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Lesser Trochanter Osteochondroma as an Etiology for Ischiofemoral Impingement: A Case Report

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Learning Point of the Article:

Timely diagnosis and surgical excision can result in complete resolution of symptoms and early return to full activity.

Abstract

Introduction: Ischiofemoral impingement (IFI) syndrome is a non-articular source of hip pain caused by compression of the quadratus femoris muscle in the space between the ischial tuberosity and the lesser trochanter of the femur. Among the rare structural causes of IFI, Osteochondroma (OC), a benign bone tumor, can present as a space-occupying lesion, reducing the ischiofemoral space and leading to soft tissue impingement.

Case Report: We report a case of a 33-year-old male patient presenting with a six-month history of clicking and progressive left gluteal pain. Examination and Imaging studies revealed a narrowed ischiofemoral space associated with an OC arising from the medial aspect of the lesser trochanter. Surgical resection of the lesion led to complete resolution of the symptoms and restoration of hip function.

Conclusion: This case highlights the need for a high index of suspicion for structural causes of IFI and underscores the importance of magnetic resonance imaging in the diagnosis. Early surgical intervention for OC -induced IFI can result in excellent clinical outcomes.

Keywords: Ischiofemoral Impingement, osteochondroma, quadratus femoris muscle.

Introduction

Ischiofemoral impingement (IFI) syndrome is a non-articular source of hip pain caused by compression of the quadratus femoris muscle (QFM) in the space between the ischial tuberosity and the lesser trochanter of the femur. Initially described in post-operative patients, IFI is now recognized in a wider population, including athletes and individuals with congenital or acquired anatomical variations.

Among the rare structural causes of IFI, osteochondroma (OC), a benign bone tumor, can present as a space-occupying lesion, reducing the ischiofemoral space and leading to soft tissue impingement. This report details the presentation, diagnostic workup, and surgical treatment of a 33-year-old male patient with IFI secondary to a proximal femoral OC.

Case Report

We present a case of a 33-year-old male patient, a software developer by profession, with sedentary lifestyle and occasional recreational running with no history of trauma or previous hip surgery and systemic disease. The patient presented with a 6 month history of gradually worsening left gluteal pain and clicking sound which was dull aching in nature, worsened by

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Author's Photo Gallery


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Figure 1: Pre-operative X-ray of pelvis showing protuberant growth from the medial aspect of the lesser trochanter.

prolonged sitting, walking and stair climbing. Occasionally the pain radiates to posterior aspect of thigh and is not associated with any neurological symptoms, such as tingling, numbness or weakness. Physical examination revealed antalgic gait with pain on passive extension and adduction. IFI Test was Positive (pain reproduced with extension, adduction, and external rotation of the hip). Neurological Examination showed normal reflexes, motor strength, and sensation in the lower limbs.

Diagnostic workup

Plain Radiographs of Pelvic with both hips showed a pedunculated bony protuberance projecting from the medial aspect of the left lesser trochanter, suspicious for OC (Fig. 1).

Magnetic Resonance Imaging (MRI) and computed tomography showed a significant reduction in ischiofemoral space (measured at ~10 mm), Edema and T2 signal

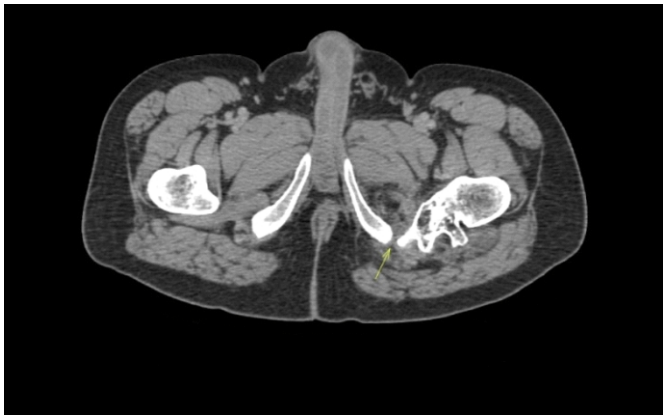

Figure 3: Computed tomography axial image showing reduced ischiofemoral interval.

