parameters were normal. An X-ray of the elbow joint revealed an osteochondroma involving the left medial condyle of the humerus (Fig. 1). Magnetic resonance imaging (MRI) showed an extension of the tumor and normal soft-tissue anatomy (Fig. 2). The electromyography and nerve conduction studies demonstrated both motor, as well as, sensory ulnar axonal neuropathy.

During surgery, the patient was positioned in the left lateral position and marking was done (Fig. 3a). A 10 cm incision centered over the posterior aspect of the elbow joint was given. The ulnar nerve was dissected and held with an infant feeding tube (Fig. 3b). An osteochondroma was localized (Fig. 4a) and its margins were dissected all around (Fig. 4b). It was restricting

the extension of the elbow joint by getting locked with olecranon. It was excised with the help of an osteotome, measured, and sent for histopathological examination (Fig. 5). The ulnar nerve was subcutaneously transferred anteriorly. The elbow was moved with a full range of motion. A wound wash was given and the wound was closed over layers. There were no intraoperative complications.

A post-operative X-ray was done (Fig. 6). He recovered well and had a full range of motion and was discharged on the 3rd post-operative day. Histopathology confirmed the diagnosis of osteochondroma.

DISCUSSION

The above case documents the rare location of the osteochondroma. Osteochondromas are frequently asymptomatic and found by chance. A lump or mass that is not painful or tender is part of



