RUHANI COLLEGE
OF HEALTH BUSINESS AND TECHNOLOGY

Lecture 19 — Piriformis Syndrome

Student Handout · RU RMT 20 Pathological Treatments · Ruhani College · Registered Massage Therapy Diploma Program

How to use this handout: it follows the lecture in the order it is delivered, so you can annotate it as we go rather than copying slides. Everything examinable in this lecture is here. Work through the review questions at the end without looking back, then check them against the answers.

Learning outcomes

Notes:

Define the syndrome — Explain piriformis syndrome as a soft-tissue nerve-compression condition.

Trace the mechanism — Follow hypertonicity to trigger points to sciatic compression and pain.

Recognise the picture — Identify the symptoms and gait changes, and rule-out mimics like sciatica.

Assess within scope — Gather the right intake and observational findings before treating.

Treat layer by layer — Apply a gentle myofascial, static-compression protocol.

Work safely — Apply the contraindications that protect a fragile, compressed nerve.

An Overview — A soft-tissue nerve-compression syndrome

Piriformis syndrome occurs when the piriformis muscle — deep in the buttock — compresses, irritates, or entraps the nearby sciatic nerve. The result is pain, numbness, and tingling that can radiate down the leg.

A hypertonic muscle

Sciatic-nerve pain

Piriformis spasm irritates the nerve.

Radiating buttock and leg pain.

Because it mimics low-back pain from a disc problem, it is frequently misdiagnosed. Yet it is fundamentally a soft-tissue condition — which places much of its symptom relief squarely within our scope.

Often misdiagnosed

Within our scope

Mistaken for disc-related LBP.

A soft-tissue condition we can help.

Notes:

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Understanding Piriformis Syndrome

A small deep muscle, a large fragile nerve, and a long list of imitators — understanding this syndrome begins with knowing why it is so easily missed.

Notes:

General Information — What causes piriformis syndrome

Muscle spasm or hypertonicity. A spasming or extremely hypertonic piriformis compresses, irritates, or injures the proximal sciatic nerve.

Trauma & fibrosis. Direct injury or traumatic fibrosis of the muscle can entrap the nerve.

Postural load. Hyperlordosis and anatomic abnormalities alter the muscle's pull on the nerve.

Prolonged sitting. Sustained pressure through the buttock — a common daily driver.

Explosive movement. Vigorous activity involving sudden bending or twisting can trigger it.

Notes:

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

The Great Impersonator — Why it is so often misdiagnosed

Piriformis syndrome is frequently mistaken for clinical low-back pain with radiculopathy — pain radiating from the spine — caused by a lumbar disc problem. Its symptoms overlap almost perfectly.

Several physicians. A client may see many clinicians before the correct diagnosis is reached.

Unnecessary surgery. Misdiagnosis can lead to inappropriate treatment — even needless spinal disc surgery.

Notes:

Source: Rattray & Ludwig (2000)

Who Is At Risk — Populations & patterns

Notes:

Athletes — Skiers, tennis players, and long-distance cyclists — sports with repetitive hip loading.

Prolonged sitters — Truck drivers and taxi drivers, from hours of sustained buttock pressure.

More common in women — The condition shows a notable prevalence among women.

Onset & duration — Gradual when lifestyle-related, sudden when trauma-related; typically lasting weeks to months.

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Morbidity & Mortality — A leading contributor to low-back pain

Piriformis syndrome ranks alongside sciatic-nerve entrapment, herniated disc, direct trauma, and muscle spasm as a leading cause of low-back pain. Reported trauma includes motor-vehicle accidents, a fall onto the buttock, difficult childbirth, or a hip or low-back torsion injury. Common comorbidities are degenerative lumbar disc disease, ischial-tuberosity bursitis, and sciatica.

