

6-1-2023

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Wei-Chun Lee

*Department of Physical Medicine and Rehabilitation, Chung Shan Medical University Hospital, Taichung;
Department of Physical Medicine and Rehabilitation, Chung Shan Medical University, Taichung*

Yao-Jen Chen

*Department of Physical Medicine and Rehabilitation, Chung Shan Medical University Hospital, Taichung;
Department of Physical Medicine and Rehabilitation, Chung Shan Medical University, Taichung,
yj.chen1960@gmail.com*

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Recommended Citation

Lee, Wei-Chun and Chen, Yao-Jen (2023) "Ischiofemoral impingement: A Case Report and Literature Review," *Rehabilitation Practice and Science*: Vol. 2023: Iss. 1, Article 8.

DOI: 10.6315/TJPMR.202306_2023(1).0008

Available at: <https://rps.researchcommons.org/journal/vol2023/iss1/8>

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Ischiofemoral Impingement: A Case Report and Literature Review

Wei-Chun Lee^{1,2}, Yao-Jen Chen^{1,2}

¹Department of Physical Medicine and Rehabilitation, Chung Shan Medical University Hospital, Taichung;

²Department of Physical Medicine and Rehabilitation, Chung Shan Medical University, Taichung.

Ischiofemoral impingement (IFI) is an uncommon disease characterized by pain and snapping in the hip, buttock, and groin areas. Research articles on IFI are still rare, and comparative articles are lacking. In this case report, we present a patient with pain radiating to the right lower limb for about 3 months. After imaging evaluation, the diagnosis of IFI was made, which was helpful in the ensuing treatment. Magnetic resonance imaging, the gold standard diagnostic method for IFI, revealed a reduced ischiofemoral space and a reduced quadratus femoris space with abnormal morphology and/or concurrent edema centered in the quadratus femoris muscle belly. It is important to keep this potentially-underestimated syndrome in mind when treating posterior hip pain. (*Rehabil Pract Sci* 2023; 2023(1): 57 - 60)

Key Words: ischiofemoral impingement (IFI), magnetic resonance imaging (MRI), ischiofemoral space (IFS), quadratus femoris space (QFS)

INTRODUCTION

Hip pain is a common symptom in the outpatient department. The spectrum of differential diagnoses is broad and includes both intra-articular (such as labral tears, loose bodies, femoroacetabular impingement, and chondral damage) and extra-articular (e.g., femoral neck stress fracture, adductor strain, piriformis syndrome, sacroiliac joint pain) pathologies. This study aimed to inform physicians about ischiofemoral impingement (IFI), which can easily be mistaken for another pathology.

A 57-year-old female who denied suffering from any systemic disease visited our outpatient department for the management of her intermittent right hip and groin pain that radiated to the right lower limb. The symptom persisted for approximately 3 months, and she visited a local clinic for help. Oral analgesics and physical therapy with traction and hot packing were administered under the impression of lumbar degenerative disease for 2 weeks; however, the intermittent pain in her right hip persisted, although there was no trauma history. This pain was aggravated by prolonged walking. She was referred to our hospital for further management. Physical examination revealed negative straight leg raising test and no tender-

CASE REPORT

Submitted date: 10 December 2022

Revised date: 7 January 2023

Accepted date: 20 January 2023

Correspondence to: Dr. Yao-Jen Chen, Department of Physical Medicine and Rehabilitation, Chung Shan Medical University Hospital, No. 110, Jian-guo North Road, Section 1, South District, Taichung 402, Taiwan.

Tel : (04) 24739595 ext. 34817

E-mail : yj.chen1960@gmail.com

doi: 10.6315/TJPMR.202306_2023(1).0008

ness over the lumbar spine, and her neurological examination was normal. There was tenderness over her right posterior buttock area. Pelvic radiography revealed no obvious bony defects in her right hip joint. In suspicion of lumbar disc herniation with referred pain, physical therapy was then administered, including lumbar traction and core muscles training. However, she still experienced pain for more than 3 months and responded poorly to analgesics and physical therapy. Besides, the long-stride walking test revealed positive, and the FABER test was positive while external rotation of right hip joint. For differential diagnosis of hip joint lesion, piriformis syndrome or impingement, we then arranged pelvic magnetic resonance imag-

ing (MRI) for further evaluation. The result showed increased signal intensity over the right quadratus femoris muscle (QFM) with a reduced distance between the ischial tuberosity and the lesser trochanter of the femur (Figure 1). Under the diagnostic impression of IFI, she then received a short course of NSAIDs and underwent a rehabilitation program. This time, we emphasized stretching exercises and a gentle massage to the external rotator of the right hip with diathermy. Her symptom improved significantly 2 weeks later. Education on self-stretching to the external rotator of the hip and strengthening of core muscles was also provided.