Figure 1: X-ray of the left elbow

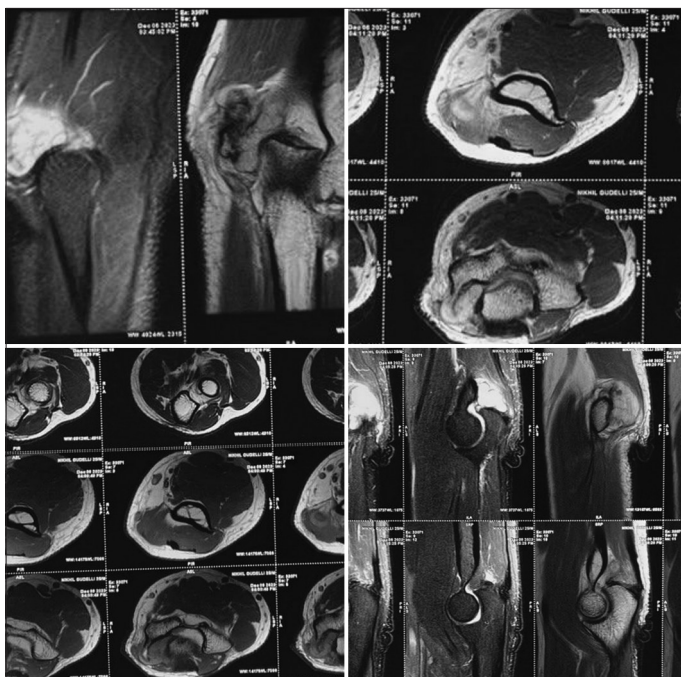


Figure 2: Magnetic resonance imaging of the left elbow



Figure 3: (a) Position and markings of the tumor; (b) Ulnar nerve dissection

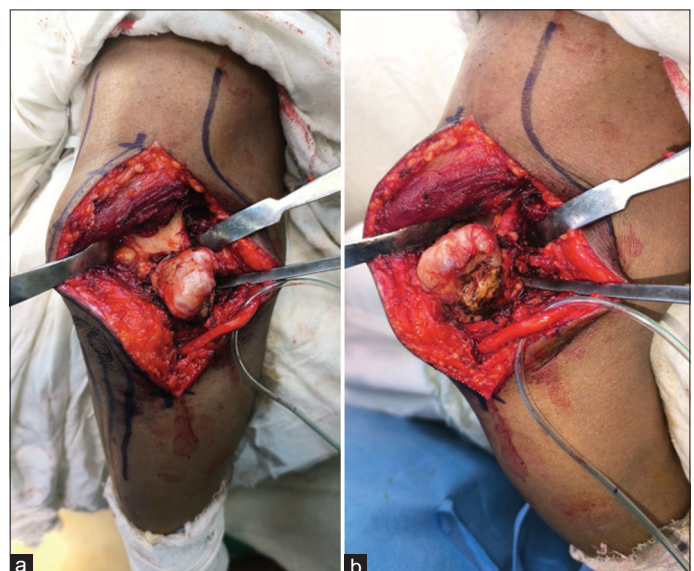


Figure 4: (a) Localization of osteochondroma; (b) dissection around the lesion

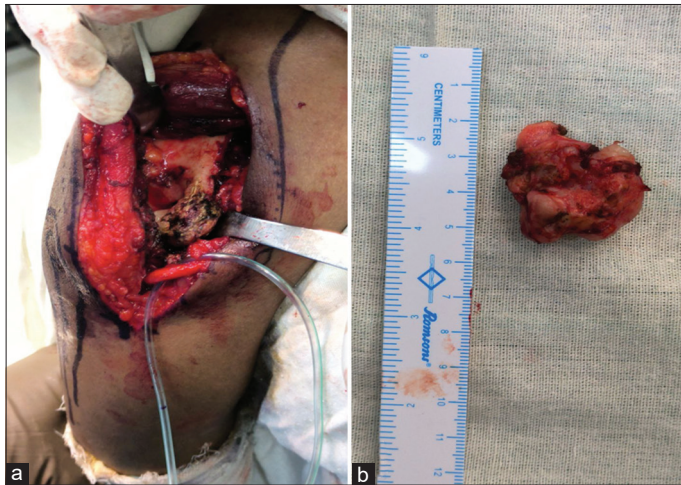


Figure 5: (a) After excision of the tumor; (b) Measurements of the excised tumor



Figure 6: Post-operative X-ray of the left elbow

the clinical presentation. However, discomfort, palpable masses, and pathological fractures, which appear in roughly 17–94% of patients, are the most prevalent symptoms and signs [12]. While compressive neuropathy, bursa development with subsequent bursitis and limb deformity is also mentioned in the literature [13,14].

As the occurrence of this tumor at the medial epicondyle is rare, the involvement of the ulnar nerve is also rare [15]. An osteochondroma can occur near a nerve or blood vessel, the most common being the popliteal nerve and artery. The affected limb can exhibit numbness, weakness, loss of pulse, or color changes [16]. The tumor can be found under a tendon, resulting in pain during relevant movement, and thus causing restriction of joint motion [17]. A review of the literature showed only one case of osteochondroma at the medial condyle humerus with ulnar nerve involvement [15]. The patient 34-year-old had severely restricted elbow motion, pain, and hypoesthesia of the fourth and fifth fingers. The lesions were surgically removed, together with subcutaneous anterior transposition of the ulnar nerve. At the end of the post-operative 8 months, complaints of the patient disappeared except for slight hypoesthesia in the fingers. A literature search revealed only a single case of solitary osteochondroma associated

with peripheral nerve compression. The reasons for the pressure on the ulnar nerve in the cubital tunnel are reported as ganglion, lipoma, hematoma, chondromatosis, synovitis, piece of fractures, callus, heterotopic bone, and arthrosis [18]. Osteochondromas can also involve epiphysis of long bones that have open physal cartilage. They are believed to have started from the periosteum and are a developmental deformity rather than a real tumor. The osteochondroma at the distal humerus is the rarest site.

Diagnosis of osteochondroma can be done with just an X-ray. Sometimes an MRI or computed tomography scan may be required. Immobilization by splinting, physiotherapy, NSAIDs, and local anesthetic injections are examples of conservative care strategies. When osteochondromas cannot be treated conservatively, the tumor must be removed surgically under anesthesia. The presence of osteochondroma at multiple sites and abrupt cease in size after the third decade of life must be considered warning signs of its malignant transformation, which demands appropriate management.

CONCLUSION

The case presented adds to the body of evidence of a rare location of an osteochondroma. The risk history, clinical presentation, diagnostic imaging, and management outlined may help in the early identification and management of this rare but complicated condition.

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AUTHOR CONTRIBUTIONS

The authors confirm sole responsibility for the following: study conception and design, data collection, analysis, and manuscript preparation.

DECLARATIONS

Ethics approval and consent to participate Ethics approval was obtained from the Research and Ethics Committee at the HBTMC and Dr. R N Cooper Hospital. The patient's consent was obtained before acquiring and summarizing the case for publication. Consent for publication written informed consent was obtained from the patient for the publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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