

Arthroscopic Excision of Intra-articular Osteochondroma of the Elbow: A Case Report

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Osteochondromas are one of the most common benign bone tumors usually involving extraarticular metaphysis of long bone. Solitary intra-articular osteochondroma arising from the elbow joint has rarely been reported. We present a case of 23-year-old female who had pain and limited motion of the left elbow as a result of intraarticular osteochondroma of the distal humerus. Arthroscopic excision of the osteochondroma yielded complete relief of symptoms. Absence of recurrence was confirmed radiographically at two years after surgery. To the best of our knowledge, this is the first report of osteochondroma of the elbow successfully treated arthroscopically.

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Key Words: Elbow; Osteochondroma; Arthroscopy

Osteochondromas, one of the most common bone tumors of the human skeleton, are benign osseous growths capped with hyaline cartilage. The tumor is usually located extra-articularly in the proximal femur and proximal humerus, and is asymptomatic.¹⁾ Osteochondromas have a typical, diagnostic radiographic appearance. The lesion is composed of cortical and medullary bone protruding from and continuous with underlying bone.²⁾ A simple surgical excision has been universally accepted for solitary osteochondroma. Intra-articular osteochondromas of the elbow are rare.^{3,4)} We report on a patient who presented with pain and discomfort of the left elbow due to a solitary intra-articular osteochondroma, which was treated successfully by arthroscopic excision.

Case Report

The patient was a 23-year-old right-handed slender female with insidious pain and limited active range of motion of the left elbow for the past 1 year, especially during elbow flexion and overuse. There was no history of trauma. Despite conservative treatment with oral and topical nonsteroidal anti-inflammatory drugs and physical therapy at various clinics, her pain continued

to worsen.

Physical examination detected a palpable bony hard mass of approximately 1×1 cm in size and pain over the antecubital fossa of the left elbow. There was no restriction in the passive range of movements of the elbow joint. However, there was restricted active range of motion due to pain occurring at terminal extension and terminal flexion.

Simple radiography showed a round bony mass arising from the anterior aspect of just proximal to the left coronoid fossa. The 3-dimensional and multidirectional computed tomography (CT) scans showed more clearly that a round osseous mass extended toward the cortex at the anterior aspect of the coronoid fossa, and there was continuity of the cortex of the lesion with the underlying bone and continuity of the medullary cavity of the lesion with that of the underlying bone (Fig. 1). Magnetic resonance imaging showed a prominence with the same intensity as a bone, arising from the distal humerus within the joint capsule. There was moderate synovitis and no bone edema (Fig. 2). Whole body scintigraphy showed marked increased uptake in the left distal humerus but not in other extremity or trunk bones. Based on these findings, we made the diagnosis of intra-articular osteochondroma of the left elbow joint, and with no evidence

