

## Rapid development of osteoarthritis following arthroscopic resection of an “os acetabuli” in a mildly dysplastic hip—a case report

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A 42-year-old athletic woman attended our clinic complaining of right groin pain. The pain had begun 2 years previously when jogging. The pain had gradually become worse, limiting her daily activities and any sporting activities.

Clinical examination showed a positive impingement test and limitation of internal rotation of up to 20° at 90° of hip flexion. Plain radiographs showed a normal alpha angle, and a 12 × 14 mm “os acetabuli” was present at the superolateral acetabular rim (Figure 1). The joint was mildly dysplastic with a center-edge angle (CEA) (excluding the “os acetabuli”) of 15° (25° in the contralateral hip). The Tönnis angle was 24°. Differential diagnoses were an “os acetabuli” in a dysplastic hip, chronic avulsion fracture of the anteroinferior iliac spine (Larson et al. 2011), stress fracture (Martinez et al. 2006), or enchondroma-like lesion. The CT described the presence of an “os acetabuli” beside the joint surface with an intact anteroinferior iliac spine (Figure 2).

The patient’s pain persisted, and we made a hip arthroscopy. She was placed supine on the traction table. Due to the shape, size, and location of the lesion, access to the central compartment was difficult and an “outside-in” technique with a T-shaped capsulotomy was performed (Horisberger et al. 2010, Cuéllar et al. 2013). Dynamic intraoperative assessment showed impingement between the “os acetabuli” and the superior labrum, which was slightly frayed and detached from the acetabulum (Figure 3). The bony lesion was dissected and resected, keeping the underlying labrum intact. The labrum was reinserted with three 2.3-mm Bioraptor bone anchors (Smith and Nephew). The capsule was then repaired with interrupted Ultrabride sutures, with 2 side-to-side sutures. No femoral osteochondroplasty was performed.

After surgery, the patient was instructed not to bear weight for 4 weeks and then to resume partial weight bearing for another 4 weeks. Hyperextension was restricted for the first 3 months, to protect capsular healing. At 4-month follow-up, the patient was walking unaided and was free from pain; she had a full range of motion and radiographs confirmed the complete resection of the “os acetabuli”—but a slight joint narrowing was detected. At 6-month follow-up, she had again developed groin pain. At 10 months, radiographs showed a Tönnis-III degenerative stage (Figure 4). A total hip replacement was

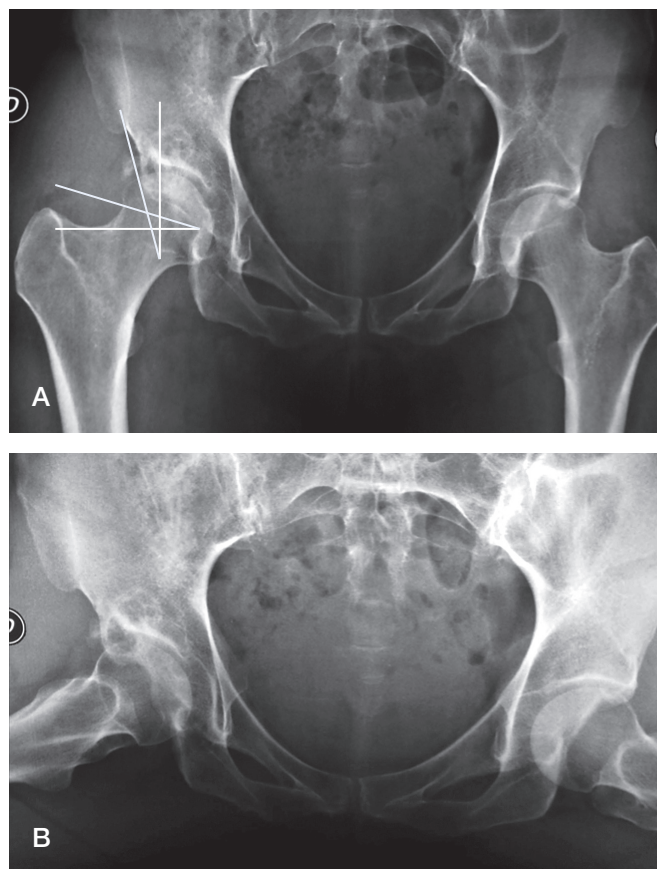


Figure 1. Plain AP (A) and lateral view (B) showing a normal alpha angle. A 12 × 14 mm calcified irregular-shaped image was seen at the superolateral acetabular rim. Excluding the “os acetabuli”, the center-edge angle was 15° (25° in the contralateral hip). The Tönnis angle was 24°.

required at 12 months. During the joint replacement, we found osteoarthritis and a reduction of femoral head coverage.

