

A Rare Case of Synovial Osteochondromatosis of the Bicipital Radial Bursa

Fukuoka N, Nakamura O*, Kaji Y, Yamagami Y, Nishimura H, Yamaguchi K, Tobiume S and Yamamoto T

Department of Orthopedic Surgery, Kagawa University Faculty of Medicine, Japan

*Corresponding author: Nakamura O, Department of Orthopedic Surgery, Kagawa University Faculty of Medicine, 1750-1 Ikenobe, Miki-cho, Kita-gun, Kagawa 761-0793, Japan, Tel: +81-87-891-2195; E-mail: osamunak@med.kagawa-u.ac.jp

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Abstract

Introduction: Synovial osteochondromatosis of a bicipital radial bursa is a very rare condition. We report herein a case of synovial osteochondromatosis of a bicipital radial bursa.

Presentation of Case: A 52-year-old man presented with a 20-year history of a slowly enlarging mass on the left elbow. Radiographs revealed multiple oval calcified lesions in the anterior aspect of the elbow. A mass lesion was located in the bicipital radial bursa on magnetic resonance imaging (MRI) and computed tomography (CT). Surgical resection was performed. Histological examination of the excised tissue showed that the resected nodules comprised numerous hyaline cartilage-like areas surrounded by synovial membrane, suggesting synovial osteochondromatosis of the bicipital radial bursa. At 4 years postoperatively, the clinical outcome is excellent with no recurrence.

Discussion: Synovial osteochondromatosis is usually an intra-articular condition. Extra-articular involvement may thus represent a diagnostic problem. MRI and CT are helpful in diagnosing and evaluating the nature, calcification, and location of the lesion. CT was particularly useful in evaluating the location of the lesion and the calcification using CT in this case. Bicipital radial bursitis is infrequent, with few reports describing this disease, and synovial osteochondromatosis of the bicipital radial bursa is an extremely rare condition.

Conclusion: A very rare case of synovial osteochondromatosis of the bicipital radial bursa was described. In the case of a gradually enlarging calcifying mass in the elbow, synovial osteochondromatosis of the bicipital radial bursa should be considered among the differential diagnoses.

Keywords: Synovial osteochondromatosis; Bicipital radial bursa; Elbow and Surgery

Introduction

Primary synovial osteochondromatosis is an unusual condition, generally involving otherwise normal joints. Joints commonly affected in descending order of frequency are the knee, hip, glenohumeral joint, elbow and ankle, though any articulation may be involved. Synovial osteochondromatosis has also been encountered in tendon sheaths and periarticular bursae [1].

The bicipital radial bursa, which lies at the insertion of the biceps tendon onto the radial tuberosity, is a rare site of chronic bursitis [2]. Furthermore, synovial osteochondromatosis of a bicipital radial bursa is a very rare condition, with only one report found in the orthopedic literature [3].

We describe herein a very rare case of synovial osteochondromatosis of a bicipital radial bursa along with the clinical, radiological, and pathological findings.

Presentation of case

A 52 year old man presented with a 20-year history of a slowly enlarging mass on the left elbow. He complained of pain and slight limitation to the range of motion (ROM) of the elbow. Physical

examination revealed a soft tissue mass located on the radial aspect of the elbow. The mass lesion, measuring 5 cm × 6 cm × 7 cm, was hard, well-defined, non-mobile, and non-tender. Neurological examination revealed normal results. No abnormalities were noted from peripheral blood examination.



Figure 1: Radiographs showing multiple oval calcified lesions in the anterior aspect of the elbow.

Radiography revealed multiple oval calcifications on the anterior aspect of the elbow (Figure 1). T1 and T2 weighted magnetic

resonance imaging (MRI) showed a mass lesion of inhomogeneous intensity around the radial head. No contrast enhancement was observed (Figure 2A-2C). Computed tomography (CT) revealed multiple areas of calcification around the radial head. The mass lesion was considered to be located in the bicipital radial bursa based on the results of MRI and CT (Figure 3A-3B).

