Introduction

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Piriformis syndrome is an uncommon neuromuscular disorder that is caused when the piriformis muscle compresses the sciatic nerve. The piriformis muscle is important in lower body movement because it stabilizes the hip joint and lifts and rotates the thigh away from the body. It enables us to walk, shift our weight from one foot to another, and maintain balance. It is also used in sports which involve lifting and rotating the thighs, in almost every motion of the hips and legs.

LBP [Low back pain] most commonly involves one of the following conditions: sciatic nerve entrapment, herniated nucleus pulposus, direct trauma, muscle spasm due to chronic or overuse injury, or piriformis syndrome.

Piriformis syndrome occurs when this muscle presses on the sciatic nerve (the nerve that goes from the spinal cord to buttocks and down the back of each leg) which can cause pain and numbness in the lower body.

Piriformis syndrome is an uncommon cause of buttock and hip pain due to entrapment of the sciatic nerve by the piriformis muscle at the greater sciatic notch. Entrapment of the sciatic nerve by the piriformis muscle was first described in 1928 by Yeoman. In 1937 Freiberg described such entrapment in great detail, specifying that it can be distinguished from other causes of radicular pain such as disc herniation, extrinsic pressure by tumor or other mass, or intrinsic nerve abnormality. Pace's sign has also been described (pain and weakness in association with resisted abduction and external rotation of the affected thigh. Robinson first introduced the term piriformis syndrome in 1947, and enumerated six classic diagnostic findings:

1. History of trauma to the sacroiliac and gluteal areas.
2. Pain at the sacroiliac joint, greater sciatic notch, and piriformis muscle that radiates down the limb and causes difficulty walking.
3. Acute exacerbation of pain by stooping or lifting and moderate relief of pain by traction in a supine position.

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4. Palpable sausage-shaped tender mass over the piriformis muscle on the painful side.
5. Positive Lasegue's sign.
6. Gluteal atrophy, depending upon duration of the affliction.

It is a clinical condition which is believed to be caused by compression of the sciatic nerve by the piriformis muscle. Piriformis syndrome (PS) is a somewhat vague diagnosis marked by lower back, buttock, and upper posterior thigh pain. It can cause pain or numbness in the buttock and down the back of the leg. Piriformis syndrome usually begins with pain, tingling, or numbness in the buttocks. Often symptoms are caused and made worse by sitting or running.

Piriformis syndrome is more common in females by a 6:1 ratio, thought to be due to anatomical differences. In about 20% of the population, the sciatic nerve or some of its branches innervate the piriformis muscle.

The Piriformis muscle is divided into 2 parts by peroneal division of the sciatic nerve going between the 2 parts of the muscle.

There are 2 types of Piriformis Syndrome namely:

(1) Primary Piriformis Syndrome: This type is seen in cases which have a anatomical variation such as a split piriformis muscle or sciatic nerve or a different path of the sciatic nerve. These type are about 15% of cases of Piriformis Syndrome.
(2) Secondary Piriformis Syndrome: This is usually because of some other causes such as trauma giving rise to ischemia.
   a. Nerve compression giving rise to spasms and inflammation of the buttocks.
   b. In Piriformis Syndrome, muscle spasms are usually due to trauma or due to lumbar and sacroiliac joint pathologies.
   c. Altered biomechanics of the lower limb, low back and pelvic regions giving rise to compression may also be the cause of Piriformis Syndrome giving rise to signs and symptoms in other regions of the sciatic nerve such as buttock, leg and feet.
   d. Excessive use of the piriformis muscle such as running may give rise to compression termed as "wallet neuritis" due to repeated trauma due to sitting on hard surfaces.

Most patients complain of acute tenderness in the buttock and sciatica-like pain down the back of the thigh, calf and foot. Typical piriformis syndrome symptoms may include: A dull ache in the buttock or a pain down the back of the thigh, calf and foot similar to sciatica. There is no definitive test for piriformis syndrome. Many cases may give a history of trauma or sitting for longer durations.

The SERS [Short External Rotators] comprising the piriformis muscle (PM), superior gemellus (SG), inferior gemellus (IG), obturator internus (OI), which was a far superior method to the reattachment technique in terms of contiguity and muscle atrophy as seen by a long-term postoperative follow-up using magnetic resonance imaging (MRI).

The piriformis muscle is an important surgical landmark for the posterior approach to the hip as it has a close relationship to the sciatic nerve and to the entry point for the

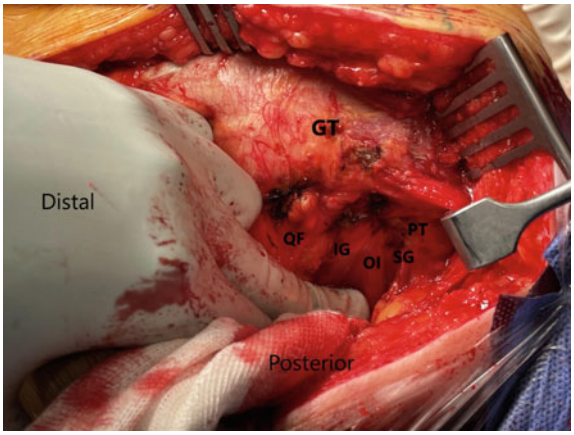

Fig. 1 Short external rotators comprising the piriformis muscle (PT), superior gemellus (SG), inferior gemellus (IG), obturator internus (OI) [Courtesy: Figure reproduced with kind permission of Ahmed Salah El-Din Osman Zaghloul < ahmed_zaghloul@mans.edu.eg]

femoral canal. Many variations in the morphological appearance in piriformis have been described, with the most common one being the belly of piriformis split into upper and lower portions by the sciatic nerve or one of its components. Preservation of the piriformis tendon is far superior to reattachment technique in terms of contiguity and muscle atrophy using magnetic resonance imaging. Piriformis muscle appears to function as a posterior stabilizer of the Hip joint in 90° of flexion and hence leaving the tendon intact appears to decrease the risks of dislocation.

Piriformis syndrome when seen is a peripheral neuritis of the sciatic nerve caused by an abnormal condition of the piriformis muscle and is characterized by hip and buttock pain. Effectively, piriformis syndrome is a form of 'sciatica' caused by compression of the sciatic nerve by the piriformis muscle. Symptoms may include pain on sitting along with pain through the sacrum, gluteal region and thigh or pain with single leg movements with Pain when getting up from sitting or squatting. MRI imaging is highly accurate at assessing both bone and soft tissue pathologies since MRI imaging can accurately demonstrate and measure both the size of the piriformis, size and variation in the sciatic nerve. Diagnostic musculoskeletal ultrasound imaging is ian excellent imaging tool for assessing for soft tissue hip pathology as well as being useful for measuring the size and thickness of structures such as the piriformis muscle and the sciatic nerve. Ultrasound appears to be a reliable technique for the diagnosis of piriformis syndrome (Fig. 1).

It is also known by other names such as Pseudosciatica; Wallet sciatica; Hip socket neuropathy; Pelvic outlet syndrome; Low back pain.

In around 80% of people, the common fibular nerve penetrates the muscle.