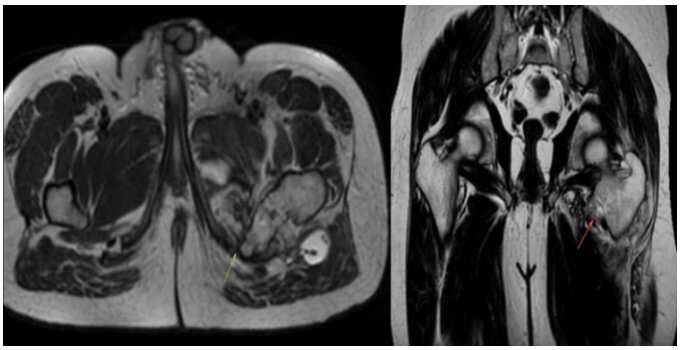

Figure 2: Axial and coronal sections of magnetic resonance imaging showing reduced ischiofemoral interval and growth from the lesser trochanter.

hyperintensity in the QFM. Lesion arising from the lesser trochanter with continuity of marrow and cortical bone, consistent with OC (Fig. 2 and 3).

Final Diagnosis was IFI syndrome secondary to OC of the left lesser trochanter.

Management

Given the mechanical etiology of the impingement, a surgical intervention was planned. Across a posterior approach to the hip, complete excision of the OC along with partial excision of lesser trochanter with preservation of adjacent muscular and neurovascular structures was performed (Fig. 4, 5, 6). Intraoperative fluoroscopy confirmed complete lesion removal (Fig. 7). The sample was sent for Histopathological examination and confirmed as OC (Fig. 8).

Post-operative Outcome showed marked reduction in gluteal pain within 2 weeks of post-op. Rehabilitation started with weight-bearing as tolerated after 6 weeks with progressive strengthening and range-of-motion exercises started immediately. At 3 Months Follow-up there was no residual pain

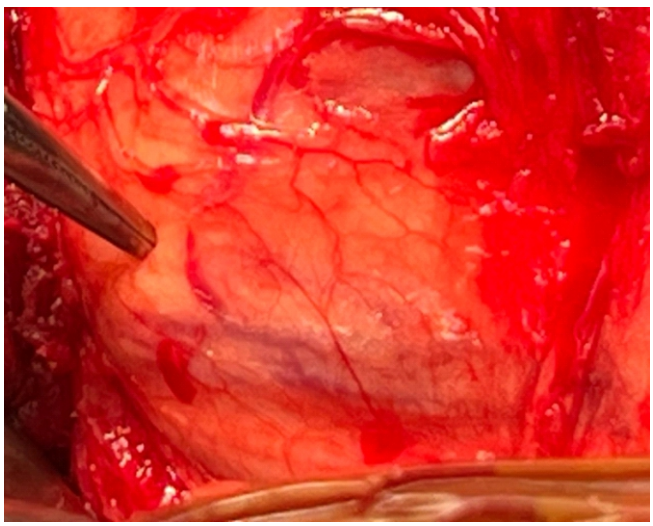

Figure 4: Intraoperative picture after exposure through posterior approach.

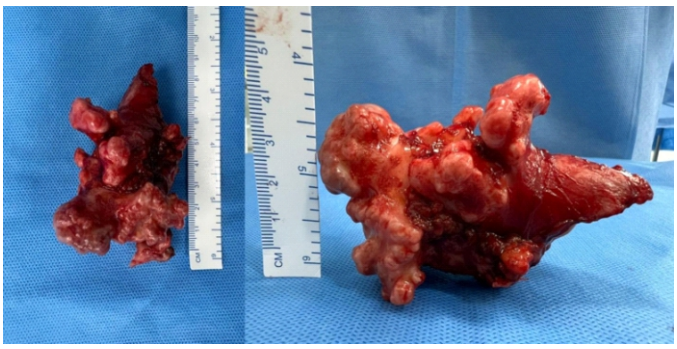

Figure 5: Intraoperative picture showing the dimensions of osteochondroma after escision.

or functional limitations and full hip range of motion was restored. The Patient is currently 2 years post-operative, with no new complaints.

