Case report

Arthroscopic treatment of synovial chondromatosis of the ankle

Daniel Peixoto\textsuperscript{a,*}, Marta Gomes\textsuperscript{b}, António Torres\textsuperscript{b}, António Miranda\textsuperscript{b}

\textsuperscript{a} Hospital Distrital da Figueira da Foz, Figueira da Foz, Portugal
\textsuperscript{b} Centro Hospitalar Entre Douro e Vouga, Hospital de São Sebastião, Santa Maria da Feira, Portugal

\textbf{ARTICLE INFO}

Article history:
Received 19 March 2017
Accepted 2 May 2017
Available online 27 July 2018

Keywords:
Synovial chondromatosis
Ankle
Arthroscopy

\textbf{ABSTRACT}

Synovial chondromatosis is a rare proliferative disease, characterized by the occurrence of metaplasia in the synovium of the joints. These lesions become pedunculated; with the evolution of the disease they become detached, leading to intra-articular loose-bodies. It occurs more frequently in males between the third and fifth decades of life, usually affecting large joints such as the knee and hip. Smaller joints, such as the ankle, are less frequently affected. Patients report articular pain, blockage, and limited range of motion caused by the loose fragments. As the disease progresses, the joint undergoes degenerative changes. This report describes a case of synovial chondromatosis of the ankle, treated by arthroscopy.

The patient, a 59-year-old male, complained of pain and swelling of the left ankle. Physical evaluation showed limited tibiotarsal mobility (plantar flexion of 20° and dorsiflexion of 5°). After physical and imaging evaluation, the patient underwent ankle arthroscopy due to impingement of the joint, with limitation of mobility. Arthroscopic treatment allowed easy access to the joint, removal of loose bodies, and partial synovectomy, with low morbidity and early rehabilitation. The final prognosis was excellent.

© 2018 Published by Elsevier Editora Ltda. on behalf of Sociedade Brasileira de Ortopedia e Traumatologia. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

\textbf{Tratamento arroscópico de condromatose sinovial do tornozelo}

\textbf{RESUMO}

A condromatose sinovial é uma doença proliferativa, rara e caracterizada pela ocorrência de metaplasia na sinovial das articulações. Essas lesões tornam-se pedunculadas e à medida que a doença evolui, as lesões se soltam, dão origem a corpos livres intra-articulares. A prevalência é maior em homens entre a terceira e quinta décadas de vida, atingindo normalmente
Introduction

Synovial chondromatosis is a rare but benign condition of unknown etiology. It is characterized by the appearance of hyperplastic metaplasia in joint synovia. As the disease progresses, these lesions become pedunculated; they can loosen and form loose intra-articular bodies.\(^1,2\) These loose bodies may be cartilaginous or calcified/ossified.

This condition is usually observed in men between the third and fifth decades of life. It primarily occurs in large joints, such as the knee and hip; small joints, such as the ankle, are affected less frequently.\(^3\)

Clinically, patients complain of joint pain, blockage, and range of motion limitation caused by the loose fragments. In the course of the disease, the onset of degenerative changes of the joint is inevitable.\(^4\)

Clinical case

A 59-year-old male patient was referred to orthopedic consultation due to pain and edema in the left ankle, with approximately two years of evolution. The patient denied previous trauma and his personal and family background were irrelevant.

Objective examination indicated a marked limitation of ankle mobility (plantar flexion of 20° and dorsiflexion of 5°) with no signs of instability. On palpation, it was possible to notice the presence of small swellings in the anterior aspect of the ankle, as well as articular crepitation.

Simple ankle radiographs indicated the presence of multiple intra-articular bodies, many of which were calcified (Fig. 1). Computed tomography was used to better define these lesions and their location, as well as the absence of associated degenerative changes (Fig. 2).

Considering the results of the physical and imaging evaluations, the therapeutic option was an anterior ankle arthroscopy.

The patient underwent the procedure; he was placed in a supine position and a tourniquet was placed at the upper end of the thigh. The superficial peroneal nerve, the anterior tibial tendon and the extensor digitorum tendons were identified and marked. When creating the anterolateral portal, spontaneous exteriorization of several calcified loose bodies was observed (Fig. 3). During arthroscopy, multiple loose bodies were identified and removed (more than 40, the largest of which measured 10 mm × 5 mm × 3 mm), and partial synovectomy was performed (Figs. 4 and 5). The ankle was not immobilized and gait with partial weight-bearing was authorized in the immediate postoperative period. At four weeks, the patient presented complete and painless mobility of the tibiotalar joint. An anatomopathological exam confirmed the diagnosis of synovial chondromatosis.

