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Case report

Hip arthroscopy for the treatment of osteoid osteoma of the acetabulum: a case report study.

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Abstract. Osteoid osteoma (OO) of the acetabulum is a quite rare pathology, with an overall incidence of 0,5%. Frequently the diagnosis of OO may not be simple to obtain, because the clinical presentation can mimic other common hip pathologies. We present a case report of OO of the anterior/superior edge of the acetabular fossa associated with a degenerative lesion of the acetabular labrum and with a concomitant femoral neck cam. The patient was refractory to prior pharmacological therapy with NSAIDs so arthroscopic treatment was performed. As a rational strategy, we trimmed the region of the tumor and we finally excised the nidus of the OO. Finally a femoroplasty and a partial labrectomy were performed. At the last follow-up the patient was symptom-free and able to walk with full weight bearing. The nocturnal pain was gone and his ROM improved fully without pain. The arthroscopic procedure, being less invasive, represents a valid option in the treatment of OO, allowing to treat radically the tumor and concurrently diagnose and repair any chondral or soft tissue injuries. (www.actabiomedica.it)

Key words: Osteoid osteoma, hip, arthroscopy, acetabulum

Background

Osteoid osteomas (OOs) are a solitary benign osteoblastic tumors represent approximately 10% of benign bone tumors and usually located in long bones of the lower extremities of the children and young adults (1,2). It commonly appears during the second and third decades of life with a male to female predominance of approximately 2-1 (3).10% of OOs have an intra-articular location and about 0,5% of the lesions occur at the acetabulum (4). Concerning the clinical presentation, the diagnosis of the OO may not be easy to achieve, because it can mimic other hip pathologies such femoral acetabular impingement (FAI), Legg-Calve-Perthes disease or slipped capital femoral epiphysis. Patients often present with increasing groin pain, almost during the night, that is partially relieved with the use of non-steroidal anti-inflammatory drugs (NSAIDs) (5). Joint effusion, decreased ROM, muscle atrophy in the affected leg or abductor muscles, limb length discrepancy, hip contractures and antalgic gait are the main clinical manifestations of OO's pathology (6,7). In addition to the history and clinical examination X-rays, CT scan and MRI are useful and mandatory tools to make a proper diagnosis of OO. The treatment of OO can be both surgical and conservative. Since prolonged administration of NSAIDs has been reported to take 2-15 years for relieve the pain, the surgical procedures are the gold standard for the treatment of the intra-articular OOs (8). Many surgical treatment of OO lesions are described; percutaneous radiofrequency ablation (RFA), open surgical procedure or hip arthroscopy. The aim of the study is to highlight the fact that osteoid osteoma of the acetabulum is rare, difficult to diagnose and well treated with the use of hip arthroscopy.

Methods

Case Description

An healthy 31-year-old male presented with 3 years history of right hip pain of insidious onset. Pain was initially mild but gradually increased in severity over few months and worse on movement, especially in internal rotation. The pain was mainly located in the groin area and was radiating to the thigh. The pain was worse at night and waked up the patient from sleep every night. The treatment with NSAIDs did not completely relief his pain. Clinical examination of the affected hip revealed normal ROM with a restriction in external and internal rotation. Sometimes, after a long walk, the patient reported antalgic gait. Radiographic features of intra-articular OO failed to show any tumor on plain radiograph, probably because the lesion was lesser than 4 mm in size (Figure. 1). CT scan, being the gold standard and the most useful imaging modality, identified a small lytic area, surrounded by reactive bone sclerosis. A nidus, which is a small area of calcification in the center of the lytic lesion, was found as well (Figure. 2). MRI showed an extensive bone marrow edema associated with a chondral hypertrophy and acetabular labrum lesion at the anterior-superior edge of the acetabular fossa (Figure. 3). The same findings were highlighted with the use of 99 mTc scintigraphy, demonstrating increased uptake of radioisotope in the acetabular fossa of the left hip (Figure. 4). With the possible higher rate of complications of open surgery that requires hip dislocation, the patient agreed for an attempt of arthroscopic excision of the tumor.