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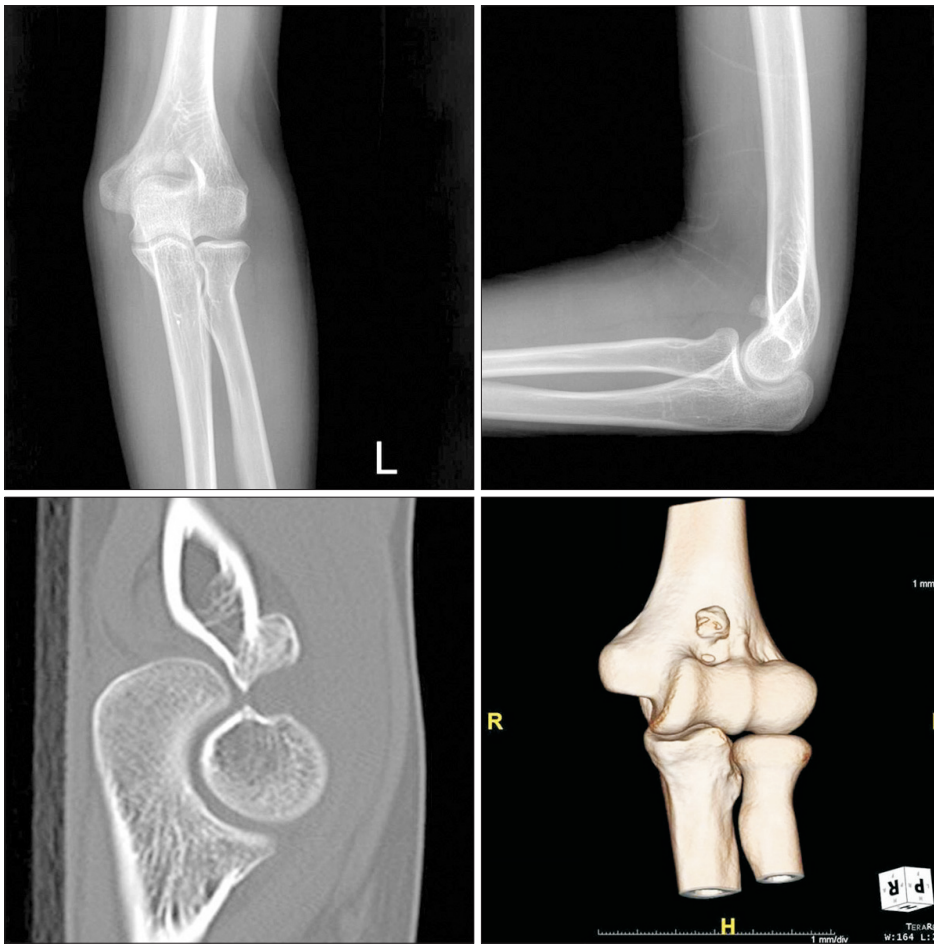


Fig. 1. Simple radiography and 3-dimensional computed tomography shows benign tumor involving the distal humerus with a stalk.

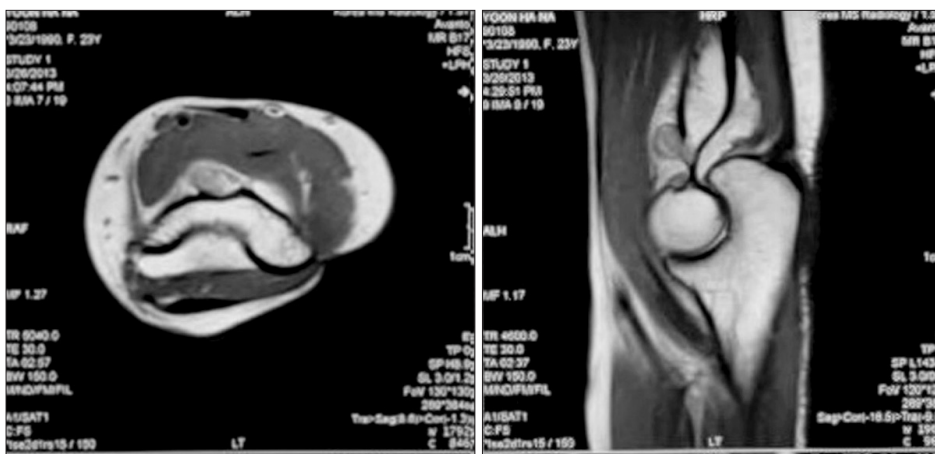


Fig. 2. Magnetic resonance imaging images show intra-articular osteochondroma with cartilaginous cap.

of extra-articular pathology, we decided to perform arthroscopic excision of the tumor.

Under general anesthesia, with the patient in prone position, arthroscopic anterolateral and anteromedial portals were made to access the anterior compartment. A retraction portal was made at 2 cm above the proximal lateral portal, then soft tissue was retracted using a thin elevator to provide an appropriate

surgical view. Ligament and cartilage were intact. A small free fragment was partially detached from the cartilaginous cap and a moderate degree of intra-articular synovitis, which was debrided, was observed during the arthroscopic examination.

