

## Removal of a benign tumor in the knee by a combined approach in a patient with acute blockage of the joint: Case report

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### Abstract

Soft tissue tumors are the most prevalent tumor lesions in the extremities, of which lipomas are the most frequent tumors in soft tissue, highlighting that these are benign conditions, despite being tumors, however, intra-articular cases are extremely rare, which contrasts with arborescent lipomas that are well described in the literature, which are secondary to degenerative processes in the knee and not neoplastic lesions. Intra-articular lipomas are rare, with the most common location being the knee, followed by the hip, lumbar spine, elbow, shoulder and wrist.

Within the lipomas of the knee we find the arborescent lipoma, this is the product of degenerative changes established in the joint, which will be compromised and will give a manifest clinical appearance depending on its extension and size, which in turn will allow us to determine adequate management. surgical, in this case report we present a resection performed through arthroscopy and open approach due to a large lesion that generated joint blockage which subsides after the intervention.

**Keywords:** Lipoma; Neoplasms; Adipose Tissue; Knee; Arthralgia; Arthroscopy

### 1. Introduction

Lipomas are the most frequent tumors in soft tissue, however, intra-articular cases are extremely rare, which contrasts with arborescent lipomas that are well described in the literature; the latter are secondary to degenerative processes in the knee and not injuries. neoplastic.

Intra-articular lipomas are rare, with the most common location being the knee, followed by the hip, lumbar spine, elbow, shoulder and wrist [1].

Two types of knee lipoma have been described; true intra-articular lipomas and arborescent lipoma, the former are generally located in the infrapatellar fat pad; are solitary, slow-growing lesions, the latter generally develops as a consequence of a degenerative joint disease and is not considered a true neoplasm [2].

### 2. Methodology

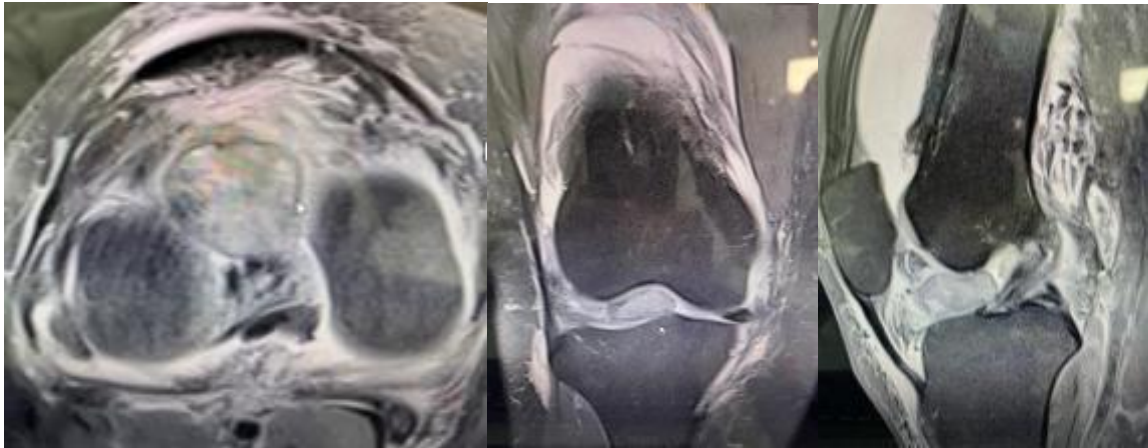
An exhaustive search of the literature in Pubmed and ClinicalKey (2005-2024) in English and Spanish on lipoma arborescens, obtaining 10 useful bibliographies for the development of the study. Search terms included "Lipoma," "neoplasia," "arthroscopy," "arthralgia," and "knee." The search was limited to human studies.

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For the literature review, bibliography of case reports and systematic reviews of lipoma-type intra-articular tumors were included, taking into account the patient's symptoms, including limping and joint pain, in addition to the imaging studies indicated for the aforementioned diagnosis.

### 3. Case presentation

This is a 60-year-old Caucasian female patient with a 24-hour history of clinical symptoms characterized by pain in the right knee associated with functional limitation and limping. She denies previous trauma. On physical examination, the patient weighs 98 kg, height 160 cm, painful gait is evident, at the level of the right knee there is pain in the anterior joint interline, blockage in flexion of 40°, therefore magnetic resonance imaging was requested (figure 1. A. axial section B. coronal section, C. sagittal cut) as a priority, with analgesic management and total rest.



**Figure 1** (A: Axial MRI section of the knee showing nodular image with fatty characteristics located between the distal portion of the femoral condyles, B and C: Coronal and sagittal section of MRI in which the same nodular image can be seen located between the anterior portion of the middle zone between femoral condyles and the anterior portion of the proximal tibia, anterior to the anterior cruciate ligament.)