Arthroscopic findings and surgical technique

The patient was placed in the supine position, with the hip placed in 15 flexion, 10 internal rotation and neutral abduction. Traction was applied under fluoroscopy, and the following two standard

Figure 1. Hip radiographs showing a femoral acetabular impingment CAM-type in an apparently normal hip joint.

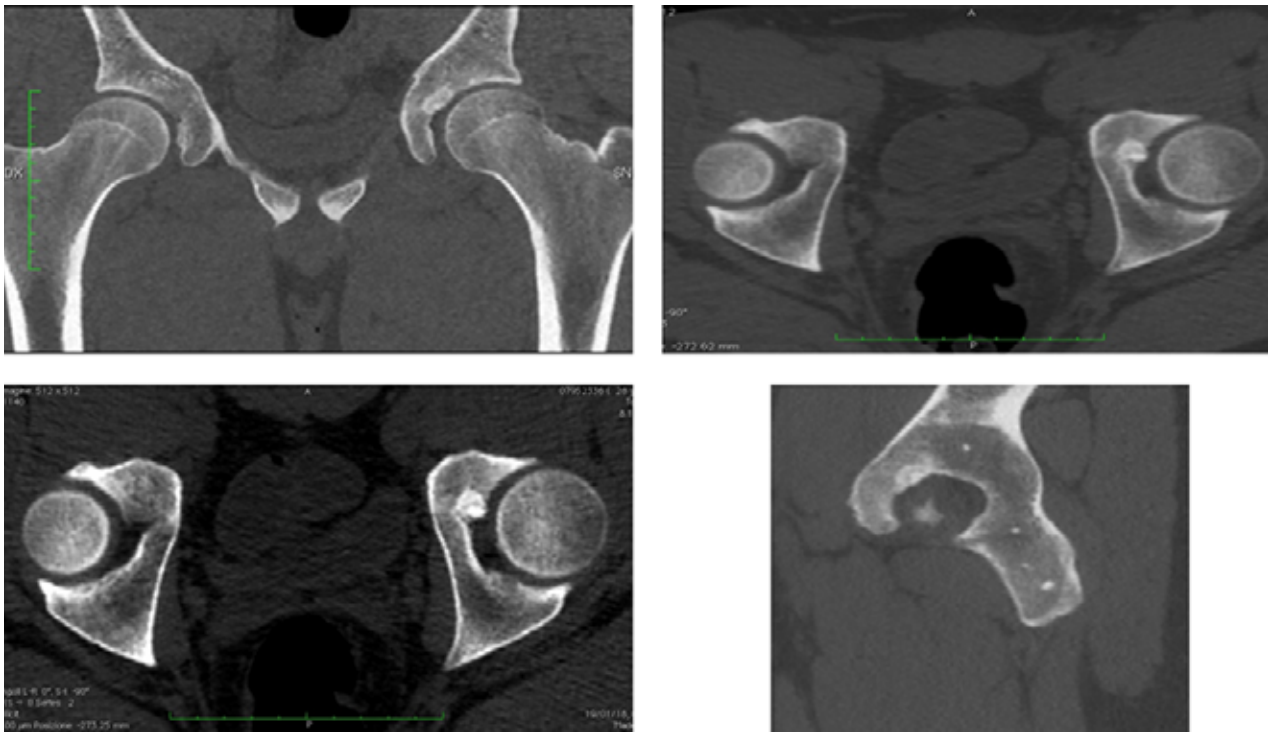

Figure 2. Hip CT scan identifying a small lytic area with the typical nidus into its center, surrounded by reactive bone sclerosis.

