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Case report

Arthroscopic treatment of synovial osteochondromatosis of the elbow. Case report and literature review☆

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ABSTRACT

Synovial osteochondromatosis is a benign proliferative disorder with metaplasia of the synovial membrane that affects the fibroblasts of the synovial joints, tendons and bursae. In literature, there are few descriptions of synovial osteochondromatosis of the elbow. The objective of this article was to report a case of synovial osteochondromatosis of the elbow in a patient aged 32, basketball athlete, in which surgical treatment was chosen because of the pain and functional limitation and stage of disease with multiple loose bodies. Patient 32, male, presented with pain and limitation of motion of the elbow. The range of passive motion was 100° of flexion and 30° extension. The range of active motion was 40–90°. Magnetic resonance observed many loose bodies mainly in the posterior compartment in the olecranon fossa plus some chondral lesions in the capitellum. The arthroscopic treatment was chosen with two anteriors portals (medial and lateral) and two posterior portals (standard posterior and posterolateral) for easing loose bodies and osteoplasty of the olecranon fossa. The visual analog scale pain was 9–3 and its arc of active motion was 110° to −20° of flexion and extension. On a scale of performance from Mayo Clinic patients was 65 points preoperatively to 90 postoperatively with 9 months follow-up and the patient was satisfied with the treatment outcome. Arthroscopic treatment of synovial osteochondromatosis of the elbow is an effective and safe therapeutic management with low morbidity and early return to activities.

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Tratamento artroscópico da osteocondromatose sinovial do cotovelo. Relato de caso e revisão da literatura

Palavras-chave:
Osteocondromatose sinovial
Artroscopia
Cotovelo
Sinovite

RESUMO

A osteocondromatose sinovial é uma patologia proliferativa com metaplasia benigna da membrana sinovial que afeta os fibroblastos das articulações sinoviais, dos tendões e das bursas. Na literatura, existem poucas descrições de osteocondromatose sinovial do cotovelo. O objetivo deste artigo foi relatar um caso de osteocondromatose sinovial de cotovelo em um paciente de 32 anos, sexo masculino, atleta de basquete, no qual se optou pelo tratamento cirúrgico devido ao quadro clínico com dor e limitação funcional e ao estágio da doença com múltiplos corpos livres. Paciente apresentou dor e limitação do arco de movimento do cotovelo. O arco de movimento passivo era de 100° de flexão e −30° de extensão. Na ressonância magnética observaram-se diversos corpos livres, principalmente no compartimento posterior na fossa do olecrano, além de algumas lesões condrais no capítulo. Optou-se pelo tratamento artroscópico com a feitura de dois portais anteriores (medial e lateral) e dois posteriores (posterior padrão e posterolateral) para remoção dos corpos livres e osteoplastia da fossa olecraniana. A escala visual analógica da dor foi de 9 para 3 e seu arco de movimento ativo foi para 110° de flexão e −20° de extensão. Na escala de desempenho da Clínica Mayo o paciente foi de 65 pontos no pré-operatório para 90 no pós-operatório com nove meses de seguimento e satisfeito com o resultado. O tratamento artroscópico da osteocondromatose sinovial do cotovelo mostra-se com uma opção terapêutica eficaz e segura no manejo terapêutico dessa patologia, apresenta baixa morbidade e retorno precoce às atividades.

Introduction

Synovial osteochondromatosis is a proliferative pathological condition with benign metaplasia of the synovial membrane that affects the fibroblasts of the synovial joints, tendons and bursas. The first description in the literature of this pathological condition was in relation to the knee joint, by Ambrose Páré in 1958, apud Ho and Choueka.[1]

Osteochondromatosis can affect any joint, but the great majority of the cases involve the knee. In the upper limbs, the joint most affected is the elbow, but the shoulder, wrist, acromioclavicular and even the interphalangeal joints may be involved.[2,3] The first case in the elbow was reported by Henderson in 1918, cited by Mussey and Henderson.[4] In the literature, there are few descriptions of synovial osteochondromatosis of the elbow, mainly concerning surgical results.[5]

Synovial osteochondromatosis can be classified as primary when the cartilaginous tissue originates directly from the metaplasia of the synovial tissue or the bursa; or as secondary synovial osteochondromatosis when free bodies originate directly from the hyaline cartilage and are deposited in the joint space or in the tendon sheath, due to degenerative diseases, trauma or neuropathic arthropathy.[6]

Synovial osteochondromatosis can be subdivided into intra-articular synovial and tenosynovial (extra-articular) types. Intra-articular osteochondromatosis is more common and is usually monoarticular. Tenosynovial osteochondromatosis is extra-articular and more commonly involves the flexor tendons of the fingers, wrists and feet. Histologically, they are the same entities, but it is important to differentiate them, since there is a greater chance that extra-articular tenosynovial osteochondromatosis might reoccur.[7,8]

The objective of this paper was to report on a case of synovial osteochondromatosis of the elbow in a 32-year-old patient who was a basketball player, for whom surgical treatment was chosen because of his clinical condition of pain and functional limitation and the stage of the disease, with many free bodies.

