

CASE REPORT

Prolonged Weakness After Piriformis Injection: A Case Report

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ABSTRACT

Background: Piriformis syndrome is a neuromuscular disorder where there is compression of the sciatic nerve by the piriformis muscle. It may present with buttock pain with or without radiation in the distribution of the ipsilateral sciatic nerve. There are no standardized diagnostic criteria for its diagnosis, but the diagnostic block is helpful for its confirmation. However, injection into the piriformis muscle is not devoid of complications including muscle weakness and numbness.

Case description: A 60-year-old male patient presented with right buttock pain radiating along the posterior aspect of the thigh and leg up to the great toe over the dorsum of the foot. Right SLR, FAIR, Pace tests were positive, and piriformis tenderness was present. Provisional diagnosis was made as right-sided piriformis syndrome, and diagnostic piriformis block was done under fluoroscopic guidance. But the patient developed numbness and motor weakness of the right lower limb with modified Bromage scale score 4/6 immediately after the procedure, and the score was 5/6 even after 3 hours of the procedure.

Conclusion: One should be cautious in a post-procedure period of piriformis injection as the prolonged neurological deficit may occur following the piriformis injection.

Keywords: Complication of piriformis injection, Piriformis syndrome, Prolonged piriformis weakness.

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BACKGROUND

Piriformis syndrome is a neuromuscular disorder where there is compression of the sciatic nerve by the piriformis muscle. It may present with buttock pain with or without radiation in the distribution of the ipsilateral sciatic nerve. About 8% of buttock pain¹ and 6% of sciatica² is caused by piriformis syndrome. It may occur due to an abnormal relationship between the piriformis muscle and the sciatic nerve.¹ Piriformis muscle hypertrophy,

its infection or tumor invading the muscle can lead to pressure or irritation of the nerve. Piriformis syndrome may mimic L5-S1 radiculitis, although the pain starts in the buttock.¹ It can also result from fibrosis after deep injections, irritation of the sacroiliac joint or a lump near the sciatic notch, overuse of piriformis muscle, piriformis muscle tendon tethering the sciatic nerve, laminectomy, total hip replacement.³ Risk factors include female sex, the practice of physical activities such as cycling and long-distance running, leg length inequality and lumbar hyperlordosis.⁴

Some conditions may mimic the clinical picture of piriformis syndrome including lumbosacral radiculopathy, lumbar degenerative disc diseases, lumbar facet arthropathy, lumbar spondylolysis and spondylolisthesis, trochanteric bursitis, ischial tuberosity bursitis.² Piriformis syndrome is a diagnosis of exclusion and no standardized diagnostic criteria for its diagnosis.¹ Diagnosis of the piriformis syndrome is a challenge and it is frequently missed due to more common causes with similar clinical resemblance such as lumbosacral radiculopathy caused by intervertebral disc prolapse and sacroiliac joint arthropathy with pain radiating to lower limb.

Here we discuss a case of 60-year-old male with suspected piriformis syndrome, and for confirmation of the diagnosis, the diagnostic block was given. Following the diagnostic block, there was prolonged motor weakness and numbness.

CASE DESCRIPTION

A 60 years old male patient came with the complaint of right leg pain for 6 months. The pain was from right buttock radiating along the posterior aspect of thigh and leg up to the great toe over the dorsum of the foot. Pain used to increase on sitting or standing for more than 10 minutes and decrease on lying supine. But the pain was persistent throughout the day with average numerical rating scale score in last one month 6–7 with maximum score being 8–9. The patient was a known case of ischemic heart disease and diabetes mellitus for 20 years; on insulin, anti-hypertensives and antiplatelet medications.

On examination, straight leg raising test on the right side was positive at about 60 degrees. Right side FAIR test (flexion, adduction and internal rotation of hip joint) was

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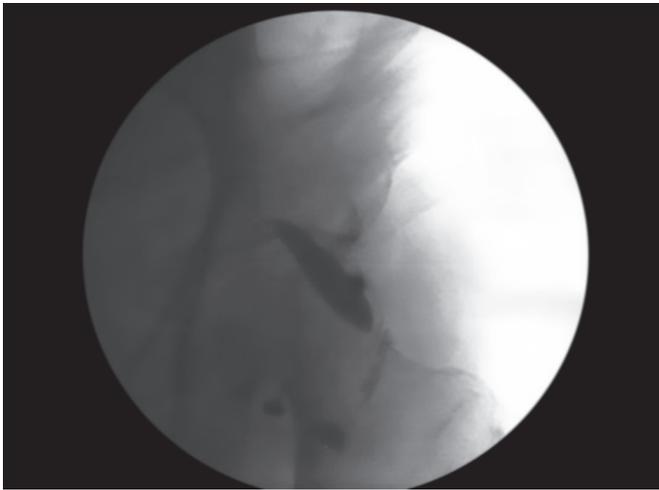


Fig 1: Dye spread for piriformis injection

positive. Pace's sign was positive on the right side. Right piriformis tenderness was present. There was a decreased sensation to touch at right L5 and S1 dermatomes. Motor examination and reflexes were normal.

