

Piriformis Syndrome Mimicking Sciatica: A Case Report and Physiotherapy-Based Conservative Management

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Abstract

Introduction: Piriformis Syndrome is an underdiagnosed cause of sciatica-like symptoms, resulting from compression of the sciatic nerve by the piriformis muscle. It is commonly misdiagnosed as lumbar radiculopathy.

Case Presentation: We report the case of a 42-year-old woman with right buttock pain radiating down the leg, ultimately diagnosed with Piriformis Syndrome. A structured physiotherapy regimen led to significant symptom resolution.

Conclusion: Early diagnosis and conservative management through physiotherapy are effective in managing Piriformis Syndrome, emphasizing the importance of clinical awareness and tailored rehabilitation programs.

Keywords: Piriformis, Sciatic Nerve, Physiotherapy, Sciatica, Conservative Management, Case Report

Introduction

Piriformis Syndrome is a neuromuscular disorder characterized by compression of the sciatic nerve by the piriformis muscle, which extends from the pelvic surface of the sacrum to the upper border of the greater trochanter of the femur. This compression, particularly during sitting or running, can lead to radiating pain down the lower limb, mimicking sciatica [Merck Manual, 17th edition]. Although rare, Piriformis Syndrome is a significant differential diagnosis in patients presenting with sciatica-like symptoms without spinal pathology. Diagnosis is clinical, supported by exclusion of other causes. This case report illustrates successful conservative management of Piriformis Syndrome through physiotherapy.

Case Presentation

- **Patient Information**
- **Age:** 42
- **Gender:** Female
- **Occupation:** Office worker
- **Presenting Complaint:** Right-sided buttock pain radiating to the posterior thigh for 4 months
- **History of Present Illness:** The patient reported insidious on-set pain aggravated by prolonged sitting and driving. Walking and standing temporarily relieved the symptoms. No history of trauma or previous back problems.
- **Medical History:** Non-contributory.
- **Family History:** Non-contributory.
- **Medication History:** Occasional NSAIDs with minimal relief.

Clinical Findings

On physical examination, the patient exhibited **localized tenderness** and **pain reproduction** consistent with Piriformis Syndrome. Notably, lumbar spine palpation and neurological assessment were unremarkable, helping differentiate it from lumbar radiculopathy.

Palpation

- **Tenderness over the right piriformis muscle** was elicited upon deep palpation of the **mid-buttock**, approximately midway between the sacrum and greater trochanter.
- The pain was localized, deep, and dull in nature, with radiation toward the posterior thigh upon sustained pressure.
- No swelling or visible muscle atrophy was noted.

Provocative Tests

Several orthopedic special tests were conducted to reproduce symptoms and assess the mechanical involvement of the piriformis muscle:

Freiberg's Test

1. The patient was in a **supine position** with the hip in neutral. The examiner passively **internally rotated** the extended hip.
2. This maneuver stretched the piriformis, reproducing the patient's deep gluteal pain.
3. **Positive** on the right side, indicating piriformis irritation.

FAIR Test (Flexion, Adduction, Internal Rotation)

1. Performed in the **side-lying position** on the non-affected side.
2. The affected hip was flexed to 60°, adducted, and internally rotated while stabilizing the pelvis.
3. The test **provoked buttock pain**, confirming compression of the sciatic nerve by the piriformis.
4. FAIR is considered one of the most sensitive tests for Piriformis Syndrome and was clearly positive in this case.

Pace Sign

1. The patient was seated with hips flexed at 90°, knees bent. She was instructed to **abduct both hips against manual resistance**.
2. The test reproduced **pain and weakness** in the right buttock, indicating piriformis involvement.
3. Mild weakness was noted in resisted abduction, likely due to pain inhibition rather than neurological deficit.

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Citation: Turkia EROUK*, Piriformis Syndrome Mimicking Sciatica: A Case Report and Physiotherapy-Based Conservative Management. Jour of Clin & Med Case Rep, Imag 2025; 3(5): 1124.

