Minimum 2-Year Outcomes of Arthroscopic Management of Symptomatic Hip Labrum Tears in Patients With Global Acetabular Overcoverage

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Purpose: To report minimum 2-year patient-reported outcomes (PROs) after hip arthroscopy (HA) for symptomatic labral tears in patients with global acetabular overcoverage. **Methods:** This study was a retrospective case series of patients who underwent HA from April 2008 to April 2013. The inclusion criteria were patients with global acetabular overcoverage, defined as a lateral center-edge angle greater than 40°, and with coxa profunda, defined radiologically by the ilioischial line lateral to the acetabular floor. Only patients with minimum 2-year follow-up and no history of hip conditions or surgery were included. We recorded demographic, examination, radiologic, and intraoperative findings; intraoperative procedures performed; and the following PROs: modified Harris Hip Score (mHHS), Non-Arthritic Hip Score, Hip Outcome Score—Activities of Daily Living (HOS-ADL), Hip Outcome Score—Sports-Specific Subscale (HOS-SSS), visual analog scale, and patient satisfaction. **Results:** The inclusion criteria were met by 39 patients, of whom 35 (89.7%) had 2-year follow-up. There was no distinct pattern of examination findings. The study population had a mean acetabular inclination of −1.19° and an anterior center-edge angle of 35°. There was no association with measures of acetabular retroversion. Intrasubstance tearing of the labrum occurred in 75% of patients (mean tear size, 2.68 hours on acetabular clock face; mean location, 11.5 to 3 on acetabular clock face). There were significant improvements in the mean scores for all PROs: mHHS, 13.5 ± 17.7 points ($P < .01$); Non-Arthritic Hip Score, 14.3 ± 21.3 ($P < .001$); HOS-ADL, 11.6 ± 19.7 ($P < .001$); HOS-SSS, 17.1 ± 35.1 ($P < .001$); and visual analog scale, −2.77 ± 2.58 ($P < .001$). The mean patient satisfaction rating was 6.61. The improvements in mHHS, HOS-ADL, and HOS-SSS did not reach the minimal clinically important difference. The incidence of secondary procedures was 17% (4 patients underwent conversion to total hip arthroplasty and 2 required revision HA). **Conclusions:** HA in patients with global acetabular overcoverage was associated with improvements in PROs and pain at minimum 2-year follow-up. However, these improvements did not reach the minimal clinically important difference for the mHHS, HOS-ADL, and HOS-SSS. The incidence of secondary procedures was 17%. The pattern of labral injury is predominantly intrasubstance labral damage with a narrow rim of adjacent chondral injury. **Level of Evidence:** Level IV, therapeutic case series.

Advancements in instrumentation and techniques have extended the scope of hip arthroscopy to the treatment of complex osseous morphologies that could previously only be safely addressed with an open approach.[1] Global pincer-type femoroacetabular impingement (FAI) is an example for which obtaining access and performing osseous correction are technically challenging.[2] Radiology typically reveals an acetabulum with a lateral center-edge angle (LCEA) of Wiberg greater than 40° with concomitant protrusion or profunda.[3] Technical challenges of performing hip arthroscopy in patients with global pincer-type FAI pertain to difficulties with hip distraction, central-compartment access and instrument navigation, acetabuloplasty, and chondrolabral surgery on the posterior acetabulum.[1]

Open surgical dislocation has traditionally been used, is still advocated by some authors for global pincer-type FAI to allow safe access to the central compartment to treat intra-articular derangements, and provides a

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circumferential view of the acetabulum and femoral neck to adequately address osseous impingement and posterior lesions.[4] However, the procedure has a slower rehabilitation and higher morbidity than hip arthroscopy.[5]

The purpose of this study was to report minimum 2-year patient-reported outcomes (PROs) after hip arthroscopy for symptomatic labral tears in patients with global acetabular overcoverage. We hypothesized that current arthroscopic techniques for the treatment of global overcoverage would address symptomatic pathology associated with acetabular overcoverage in terms of PROs and complications associated with safe access.

