Synovial osteochondromatosis of the hip with femoroacetabular impingement and osteoarthritis: a case report

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ABSTRACT

Synovial osteochondromatosis is a rare, benign condition characterised by synovial metaplasia and the formation of cartilaginous and osteocartilaginous bodies in the capsule. We report one such case in a 30-year-old woman with synovial osteochondromatosis of the hip and progressive osteoarthritis caused by femoroacetabular impingement with joint-space narrowing. She underwent surgical removal of 32 loose bodies and osteochondroplasty. A coronal osteophyte at the junction of the femoral head and neck was also excised. At 2-year follow-up, her Harris Hip Score had improved from 62 to 90.

Key words: chondromatosis, synovial; femoroacetabular impingement; osteoarthritis, hip

INTRODUCTION

Synovial osteochondromatosis is a rare, benign condition of unknown aetiology. The synovial lining undergoes metaplasia and forms cartilaginous and osteocartilaginous bodies in the capsule, including the retinacular layer. The knee is the most common site of involvement, followed by the hip. Osteoarthritis secondary to synovial osteochondromatosis is usually mild, and few cases develop joint-space narrowing. Surgical removal of loose bodies is recommended, but there is no guideline on whether osteochondroplasty (resection of the osteophyte at the femoral head-neck junction) is necessary to prevent secondary osteoarthritis. We report one such case in a 30-year-old woman who underwent osteochondroplasty of the hip for synovial osteochondromatosis and osteoarthritis caused by femoroacetabular impingement.

CASE REPORT

In May 2009, a 30-year-old woman presented with pain and limited range of motion in her left hip joint. The pain had increased gradually for the past 5 years. There was tenderness in the region of the Scarpa triangle. The affected hip had a flexion range of -10º to 85º, an abduction range of 0º to 25º, an adduction
range of 0° to 20°, an external rotation range of 0° to 5°, and an internal rotation range of 0° to 5°. The anterior impingement test was positive but there was no leg-length discrepancy. Her Harris Hip Score was 62 out of 100.

Radiographs showed speckled calcification and osteophyte formation in the femoral neck, an atrophic femoral head, and an ossified labrum. Joint-space narrowing and joint degeneration was apparent, and the femoral head had migrated laterally (Fig. 1). Radiographs were analysed for pincer- and cam-type femoroacetabular impingement. The lateral centre-edge angle was 33° and the Sharp angle was 30°. The cross-over sign of the anterior acetabular rim was negative. The alpha angle was 72° and the anterior head-neck offset ratio was 0.086.

Arthrography revealed multiple calcified loose bodies extending around the femoral neck (Fig. 1). Computed tomography with multiplanar reconstruction showed an osseous bump (coronal osteophyte formation), characteristic of synovial osteochondromatosis of the hip and studded loose bodies (Fig. 2). Magnetic resonance imaging showed expansion of the capsule containing loose bodies below the femoral head and in the acetabular fossa (Fig. 3). The femoral head appeared conical, consistent with osteochondromatosis. Serological tests revealed no abnormality.

A diagnosis of osteoarthritis caused by synovial osteochondromatosis with femoroacetabular impingement was made. The woman underwent anterior surgical dislocation of the joint using the technique described by Lim and Park. The greater

Figure 1  Radiography and arthrography showing multiple calcified loose bodies and lateral joint-space narrowing in the left hip.

Figure 2  Computed tomography showing multiple loose bodies in the acetabular fossa and around the femoral neck from anterior to posterior.

Figure 3  (a) T1- and (b) T2-weighted magnetic resonance images showing multiple loose bodies with iso-intensity to the bone in and around the femoral neck and acetabular fossa (arrows). Synovial osteochondromatosis is apparent at the anterior aspect of the femoral neck (arrowheads).
trochanter was not osteotomised; instead, the anterior one-third of the gluteus medius was incised from the anterior portion of the base of the greater trochanter and retracted anteriorly to expose the gluteus minimus tendon, which was divided as a single flap from its attachment to the greater trochanter. 32 loose bodies were then removed and total synovectomy performed. The coronal osteophyte at the femoral head-neck junction was also resected. The anterolateral aspect of the coronal osteophyte was dark red indicating cam-type impingement (Fig. 4). The femoral head-neck junction was checked to ensure no impingement at the acetabular rim. Postoperative rehabilitation was based on the protocol described by Lim and Park, and full weight-bearing was allowed at week 4.

Histologic study of the loose bodies and coronal osteophyte showed characteristic findings of synovial osteochondromatosis (Fig. 5). Clustered chondrocytes in the hyaline cartilage tissue surrounded by synovial membrane were noted. According to the Milgram staging criteria, the osteochondromatosis was phase 3, as there was no proliferation of synovial tissue.

At 2-year follow-up, her Harris Hip Score had improved to 90. Her left hip range of motion had improved to 120° of flexion. Testing for impingement was negative, and flexion, abduction, and external rotation were within normal limits. Magnetic resonance images revealed no additional loose bodies, recurrence, or avascular necrosis of the femoral head. Osteoarthritis had not progressed (Fig. 6).

**DISCUSSION**

Synovial osteochondromatosis is usually associated with joint-space widening; joint-space narrowing
is rare. Femoroacetabular impingement can be a cause of hip pain in young adults and a precursor to osteoarthritis. Cam-type impingement is caused by an aspherical femoral head. No association has been reported between synovial osteochondromatosis and femoroacetabular impingement. Progression to severe osteoarthritis is unlikely in a hip without osteoarthritic changes at the time of debridement. Instead, it is more likely to occur in other synovial disorders, such as pigmented villonodular synovitis and rheumatoid arthritis. In the current case, cam-type impingement caused progression of osteoarthritis, in addition to synovial osteochondromatosis. Adherent circumferential chondromas can lead to femoroacetabular impingement.

In our patient, the surgical technique described by Lim and Park rather than the technique of Ganz et al. was used because no trochanteric flap osteotomy was needed. Nonetheless, surgical dislocation of the hip using the Ganz technique is appropriate for patients with synovial osteochondromatosis with extracapsular disease when more extensive surgical exposure is necessary. To prevent progression of osteoarthritis, a combination of removal of all loose bodies, synovectomy, and osteochondroplasty should be performed when there is coronal osteophyte formation. Further studies are needed to confirm whether osteochondroplasty prevents osteoarthritis progression in the long term.

**DISCLOSURE**

No conflicts of interest were declared by the authors.
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