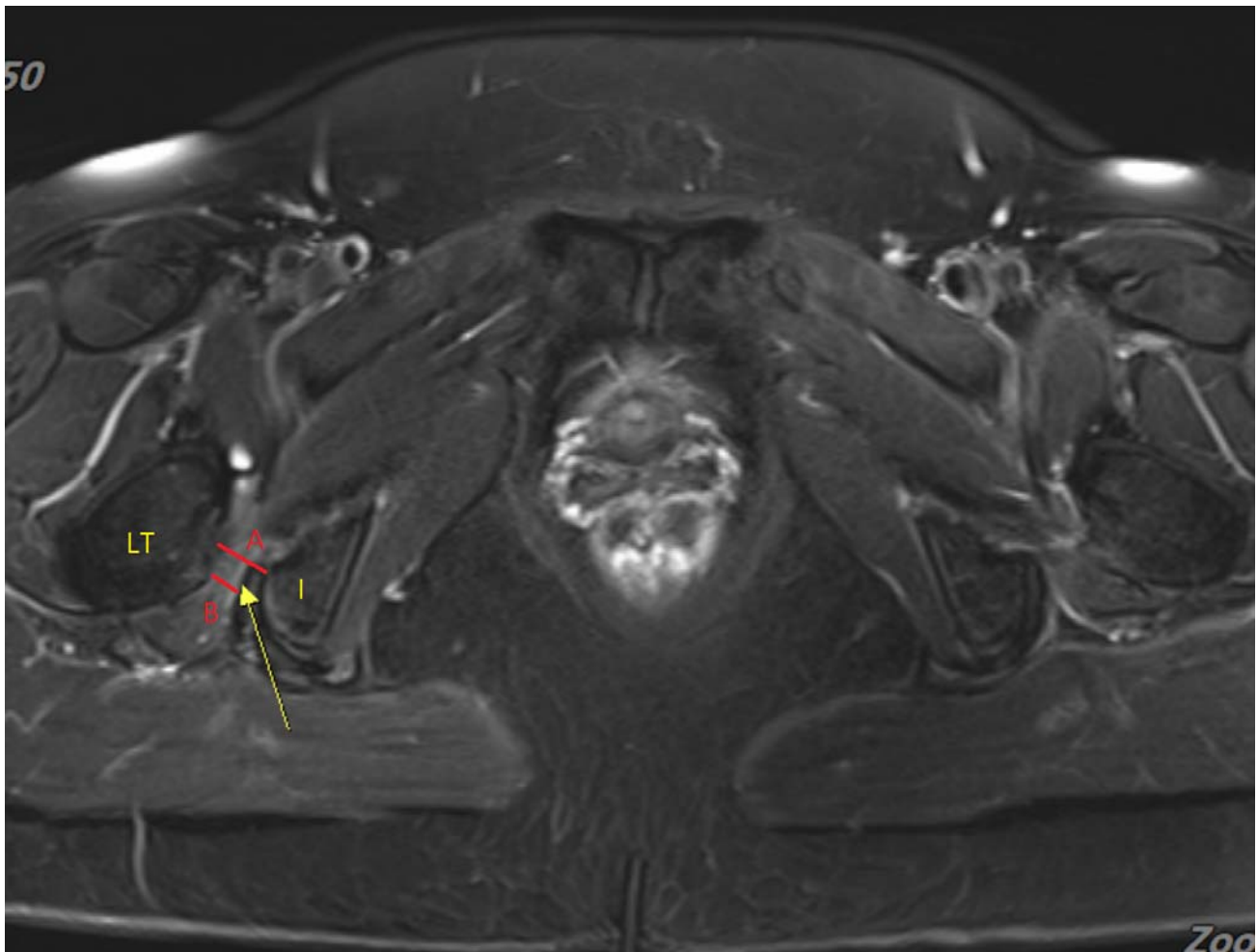


Figure 1. Pelvic MRI showed increased signal intensity over the right QFM (arrow) with a reduced IFS (distance between the ischial tuberosity and the lesser trochanter of the femur). LT=lesser trochanter, I=ischium, A line=IFS, B line=QFS.