Methods

Patient Selection

This study was a retrospective case series on prospectively collected data of patients who had undergone hip arthroscopy for the treatment of painful intra-articular disorders for which nonoperative management had failed during the study period from April 2008 to April 2013. Institutional review board approval (IRB 5276) was obtained for the study. The inclusion criteria were patients with an LCEA greater than 40° and coxa profunda as defined radiologically by the ilioischial line lateral to the medial border of the acetabular teardrop[3,6] (Fig 1). Only patients with minimum 2-year follow-up were included in the study. The exclusion criteria were patients with previous hip conditions (e.g., fractures, Legg-Calvé-Perthes disease, slipped capital epiphysis, and avascular necrosis), inflammatory arthritis, osteoarthritis with a Tönnis grade greater than 2,[7] and previous hip surgery. The following demographic data were recorded: age, sex, laterality, body mass index, and time of latest follow-up.

Physical Examination

Physical examination was performed on all patients by the senior surgeon (B.G.D.). Maximum flexion, abduction, and maximum internal and external rotation at 90° of flexion were recorded. Anterior, lateral, and posterior impingement tests were performed as described by Byrd[8] and recorded as either present or absent.

Radiologic Evaluation

Radiographic views included an anteroposterior pelvic view, a 45° Dunn view,[9] and a false-profile view.[10] Measurements were made including the acetabular inclination angle using the method described by Jessel et al.,[11] anterior center-edge angle (ACEA) and LCEA of Wiberg,[6] presence of the ischial spine sign,[12] presence of the crossover sign,[13] and alpha angle (Dunn view).[9] Coxa profunda was defined on the anteroposterior pelvic view as the ilioischial line lateral to the medial border of the teardrop.[14] The crossover sign size was quantified according to its percentage from the acetabulum diameter. All measurements were taken by the same orthopaedic surgeon (S.C.) using a picture archiving and communication system computer program and repeated at a separate time interval to determine intrarater reliability.

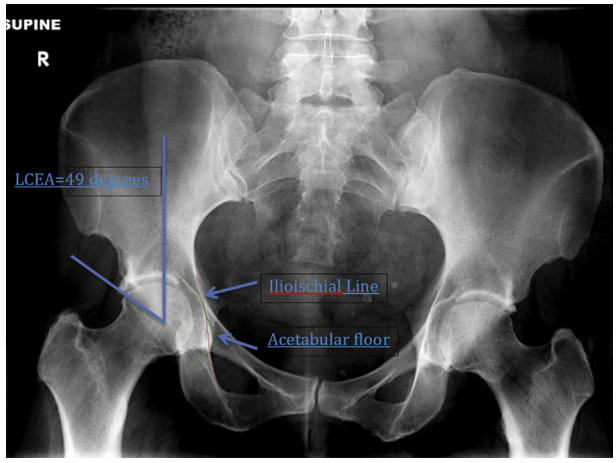

Fig 1. Radiograph of a patient with acetabular overcoverage and coxa profunda. The lateral center-edge angle (LCEA) measures 49°, and the acetabular floor is medial to the ilioischial line.

Surgical Technique

Intraoperative Diagnoses. All hip arthroscopies were performed with patients under general anesthesia in the supine position using a traction table and well-padded perineal post. Access was achieved by venting the joint with an 18-gauge spinal needle followed by insertion of a 4.5-mm cannula using a nitinol guidewire. This technique could safely be used with at least 1 cm of hip joint distraction. In cases in which adequate distraction could not be achieved, an outside-in approach was used to create a capsulotomy and perform a rim resection to allow safe passage of instruments into the central compartment. Intraoperative diagnoses and procedures performed in the central, peripheral, and peritrochanteric compartments were recorded. Labral tears were classified according to a modification of the Seldes classification.[15] A Seldes type 1 tear was defined as disruption at the labral-chondral junction, and a Seldes type 2 tear was an intrasubstance tear. The Seldes classification is a histologic description of the labral tear, and our study has modified it to its macroscopic appearance. The clock-face method was used to document the size and location of the labral tear.[16] This method measures labral tearing using the 12-o'clock position as the most superolateral portion