

# Coexistence of Femoroacetabular Impingement and Snapping Hip Due to Osteochondroma of the Femoral Neck - a Case Report

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**Abstract:** *Introduction and objectives:* The aim of this report is to highlight the uncommon association of femoroacetabular impingement and snapping hip due to an osteochondroma of the femoral neck. Case report: a 41 years old male patient complaining progressive pain, limited range of motion and snapping hip with audible click for more than five years was diagnosed with an association of different conditions affecting his right hip joint and surgical treatment was indicated with good outcome in one year follow-up. *Conclusion:* The authors pointed out the rare association of these conditions in the same joint and the need of correct interpretation of radiological and clinical findings for diagnosis, surgical planning and satisfactory resolution of symptomatology, leading to recovery of the individual's functional capability.

**Keywords:** Femoroacetabular Impingement, Osteochondroma, Snapping Hip.

## INTRODUCTION

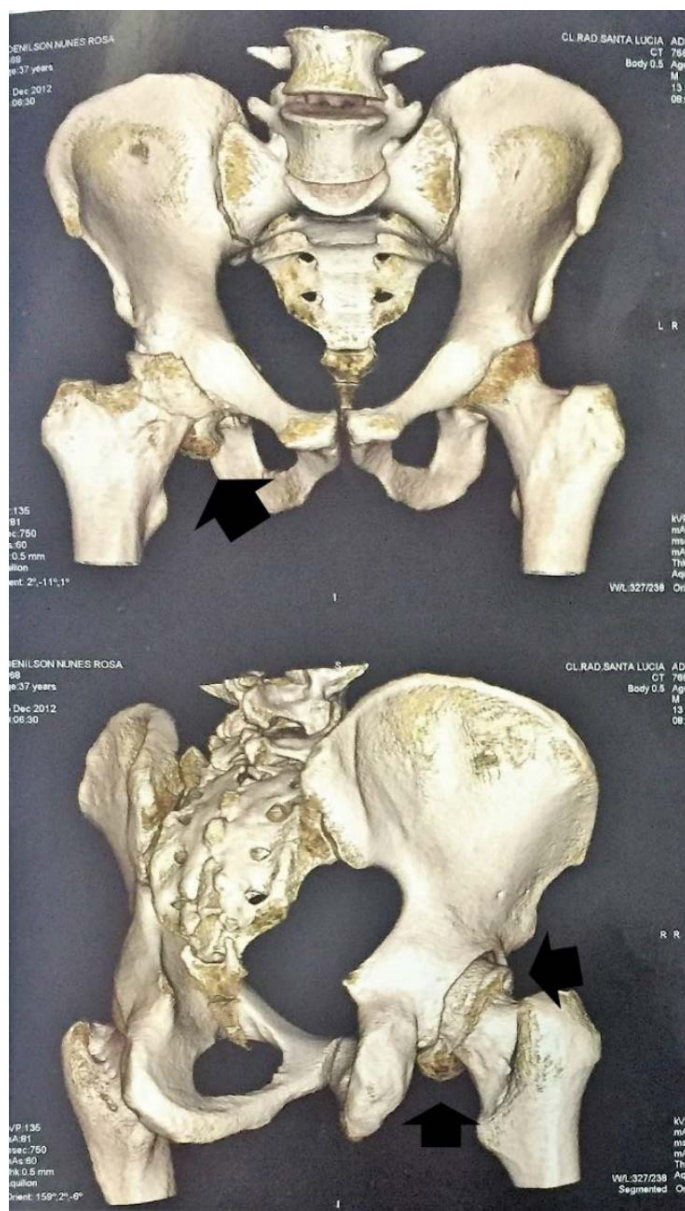
To describe the case of an individual with chronic pain, progressive functional limitation, snapping and audible click in the right hip joint due to intra-articular osteochondroma located on the femoral neck associated with mixed femoroacetabular impingement. After surgical treatment, he evolved with regression of symptoms and reestablishment of joint function. No similar case has been described to date in the Pubmed, Scielo, Scopus and Google Scholar databases.