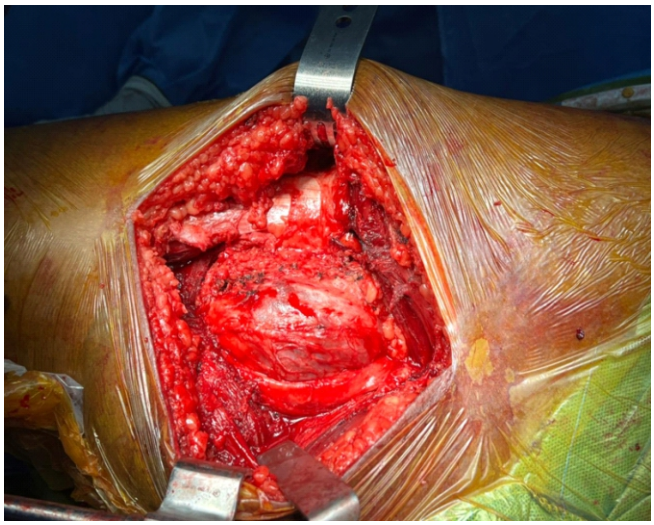

Figure 6: Intraoperative picture after excision of osteochondroma and clousure.

Discussion

OCs are benign exostoses that typically develop during skeletal development. Although often asymptomatic, they can become clinically relevant when located near anatomical structures where space is limited, such as the ischiofemoral interval.

Johnson, first mentioned IFI in 1977 and demonstrated the reduction in distance between lesser trochanter and ischium in X-ray and its association with persistent hip pain in three patients. In two patients, it followed hip replacement, and in one patient it followed a proximal femoral osteotomy. All three patients were completely pain free after the resection of lesser trochanter supporting the hypothesis that abnormal contact with the ischium was responsible for the symptoms [1].

Guney et al. presented a case series about the relationship between OC and IFI as one of the causes of hip pain in the early age group and the need to evaluate OCs located in the lesser trochanter or ischio pubicramus [2].

Torriani et al. described IFI in patients with abnormal signals on MRI in QFM in all aspects in 2009 [3].

Kassarjian et al. described IFI as a typical impingement involving the QFM. It is the most important External rotator of the hip which also helps in adduction. It passes through the ischiofemoral interval and is in close proximity to sciatic nerve during its course. The most important complaint being the hip pain, which may radiate to the buttocks, knee, and inguinal regions and increases with external rotation, adduction, and extension [4].

Dooley described the anterior impingement test as one of the most important diagnostic tool for IFI [5].

OC is a rare cause of IFI, as described in detail in the case report by Schubert et al. in 2019, with only one case report showing IFI resulting from OC [6].

OCs are the most common benign bone tumors and constitute 10–15% of all bone tumors. They can be solitary or multiple in nature. They are more common in males, whereas IFI is more common in females. Approximately 75% of OCs are encountered before the age of 20. They are mostly observed in the lower extremities, especially in the femur [7].

However, IFI is a disease of the middle age group. The OCs and IFI age groups were different. Probably, this epidemiologic information is the factor that diminishes the role of OCs as an etiology of IFI [8].

However, the X-ray findings are limited and not specific to IFI. Patti et al. reported heterogeneity and sclerosis in the lesser

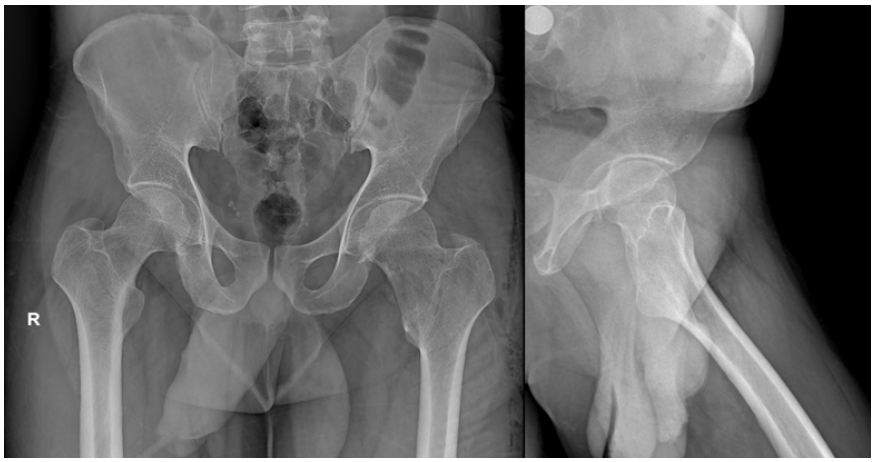

Figure 7: Post-operative X-ray of pelvis anteroposterior view and left hip lateral view after excision of osteochondroma.