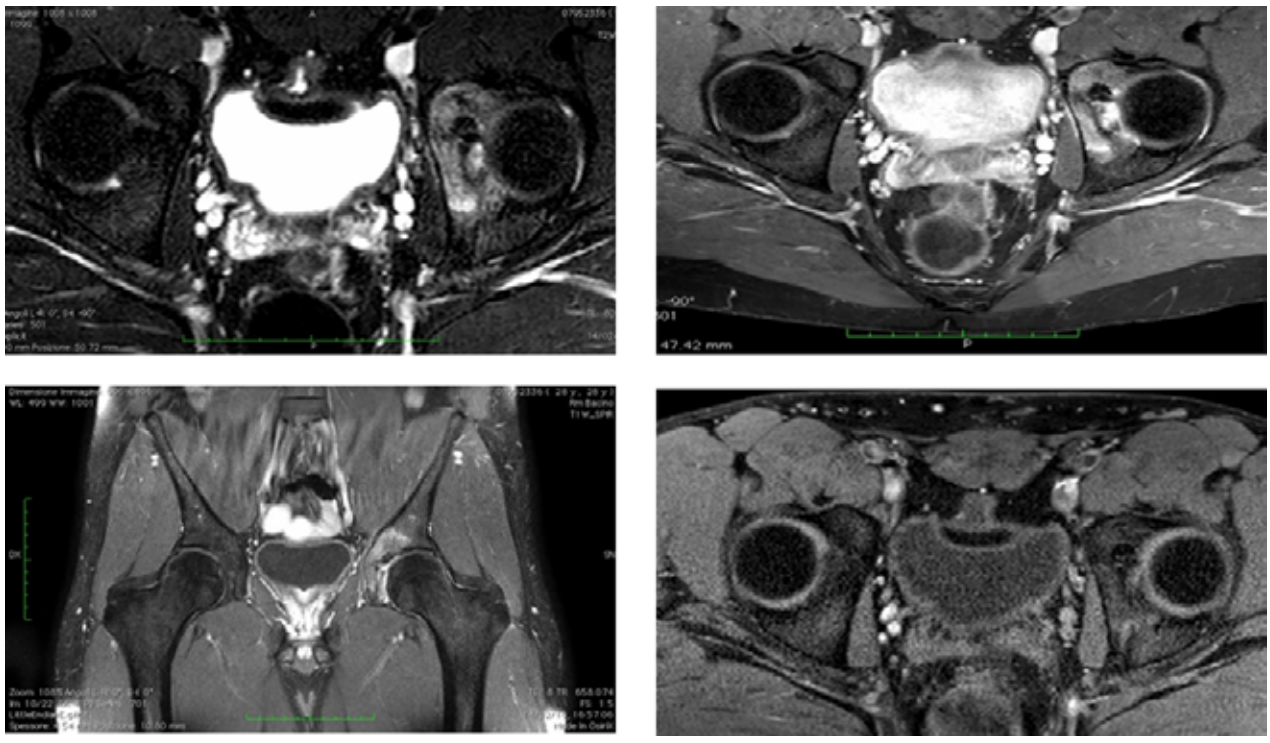

Figure 3. Hip MRI highlighting an extensive bone marrow edema associated with a chondral hypertrophy and acetabular labrum lesion at the anterior-superior edge of the acetabular fossa.