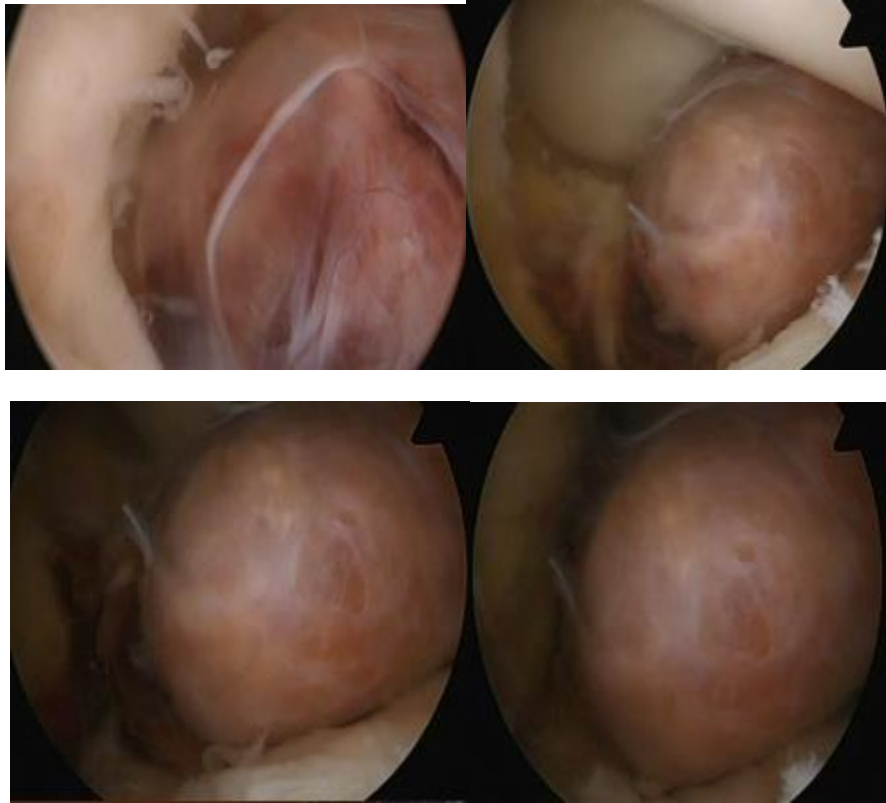
#### 3.1. MRI report

Fracture of the posterior horn of the medial meniscus and posterior horn of the lateral meniscus, increase in the amount of joint fluid, changes of synovitis and Hoffa's fat, image compatible with the presence of nodular synovitis of the measures described, grade I injury of the medial collateral ligament, changes of chondromalacia patella grade IV, patellar tendinosis, popliteal tenosynovitis, pes pes tendonitis, findings compatible with the presence of a dissecting ruptured popliteal cyst, edema of infrapatellar subcutaneous cellular tissue, probable infrapatellar bursitis.

Due to the findings described in the clinical history and MRI report, it was decided to take the patient for surgical management of emergent exploratory arthroscopy.

A well-circumscribed tumor lesion was found, with regular edges, reddish, pedunculated in the posterior compartment in direct relation to the lateral femoral condyle anterior to the cruciate ligaments (figure 2) causing the joint blockage of our patient, for which an expanded release of its pedicle was performed and It was decided to take it to a side port for open-track extraction.

Arthroscopy ports are removed, a lateral parapatellar approach is marked, followed by extraction of the tumor lesion, a lesion of approximately 2\*2 cm is evident, firmly adhered to Hoffa's fat, which is removed en bloc, respecting adjacent tissues, marked and sent to pathology.



**Figure 2** (different sequences are seen during the arthroscopic examination showing a solid tumor lesion (A), adhered to a vascular pedicle (B) delimited with regular edges, encapsulated surrounded by a thin membrane (C, D).

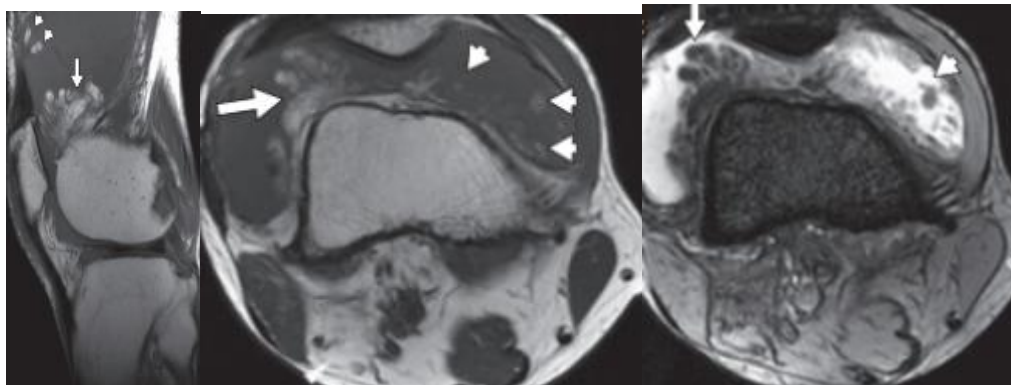


**Figure 3A.** Lateral parapatellar incision is shown. B. After capsulotomy, a tumor lesion is identified in the anterior area adhered to Hoffa's fat. C. Tumor lesion removed.