Case report

The patient was a 32-year-old man who came to the outpatient clinic 3 months before the surgery, presenting pain and limitation of elbow range of motion that had begun 8 months earlier. He said that he had not fallen; he had not had any systemic diseases or previous surgery; and he did not provide any other information of relevance to the case. On inspection, it was noted that one elbow presented slight edema, but without phlogistic signs. He complained of pain on palpation in the fossa of the olecranon and in the region of the insertion of the extensors and supinators of the forearm. The passive range of motion was from 40° to 100° of flexion. The active range of motion was from 50° to 90°, pronation was 90° and supination was 85°. Neurological and vascular examinations showed normal findings.

Complementary imaging examinations and serum tests (regarding infection and rheumatology) were performed. Magnetic resonance imaging showed a variety of free bodies, especially in the posterior compartment of the fossa of the olecranon, along with some chondral lesions in the

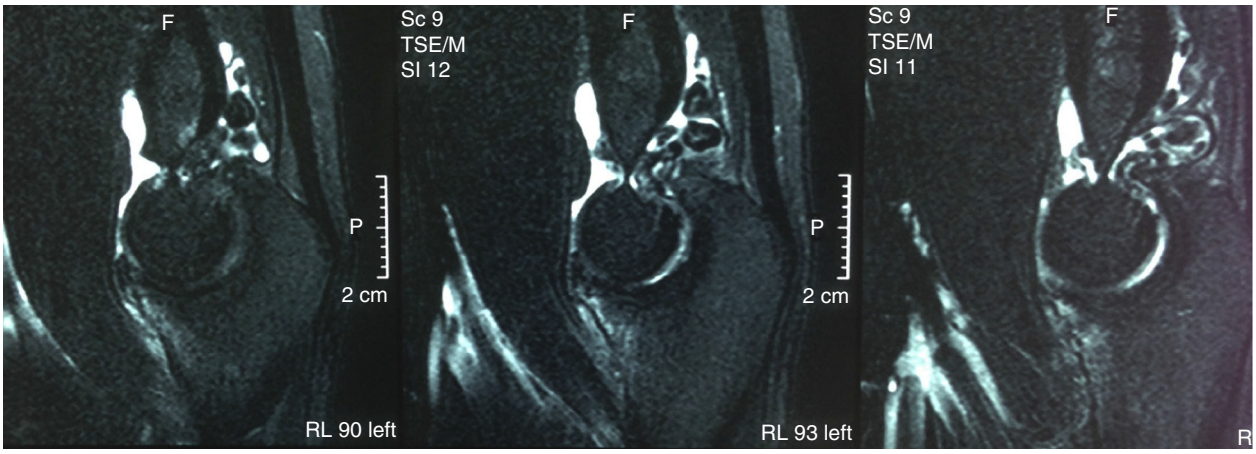

Fig. 1 – T2-weighted sagittal magnetic resonance imaging showing many free bodies in the fossa of the olecranon.

capitellum (Figs. 1–3), and the radiologist's diagnostic hypothesis was that this was intra-articular synovial osteochondromatosis. The results from the serum tests were negative for rheumatological diseases or infectious processes.

Because of the severity of the case, it was decided to use arthroscopic treatment. Two anterior portals (medial and lateral) were opened (for partial synovectomy, anterior capsulotomy to gain extension and microperforations in the capitellum because of the osteochondral lesions) and two posterior portals (standard posterior and posterolateral) in order to remove the free bodies and perform osteoplasty on the fossa of the olecranon because of the local osteophytes (Figs. 4–7). At the time of the surgery, material for histopathological examination was collected (free body and fragment from the synovial membrane), which subsequently confirmed the diagnosis.

The patient was immobilized by means of compressive bandaging. Passive movement was allowed during the immediate postoperative period and active movement according to the tolerance of pain. Physiotherapeutic rehabilitation was started on the tenth postoperative day.