Notes:

30–45% — of people aged 18–55 experience some form of low-back pain

~50% — of piriformis cases report a history of direct trauma to the buttock

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Complications & Prognosis — Why accurate diagnosis matters most

The most serious complications don't come from the syndrome itself — they come from getting the diagnosis wrong. Misdiagnosis can worsen symptoms, invite inappropriate treatment, and lead to unnecessary surgery, long-term disability, and pain.

Improper diagnosis

Needless surgery

The main source of serious harm.

An avoidable, high-cost outcome.

The prognosis is good when diagnosis is early and accurate, and recurrence is uncommon once a rigorous course of therapy is followed.

Good with early care

Low recurrence

Accurate, timely treatment helps.

When rigorous therapy is followed.

Notes:

Source: Rattray & Ludwig (2000)

Confirming the Diagnosis — How piriformis syndrome is identified

Physical assessment & history. Diagnosis rests on examination plus the neurologic history and any pelvic trauma or childbirth difficulty.

Manual compression. The muscle is accessible through the rectum; manual compression that reproduces the pain helps confirm the condition.

MR neurography. A newer technique that accurately reveals piriformis asymmetry and sciatic-nerve hyperintensity.

Rule-out imaging. X-ray, MRI, and nerve-conduction tests exclude other conditions with similar symptoms.

There is no single definitive test — diagnosis is a process of confirmation and exclusion.

Notes:

Pathophysiology

Picture the anatomy clearly: a deep rotator muscle lying directly over a large but fragile nerve — and a pain signal born of oxygen starvation.

Notes:

The Anatomy — The gluteal complex & the piriformis

Clearly envisioning the anatomy of the gluteal complex is the therapist's most important tool for this syndrome. The piriformis is a deep hip rotator that lies beneath the thick gluteus maximus.

Deep to glute max

A hip rotator

The piriformis sits beneath thick muscle.

It laterally rotates the hip.

Running immediately alongside — and in some people through — the muscle is the proximal sciatic nerve: large, but surprisingly fragile under pressure.

Beside the nerve

A fragile nerve

The sciatic nerve runs alongside it.

Large, but vulnerable to compression.

Notes:

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

The Key Relationship — The piriformis and the sciatic nerve

Notes:

Hypertonicity — A chronically tight piriformis presses on the proximal sciatic nerve.

Trigger points — Sustained tension seeds myofascial trigger points in and around the muscle.

Nerve compression — Those tissues compress and irritate the nerve where it exits the pelvis.

Radiating pain — The nerve refers pain, numbness, and tingling down the leg.

Source: Rattray & Ludwig (2000); Travell & Simons (1999)

The Compression Cascade — How tightness becomes nerve pain

Massage therapy works along this whole cascade — softening the tissue layer by layer to relieve the compression at its source.

Notes:

Hypertonicity — The piriformis and neighbours tighten and shorten.

Trigger points — Myofascial trigger points develop in the tense tissue.

Nerve compression — The sciatic nerve is compressed and irritated.

Source: Rattray & Ludwig (2000)

Why It Hurts — The oxygen-deprivation pain signal

A nerve deprived of oxygen through compression or impingement alerts the body to its need for oxygen by signalling pain — often surprisingly intense pain. It is the same mechanism seen in the pain-spasm-pain cycle and in TMJ syndrome.

Compression starves the nerve. Reduced blood flow means reduced oxygen.

Pain is the alarm. The nerve's distress signal is felt as pain along its path.

Notes:

Source: Rattray & Ludwig (2000)

Trauma Is Not the Only Cause — Chronic, low-level compression

Blunt-force trauma is a common cause — but it is far from the only one. Even low-level, chronic compression, sustained over years, can produce piriformis syndrome.

Acute trauma

Chronic pressure

A fall or blow to the buttock.

Low-level load over years.

The classic example is a wallet kept in the same back pocket for years, quietly pressing on the nerve every time its owner sits down.