## CASE DESCRIPTION

A.N.R., male, 41 years old, bricklayer, complaining of continuous pain with insidious onset in the right hip joint 5 years ago, limp, audible clicking in some movements and worsening of pain when squatting. There was progressive increase of pain and limitation of hip movements as well as the perception of audible and painful snapping in some positions, especially when squatting during the last 12 months. Physical examination showed a slight limp with negative Trendelenburg sign, pain on flexion and internal rotation and reduced range of motion of the hip joint with flexion = 90°, internal rotation = 10° and external

rotation = 30°, FADURI test positive (positive anterior impingement test), perceptible snapping and sometimes audible clicking on hip flexion when associated with mild abduction and external rotation. Neurological and vascular examination had no abnormalities. Test of posterior impingement (extension and external rotation) also positive. Harris Hip Score - HHS = 68 [1]. Asymptomatic contralateral hip with normal physical exam. Laboratory tests within normal limits. X-ray imaging and computed tomography (CT) scan revealed pediculated bone exostosis in the sub capital region at the femoral neck, projecting inferiorly and medially associated with radiological changes typical of mixed type femoroacetabular impingement, *i.e.*, combination of reduced head-neck offset and excessive anterolateral and posterior over coverage regarded as *coxa profunda* in early stage. On the lateral cross-table x-ray view an osseous excrescence at the anterolateral femoral head was noticed. According to the Kelgrenn & Lawrence classification [2] a degree I coxarthrosis was present with osteophytes and slight narrowing of the joint space (Figures 1, 2-A, 2-B, 3).-The patient was submitted to surgical resection of the osteochondroma, limited osteoplasty of the femoral neck with partial correction of the anterolateral dysmorphism and parsimonious resection of osteophytes in the postero-inferior aspect of the acetabulum and femoral head, using the posterior approach without dislocation of the femoral head [3] (Figure 4). Intra-operatively, the snapping was

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**Figure 1:** CT scan images. Note the exostosis and osteophytes.

observed during flexion associated with complete external rotation of the joint representing a mechanical conflict between the exostosis and the iliopsoas tendon. The patient evolved after one-year with total relief of symptoms (Figure 5). The anatomopathological examination confirmed the diagnosis of osteochondroma. The one year follow-up showed a significant evolution on the functional score (HHS) which reached 93 points (“excellent”) compared with 68 points pre operative (“poor”).

## DISCUSSION

Osteochondromas are the most frequent benign bone tumors. In 90% of cases it is a single isolated

entity although they may be part of the hereditary multiple osteochondromatosis syndrome. They are usually extra-articular and of metaphyseal location in the long bones [4]. When it is intra-articular it can generate pain and restriction of the range of motion. Malignant degeneration though rare is possible [5]. Sessile and pediculate types are described. This exostosis is attributed to endochondral ossification in an abnormal islet of cartilage adjacent to the epiphysis. Around 2% of the cases are accidental findings and 9% of the diagnosed exostosis are located adjacent to the proximal femoral epiphysis [5]. The recommended treatment for most symptomatic cases is surgical resection [4-6]. There are descriptions in the literature of compression of the sciatic nerve by osteochondroma

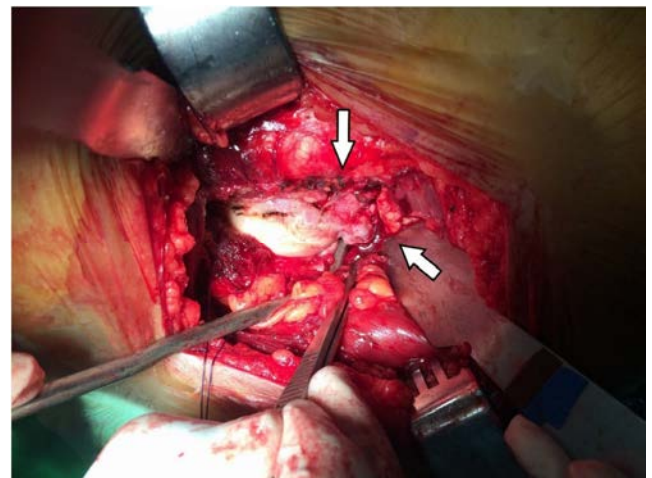


**Figure 2-A:** CT scan axial view. Note the “coxa profunda” on the right hip.



**Figure 2-B:** CT scan showing the conflict between acetabulum, exostosis and the femoral head.

of the proximal femur, association with the development of secondary synovial osteochondromatosis and fractures in intra-articular pedicled osteochondromas [6]. Inoue *et al.* described an extra-articular snapping hip related to a proximal femur exostosis [7]. Femoroacetabular impingement (FAI) is recognized as a possible ethiological factor in osteoarthritis of the hip joint and cause of pain in the young adult, being the most prevalent the mixed type which associates the characteristics of types came and pincer, usually presenting pain and restriction of the range of motion and progressive joint degeneration in many cases [8]. Not all individuals with radiological abnormalities classified as FAI will develop degenerative arthritis [9].