In the second week after the operation, the patient returned to the outpatient clinic practically without pain and presented an active range of movement of 20–100° (Figs. 8 and 9). Eighteen months after the operation, the score on the visual analog scale had decreased from 9 to 1 and the patient's active range of motion was now 10–130°. On the Mayo Clinic performance scale, the patient went from 65 points to 90 after the operation and he was extremely satisfied with the result from the treatment. The Mayo Clinic functional scale[9] takes into consideration four criteria (pain, range of motion, stability and function) and ranges from 10 to 100 points. Resultant scores higher than 90 are excellent; 75 to 89 good; 60 to 74 fair; and lower than 60 poor.

Discussion

Synovial osteochondromatosis of the joints is a rare condition for which the definition and diagnostic criteria are unclear. There is still little knowledge about this condition.[10] Clinically, the signs and symptoms are nonspecific and may suggest several pathological conditions. In most cases, the symptoms comprise pain and/or loss of range of motion. Incapacity to perform complete extension is one of the first symptoms, followed in some cases by locking of the joint. Stiffness is not a marked characteristic. In our case, the patient had a painful

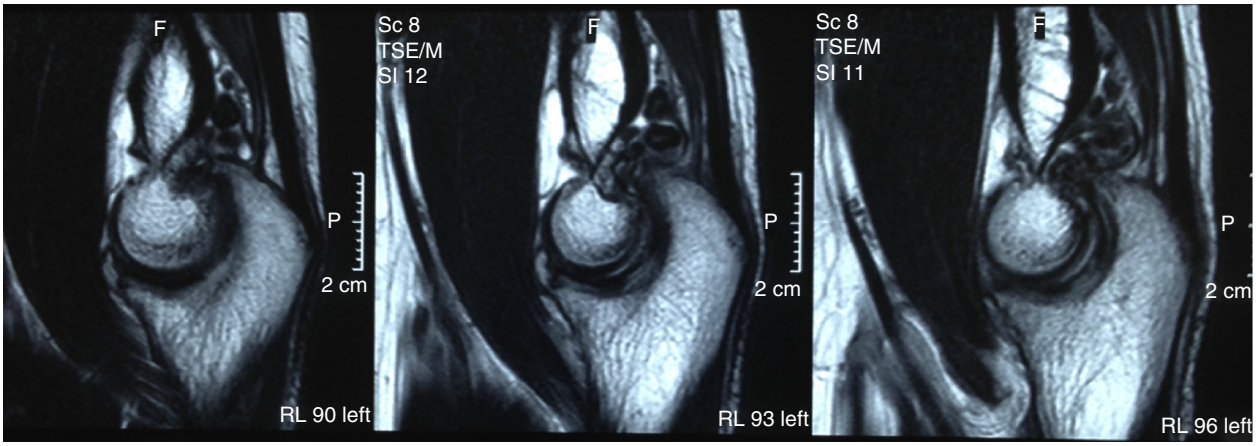

Fig. 2 – T1-weighted sagittal magnetic resonance imaging showing many free bodies in the fossa of the olecranon.