The wallet effect

Same result

A back-pocket wallet while sitting.
The fragile nerve is compressed.
Notes:
Source: Rattray & Ludwig (2000)

The Clinical Picture

The symptoms range from local buttock pain to radiating numbness and subtle changes in gait — and much of the picture falls within our scope.
Notes:

Overall Signs & Symptoms — What the client reports

Deep regional pain. In the buttock, coccyx, hip, groin, or posterior thigh.
Radiating numbness & tingling. Travelling down the posterior leg and into the lateral foot.
Worse with sitting. Prolonged sitting, climbing stairs, or squatting all aggravate it.
Piriformis spasm. Palpable spasm and hypertonicity, with a tender gluteal region.
Weak hip abduction. Reduced strength moving the leg outward.
SI-joint hypomobility. A stiff sacroiliac joint, sometimes with pain on bowel movements.
Notes:
Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

What You Will Observe — Gait & postural signs

These quiet, observable signs — seen as the client walks, sits, and lies down — often tell you as much as the reported pain.
Notes:
Shortened stride — The client takes a noticeably shorter step on the affected side.
Apparent leg shortening — The leg on the affected side can appear shorter.
A splayed foot — Marked lateral rotation of the foot when the client lies supine.
Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

An Important Distinction — Piriformis syndrome vs. sciatica

Piriformis syndrome
Sciatica
A muscular entrapment
A nerve-root problem
A soft-tissue problem in the buttock
The piriformis compresses the nerve
Well suited to massage therapy
Reproduced by muscle compression
Often arises from the lumbar spine
A disc or root is the source
May need medical management
Anatomically related, but distinct
The two are frequently confused — they are anatomically related, but they are genuinely different conditions.
Notes:
Source: Rattray & Ludwig (2000)

Within Our Scope — Symptoms massage therapy can address

Piriformis syndrome is a soft-tissue condition, so much of its symptom relief sits well within the massage therapist's scope of practice.
Notes:
Relieve nerve compression — Layer-by-layer softening of hypertonic muscle unloads the nerve.
Ease pain & tingling — Multiple techniques address symptoms of nerve oxygen deprivation.

Reduce muscle tenderness — Careful muscle-stimulating techniques calm the tender tissue.

Lower anxiety — Relaxing work helps the client reach a parasympathetic state and improves quality of life.

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Medical Management

Care begins conservatively and escalates only when it must — and the massage therapist works as one member of a physician-led team.

Notes:

Treatment Options — From conservative care to surgery

Conservative first. Spinal/pelvic traction, progressive stretching and strengthening, careful ROM, heat and cold, ultrasound, and activity modification.

Daily home self-care. A rigorous, daily self-care regimen is essential for complete recovery.

Corticosteroid injection. Injected into the muscle belly only when conservative methods fail.

Surgery, last of all. Reserved as the treatment of last resort.

A sports-medicine or orthopedic physician most often leads treatment — frequently after the client has seen several clinicians.

Notes:

Common Medications — Managing pain & inflammation

Notes:

NSAIDs — Non-steroidal anti-inflammatories such as ibuprofen (Motrin, Advil) reduce pain and inflammation.

Local anaesthetics — Agents such as bupivacaine and topical lidocaine (Lidoderm, Xylocaine) numb the painful region.

A treatment caution — Avoid cross-fibre friction while a client is taking anti-inflammatory medication.

Pain can be masked — When medication dulls pain, moderate your pressure and rely on frequent feedback.

Source: Rattray & Ludwig (2000); Werner (2019)

Working As Part of the Team — The massage therapist's place in care

The massage therapist does not diagnose piriformis syndrome. That diagnosis belongs to the physician; our role is to treat the secondary soft-tissue symptoms it produces.

Physician-diagnosed

Alongside the PT

We treat, we do not diagnose.

Coordinate with the care team.

That means working closely with the sports-medicine or orthopedic physician and the physical therapist who already know the exact anatomic picture.

Treat the symptoms

Stay in scope

Focus on the soft-tissue effects.

Respect the boundaries of practice.