After removal of surrounding synovium, the anterolateral view showed a 1.5×1.5 cm-sized osteochondroma with a cartilaginous cap. The loosely attached cartilaginous cap was then

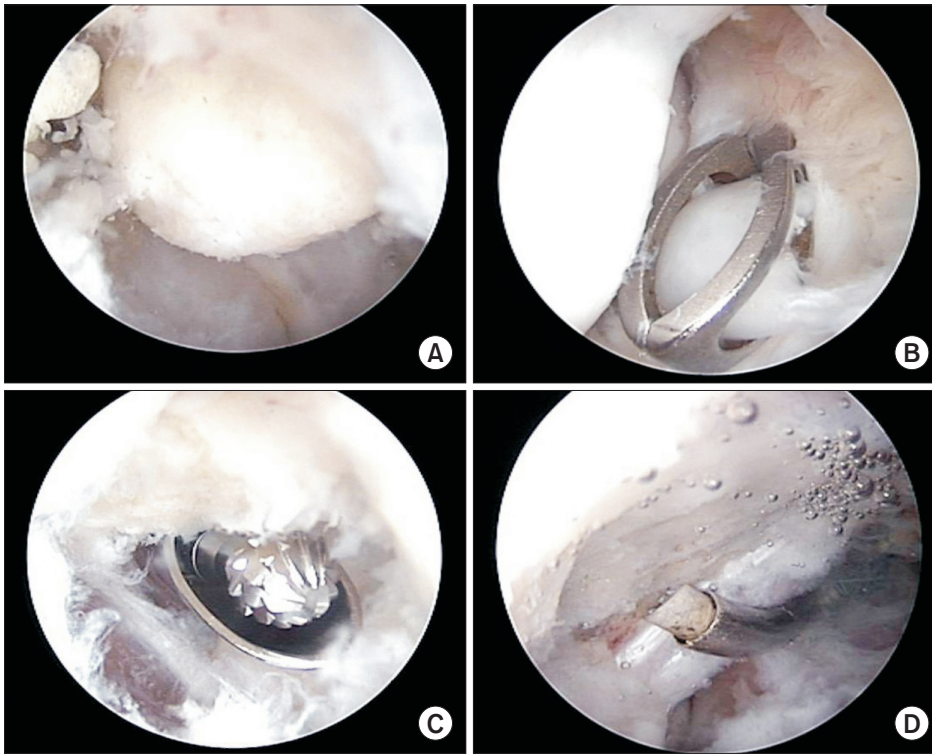


Fig. 3. (A) Bony mass at distal humerus seen from arthroscopic anterolateral portal. (B) Removal of cartilagenous cap with grasper. (C) Excision of remaining bony stalk with burr. (D) Completion of excision with meticulous cauterization with Arthrocare®.

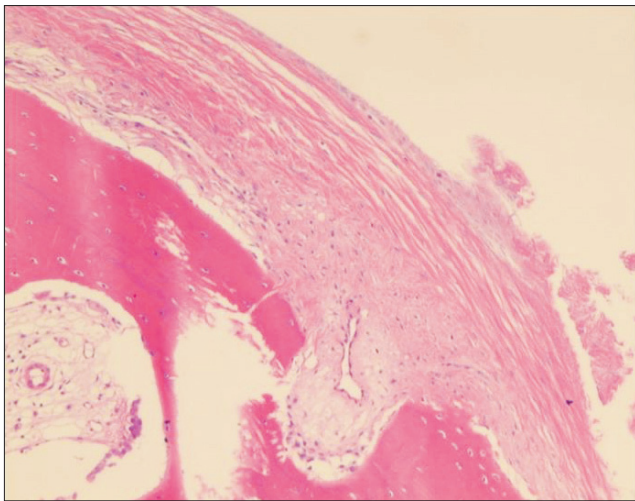


Fig. 4. Histopathology shows the cartilage cap appears pale blue, with underlying bone appearing pink (H&E, $\times 40$).

excised using a small osteotome, and the fragment was then removed using a Tendon Graft Passing Forcep (Arthrex, Naples, FL, USA). Remnant bony lesion was excised using a small osteotome, burr, and shaver (Fig. 3).