### Discussion

The list of indications for arthroscopic hip surgery is growing. Currently, there is an open debate about the indications in

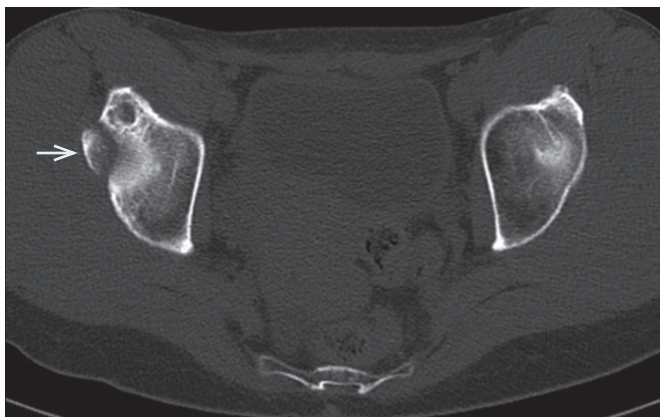


Figure 2. Sagittal plane CT scan image optimized for bone density, showing the “os acetabuli” (arrow).

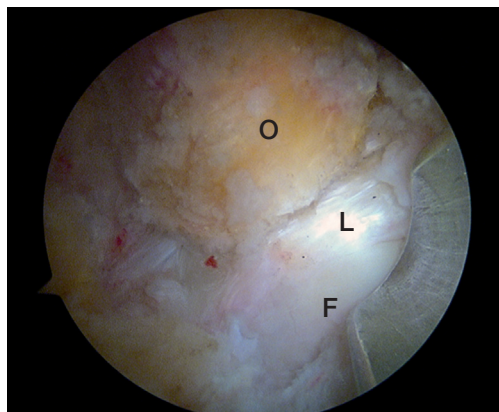


Figure 3. View of the peripheral compartment from the anteromedial portal with a 30° scope. The close relation between the detached labrum (L) and the “os acetabuli” (O) can be seen. F: femoral head.

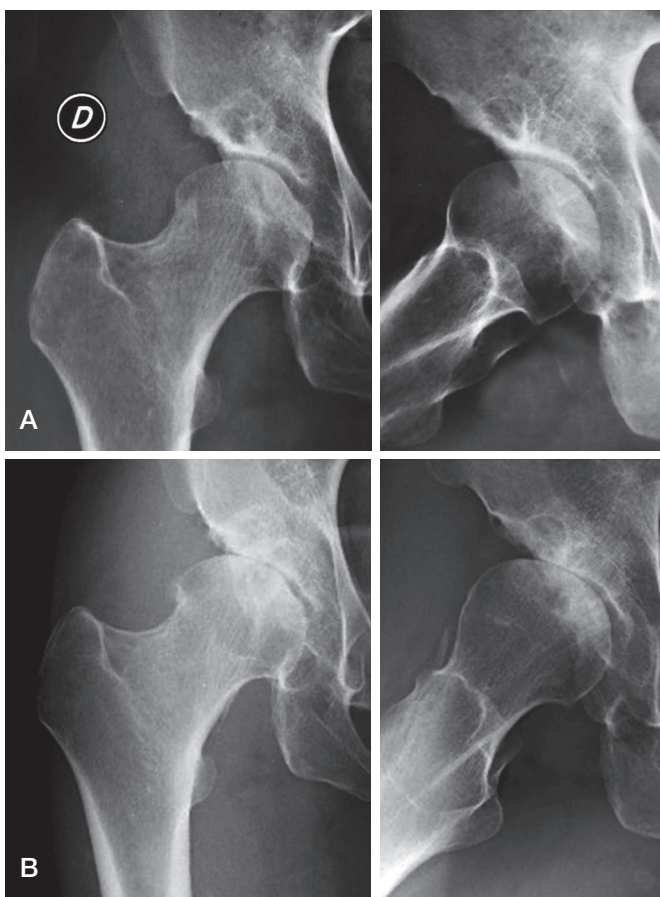


Figure 4. A. At 4-month follow-up, complete resection of the “os acetabuli” and a slight narrowing of the joint space. B. At 10-month follow-up anterosuperior subluxation and clear degenerative joint disease with sclerotic joint line and subchondral cyst formation.

borderline hip dysplasia. There are some poor prognostic factors that may contraindicate hip arthroscopic surgery, such as osteoarthritis (Tönnis grade II or more), large chondral lesions

that affect the joint loading area, and chondral lesions with subchondral cysts in the femoral head, especially in patients over 50 years of age (Philippon et al. 2009). Although we found no other poor prognostic factors in our patient, a low postoperative head coverage angle should be added as a poor prognostic factor in hip arthroscopy (Bozic 2013).

In an attempt to minimize the risk of hip instability or degenerative joint disease following arthroscopic surgery (Matsuda 2009, Ranawat et al. 2009), we repaired the cartilage lesion with fibrin “glue”, re-attached the labrum with bone anchors, closed the capsule with sutures, and finally protected soft tissue healing—keeping the patient from weight bearing for 4 weeks and limiting hyperextension of the hip joint.