Notes:

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Massage Therapy Treatment

Assess carefully, then work slowly — warming and softening each layer with static compression until the piriformis itself can be reached and released.

Notes:

Assessment · Intake — Questions to ask before you begin

Who is on the care team? Is the client under a sports-medicine, orthopedic, or chiropractic physician?

Any recent injection? Has she had a corticosteroid or anaesthetic injection into the buttock in the last 10 days?

Any recent rectal procedure? Has she had a rectal examination or treatment in the last 10 days?

What is the pain now? Ask her to rate her current pain on a scale of 0 to 10.

Notes:

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Assessment · Observation — Reading the pain & the movement

The path of the pain. Trace exactly where the pain travels.

The nature of the pain. Is it burning, numb, tingling, dull, or achy?

Guarding as she walks. Watch for protective guarding, an apparent limp, or signs of leg shortening.

Bracing at the chair. Note whether she braces herself when sitting down or rising.

Notes:

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Therapeutic Goals — What we aim to achieve

Because piriformis syndrome is a soft-tissue condition, the therapist — working closely with the physician and physical therapist — has clear, achievable goals.

Notes:

Unload the nerve — Reduce the compressive force on the affected sciatic nerve.

Reduce hypertonicity — Soften the piriformis and the surrounding gluteal muscles.

Improve posture — Facilitate better posture to ease ongoing strain.

Provide pain relief — Deliver genuine, lasting relief of the client's pain.

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Session Frequency — A general treatment schedule

Consistency, paired with the client's daily home regimen, is what carries the recovery through to completion.

Notes:

2× / wk — 60-minute sessions in the early, painful stages

1× / wk — 60-minute sessions as the symptoms begin to subside

Monthly — 60-minute maintenance until symptoms fully resolve

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Massage Protocol — The guiding philosophy

Effective treatment depends on clearly visualising the structures beneath your hands, and a willingness to begin gently and move, layer by layer, only to the depth the client can tolerate.

See the structures

Layer by layer

Visualise the layers you work.

To the depth she tolerates.

Although deep trigger points are common, the protocol does not call for aggressive trigger-point work. It leans on myofascial technique — working muscle and fascia — and warming superficial tissue first.

Gentle, not aggressive

Static compression

No forceful trigger-point work.

Broad open hand and forearm.

Notes:

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

The Core Technique — Static compression, done safely

Light to deep, then wait. Apply direct, non-moving pressure, progressing gently and waiting for the tissue to release, soften, or shift ever so slightly.

Let the tissue lead. That small movement is the body's acquiescence — your signal that you may go deeper.

No elbows, knuckles, or fists. An untrained elbow with poor mechanics can damage the already-fragile sciatic nerve.

Work toward the origin. Know the muscles' origins and insertions, and work toward the origin to soften and prevent spasm.

Notes:

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Finding the Muscle — Locating the piriformis

With the client side-lying, palpate the posterior-superior iliac spine (PSIS) and the greater trochanter. Lay the heel of your hand on the PSIS and point your fingertips toward the greater trochanter.

Follow the line. The piriformis lies deep to the gluteals along that PSIS-to-trochanter pathway.

Deep to glute max. You must work through the thick gluteus maximus to reach it.

Notes:

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Getting Started — Positioning, draping & hydrotherapy

Notes:

Hydrotherapy ready — Hot packs for dull, aching or distal tissue; cold packs to quiet a spasm or sharp, stabbing pain.

Comfortable side-lying — Provide plenty of pillows to support a relaxed side-lying position.

Draping is paramount — Work involves the hip and gluteal complex; skin-on-skin is most effective, with careful, respectful draping.

Help her relax — A client in pain guards herself; a calm environment and a few deep breaths help her settle.

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Aftercare & Safety

Here, less is more: keep self-care simple, defer to the physical therapist's regimen, and respect the firm cautions that protect the nerve.