DISCUSSION

There is a wide range of differential diagnoses for hip pain. An accurate diagnosis is important for prescribing effective therapy. The symptom can be localized in three main areas; the anterior, lateral, or posterior areas. Intra-articular hip pain predominantly presents anteriorly. Anterior hip pain also includes hip flexor strain or pain referred from intra-abdominal causes. Lateral hip pain is most commonly caused by the greater trochanteric pain syndrome, which was associated with bursitis, gluteus medius tendinopathy, or iliotibial band friction. The differential diagnosis of posterior hip pain can be difficult, and it includes lumbar radiculopathy, referred pain from the sacroiliac joints, femoroacetabular joint or lumbar facets, irritation of the lumbosacral plexus, piriformis syndrome, deep gluteal syndrome with sciatic nerve entrapment, IFI, hamstring tendinopathy, and intra-abdominal or intra-pelvic pathology.^[1,2] However, IFI, which has rarely been described in the past literature, remains a disputed entity.

IFI is an uncommon disease characterized by pain and snapping in the hip, buttock, and groin areas. It is characterized by congenital or acquired narrowing of the space between the ischial tuberosity and the lesser trochanter, resulting in the compression of the QFM and surrounding soft tissues. The QFM, which is innervated by a small branch of the sacral plexus formed by the roots of L4, L5, and S1, performs adduction and external rotation of the hip joint.^[3]

The clinical presentation of IFI might be vague and mistaken for those of other lumbar diseases, intra-articular hip diseases, or extra-articular hip diseases. There are some specific physical examination maneuvers that are helpful in the diagnosis of IFI. IFI testing is performed with the patient's limb in a combined position of extension and adduction of the hip. This test is considered positive if the patient's symptoms are reproducible. The long-stride walking test is expected to provoke impingement when the patient walks. This test is considered positive if the posterior pain is reproducible in a terminal stance with a long stride and alleviated when walking with short strides.^[2] Thus, the diagnosis of IFI should be kept in mind when pain is reproduced during

specific maneuvers such as hip flexion/extension, abduction/adduction, internal rotation, and external rotation.^[4]

Radiographs of the hip, including the standard anteroposterior (AP) view and frog-leg lateral view, can help physicians to detect osseous changes from chronic IFI. MRI, the gold standard diagnostic method for IFI, revealed a reduced ischiofemoral space (IFS) and quadratus femoris space (QFS), with abnormal morphology and/or concurrent edema centered on the QFM belly. One radiological study has suggested that IFS are reduced to 13 ± 5 mm in patients with IFI, in comparison with patients in the asymptomatic control group whose spaces measured 23 ± 8 mm.^[5] According to another study, the normal distance between the lesser trochanter and the ischial tuberosity, which was reported to be 18.6 mm in females and 23 mm in males, reduced by 0.09 mm with each year of the patient's age.^[6] It has also implied that women may be more prone to impingement due to the wider positioning of the ischial tuberosities. It was suggested that certain cutoff values (IFS: <15 mm; QF space: <10 mm) should be used when diagnosing IFI via MRI.^[2] Ultrasonography has also been found to be consistent with MRI for the measurement of the IFS and has also been helpful in dynamic imaging and sonopalpation in the IFS, which could reproduce buttock and lower limb symptoms.^[2]

A wide range of conditions related to hip pain should be considered when making the differential diagnosis of IFI, including QFM strain or tear without narrowing of the IFS, tendinopathy of the iliopsoas or hamstring muscle, iliopsoas bursitis, denervation, delayed-onset muscle soreness, mass lesions, etc. It is important to differentiate edema at the belly of the QFM from edema at the myotendinous junction, which is most commonly seen in tears or strains.^[7] The accurate diagnosis of IFI can prevent unnecessary procedures or treatments.

The treatment of IFI usually starts with conservative approaches such as rest, the modification of daily activities, anti-inflammatory drugs, and physical therapy. Ata AM et al. reported the case of a 53-year-old female with low back pain radiating to the right lower extremities. Under the diagnostic impression of IFI (diagnosed via MRI), 3-week-long physical therapy was prescribed, including moist heat, ultrasonography, transcutaneous electrical nerve stimulation, and hip stretching exercises;

with all these, the symptoms improved significantly.^[8] Another case series reported by Kim et al. showed that ultrasound-guided QF muscle injection was an effective and safe procedure.^[9] Previous studies reported favorable outcomes after ultrasound-guided injection therapy with botulinum toxin or prolotherapy with polydeoxyribonucleotide sodium mixed with local anesthetics into the QFM.^[10,11] Surgical intervention (either open surgery or endoscopic surgery), may also be an effective treatment (since it decompresses the IFS) if conservative treatment fails. Several case reports all speak of symptom alleviation without adverse events after partial or complete excision of the lesser trochanter.^[12]

CONCLUSION

Research articles on IFI are still extremely rare, and comparative articles are lacking. IFI should be included in the list of differential diagnoses for posterior hip pain, especially when the radiation pain to the lower extremities was noted. This study aimed to remind physicians about IFI, which should always be kept in mind when dealing with patients experiencing hip pain.

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