**Figure 4:** Posterior approach to the joint and exposure of the exostosis.



**Figure 5:** Cross-table x-ray view pos-operatively after osteoplasty of femoral neck and osteophytes resection.

Etiology is not well known, and it probably involves a genetically determined disturbance in the proximal femoral epiphysis' growth along with other possibilities that might cause a change in the anatomy of the hip are hypothesized [9]. Initial treatment consists of conservative measures. Operative treatment aims to prevent arthritis development and /or to treat symptomatic patients. It is indicated by means of open procedures or less invasive techniques using video-arthroscopy in selected individuals [8,9]. The snapping hip or "coxa saltans" is a condition characterized by palpable or audible bounce or snapping during the range of motion of the hip joint [10]. It is commonly associated with external extra-articular factors such as the iliotibial band or gluteus maximus tendon. It should be considered an internal factor when it involves the iliopsoas tendon in conflict with the iliopectinea eminence or the femoral head [10]. It may also be of intra-articular origin when free bodies, labral lesions, joint instability, synovial chondromatosis or other intra-articular disorders are present [11]. This is a benign phenomenon, often non-painful and rarely there is any indication of surgical correction, particularly for cases of extra-articular snapping. Operative intervention is reserved for those patients who have actual functional impairment and/or frequent pain [11, 12]. In the present case, the association of two distinct entities in the same joint is highlighted, causing a combination of "*sui generis*" symptoms, generating confusion and hindering accurate diagnosis. Many of the symptoms found in the FAI are common to other entities such as painful clicking, locking, restraint of hip movements and activity-dependent pain which may present difficulties in differential diagnosis [8]. In addition, the osteochondroma at the described location is

considered a very uncommon event, despite being relatively easy to detect, even on single radiographs. Surgical and simultaneous correction of the described abnormalities resulted in resolution of the clinical findings and the one-year follow-up revealed an asymptomatic individual with great improvement of range of motion (HHS = 93), having fully resumed his previous work activities. Video arthroscopy was initially considered for treatment in the present case. The arthrotomy was the chosen option due to the possibility of simultaneously approaching dysmorphism and osteophytes of the femoral neck, the osteochondroma itself and also to carry out a careful resection of osteophytes on the posterior margin of the acetabulum, which is usually more difficult by arthroscopic techniques. The risk of osteonecrosis of the femoral head by injury of the medial circumflex artery is present when the joint is dislocated [8], which was not necessary in the present case. Written informed consent for the publication of the case and corresponding images was obtained from the patient.

## CONCLUSION

In the case reported, it was observed the unusual coexistence of osteochondroma in a rare sub-capital location on the femoral neck, generating an intra-articular snapping hip associated with the characteristic signs and symptoms of the mixed type femoroacetabular impingement. After surgical treatment, remission of symptoms and recovery of functional capability was achieved. The authors highlight the rarity of the association of these two entities in the same joint and the need of correct interpretation of radiological and clinical findings for diagnosis, surgical planning and satisfactory resolution of symptomatology, leading to recovery of the individual's functional capability.

## AUTHOR CONTRIBUTIONS

Elmano de Araújo Loures. Senior surgeon, substantial contributions to conception and design, acquisition of data, analysis and interpretation of data, drafting the article, revising it critically for important intellectual content, final approval of the version to be published.

Daniel Naya Loures and Felipe Jader Coelho Pereira. Substantial contributions to conception and design, acquisition, analysis and interpretation of data, revising it critically for important intellectual content, final approval of the version to be published.

Adriano Fernando Mendes Junior. Contributions in analysis of data, revising it critically for intellectual content, final approval of the version to be published.

#### GUARANTOR OF SUBMISSION

The corresponding author is the guarantor of submission.

#### SOURCE OF SUPPORT

None

#### CONSENT STATEMENT

Written informed consent was obtained from the patient for publication of this case report.

#### CONFLICT OF INTEREST

Authors declare no conflict of interest.

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