CASE REPORT

Ultrasound Guided Trigger Point Injection and Sciatic Nerve Hydrodissection for Atypical Piriformis Syndrome: A Case Report

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Abstract

Introduction: Chronic low back pain is a common complaint and is often attributed to lumbar disc disease. Less recognized causes, such as piriformis syndrome, can be overlooked, especially when routine tests and imaging are inconclusive. Early accurate diagnosis and targeted therapy are essential for effective pain relief.

Case presentation: A 39 year old male experienced 6 years of atraumatic low back pain radiating to left leg and sole, worsening over 10 days. Examination revealed left piriformis tenderness but negative provocative tests, with minimal sensory deficit in the left L5 dermatome. Imaging were inconclusive in explaining his symptoms. He had previously been managed conservatively for suspected prolapsed disc, without pain relief. Ultrasound guided piriformis trigger point injection and sciatic nerve hydrodissection provided rapid and significant pain relief, confirming the piriformis as the primary pain source.

Conclusions: This case demonstrates the diagnostic and therapeutic value of ultrasound-guided injections in atypical piriformis syndrome.

Keywords: *case report; injection; lumbar pathology; piriformis syndrome; sciatic nerve; ultrasonography.*

Introduction

Piriformis syndrome (PS) accounts for 0.3-6% of low back pain and is most commonly caused by irritation of the sciatic nerve by the piriformis muscle.[1] Sciatic nerve variations and piriformis muscle abnormalities are frequently associated.[2] As its symptoms often mimic lumbar radiculopathy, PS is commonly misdiagnosed, resulting in prolonged symptoms.[2,3] Management typically begins with conservative measures, with injections or surgery considered in refractory cases. In patients with atypical presentations, ultrasound-guided piriformis injection with sciatic nerve hydrodissection relieves muscle spasm, improves nerve function, and reduces neuropathic pain.[2,4] This case highlights the

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diagnostic and therapeutic value of this targeted approach.

Patient Profile

A 39 year old male with a sedentary desk job was referred for evaluation of a six-year history of low back pain radiating to the left leg and sole of the foot, which had acutely worsened over 10 days with a Numeric Rating Scale (NRS) score of 8/10. Pain was aggravated by prolonged sitting and standing, without associated trauma, fever, or neurological deficits. Previously, he was managed conservatively as a case of prolapsed intervertebral disc at another center, without sustained benefit. No significant past medical, surgical and family history.

Clinical Findings

Examination revealed localized tenderness over the left piriformis muscle with normal gait, lumbar mobility, and neurological function. Provocative tests like straight-leg raise (SLR) test, Freiberg test, Flexion Abduction and External Rotation (FABER) and Flexion Adduction and Internal Rotations (FAIR) were negative. Motor strength, deep tendon reflexes, and bowel and bladder function were normal. Differential diagnoses considered included lumbar radiculopathy due to disc disease, sacroiliac joint pathology, and piriformis syndrome. MRI of Lumbosacral Spine showed L4-L5 disc bulge with bilateral lateral recess narrowing causing indentation of L4 exiting nerve root, while X-ray of Lumbosacral spine revealed lumbarisation of the sacral vertebra.

As the clinical findings did not correlate with imaging results and prior conservative treatment did not help the patient, a targeted ultrasound-guided procedure was planned to further clarify the diagnosis and address both the piriformis muscle and the sciatic nerve.

Therapeutic Intervention

Pre-procedure ultrasound was performed with the patient in the prone position, using a curvilinear probe placed between the ilium and greater trochanter. The piriformis muscle and sciatic nerve appeared normal, without evidence of anatomical variations and mass or contracture (Figure 1). With aseptic technique and ultrasound guidance, a 3.5-inch, 22-gauge Quincke spinal needle was inserted in plane towards the piriformis muscle. A total of 2 ml of 5% dextrose was injected into the piriformis muscle, while eliciting multiple local twitch responses confirming the presence of trigger points (Figure 2). This was immediately followed by hydrodissection of the sciatic nerve with 4 ml of 5% dextrose. The injected fluid was visualized separating the sciatic nerve beneath the piriformis muscle (Figure 3). The patient experienced immediate pain relief of over 50%, supporting the diagnosis of piriformis syndrome with suspected sciatic nerve compression. The procedure was well tolerated, with only mild injection site pain and no other adverse events.