Provisional diagnosis was made as right-sided piriformis syndrome. And to confirm the diagnosis, diagnostic piriformis injection was planned. After getting normal blood reports (complete blood count, PT-INR) and consent, the diagnostic procedure was done under fluoroscopic guidance. Under all aseptic precautions and with multipara monitor attached, Inj. Lignocaine hydrochloride 2% was injected into the muscle after confirmation of needle position by radio-opaque dye spread along the muscle fibers (Fig. 1). The post-procedure patient was monitored. Vital parameters were within normal limit. But the patient developed numbness and motor weakness of the right lower limb with modified Bromage scale score 4/6 immediately after the procedure and the score was 5/6 even after 3 hours of the procedure.

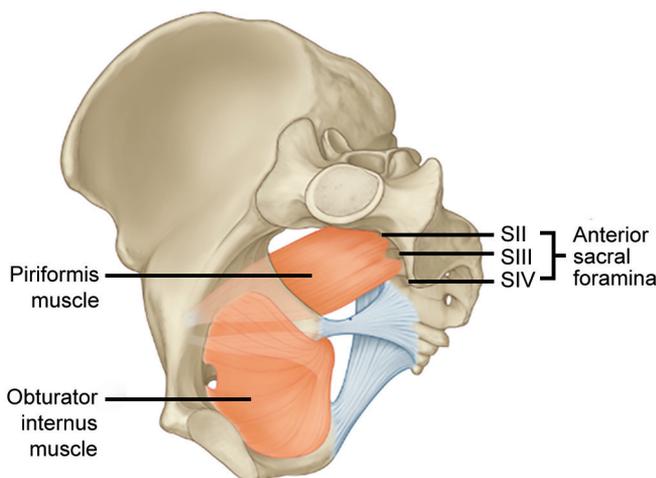


Fig 2: Obturator internus and piriformis muscle (medial view of right side of pelvis)

DISCUSSION

Piriformis, a triangular shaped muscle, has its origin in the bridges of sacral bone between the four anterior sacral foramina, it passes laterally through the greater sciatic foramen and crosses the posterosuperior aspect of the hip joint and then gets inserted on medial side of the superior border of greater trochanter of femur above the insertion of obturator internus muscle (Fig. 2). It is supplied by the branches from nerve roots L5, S1 and S2 and it is responsible for the lateral rotation of the extended hip joint and abduction of the flexed hip joint.⁵

In 78 to 84% of the population, the sciatic nerve passes in front of the muscle¹ (Fig. 3).⁶ In 12 to 21% of individuals, the divided nerve passes through or posterior to the piriformis and is exposed to muscle contractions, which may trigger sciatic symptoms.¹

Piriformis syndrome clinically⁷ may present as buttock pain radiating to thigh and leg. The pain usually gets worsened on prolonged sitting and walking. Physical examination may reveal tenderness over the piriformis muscle, positive FAIR (passive flexion, adduction and internal rotation of ipsilateral thigh) test, positive Pace test (pain on resisted abduction of ipsilateral hip) and positive Beatty test (pain on adduction of thigh against gravity). Other physical examination findings may include a positive straight leg raising test, diminished ankle and hamstring reflex and motor weakness in L4 to S1 dermatome. However, there is no clinical gold standard test to diagnose the piriformis syndrome.

The diagnosis of piriformis syndrome is challenging. Certain investigations such as electromyography, magnetic resonance imaging (MRI) and magnetic resonance neurography (MRN) may be of some help. However, nerve conduction studies have been found to be inconclusive.³

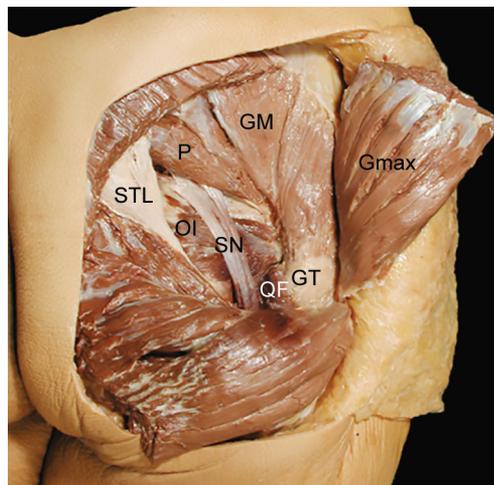


Fig 3: Posterior view of right gluteal region (SN: sciatic nerve, P: piriformis muscle, GM: gluteus medius muscle; GMax: gluteus maximus muscle; OI: internal oblique muscle; QF: quadratus femoris muscle; GT: greater trochanter; STL: sacrotuberous ligament)

