CASE REPORT

Intra-articular lipoma of the hip

Anthony J Mells,¹ G Max Gosey,² Michael P Muldoon³¹Oakland University William Beaumont School of Medicine, Rochester, MI, USA²Department of Orthopedic Surgery, University of Arizona Arizona Health Sciences Center, Tucson, AZ, USA³Department of Orthopaedic Surgery, University of California San Diego School of Medicine, La Jolla, CA, USA**Correspondence to**
Anthony J Mells,
ajmells@oakland.edu

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SUMMARY

Intra-articular lipoma of the hip is a rare entity, with only two reports published in the English-language literature. We present a case of successful arthroscopic resection of an intra-articular peripheral compartment lipoma in a 69-year-old woman with a coincident labral tear. This woman presented with left hip pain that developed gradually over 2 years and increased over 2 months. MRI showed a fat-intense mass in the anterior aspect of the hip joint, convincing for intra-articular lipoma. Physical examination in the operating room reproduced decreased range of motion and evidence of impingement but with a soft endpoint. Arthroscopy revealed an anterior intrasubstance labral tear, which was debrided. The mass was excised and confirmed as true lipoma on histology. The soft endpoint on examination illustrates that a large lipoma of the hip joint can cause clinical symptoms of impingement in the absence of bony abnormality or trauma.

BACKGROUND

Lipomas are the most common soft tissue tumour found in medicine; however, intra-articular lipomas are very rare entities. This benign neoplasm has only been found intra-articularly in a limited number of cases, most of which are in the knee. Only two reports published in the English-language literature exist of an intra-articular lipoma of the hip. We present a third known case of an intra-articular lipoma, in a patient with coincident labral tear who underwent successful arthroscopic resection.

CASE PRESENTATION

A 69-year-old woman previously treated for bilateral knee arthritis presented with a new complaint of left hip pain that developed gradually over 2 years and increased over 2 months. She reported increasing mechanical symptoms and pain with hip rotation and flexion. On examination, she had decreased range of motion, with some signs of psoas tendinopathy and trochanteric bursitis as well as a positive impingement sign, Ober's test and flexion–abduction–internal rotation test. Radiographs revealed minimal to no arthrosis or structural abnormality. Examination was also notable for a subtle bulge in the groin of unknown aetiology, and due to the patient's obese habitus, a general surgery consultation was warranted. A CT scan was obtained to rule out inguinal hernia, and this revealed an intra-articular mass in the left hip joint. Further characterisation on MRI showed a fat-intense mass (2.0 cm × 1.5 cm × 3.5 cm) in the anterior aspect of the left hip joint along the anterior femoral

neck extending towards the lesser trochanter, highly consistent with intra-articular lipoma (figure 1). An anterior labral tear on arthrography was also seen.

TREATMENT

The decision was made to remove the mass arthroscopically. Based on the MRI findings and radiologist's report, it was determined that the lipomatous-appearing mass was unlikely to be malignant. Examination of the left hip under anaesthesia in the operating room reproduced findings of decreased range of motion with impingement; however, a soft endpoint was felt. The procedure was done in the lateral position with a specialised hip distractor (Smith and Nephew) employing anterior peritrochanteric, posterior peritrochanteric and mid-anterior portals. A degenerative anterior intrasubstance labral tear was gently debrided, as mild haemorrhage and inflammation were noted anteriorly along the capsular side of the labrum.

After the release of traction, the peripheral compartment was accessed via a superior portal to avoid penetrating the mass. The lipomatous tumour was clearly identifiable and loosely encapsulated (figure 2A). A medial window was established through the mid anterior portal, and the lipoma was excised. Histopathology confirmed the diagnosis as a lipoma confined to the peripheral compartment of the hip joint (figure 3). Capsulorrhaphy was performed to treat the attenuated capsule (figure 2B).

OUTCOME AND FOLLOW-UP

At 2 weeks postoperatively, the woman reported marked pain relief and improvement over her preoperative activity level. She persists with a durably excellent result at 10 weeks and 1 year follow-up.

DISCUSSION

To our knowledge, this is the third reported case of intra-articular lipoma in the hip. The first case was reported in 1998, which described a 31-year-old male with mechanical symptoms and pain in the left hip with weight-bearing and deep flexion found to have a subcentimetre central compartment lipoma coincident with an anteroinferior labral tear, which were both effectively treated arthroscopically.¹ The second, in 2010, described a 20-year-old female with prolonged right hip and back pain with radicular symptoms unresponsive to conservative management; she was found to have a 3 cm true lipoma near the posterior femoral head which was resected arthroscopically and provided relief of what the authors believed to be mass effect on the sciatic

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Figure 1 MRI of left hip. Axial T1-weighted image demonstrating an intra-articular homogeneously fat signal intensity mass located in the anterior aspect of the left hip joint.

nerve.² Our good result with arthroscopy is consistent with these reports.