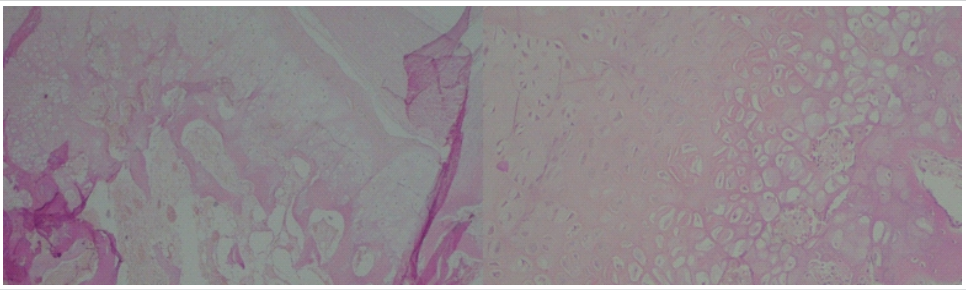

Figure 8: Histopathological examination pictures showing presence of cartilagenous cap consisting with fibrous perichondrium suggestive of osteochondroma.

trochanter and ischia ischium as the most prominent X-ray findings. It can also provide information about the narrowing of the distance between the lesser trochanter and ischium. Ultrasonography studies have not shown any benefits in the diagnosis of IFI. CT provides clear information about bone structures and narrowing of the IF interval, but it is insufficient to show soft tissue findings, such as muscle edema and fat tissue replacement [9].

MRI is the best imaging method for diagnosing IFI. In MRI, edema in the QFM is the most important finding suggesting IFI. The lesser trochanter and tuber ischium are normally approximately 2 cm apart. This distance allows the femur to rotate without touching the tuber ischium or hamstring tendon. IFI is best evaluated using axial T2-weighted images. The presence of edema in the muscle, instead of the absence of muscular fiber disruption, helps distinguish IF compression from QFM tears. In the chronic period, T1-weighted MRI images are useful for evaluating quadratus femoris atrophy, hyperintense fat replacement, and muscle volume loss associated with IFI [10].

Initial treatment may include conservative therapy, which includes rest, activity restriction, anti-inflammatory non-steroidal drugs, percutaneous ultrasound therapy, and physical therapy. CT- or ultrasound-guided injections with anesthetics and steroids can be used as a diagnostic test and for symptomatic relief [11].

Surgical treatment options include resection of the lesser trochanter and decompression of the QFM [12].

Nakano et al. described OC located at the lesser trochanter and causing impingement of the QFM as a type of extra articular hip impingement, where patient presents with pain in the groin and sometimes radiating to buttock area and medial aspect of the thigh. The pain is reproduced or worsened by hip extension, adduction and external rotation [13].

Ramos-Pascua et al. presented that surgical treatment of solitary proximal end of femur OCs is mandatory and en bloc resection can be performed by a single wide approach without the need for hip dislocation [14].

Aldashash and Elraie presented a case report of a Solitary OC of the proximal femur causing sciatic nerve compression, which was surgically removed with improvement in symptoms gradually [15].

Asymptomatic OCs are usually left alone and observed. Only symptomatic patients underwent marginal to wide resection with or without fixation. In our patient, excision of the OC was performed because it was a mechanical block causing clicking and pain. Regular monitoring was performed for recurrence. A positive response to surgical resection reinforces the value of early imaging and recognition of structural causes in patients with unexplained gluteal pain.

Conclusion

This case exemplifies a rare but treatable cause of IFI. OCs should be considered in patients with persistent deep gluteal pain and imaging evidence of a bony mass near the lesser trochanter. Timely diagnosis and surgical excision can result in complete resolution of symptoms and return to full activity.

Clinical Message

- MRI is essential for identifying both the cause and consequences (e.g., muscle edema) of IFI
- Osteochondroma should be considered in young adults with focal bony outgrowths near the hip joints
- Surgical excision offers excellent outcomes when conservative measures fail or are unlikely to succeed because of a space-occupying lesion.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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