Notes:

Homework — Simple, safe self-care

Unlike most conditions, here you deliberately keep self-care simple — the risk of harm means you offer lifestyle suggestions and encourage the rigorous regimen the client's PT has already assigned.

Notes:

Sit smarter — For long sitting, use a padded or rocking chair; when driving, get out and walk every hour.

Ice or heat — Ice for acute, sharp local pain; heat for dull, aching pain.

Pillow support — A pillow between the knees when side-lying, and under the knees when supine, offloads the low back.

Gentle movement — Yoga or tai chi can help — but only with the physician's and PT's permission.

Source: Rattray & Ludwig (2000); Ruhani College Lecture 19

Contraindications & Cautions — Protecting a compressed nerve

Modulate elbow work. The sciatic and neighbouring nerves are already compressed; an ill-placed, aggressive elbow can cause serious damage.

No cross-fibre friction on anti-inflammatories. Skip cross-fibre friction while the client is taking anti-inflammatory medication.

No active or passive joint ROM. The PT and physician know the exact anatomic damage; without it, even innocuous ROM can harm.

No hip ROM in pregnancy with unexplained LBP. Especially avoid it in the third trimester when the cause of the pain is unknown.

Notes:

Source: Rattray & Ludwig (2000); Werner (2019)

References and further reading

- Rattray, F., & Ludwig, L. (2000). Clinical Massage Therapy: Understanding, Assessing and Treating Over 70 Conditions. Toronto: Talus Inc.
- Travell, J. G., & Simons, D. G. (1999). Myofascial Pain and Dysfunction: The Trigger Point Manual (2nd ed.). Baltimore: Williams & Wilkins.
- Werner, R. (2019). A Massage Therapist's Guide to Pathology (7th ed.). Books of Discovery.
- Magee, D. J. (2014). Orthopedic Physical Assessment (6th ed.). St. Louis: Saunders / Elsevier.
- Lowe, W. (2009). Orthopedic Assessment in Massage Therapy. Sisters, OR: Daviau-Scott.

– Notes:

Key takeaways — Work slow, work safe, respect the nerve

Piriformis syndrome is a soft-tissue nerve-compression condition that hides behind low-back pain. Diagnosed by a physician and treated by our hands, it responds to patient, layer-by-layer myofascial work — gentle static compression, no aggressive elbows, and constant client feedback to protect the fragile sciatic nerve.

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Notes:

Review questions

Answer these from memory before checking the answers below.

1. Describe the anatomical relationship between piriformis and the sciatic nerve.
2. What is the typical presentation of piriformis syndrome?
3. How do you distinguish piriformis syndrome from lumbar disc-related sciatica?
4. Why does the function of piriformis change with hip position?
5. Outline the treatment approach and its cautions.

Answers

1. Piriformis runs from the anterior sacrum to the greater trochanter, passing through the greater sciatic foramen. The sciatic nerve usually passes beneath it, but in a minority of people the nerve or part of it passes through or above the muscle, which increases vulnerability to compression.

2. Deep buttock pain, often referring into the posterior thigh, aggravated by prolonged sitting, by driving and by activities that load the hip in rotation, with tenderness on palpation of the muscle.

3. Piriformis syndrome produces pain that begins in the buttock, is reproduced by palpating and stretching the muscle, and typically lacks true neurological deficit. Disc-related sciatica more often produces a dermatomal pattern with back pain, a positive straight leg raise at a low angle, and may show reflex, sensory or motor changes.

4. In neutral it is a lateral rotator of the hip; with the hip flexed beyond about ninety degrees its line of pull changes and it acts increasingly as an abductor and medial rotator. That is why assessment and stretching positions must be specified carefully.

5. Warm the gluteal group, release gluteus maximus before working deeper, apply sustained specific pressure and trigger point work to piriformis, and stretch the muscle in the appropriate hip position — while avoiding sustained direct pressure over the sciatic nerve and stopping if numbness, tingling or shooting pain is reproduced.