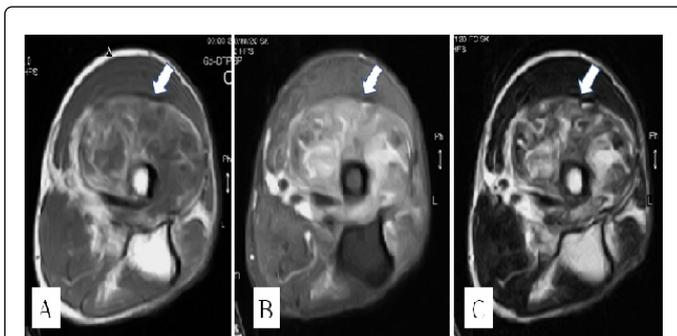


Figure 2: Magnetic resonance imaging reveals a mass with inhomogeneous intensity located around the radial head A) Axial T1-weighted image showing a lesion with low signal intensity located around the radial head. B) Coronal T2-weighted image showing the lesion with high signal intensity. C) Axial T1-weighted magnetic resonance image with gadolinium diethylene enhancement, showing a cystic mass located around the radial head.

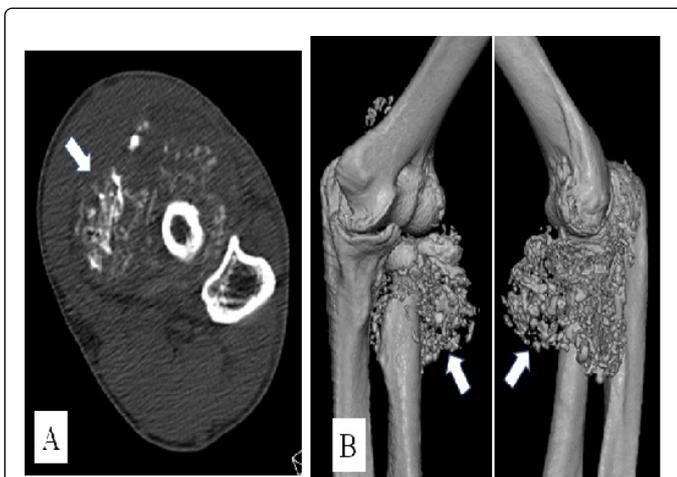


Figure 3: CT reveals that the heavily ossified mass is attached to the cortex and shows no areas of lucency. The cortex underlying the osteoma is intact. A) Axial image of the left elbow. B) Three-dimensional image of the left elbow.

The patient underwent surgical resection of the mass lesion using an anterior approach. A linear incision was made on the elbow. The superficial and deep radial nerve branches were identified and avoided. Multiple cartilaginous nodules covered with synovial tissue were identified, located between the distal tendon of the biceps brachii muscle and the anterior part of the radial tuberosity. These lesions extended to the radial neck and head. This synovial tissue seemed to represent bicipital radial bursa, and multiple osteochondral loose

bodies and clear mucosal fluid were apparent in the bursa. These lesions were excised piece by piece.

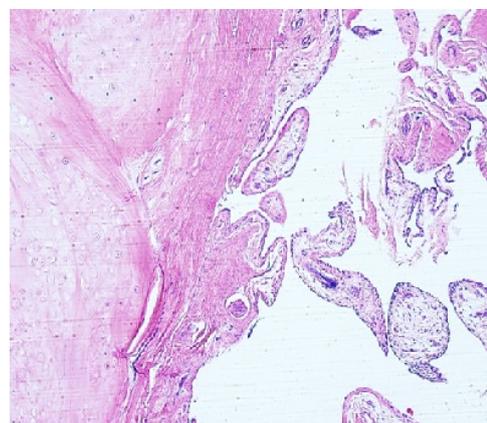


Figure 4: Histological examination of the excised tissue showing that the resected nodules comprise numerous areas of hyaline cartilage like tissue surrounded by synovial membrane.

Operative specimens were sectioned and stained with hematoxylin and eosin. Histological examination of the excised tissues showed that the resected nodules comprised numerous hyaline cartilage-like tissues surrounded by synovial membrane (Figure 4). The slide was imaged under microscopy (Zeiss LSM 710: Carl Zeiss, Munich, Germany). The diagnosis of synovial osteochondromatosis of the bicipital radial bursa was made based on both operative and histological findings. At final follow-up, 4 years after surgery, function of the left elbow had completely recovered and no pain was present. He had been able to live and perform activities of daily living without any problems. Plain radiography at the same time showed no evidence of recurrence (Figure 5).