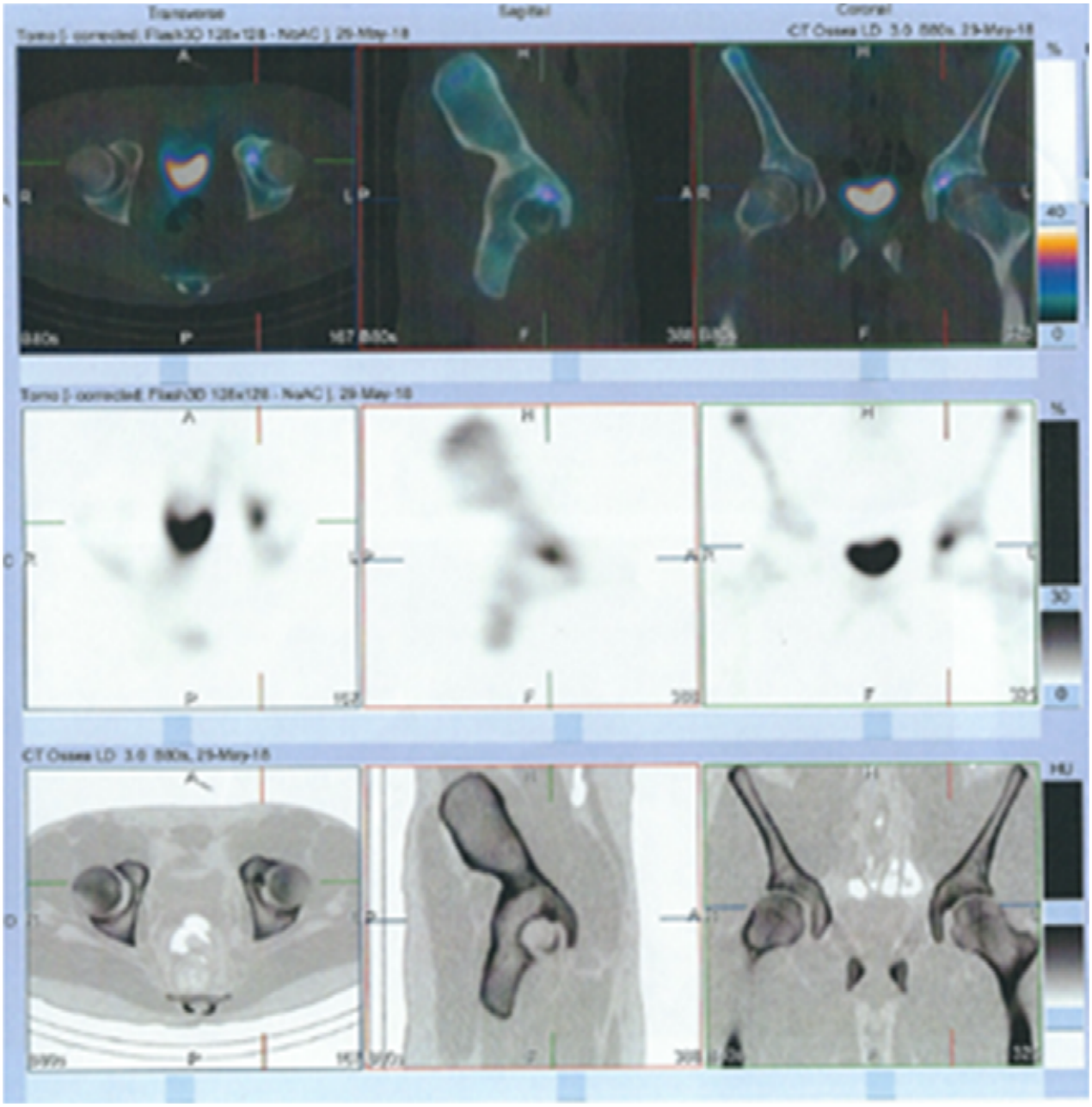

Figure 4. 99 mTc bone scintigraphy showing increased uptake of radioisotope in the acetabular fossa.

hip portals were created: anterolateral portal (AL) and mid-anterior portal (MAP). A widespread synovitis associated with a degenerative lesion of the anterior/superior portion of the acetabular labrum with a wave sign were identified. The surgeon decided to treat these lesions lately in order to avoid bleeding. Furthermore a femoral neck cam was found and immediately treated with an a osteoplasty (Figure. 5).