Currently, at 12 months postoperatively, the patient presents no complaints or signs of relapse.

---

**Fig. 1 – Anteroposterior and lateral left ankle radiographs show calcified loose bodies in the tibiotalar joint.**
Discussion

Synovial chondromatosis is an uncommon disease, and its appearance in the ankle is even rarer. Although its etiopathogenesis is not yet clear, this condition is known to result from a chondral metaplasia of the synovial sheaths that surround joints and tendons. Cartilage foci are formed at the level of the synovial membrane initially, but as the disease progresses, these cartilage foci detach themselves and form loose intra-articular bodies.

It mainly affects male individuals, with a peak incidence between the third and fifth decades of life. Patients complain of joint pain, edema, limitation of mobility of the joint; in cases of advanced disease, the intra-articular loose bodies are palpable. The course of the disease is slowly progressive and leads to degenerative changes in the joints of untreated patients.

The anatomopathological confirmation of the disease allows the differential diagnosis of other conditions that may cause intra-articular loose bodies (trauma, rheumatoid arthritis, tuberculosis arthritis, osteochondritis dissecans); and also chondrosarcoma, since malignant degeneration is
observed in about 5% of cases; its occurrence is related to multiple recurrences of the disease.\textsuperscript{8}

Classically, the treatment of synovial chondromatosis of the ankle consists of arthrotomy with excision of the loose bodies and synovectomy. Due to the recent advances in ankle arthroscopy, therapy can now be performed in a non-invasive manner, with low morbidity and early rehabilitation.\textsuperscript{9,10}

The authors present a rare and exuberant case of synovial chondromatosis of the ankle, whose treatment and results are in agreement with the literature. In order to avoid joint destruction, the importance of a high index of suspicion for the diagnosis of this pathology and its early treatment is highlighted.

\textbf{Conflicts of interest}

The authors declare no conflicts of interest.

\textbf{REFERENCES}

1. Shearer H, Stern P, Brubacher A, Pringle T. A case report of bilateral synovial chondromatosis of the ankle. Chiropr Osteopat. 2007;15:18.
2. Mertens F, Jonsson K, Willén H, Rydholm A, Kreicbergs A, Eriksson L, et al. Chromosome rearrangements in synovial chondromatous lesions. Br J Cancer. 1996;74(2):251–4.
3. Lee DK, Louk L Jr, Bell BL. Synovial osteochondromatosis involvement in post-traumatic ankle injury. J Am Podiatr Med Assoc. 2008;98(1):70–4.
4. Galat DD, Ackerman DB, Spoon D, Turner NS, Shives TC. Synovial chondromatosis of the foot and ankle. Foot Ankle Int. 2008;29(3):312–7.
5. Young-In Lee F, Hornickel FJ, Dick HM, Mankin HJ. Synovial chondromatosis of the foot. Clin Orthop Relat Res. 2004;423:186–90.
6. Davis RI, Hamilton A, Biggart JD. Primary synovial chondromatosis: a clinicopathologic review and assessment of malignant potential. Hum Pathol. 1998;29(7):683–8.
7. Chillemi C, Marinelli M, de Cupis V. Primary synovial chondromatosis of the shoulder: clinical, arthroscopic and histopathological aspects. Knee Surg Sports Traumatol Arthrosc. 2005;13(6):483–8.
8. Perry BE, McQueen DA, Lin JJ. Synovial chondromatosis with malignant degeneration to chondrosarcoma. Report of a case. J Bone Joint Surg Am. 1988;70(8):1259–61.
9. Brodsky JW, Jung KS, Tenenbaum S. Primary synovial chondromatosis of the subtalar joint presenting as ankle instability. Foot Ankle Int. 2013;34(10):1447–50.
10. Doral MN, Uzumcugil A, Bozkurt M, Atay OA, Cil A, Leblebicioglu G, et al. Arthroscopic treatment of synovial chondromatosis of the ankle. J Foot Ankle Surg. 2007;46(3):192–5.