Figure 5: Final plain radiographs at 4 years after surgery show no evidence of recurrence.

Discussion

Synovial osteochondromatosis is characterized by the formation of multiple osteochondral nodules arising from metaplasia of synovial tissue in the joint capsule, tendon sheath, or burs [4-7]. Large joints are

more commonly involved than small joints, with the knee as the most commonly involved joint, followed by the elbow, hip, ankle, and shoulder. Signs of this disease are nonspecific, including pain, swelling, joint effusion, decreased ROM, and sometimes adjacent muscle atrophy. Loose bodies may be palpable beneath the skin [8,9].

Synovial osteochondromatosis is usually intra-articular. Extra-articular involvement may thus present a diagnostic problem. Soft-tissue masses showing spotty shadows on plain radiography, especially with osseous involvement, as in the present patient, may be mistaken for chondrosarcoma. For accurate diagnosis of such masses, osseous involvement of synovial osteochondromatosis is important to rule out. Some authors have reported that MRI and CT are helpful in diagnosing and evaluating the nature, degree of calcification, and location of lesions [10]. Multiple osteochondral loose bodies are observed on CT, and fluid collection and bursal formation with a thin or thick wall are observed on MRI. In the present case, evaluation of the location of the lesion and degree of calcification using CT was particularly useful.

Synovial osteochondromatosis is classified into two groups: primary or secondary. The primary type is characterized by undifferentiated stem cell proliferation of the stratum synovial, while factors associated with the secondary type are trauma, degeneration, joint disease, osteochondritis dissecans, rheumatoid arthritis, and tuberculosis [11]. Each group shows synovial chondrometaplasia, but the histological patterns are dissimilar. In cases of secondary synovial chondrometaplasia, the initiating factors are usually obvious, and the lesions are nonaggressive. Primary synovial chondrometaplasia, on the other hand, is aggressive and associated with a high incidence of recurrence [6,12,13]. The present case seemed to involve the primary type, because of the absence of previous trauma or inflammatory pathologies. Fortunately, no evidence of recurrence was seen at final follow-up, 4 years after surgery.

Milgram classified the stages of synovial osteochondromatosis into three phases in 1977. The early phase (phase 1) is the active intra-synovial disease phase. No intra-synovial loose bodies are present. In the transition phase (phase 2), intra-articular loose bodies appear together with active intra-synovial proliferation. In the late phase (phase 3), active intra-synovial disease is absent, but multiple osteochondral loose bodies remain [7]. Milgram advocated synovectomy to treat active phase 1 disease, synovectomy with removal of chondral fragments for phase 2 diseases, and removal of multiple chondral bodies without synovectomy for phase 3 diseases [12]. In the present case, removal of multiple chondral bodies was performed because phase 3 diseases were diagnosed.

The bicipital radial bursa lies between the radial tuberosity and the insertion of the biceps brachii tendon. Bursitis leading to enlargement of the bursa can result from a number of causes, most frequently repetitive mechanical trauma [14]. Other causes include infection, inflammatory arthropathic, chemical synovitis, bone proliferation, and synovial chondrotoxic [3,15]. In normal patients, the bursa is not visualized on CT or MRI. CT demonstrates an inflamed bursa as a sharp fusiform lesion with thick or thin walls, and uniform density. On MRI, T2 weighted images usually reveal the lesion as containing areas with homogeneous, increased intensity compared to fat, suggesting fluid collection [16,17]. Bicipital radial bursitis is encountered very infrequently, and few reports have described the disease; synovial

osteochondromatosis of the bicipital radial bursa is thus an extremely rare condition.

Conclusion

In conclusion, we described a very rare case of synovial osteochondromatosis of the bicipital radial bursa. In the case of a gradually enlarging calcifying mass in the elbow, synovial osteochondromatosis of the bicipital radial bursa should be considered among the differential diagnoses. To the best of our knowledge, this represents the only report of synovial osteochondromatosis of the bicipital radial bursa to date [3].

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