The region of the tumor was identified with irregularities of the cartilage at the anterior/superior edge of the acetabular fossa. A burr and a radiofrequency instrument was placed in the region of the tumor. This region was trimmed, and the deep cavity of the nidus was identified and excised (Figure. 6). Finally a partial labrectomy was performed. No intra- or postoperative complications were encountered. Histological

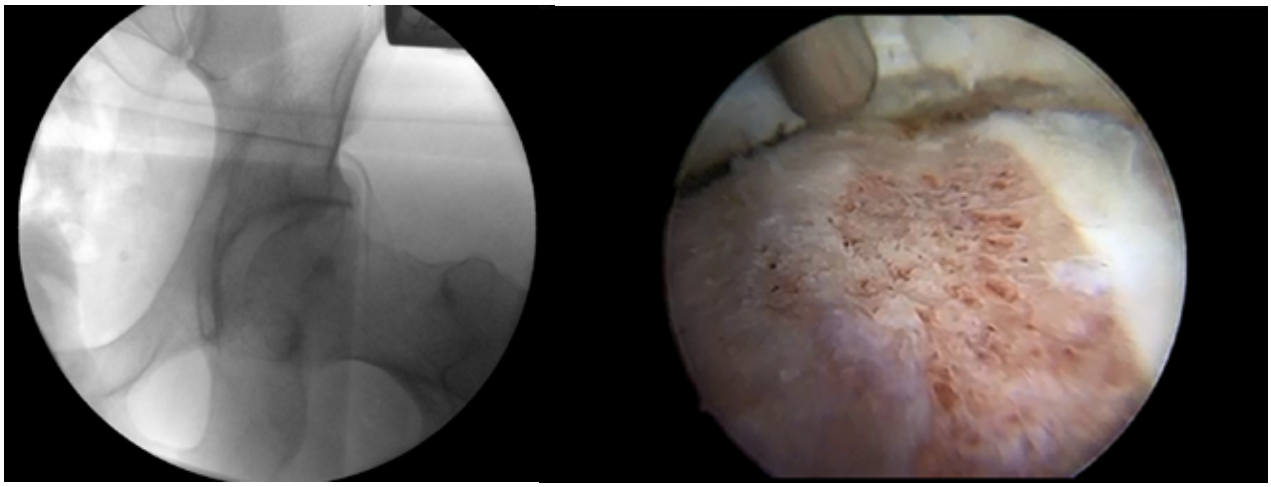

Figure 5. Post-operative radiograph after osteoplasty of the femoral neck (*on the left*) and intra-operative arthroscopic shaving of the femoral neck CAM (*on the right*).

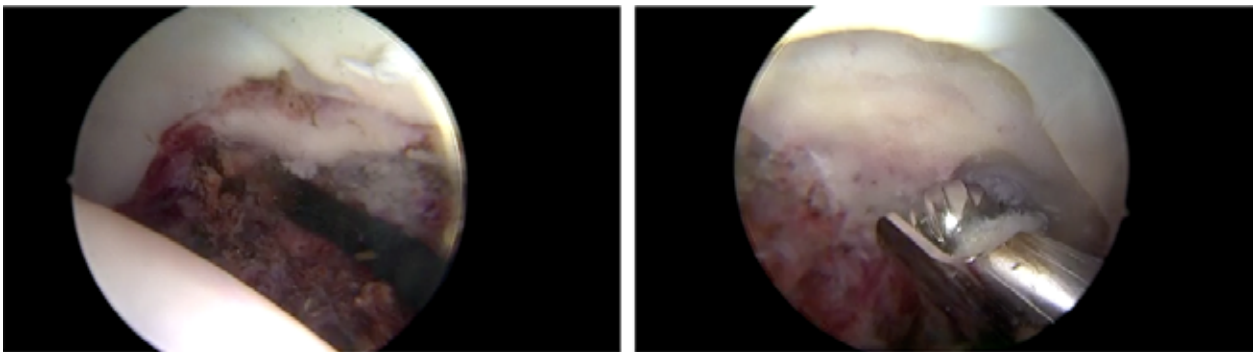

Figure 6. Intraoperative findings showing the excision of the nidus, associated with irregularities of the cartilage at the anterior/superior edge of the acetabular fossa.

examination of the excised tissue confirmed the diagnosis of OO.