The histopathologic report showed that the bony outgrowth was mainly a cancellous bone with a bluish gray cartilaginous cap, a feature consistent with osteochondroma. The cartilaginous cap contained hyaline cartilage with 2 mm thickness. There was no evidence of malignancy (Fig. 4).

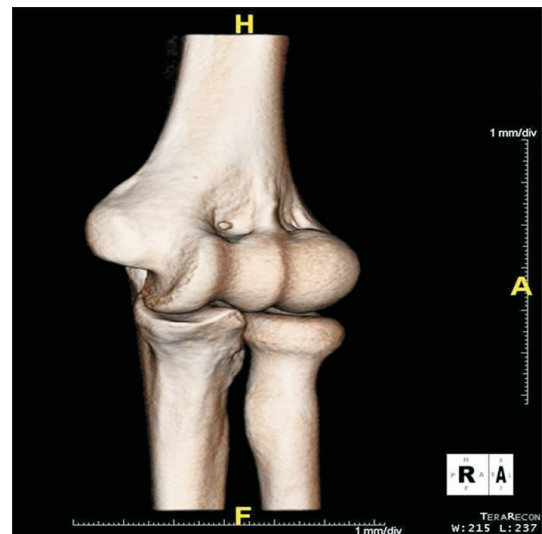


Fig. 5. After two years, 3-dimensional computed tomography radiography shows no recurrence.

At two year follow-up, the patient was asymptomatic and was involved in full activities. There was no palpable mass, no limited range of motion, and no pain (visual analogue scale 0). Simple radiography and CT follow-up showed no recurrence (Fig. 5).

Discussion

Osteochondromas or exostoses are derived from aberrant

cartilaginous tissue of the physis that separates from the periphery of the growth plate during growth. The tumors take the form of cartilage-capped bony projections or outgrowth on the surface of bones. The cap is synonymous with the growth plate because it grows by endochondral ossification and is composed of hyaline cartilage. This growth must cease by skeletal maturity.

In a recent Mayo Clinic series, osteochondromas accounted for 34.9% of benign bone tumors, and 10% of these patients had multiple hereditary exostoses, an autosomal dominant disease with an estimated prevalence of 1 in 50,000.⁵⁾

Osteochondromas are mainly seen on the distal femur, the proximal tibia, and the proximal humerus. Solitary osteochondromas are not common around the elbow, and development in a joint is rare.⁶⁾

Osteochondromas generally occur around the growth plate of long bones in a skeletally immature person and move towards the diaphysis with the connected bone. Therefore, osteochondromas located within the articular compartment of a joint in an adult are rare.

Despite the benign histologic nature of osteochondroma, the anatomic location may cause major problems due to compression of nerves or blood vessels. While the extra-articular tumors are usually symptomless, intra-articular tumors cause pain and discomfort with restrictions in the range of movements. The size of the cap is very important to rule out malignant transformation, as a cap larger than 1 cm suggests malignancy. Surgery was performed not only because of pain and limited motion but also because the exact nature of the lesion was not known. Therefore, conventional surgical excision is the treatment of choice for osteochondromas.⁶⁾

There is one case report of open resection of an intra-articular osteochondroma of the elbow and three case reports of arthroscopic resection of an osteochondroma of the knee.^{4,7-9)}

Arthroscopic technique provides better cosmetic results, more rapid postoperative recovery, and better relief of pain in the postoperative period compared to the traditional open approach.

We used two interchangeable anteromedial and anterolateral portals for viewing and working portals and one proximal an-

terolateral portal for soft tissue retraction. This is the best way to visualize and resect the bony mass in the anterior compartment of the elbow. We used two portals, which enables use of an osteotome from two different directions for resection.

As proved by our case as well as the literature, arthroscopic excision is a suitable treatment and the results are satisfactory.^{4,7-9)}

To the best of our knowledge, this is the first reported arthroscopic resection of an osteochondroma in the elbow joint, a technique found successful in eliminating clinical symptoms.

In conclusion, solitary intra-articular osteochondroma of the elbow is an unusual case, which can be managed successfully with arthroscopy.

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