Neurological Examination

A thorough neurological assessment of the lower limbs was performed to exclude radiculopathy:

- **Muscle strength:** Normal (5/5) in hip flexors, extensors, abductors, quadriceps, hamstrings, and ankle dorsiflexors/plantarflexors bilaterally.
- **Deep tendon reflexes:** Normal and symmetrical (patellar and Achilles reflexes present).
- **Sensory testing:** No hypoesthesia or paresthesia noted in L4, L5, or S1 dermatomes.
- **Straight Leg Raise (SLR) Test:** **Negative bilaterally**, further supporting the absence of lumbar nerve root irritation.

Interpretation

The combination of:

- **localized piriformis tenderness**
- **positive FAIR, Freiberg's, and Pace tests**
- **and a normal neurological exam with a negative SLR**

strongly suggested a **peripheral entrapment of the sciatic nerve** at the level of the piriformis muscle, rather than spinal origin sciatica. This clinical presentation, supported by imaging ruling out discogenic causes, confirmed the diagnosis of **Piriformis Syndrome**.

Diagnostic Assessment

1. **Lumbosacral MRI:** No disc herniation, no nerve root impingement
2. **Pelvic MRI:** Mild hypertrophy of the right piriformis muscle; sciatic nerve deviation noted
3. **Diagnosis:** Piriformis Syndrome based on clinical findings and imaging correlation.

Therapeutic Intervention

The patient underwent a **comprehensive 6-week structured physiotherapy program**, designed to address muscular imbalance, nerve irritation, and biomechanical contributors to Piriformis Syndrome. The program included the following components:

1. Stretching Program

Objective: To reduce piriformis muscle tension and increase flexibility in the surrounding musculature, thereby minimizing sciatic nerve compression.

Piriformis Stretch (Supine and Seated Variants)

- **Supine:** The patient lay on her back, flexed the affected leg, and brought it across the opposite knee, gently pulling the thigh toward the chest while keeping the pelvis neutral.
- **Seated:** While seated, the affected leg was crossed over the opposite thigh, and the patient leaned forward at the hip to stretch the gluteal and piriformis region.
- **Prescription:** Held for 30 seconds, 3–5 repetitions per session, 2–3 sessions daily.

Hamstring

Stretch

Tight hamstrings may increase posterior chain tension, aggravating sciatic symptoms. A straight-leg hamstring stretch was employed with a towel or strap to avoid lumbar flexion.

Hip External Rotator Stretch

Addressed the deep six lateral rotators to reduce compression on the sciatic nerve. This included stretches in the pigeon pose and supine figure-4 position.

2. Strengthening Exercises

Objective: To correct muscle imbalances, improve pelvic alignment, and enhance dynamic stabilization of the lumbopelvic-hip complex.

Gluteus Medius and Maximus Activation

- Weakness in these muscles can contribute to compensatory overuse of the piriformis.
- **Clamshells:** Side-lying position, knees bent, lifting the top knee while keeping feet together.
- **Glute Bridges:** Supine, knees bent, lifting pelvis while engaging glutes and core.
- **Standing Hip Abduction** with resistance bands to promote lateral hip stability.
- **Core Stabilization** Lumbo-pelvic stability is essential to reduce compensatory strain on the piriformis.
- **Exercises included:** Modified planks, dead bugs, and bird-dogs.
- Focus on activating transverse abdominis and multifidus with pelvic neutral cues.
- **Prescription:** 2–3 sets of 10–15 repetitions per exercise, performed on alternate days to allow for neuromuscular adaptation.

3. Manual Therapy

Objective: To relieve localized soft tissue tightness and reduce muscle hypertonicity through hands-on techniques.