**Figure 4** (A) Postoperative at 8 days, (B) Control during stitch removal.

The patient was scheduled 8 days after the surgical procedure, finding an asymptomatic patient with the knee in full extension with normal gait and no pain. After 3 weeks we found a patient with complete ranges of motion, the surgical wounds healed and without any complication.



**Figure 5** (A sagittal section, B axial section, C sequence with fat suppression; shows an intra-articular mass similar to a frond, additionally several projections of scattered villi in the suprapatellar Bursa consistent with a mixed morphological pattern of lipoma arborescens)

#### 4. Discussion

Most cases of knee locking and pain are caused by meniscal injuries, intra-articular loose bodies, or chondral injuries. In rare cases, benign intra-articular tumors or tumor-like lesions present with symptoms suggestive of an acute meniscal disorder [3]; As in our case, a patient presents with acute symptoms of a meniscal lesion who, due to magnetic resonance imaging findings, suspects a diagnosis of a solitary tumor lesion suggestive of an intra-articular lipoma.

Magnetic resonance imaging is the most accurate tool for preoperative diagnosis and evaluation of benign soft tissue lesions in the knee [4]; within the differential diagnosis it must be ruled out; Arborescent lipoma, intra-articular liposarcoma, pigmented villonodular synovitis (PVNS) and Hoffa's disease, macroscopically the arborescent lipoma has the appearance of a villous synovial proliferation of fatty tissue, it is associated with previous clinical conditions with trauma, osteoarthritis; Intra-articular lipoma occurs de novo without a previous history, as is the case of our patient. Articular liposarcoma is rare, affects middle-aged people, presents as a painless, slow-growing and locally aggressive tumor that rarely metastasizes. PVNS is a rare intra-articular lesion that affects the synovial membrane of the joints and the tendon sheaths, Hoffa's disease refers to impingement of the infrapatellar fat which becomes hypertrophic due to previous trauma[5].

Emphasizing lipoma arborescens, which refers to a benign, villous proliferation of intra-articular adipose tissue, and once it has reached a certain size it can give subcutaneous soft tissue, it is a rare condition that should be included in the differential diagnosis of juxta-articular inflammations. Slowly progressive soft tissue inflammation, clinically characterized by a slowly progressive inflammation of the soft tissues that developed over a period of years, patients report symptoms of subcutaneous, slightly mobile adipose tissue that is not painful, in cases of intra-articular location it can cause pain and restriction of movement, [6]. Mechanical conditions are the product of exacerbated growth at the expense of villous hypertrophy, generating marked edema that, depending on its magnitude, can present joint blockage such as that found in the patient [7]. Lipoma arborescens, like any other lesion that contains fat, generally shows a specific signal on MRI that distinguishes it from other mass-like intra-articular lesions, shows nodular villous foci of high signal intensity on T1- and T2-weighted images [8], additionally, findings of associated lesions such as cyst have been described. synovium, meniscal tears and in greater prevalence degenerative changes with a prevalence of 38%, 72% and 87% respectively [9].

After the surgical intervention and extraction of the specimen, the definitive diagnosis will be given by the histopathological evaluation of the resected lesion (8). Histopathologically, the intra-articular lipoma is made up of mature adipocytes covered by a synovial membrane and may also contain a vascular fibrous septum. That is why it is a true neoplasm of uncertain etiology. The natural history of the disease has not been studied in depth, although it is known that it grows slowly and follows a silent clinical course until the appearance of symptoms due to a space-occupying lesion, [1] which is consistent with the natural history of our disease. patient who presented symptoms 48 hours before the first consultation.

Synovectomy represents the treatment of choice for this pathology, however a gold standard has not been established for the surgical technique to be performed and its route for the resection of the intra-articular lipoma[8], it can be performed from an open excision. arthrotomy type and arthroscopic management which provides a minimally invasive means for both the diagnosis and management of these intra-articular knee injuries. Radiofrequency ablation has also been described without finding superiority in its results when compared to the results obtained arthroscopically. Likewise, although the evidence that supports these decisions is limited given the low prevalence of the pathology, low recurrence rates of the lesion after arthroscopic excision have been described in the literature in previous studies and the associated complications have been few in the face of discharge. rate of asymptomatic patients after surgical intervention, which suggests that this treatment is valid as long as it is practicable, [1] [5][10]; In our case, arthroscopy in combination with the open approach was the management of choice given the large size of the patient's lesion.

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## 5. Conclusion

Intra-articular lipomas are a rare knee pathology that can occur in the context of mechanical conditions such as pain and acute blockage of the joint. Magnetic resonance imaging is the most precise study for suspected diagnosis. There is still a lack of publications and references to establish a standard treatment, with arthroscopy being the ideal method in minimally invasive terms; The size of the lesion will give an indication of which method to choose.

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflicts of interest are declared by the authors.

### *Statement of ethical approval*

This is not a research work and did not require ethical approval. The name of the individual patient has been changed to maintain confidentiality and she cannot be identified in this document.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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