Post-operative rehabilitation

The patients was discharged two days after the surgery, with limited toe-touch weight bearing for 4 weeks with ROM encouragement, but internal and external rotation were avoided. After the first month, ROM was gradually improved without limitation regardless of pain.

Clinical results

The patient reported an increase in the International Hip Outcome Tool from (IHOT 33) 41 pre-operatively to 82 at 10 months post-operatively. The Non Arthritis Hip Score (NAHS) increased from 45 pre-operatively to 81 at 10 months post-operatively. The Tegner Activity Score remained stable pre and post-operatively (5). The study was carried out in accordance with the principles of the Declaration of Helsinki. The patient gave informed consent for the publication of this report and accompanying images.

Discussion

The most important finding of this case report was the reliability and radicality of arthroscopic-assisted excision of an acetabular osteoid osteoma with very good clinical outcomes and without recurrence. Different options of treatment were described

in literature, ranging from conservative treatment to open surgical dislocation, percutaneous or arthroscopically assisted radiofrequency ablation (RFA) and hip arthroscopy (8). In the case described, an arthroscopic procedure was performed, resulting useful for treatment of both a CAM-type impingement of femoral neck and with labral tear and for completely removing the nidus of the lesion; in this study good clinical results were reported at 10 months of follow-up with a complete recovery of the operated hip and return to a normal painless daily activity. No recurrence of the lesion was reported. According to a recent review, Marwan et al. published same results on a pool of 11 patients with age ranging from 7 to 47 years and a follow-up period between 6 months to 2 years with a success rate of 100% and only one (10%) minor complication (transient pudendal palsy due to traction) (5). Recently, in a case series study, Spiker et al. showed 13 patients who underwent arthroscopic treatment had no reported surgical complications and no recurrences of the lesion till last follow-up (average 27 months) (8). Few studies showing femoral acetabular impingement associated to an acetabular osteoid osteoma were reported in literature. In this case report, arthroscopy revealed to be an ideal solution for treating labral tears and femoral neck abnormalities together with OO excision. In the available literature there are few articles concerning the treatment of a symptomatic FAI simultaneously with an arthroscopic excision of an OO (9,10), even if in most cases the OO was localized in the femoral neck determining a bump deformity at the head-neck junction (11); in only one case the benign tumor was localized in the acetabulum. Denker et al., precisely, described an arthroscopic technique to remove an acetabular rim-based OO concomitant to asymptomatic FAI treatment with a prompt symptom resolution (11). The arthroscopic technique has several advantages including lesser surgical approach, the possibility of treating osteochondral lesions and acetabular labral tears simultaneously, the possibility of a direct visualization by arthroscopy to ensure negative margins and a lower irradiation rate (12); the disadvantages, on the other hand, are represented by a possible transient nerve injuries due to traction, extravasation of fluid into soft tissues, instruments breakage and a possible failure of the procedure because it is operator-dependent (13). In the reported case no complications were described and the surgical procedure and the following histological diagnosis were concluded without recurrences. Literature referencing the diagnosis of OO of the acetabulum has clarified that CT is the gold standard and the best method to visualize the typical nidus (8). Standard radiographs are useless in lesions smaller than 4 mm, MRI is not as detailed as CT because of bone marrow edema and inflammation around the lesion, finally bone scintigraphy is very sensitive but less useful in cases of intra-articular localization because of synovial reaction (8,14). In this case report as well, diagnosis of OO was made using CT despite the use of other imaging methods such as radiographs, MRI and scintigraphy and this was responsible of a delayed diagnosis.

Conclusion

Acetabular osteoid osteoma represents 0,5% of all OO localizations and the diagnosis is often difficult because the pain is confused with an aspecific groin pain and first imaging investigations result negative. In these cases, less invasive techniques are preferable with a shorter hospitalization time and a faster recovery of the joint function. Arthroscopy represents a valid option in this direction with a great potential if compared to other procedures, allowing to treat radically the tumor and concurrently diagnose and repair any chondral or soft tissue injuries.

Conflict of interest statement: Each author(s) declare no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

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