- **Deep Tissue Release of Piriformis**
- The therapist applied sustained pressure using fingers, knuckles, or an elbow to release taut bands and nodules in the piriformis muscle belly.
- **Myofascial Release:** Slow, low-load manual traction of the gluteal fascia and piriformis region aimed to release fascial restrictions affecting nerve gliding.
- **Trigger Point Therapy:** Identified and deactivated myofascial trigger points that reproduced referred pain patterns.

Sessions lasted 20–25 minutes, twice per week for the first 3 weeks.

4. Electrotherapy Modalities

Objective: To facilitate analgesia, reduce muscle spasm, and promote tissue healing.

Ultrasound Therapy

- **Parameters:** 1 MHz frequency, pulsed mode (20% duty cycle), 5 minutes per session
- Targeted at the piriformis and adjacent tissues to promote deep tissue healing and reduce inflammation.
- **TENS (Transcutaneous Electrical Nerve Stimulation)**
- Applied over the gluteal region using a dual-channel unit
- **Settings:** High-frequency (80–100 Hz) for pain modulation via gate control mechanism
- **Duration:** 20 minutes per session, 3–4 times weekly

5. Ergonomic and Postural Advice

Objective: To minimize mechanical stress on the piriformis muscle during daily activities.

Workstation Modification

- Lumbar-supportive chair with adjustable height and foot positioning
- Instruction on sitting with hips above knees and avoiding crossing legs

Activity Modification

- Scheduled **standing breaks every 30–45 minutes** during sedentary tasks

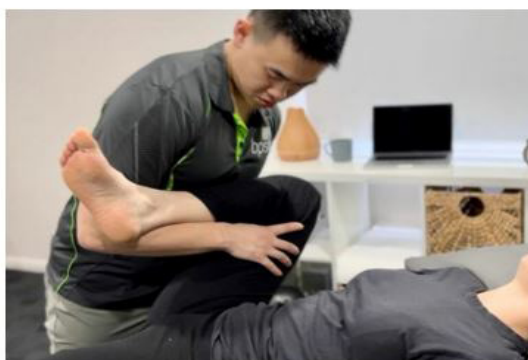
- Avoidance of prolonged external hip rotation while sitting

Sleep Posture Education

- Use of a pillow between the knees in side-lying position to reduce piriformis stretch
- Avoid prone lying or excessive lumbar extension at night.

Progression and Monitoring

1. The patient was reassessed weekly using the **Visual Analogue Scale (VAS)** and **Oswestry Disability Index (ODI)** to monitor progress.
2. Exercise intensity and complexity were increased progressively,



based on tolerance and functional improvements.

3. At week 4, dynamic tasks such as **step-downs and single-leg stance drills** were introduced to improve functional hip control.

Follow-Up and Outcome

Week 2: 40% improvement in pain (VAS 8 → 5)

Week 4: Pain significantly reduced; resumed normal walking and light activity

Week 6: VAS reduced to 2; full return to work and function.

3-month follow-up: No recurrence reported.

Discussion

Piriformis Syndrome remains a controversial and underdiagnosed cause of sciatica. Distinguishing it from lumbar radiculopathy requires careful history, physical examination, and imaging to rule out spinal pathology.

The piriformis muscle can irritate the sciatic nerve at the point it exits under the muscle belly and over the gemellus/obturator internus complex. The FAIR test and palpation tenderness are key indicators. In this case, clinical signs coupled with MRI helped confirm the diagnosis.

Conservative treatment: particularly physiotherapy, has shown strong outcomes in symptom resolution. According to Kirschner et

al. (2009), up to 80% of patients respond to non-surgical interventions. Our case confirms the effectiveness of a tailored physiotherapy protocol involving stretching, strengthening, manual therapy, and ergonomic advice [1-4].

Conclusion

This case highlights the importance of clinical suspicion for Piriformis Syndrome in patients presenting with sciatica-like symptoms but no spinal pathology. Conservative management, particularly a physiotherapy-based approach, is highly effective and should be the first line of treatment.

Patient Consent

Written informed consent was obtained from the patient for the publication of this case report and accompanying images.

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