Lipomas constitute the majority of soft tissue tumours that exist. However, intra-articular lipomas are extremely rare and are found mostly in the knee joint.³ Only a handful of cases of true lipoma have been reported in the hip, shoulder, elbow, spine and tarsometatarsal joints combined.⁴ Intra-articular lipomas of the knee can present with sudden locking of the joint caused by detachment of loose bodies from the lipoma or impingement from a rapidly growing mass.⁵ They have also been thought to create mass effects as the tumour pushes on the surrounding tissue.³ Similarly to intra-articular lipomas of the hip, the aetiology of these masses in the knee is unknown. However, it has been postulated that they originate from metabolic disturbances or from repeated microtraumatisation on articular surfaces.³ Lipomas of the knee have been successfully removed via arthrotomy and with arthroscopy, with relief of symptoms.⁶

Multiple differential diagnoses should be considered for an intra-articular mass. These include lipoma arborescens, synovial osteochondromatosis, pigmented villonodular synovitis, tuberculous arthritis, amyloid arthropathy and the malignant lesions

synovial chondrosarcoma and liposarcoma.⁷ Clinically, intra-articular masses may present with similar mechanical symptoms, pain and decreased range of motion. MRI aids in the differentiation of lipoma from other intra-articular masses. Among these different growths, lipoma arborescens is the most similar to a true lipoma, as both arise from adipose tissue. In contrast, lipoma arborescens is easily differentiated by its appearance on MRI as a frond-like mass, whereas a lipoma will appear as a single, more rounded or polyp-like mass.⁸ Synovial osteochondromatosis consists of multiple intra-articular calcified nodules, resulting from uncontrolled metaplasia of the synovium.⁷ As calcified bodies form, this condition can be diagnosed on radiographs or MRI. Pigmented villonodular synovitis is also a benign proliferative disorder of the synovium. However, haemorrhage is often present, and thus the haemosiderin deposition will lead to distinct loss of signal on T1-weighted and T2-weighted images.⁷ Perhaps, the most important entity to distinguish from an intra-articular lipoma of the hip is any malignant process, including synovial chondrosarcoma and synovial sarcoma. Synovial chondrosarcoma is very rare and forms from metaplasia of the synovium, similarly to the process behind synovial

Figure 2 Arthroscopic images preresection and postresection of the intra-articular mass. (A) The joint capsule and lipoma are clearly seen. (B) The fatty mass was removed and capsulorrhaphy was performed to close the defect caused by the resection of lipoma.

Figure 3 Histopathology analysis. Photomicrograph of removed mass showed mature adipocyte covered by a synovial layer.

osteochondromatosis, and the two can be difficult to differentiate.⁷ However, the formation of calcified cartilaginous nodules clearly distinguishes a chondrosarcoma from lipoma. Despite what its name suggests, synovial sarcoma actually arises from primitive mesenchymal cells in the extra-articular soft tissues, even though it closely resembles synovium on histology. Synovial sarcoma rarely affects the joints and on MRI can often be seen with calcifications, haemorrhage or fluid-fluid levels.⁷

As in the present case, in the presence of an intra-articular mass, conditions such as chondrolabral dysfunction may coexist. As labral tears are a common cause of mechanical hip pain and are unto themselves a good indication for arthroscopy, we cannot be certain of the level of pain that the labral tear versus the lipoma would have caused in isolation. It is possible that the growth of the lipoma caused the labral tear, as it has been hypothesised that space-occupying lesions of the acetabular fossa can alter the congruency of the labrum with the hip joint.⁹ However, it cannot be ruled out that the lipoma resulted from a previous trauma or chronic labral tear. Due to the paucity of literature on intra-articular lipoma, the aetiology of this patient's condition is unclear. Regardless of whether or not the lipoma had a coincidental labral tear, arthroscopy was the preferred treatment method.

Regarding the imaging in this case: although lipomas usually have MRI signal characteristics that aid in their diagnosis, a previous report indicates that a small intra-articular lipoma may not be appreciable on MRI.¹ Thus, if mechanical dysfunction of the hip persists without explanation, it is important to keep in mind intra-articular lipoma as a pathological differential diagnosis.

Our case illustrates that lipoma of the hip joint may present with impingement symptoms, as the patient had a labral tear in the absence of any bony abnormality or trauma. This rare diagnosis therefore should be considered in patients with mechanical pain, positive provocative manoeuvres and the absence of femoroacetabular impingement morphology, particularly in patients with inguinal fullness without herniation. The lipoma in this case is the largest reported inside the hip joint to date.^{1 2}

Thus, it is indeed conceivable that this large mass caused her impingement symptoms. Similar mechanisms for impingement have been described from a pathological psoas tendon applying force to the labrum.¹⁰ Further support that the symptoms of impingement resulted from the mass effect of the intra-articular tumour—rather than any bony abnormality—is evident by the soft endpoint found on physical examination of the hip in the operating room.

Learning points

- This patient's obese habitus and palpable inguinal mass led her diagnosis of intra-articular pathology of the hip to be difficult to make by clinical findings alone.
- The intra-articular homogeneously fatty signal intensity mass on MRI is what allowed for the definitive preoperative diagnosis to be made.
- Although rare, this benign intra-articular neoplasm can be found in the hip joint and can present with coincidental labral tear as well as secondary symptoms of impingement.
- Intra-articular lipoma of the hip can be safely and effectively treated arthroscopically.

Contributors AJM wrote the case report as the primary author. GMG played an integral role in developing ideas and outlining the case report. MPM was the surgeon for the procedure and provided guidance and advice throughout the writing process.

Competing interests None declared.

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