At least 3 other cases of iatrogenic instability after hip arthroscopy in patients with dysplasia have been published. In 1 case, the instability was related to debridement of the ligamentum teres and the capsulotomy (Mei-Dan et al. 2012). In the other 2 cases, there was severe hip dysplasia with a CEA of only 10° and 11° (Matsuda and Khatod 2012). Our patient had a mild dysplastic hip with a CEA, excluding the “os acetabuli”, of 15°. Parvizi et al. (2009) suggested that hip arthroscopy is not useful in dysplastic hips with a CEA of < 20°, but they did not repair the labrum. In contrast, other studies have shown improvement in hips with a CEA of < 20° when labral repair was performed (Byrd and Jones 2003).

When an “os acetabuli” like this is encountered, many possible origins of the bone must be considered. An enchondroma at this level is possible, but the CT scan at the arthroscopic evaluation during resection did not show any cartilaginous tissue. A chronic avulsion fracture of the anteroinferior iliac spine has a similar appearance and has been put forward as a cause for impingement (Larson et al. 2011), but an intact spine was found in the CT scan. Martinez et al. (2006) have suggested that these “os acetabuli” are in fact stress fractures of the acetabular rim related to primary impingement. Although this etiology could not be ruled out with certainty, under

arthroscopic evaluation the separation line was not perpendicular to the joint surface, which is something that is characteristic of these fractures.

The surgery that we performed in our patient followed the usual recommendations in the literature for mildly dysplastic hips (Matsuda 2009, Parvizi et al. 2009, Ranawat et al. 2009, Matsuda and Khatod 2012, Mei-Dan et al. 2012), but this did not prevent a catastrophic failure. We propose the role of “os acetabuli” to be that of an important static stabilizer that enlarges the surface of the acetabulum. Thus, resection should be carefully planned to avoid poor femoral head coverage postoperatively (Matsuda and Khatod 2012). We should add “os acetabuli” as a contributor to stabilization of a mild dysplastic hip—just like the labrum, the capsule, and ligaments (Bedi et al. 2011, Myers et al. 2011, Domb et al. 2013).

Dealing with hip problems in middle-aged patients with mild dysplasia is a challenge, as relatively minor procedures, such as the one presented here, may result in early failure of the hip joint. Perhaps a possible alternative would be to try to fix the “os acetabuli” into the acetabulum, but this has not been attempted.

Bedi A, Galano G, Walsh C, et al. Capsular management during hip arthroscopy: from femoroacetabular impingement to instability. *Arthroscopy* 2011; 27(12): 1720-31.

Bozic K J. Trends in hip arthroscopy utilization in the United States. *J Arthroplasty* 2013; 28(8 Suppl): 140-3

Byrd J W, Jones K S. Hip arthroscopy in the presence of dysplasia. *Arthroscopy* 2003; 19(10): 1055-60

Cuéllar R, Ruiz-Ibán MÁ, Cuéllar A, Sánchez A, et al. The peripheral compartment as the initial gateway for hip arthroscopy in complex cases: technical note. *Orthopedics* 2013; 36: 456-62.

Domb B G, Stake C E, Lindner D, et al. Arthroscopic capsular plication and labral preservation in borderline hip dysplasia. *AM J Sports Med* 2013;41(11): 2591-8.

Horisberger M, Brunner A, Herzog R F. Arthroscopic treatment of femoroacetabular impingement of the hip: A new technique to access the joint. *Clin Orthop Relat Res* 2010; 468: 182-90.

Larson C M, Kelly B T, Stone R M. Making a case for anterior inferior iliac spine/subspine hip impingement: three representative case reports and proposed concept. *Arthroscopy* 2011; 27: 1732-7.

Martinez A E, Li S M, Ganz R, Beck M. Os acetabuli in femoroacetabular impingement: stress fracture or unfused secondary ossification centre of the acetabular rim? *Hip Int* 2006; 16: 281-6.

Matsuda D K. Acute iatrogenic dislocation following hip impingement arthroscopic surgery. *Arthroscopy* 2009; 25: 400-4.

Matsuda D K, Khatod M. Rapidly progressive osteoarthritis after arthroscopic labral repair in patients with hip dysplasia. *Arthroscopy* 2012; 28: 1738-43.

Mei-Dan O, McConkey M, Brick M. Catastrophic failure of hip arthroscopy due to iatrogenic instability: can partial division of the ligamentum teres and iliofemoral ligament cause subluxation? *Arthroscopy* 2012; 28(3): 440-5.

Myers C A, Register B C, Lertwanich P, et al. Role of the acetabular labrum and the iliofemoral ligament in hip stability: An in vitro biplane fluoroscopy study. *AM J Sports Med* 2011; 39: 85-91.

Parvizi J, Bican O, Bender B, et al. Arthroscopy for labral tears in patients with developmental dysplasia of the hip: a cautionary note. *J Arthroplasty* 2009; 24(6): 110-3.

Philippon M J, Briggs K, Yen Y M, et al. Outcomes following hip arthroscopy for femoroacetabular impingement with associated chondrolabral dysfunction: minimum two-year follow-up. *J Bone Joint Surg Br* 2009; 9: 16-23.

Ranawat A S, McClincy M, Sekiya J K. Anterior dislocation of the hip after arthroscopy in a patient with capsular laxity of the hip: A case report. *J Bone Joint Surg Am* 2009; 91: 192-7.