Also, MRI and MRN are not of great value for diagnosing the piriformis syndrome as MRI may fail to diagnose atypical anatomy and also asymmetric piriformis muscle may be present without the piriformis syndrome.^{7,8} MRN helps to identify any thickening or hypersignal of sciatic nerve along with signs of denervation of piriformis muscle characterized by the increased signal.⁸ But MRN is not widely available and is an expensive investigation. Whereas diagnostic block is helpful for piriformis syndrome confirmation and moreover it is therapeutic also.⁷ It can easily be performed under fluoroscopic guidance and is comparatively cheaper. Local injection therapy is the mainstay of the piriformis syndrome.⁷ However, injection into the piriformis muscle is not devoid of complications. It may increase 8–10 mL volume in the muscle, increasing the possibility of pressure on the nerve. Various complications may occur following the piriformis muscle injection such as numbness, hypoesthesia, loss of strength, hemorrhage in the muscle, temporary neural deficits or pain symptoms in the late period.³

In our patient, there was muscle weakness and numbness following the fluoroscopic guided intramuscular piriformis injection, a known complication of the procedure. The weakness and numbness disappeared gradually over a few hours after the procedure. But the duration of action of lignocaine after infiltration is 60 to 120 minutes⁹ and we could not have a definite explanation for the numbness and weakness prolonged well beyond the known duration of action of Lignocaine. We think that prolonged weakness may have occurred due to various reasons such as:

- Increased volume of muscle on injection of local anesthetic compressing the sciatic nerve,
- Minor injury to the sciatic nerve during needling,
- Inadvertent injection into the neural sheath,
- Unrecognized hematoma or hemorrhage into the muscle which may compress the nerve,
- Prolonged lignocaine action due to delayed drug clearance which may occur due to compression of the vessels following increased volume of the muscle,
- Delayed drug clearance can also be due to vasospasm which may occur during needling into the muscle.

CONCLUSION

We propose that through the piriformis injection is simple and easy to perform day care procedure, it can lead to neurological complications. One must be aware and ready to manage such complications and should be cautious in a post-procedure period of piriformis injection as the prolonged neurological deficit may occur following the piriformis injection. We suggest that the neurological examination and its documentation are vital before piriformis injection as the prolonged neurological deficit can lead to medico-legal issues.

REFERENCES

1. Rivers WE, Benzon HT, Khan F, Asenjo JF. Myofascial Injection: Trigger point, piriformis, iliopsoas and scalene injections. In: Benzon HT, Rathmell JP, Wu CL, Turk DC, Argoff CE, Hurley RW, editors. Practical management of pain. 5th edition. Philadelphia: Elsevier; 2014.
2. Reynolds LW, Schrattenholzer TF. Piriformis syndrome. In: Waldman SD, editor. Pain management. 2nd edition. Philadelphia: Elsevier; 2011.
3. Ozisik PA, Toru M, Denk CC, Taskiran OO, Gundogmus B. CT-guided piriformis muscle injection for the treatment of piriformis syndrome. *Turk Neurosurg* 2014;24(4):471-477.
4. Menu P, Fouasson-challou A, Dubois C, Dauty M. Piriformis syndrome diagnosis: on two professional cyclists. *Ann Phy Rehabil Med* 2014 Jun;57(4):268-274.
5. Drake RL, Vogl W, Mitchell AWM, Gray H. Gray's anatomy for students. Philadelphia: Elsevier/Churchill Livingstone; 2005.
6. Michel E, Decavel P, Toussiroit E, Tatu L, Aleton E, Monnier G et al. The piriformis muscle syndrome: An exploration of anatomical context, pathophysiological hypotheses and diagnostic criteria. *Ann Phy Rehabil Med* 2013 May;56(4):300-311.
7. Miller TA, White KP, Ross DC. The diagnosis and management of piriformis syndrome: myths and facts. *Can J Neurol Sci* 2012 Sep;39(5):577-583.
8. Polesello GC, Queiroz MC, Linhares JP, Amaral DT, Ono NK. Anatomical variation of piriformis muscle as a cause of deep gluteal pain: diagnosis using MR neurography and treatment. *Revista Brasileira de Ortopedia*. 2013 Feb;48(1):114-117.
9. Maheshwari K, Naguib MA. Local anesthetics. In: Flood P, Rathmell JP, Shafer S, editors. *Stoelting's pharmacology & physiology in anesthetic practice*. 5th edition. Philadelphia, Wolters Kluwer Health; 2015.