This report describes the treatment of 2 cases of full-thickness cartilage defect of the femoral head. The authors performed osteochondral autologous transplantation with a different technique that has not been reported to date. One patient was 37 years old, and the other was 42 years old. Both presented with hip pain. In both patients, radiograph and magnetic resonance imaging scan showed a focal chondral defect on the weight-bearing area of the femoral head and acetabular impingement. A retrograde osteochondral autologous transplantation technique combined with hip arthroscopy and arthroscopic impingement treatment was performed. After a 2-month recovery period, the symptoms were resolved. In the first year of follow-up, Harris Hip scores improved significantly (case 1, 56.6 to 87.6; case 2, 58.6 to 90). The technique described yielded good short- and midterm clinical and radiologic outcomes. To the authors’ knowledge, this report is the first to describe a retrograde osteochondral transplantation technique performed with hip arthroscopy in the femoral head.
Treatment of hip disease in the adult is a rapidly evolving and growing area of orthopedic surgery. Less invasive techniques, such as hip arthroscopy, are becoming common. Currently, the most common indications for hip arthroscopy are labral pathologies and impingement syndromes. Chondral lesions are one of the most elusive sources of hip joint pain. The treatment of chondral lesions in the femoral head is a challenging issue, considering the young age of patients. In full-thickness cartilage defects, hip arthroscopy is known as a diagnostic method. Most of the patients reported in the literature were treated with open surgical procedures. To the authors’ knowledge, this report is the first to describe a retrograde osteochondral transplantation technique performed with hip arthroscopy in the femoral head.

The authors report a clinical series of 2 patients with hip pain secondary to a chondral defect in the femoral head and acetabular pincer impingement who were treated with an unusual technique.

The patients were informed that information about their cases would be submitted for publication, and they consented. Institutional review board approval was obtained.

**Case Reports**

**Patient 1**

A 42-year-old woman presented with left hip pain for 6 months, with no history of trauma and no history of systemic disease or childhood hip disease. The pain was activated by squatting. On physical examination, the patient had a normal range of motion but pain on internal rotation and flexion.

Femoroacetabular impingement and focal chondral defect were determined by radiograph and magnetic resonance imaging (MRI) scan findings. Conservative treatment was given for 6 months but yielded unsatisfactory results. The Harris Hip score was 56.6.

The authors obtained the standard radiographic protocol of anteroposterior or pelvic radiograph and Dunn view of the painful hip. An MRI scan was also obtained (Figure 1).

Osteochondral defect and acetabular pincer-type impingement in the femoral head were diagnosed, and hip arthroscopy was planned. Left hip arthroscopy was performed in the usual manner. During arthroscopy, the anterior capsule was released from the anterior portal and a labral tear was identified. Because the labrum was so thin, the labral tear was excised. An acetabular margin that caused impingement was displayed and shaved with a burr. A 12-mm square chondral defect (Outerbridge grade 3) was found in the weight-bearing area of the femoral head. The defect was curetted and shaved. Under fluoroscopy, a guide K-wire was sent from the lateral border of the femur and visualized with the arthroscope. It was provided to centered in the defect by an anterior cruciate ligament guide. It was overdrilled with a 12-mm diameter. At that time, the osteochondral plug was harvested from the left medial femoral condyle, which was 13 mm in diameter and 15 mm deep, using OATS (Arthrex, Naples, Florida). The lateral entry of the femoral tunnel was widened, and the plug was carried forward to be press-fit. Under fluoroscopic and arthroscopic control, the congruency of the joint surface was controlled. Afterward, the femoral tunnel was filled with a 60-mL spongy bone chip graft.

The patient returned for 2-year follow-up. At the last follow-up, the patient had no symptoms. The postoperative radiologic assessment is shown in Figure 2.

**Patient 2**

A 37-year-old woman presented with left hip pain for 9 months without a history of trauma. The pain was worsened by walking long distances. Physical examination showed pain on internal rotation and flexion after 90°. Femoroacetabular impingement and focal chondral defect were identified on radiographic and MRI findings. Conservative treatment was given for 6 months but yielded unsatisfactory results. The Harris Hip score was 58.6. Preoperative radiographs are shown Figure 3.

With the diagnosis of a chondral defect in the femoral head and acetabular pincer-type impingement, hip arthroscopy and retrograde osteochondral plug transfer were performed as described. Because the chondral plug that was harvested was 8 mm, it was drilled to 7 mm to be press-fit.

Early (1-month) and 1-year postoperative radiographs are shown in Figure 4.

**Figure 1:** Preoperative anteroposterior radiograph (A) and coronal magnetic resonance imaging scan (B) of Patient 1. The arrows indicate the chondral defect.
**TECHNIQUE**

The patient was positioned supine on the fracture table. Under general anesthesia, the joint was gently distracted and the anterior, anterolateral, and posterolateral portals were used with a 70° arthroscope. When the chondral defect was identified, the area was curetted and the fragmented chondral tissue was excised. Under fluoroscopic control with an anterior cruciate ligament femoral guide, it was drilled under 1 size of harvested plug to be press-fit. The plug was harvested from the lateral border of the medial femoral condyle using OATS. The femoral tunnel was widened with larger drills. The harvested chondral plug was dispatched to the femoral head with fluoroscopic and arthroscopic control until the plug and intact chondral articulation were equalized. The femoral tunnel was filled with a synthetic graft (Figure 5).

**REHABILITATION AND RECOVERY**

The patient was discharged home the day after surgery and was restricted to touch weight bearing with 2 crutches for 6 weeks. In the next 2 weeks, the patient was restricted to 1 crutch. At the end of the second month, full weight bearing was allowed.

Patient 1 had 2 years of follow-up, and Patient 2 had 2.5 years of follow-up. At the last follow-up, neither patient had symptoms in the hip and knee region. In the first year of follow-up, Harris Hip scores were 87.6 and 90 for Patient 1 and Patient 2, respectively.

**DISCUSSION**

Osteochondral transplantation is a well-established technique for the treatment of isolated, full-thickness cartilage lesions. It has promising clinical results in the knee and ankle, especially in younger patients. However, recommendations for the treatment of osteochondral defects within the femoral head are poorly described. All cases that have been published to date were treated with the safe dislocation method. To the authors’ knowledge, this report is the first to describe the retrograde osteochondral transplantation technique with hip arthroscopy in chondropathy of the femoral head.

The procedure is a technically demanding but feasible method, especially in young adults. Compared with the size of the operation in the safe dislocation method, the technique described in this article is much safer, is minimally invasive, and has fewer complications. Furthermore, with proper patient selection, this technique has more advantages than open surgery, such as treating labral lesions and impingement syn-
dromes at the same time, as in these 2 cases.

**CONCLUSION**

One of the limitations of these case reports is the lack of long-term follow-up results, as in the knee joint. A 1-year follow-up period is inadequate to assess whether osteoarthritic joint degeneration will occur in the long term.

Another limitation is the small number of cases. A larger series of patients would be desirable to allow for statistical analysis of the technique.

**REFERENCES**


Figure 5: Fluoroscopy showing the stages of preparation for retrograde drilling of the femur: anterior cruciate ligament guide insertion (A, B); insertion of the guidewire (C); and drilling of the femur (D). Arthroscopy of chondral defect (CD) preparation (E) and after retrograde placement of the chondral plug (CP) (F). Abbreviations: A, acetabulum; F, femur.