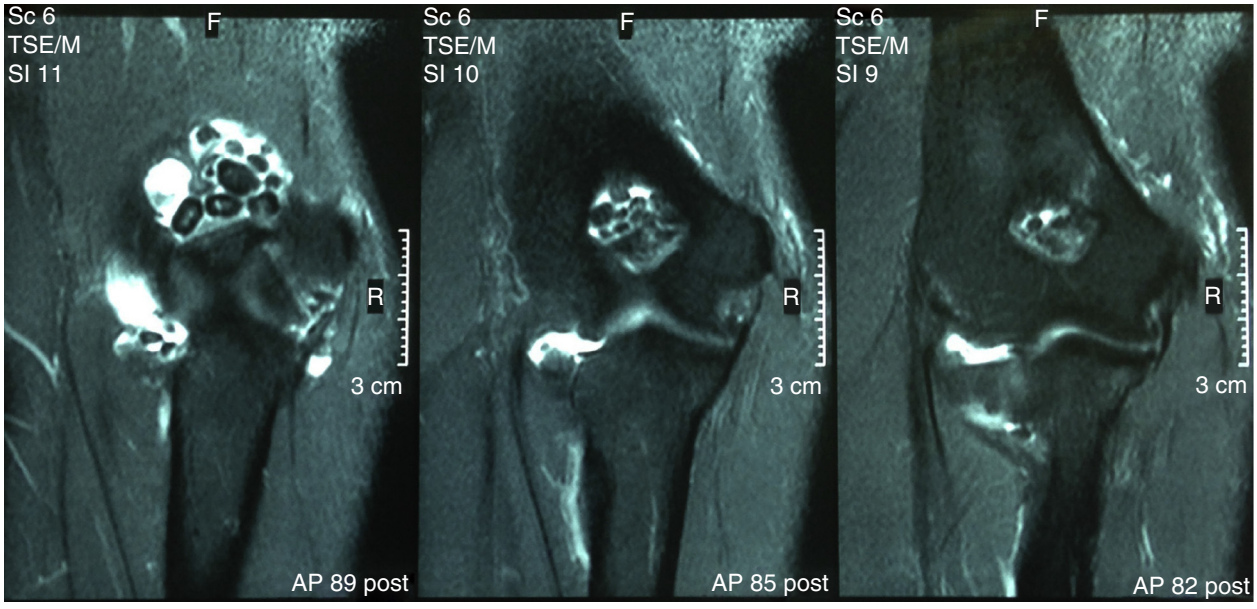

Fig. 3 – T2-weighted coronal magnetic resonance imaging showing many free bodies in the fossa of the olecranon and in the lateral compartment, along with a chondral lesion in the capitellum.

range of motion, without any signs and symptoms of compression of the ulnar nerve.

Milgram and Pease[11] described 30 cases of synovial osteochondromatosis and identified three distinct stages: disease with intrasynovial activity, but without the presence of free bodies; transitional lesions with synovial activity and free bodies; and multiple free bodies, but without synovial activity. Our patient was in stage 3, since he presented multiple intra-articular free bodies. From arthroscopy, we observed only slight foci of synovitis.

Both conservative treatment and surgery can be used as therapy for osteochondromatosis. Pain relief can be achieved through nonsurgical treatment. Surgical treatment is advocated in phases II and III by the great majority of authors. It should be performed in association with synovectomy, since there may be recurrence of the lesion after removal of the free body alone. However, some studies have questioned treatment involving synovectomy.[12,13] In the case presented here, we chose to perform synovectomy of the anterior and posterior compartments.

Fig. 4 – Intraoperative arthroscopic image showing free bodies in the fossa of the olecranon.

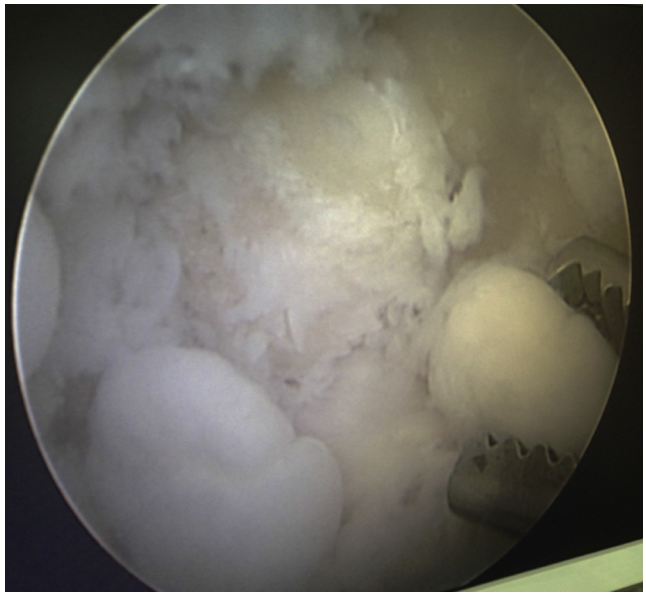

Fig. 5 – Intraoperative arthroscopic image showing free bodies in the fossa of the olecranon and one of them being removed with the aid of grasping arthroscopic tweezers.