Figure 1: Pre-procedure scan: Ultrasound image with piriformis muscle in long-axis.

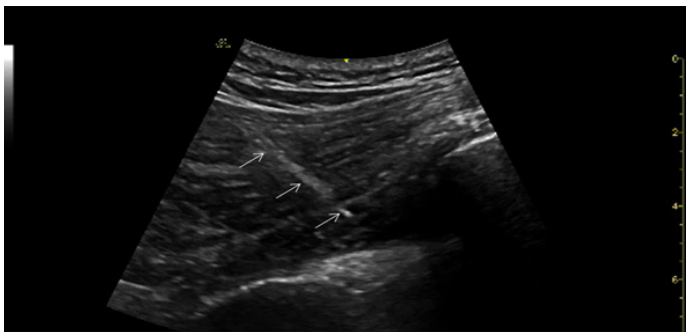

Figure 2: Ultrasound-guided needle placement (in plane technique) in the piriformis muscle during trigger point injection.

Figure 3: Separation of sciatic nerve beneath piriformis muscle seen during injection under ultrasound.

Follow-up and Outcomes

At initial follow-up, NRS improved to 2/10, and at subsequent follow-up after three months, pain further decreased to 1/10, and allowed full resumption

of daily activities and continuation of physiotherapy. The patient reported marked improvement in pain and quality of life.

Discussion

PS is a diagnostic challenge due to its symptom overlap with lumbar radiculopathy and other causes of sciatica like pain. Patients typically present with buttock pain which is exacerbated by sitting, tenderness near the greater sciatic notch, and discomfort or restriction during piriformis stretching, as outlined in the 2018 standardized criteria.[5] In our case, the patient experienced pain in the buttock and leg, with tenderness over the piriformis muscle and minimal sensory changes, which did not match the standardized criteria. MRI of lumbosacral spine revealed only mild L4-L5 disc changes and no structural abnormality on ultrasound, highlighting the discrepancy between clinical and radiological findings.

In atypical presentations of PS, where symptoms do not clearly correspond to imaging, targeted interventional approaches can provide both diagnostic and therapeutic benefits.[2] In this patient, a dual-targeted ultrasound-guided technique combining piriformis trigger point injection and sciatic nerve hydrodissection with 5% dextrose was used to simultaneously address muscular spasm and neural irritation, resulting in rapid pain relief and functional recovery. The combined use of these techniques, although previously reported individually, may offer a practical solution for refractory or atypical cases.[6,7]

Ultrasound enables continuous visualization during the procedure, ensuring precise needle localization, enhancing safety, and minimizing the risk of complications.[8] Its portability and minimal equipment requirements also make these interventions feasible on an outpatient basis, even in resource-limited settings, when appropriately performed by trained professionals. Compared with higher concentrations, 5% dextrose is isotonic, does not trigger significant inflammatory or neurotoxic reactions, and carries fewer local and systemic adverse effects than steroids or local anesthetics.[7]

We acknowledge that ultrasound findings may be less accurate in patients with high body mass index or complex anatomy and are dependent on operator expertise. Electromyography and nerve conduction studies were not performed, as the patient declined further investigations after limited benefit from previous tests and treatments.

Nonetheless, this case highlights the potential utility of dual-targeted ultrasound-guided interventions in atypical PS and underscores the importance of clinical judgment when imaging is inconclusive. Further studies and larger case series are warranted to evaluate the durability, safety, and broader applicability of this approach.

Conclusions

Although piriformis syndrome is relatively uncommon and often presents atypically, it should be considered in patients with sciatica-like symptoms. Ultrasound guided piriformis injection combined with sciatic nerve hydrodissection can provide safe and effective management.

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Conflict of Interest: None

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