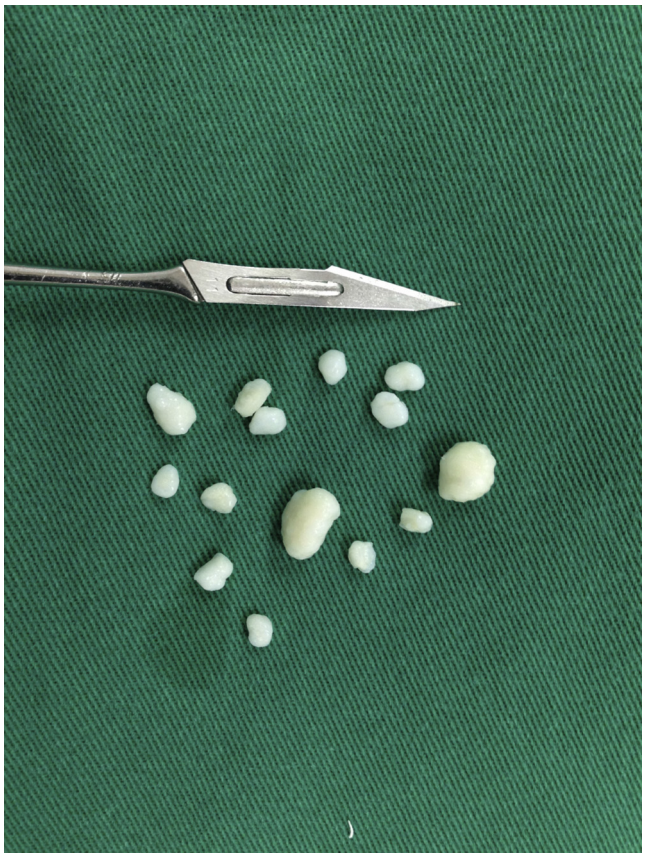

Fig. 6 – Free bodies removed.

Fig. 7 – Arthroscopic portals constructed (proximal anteromedial, proximal anterolateral, standard posterior and posterolateral).

In the literature, recurrence of this disease has been reported in up to 22% of the cases.[14] The cause is generally attributed to incomplete removal of free bodies or to the synovial disease. It is believed that recurrence implies that there is a greater chance of malignant transformation to chondrosarcoma, although this transformation of synovial osteochondromatosis is rare.[15,16] The possibility of malignant transformation needs to be considered when periosteal reaction and cortical erosion are observed. On analyzing histological slides, the differential diagnoses to be considered are periosteal chondroma, giant-cell tumor, calcifying aponeurotic fibroma, tumoral calcinosis, hydroxyapatite deposition, free bodies and inflammatory arthritis. The results from histopathological analysis on the free body and on a fragment from the capsule showed alterations compatible with synovial osteochondromatosis with moderate disease activity.

In the upper limbs, the location most affected by synovial osteochondromatosis is the elbow, followed in second place by the shoulder. Paim et al.[16] reported the result from arthroscopic treatment of a case of synovial osteochondromatosis of the shoulder, in which 44 free bodies were removed. Over a 1-year follow-up, almost complete recovery of the range of motion, without pain, was shown. Lasmar et al.[17] reported a case of synovial osteochondromatosis in a knee, in which over an 8-month follow-up, excellent recovery was obtained. These authors drew attention to the differential diagnosis with pigmented villonodular synovitis and noted that in standard radiographic examinations, the diagnosis might go unnoticed, given that the free bodies might not be calcified. Polesello et al.[18] reported the result from arthroscopic treatment of six cases of hip osteochondromatosis, from which good results were shown, with improvement on the Harris scale as modified by Byrd, from 54 points before the operation to 90 points after the operation.

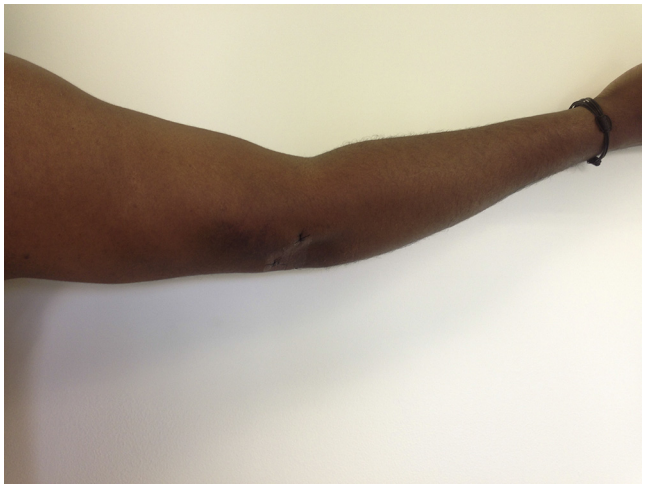

Fig. 8 – Two weeks after the operation, with −20° of active extension.

Fig. 9 – Two weeks after the operation, with 100° of active flexion.

The case reported in the present study has been followed up for 16 months and so far the patient remains free from pain and without any signs of recurrence.

Conclusion

Arthroscopic treatment of synovial osteochondromatosis of the shoulder was shown to be an effective and safe means of therapeutic management for this pathological condition, with low morbidity and an early return to activities.

Conflicts of interest

The authors declare no conflicts of interest.

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