

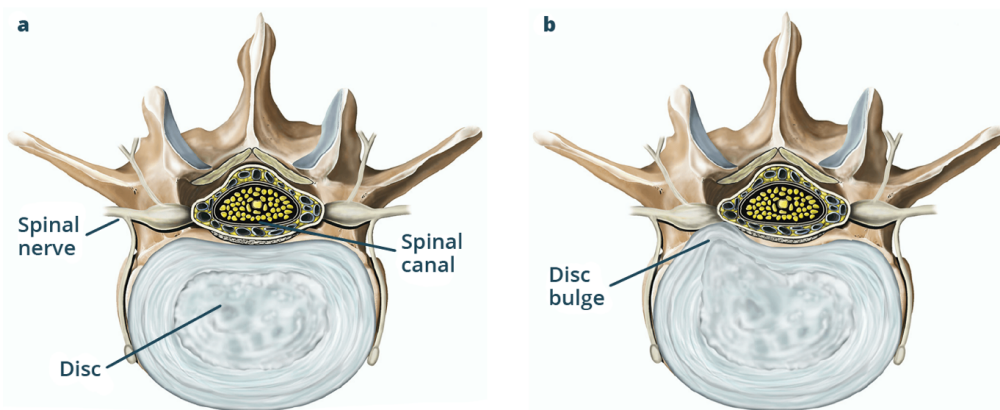
# LUMBAR RADICULOPATHY (SCIATICA)

## Introduction

Lumbar radiculopathy is a common spinal condition caused by irritation or compression of nerves as they exit the lower (lumbar) spine. When pain radiates down the leg it is often called “sciatica”. It affects 5–10% of people at some point in their lives. Most cases settle with conservative measures alone; a proportion require surgical intervention. Once correctly diagnosed, treatment options include medication and physiotherapy, image-guided spinal injections, and neurosurgical procedures such as a microdiscectomy.

## What causes lumbar radiculopathy?

By far the most common cause is a lumbar disc herniation (also known as a “slipped disc” or “prolapsed disc”). Intervertebral discs sit between each vertebra and act as shock absorbers. With age, repetitive load or injury, the tough outer ring can tear, allowing the inner gel to herniate into the spinal canal and compress or inflame the adjacent nerve root. The most affected levels are L4/5 and L5/S1, accounting for over 90% of cases.



Less common causes include:

- Lateral recess stenosis – combination of prolapsed disc and bony facet overgrowth.
- Foraminal stenosis – bony narrowing of the nerve exit channel, typically from a combination of loss of disc height, disc prolapse and bony facet arthritic overgrowth.
- Spondylolisthesis – forward slippage of one vertebra on the one below.
- Synovial cysts – fluid-filled sacs arising from the facet joints.
- Tumour or infection – uncommon but important to exclude

## What are the symptoms?

Symptoms depend on which nerve is involved but typically include:

- Leg pain that is sharp, burning, electric or shooting in nature, radiating from the buttock down the leg or into the foot, usually more severe than any associated back pain. The location of the leg pain guides the treating doctor as to which nerve is involved.
  - Pain aggravated by sitting, bending, coughing or straining.
  - Numbness or pins-and-needles in the affected nerve distribution.
  - Weakness of specific muscle groups (e.g. foot drop with an L5 radiculopathy).
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## Cauda equina syndrome — a surgical emergency

Rarely, a very large central disc herniation compresses the cauda equina (the cluster of nerves at the base of the spinal cord). This is a surgical emergency. If not decompressed promptly, permanent loss of bladder, bowel and sexual function and leg strength may result. Warning features include:

- New numbness in the saddle region (groin, buttocks and inner thighs).
- Difficulty passing urine, urinary retention, or loss of bladder or bowel control.
- Severe or rapidly progressive weakness in one or both legs.
- New sexual dysfunction.

If any of these symptoms develop, do not wait — present immediately to the nearest emergency department.

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## How is lumbar radiculopathy diagnosed?

The diagnosis is primarily clinical, based on a careful history and examination. Imaging confirms the anatomical cause:

- MRI — gold standard; provides detailed images of discs, nerves and spinal canal without radiation.
  - CT scan — useful when MRI cannot be performed; excellent for bony anatomy.
  - Plain X-rays — assesses instability; useful for spondylolisthesis with flexion/extension views.
  - Nerve conduction studies (NCS/EMG) — occasionally helpful when the diagnosis is uncertain.
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## What is the prognosis?

The natural history is generally favourable. Approximately 75–90% of patients improve substantially within 6–12 weeks of conservative treatment. Surgery provides more rapid relief of leg pain, but long-term outcomes at one to two years are often comparable between operative and non-operative management. The decision for surgery is therefore driven by symptom severity, degree of neurological deficit, and patient preference.

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### Conservative (non-surgical) treatment

Most patients are managed conservatively in the first instance:

- Activity modification — gentle activity is encouraged; strict bed rest is not recommended.
  - Analgesics — paracetamol and NSAIDs (e.g. ibuprofen, naproxen, celecoxib) are first line; short courses of steroids or opiates may occasionally be needed.
  - Neuropathic agents — amitriptyline, gabapentin (Neurontin) or pregabalin (Lyrica) help reduce burning and electric pain; common side effects include drowsiness and brain fog.
  - Physiotherapy — once severe acute pain has improved, for core strengthening, posture and flexibility; hydrotherapy and Pilates-based programs are well tolerated.
  - Image-guided spinal injections — CT or fluoroscopy-guided corticosteroid injection to the affected nerve root; significant relief in 50–70% of patients, rarely lasts beyond a month.
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### When is surgery considered?

Surgery is indicated for leg pain rather than back pain, and is considered when:

- Conservative treatment has failed after an adequate trial (typically 6–12 weeks).
  - Pain is severe and disabling.
  - There is significant or progressive neurological weakness (e.g. worsening foot drop).
  - Cauda equina syndrome is present — urgent same-day surgery is required.
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### What is a microdiscectomy?

Microdiscectomy is the most common procedure for lumbar disc herniation. Under general anaesthesia, a small incision (3–4 cm) is made over the affected disc level. Using an operating microscope, the muscles are gently retracted (not cut), a small window is created in the bone (laminotomy), and the herniated disc fragment is removed. The remainder of the disc is preserved to maintain cushioning between the vertebrae.

Most patients stay one to two nights and mobilise on the evening of surgery. 80–90% experience significant or complete relief of leg pain. Numbness and pins-and-needles may take weeks to months to resolve; weakness can be slow to recover, particularly if longstanding.

Link to microdiscectomy information: <https://drjeremyrussell.com.au/operation-info>

Link to Dr Jeremy Russell spine information: <https://www.youtube.com/watch?v=XZ1L93YtRjY&t=121s>

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### Expected recovery times

- Walking and light activity: from day 1.
  - Driving: 1–2 weeks (when pain allows safe emergency braking).
  - Office or sedentary work: 2–4 weeks.
  - Heavier physical work and sport: 6–12 weeks.
  - Full recovery: typically 3 months.
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### What are the risks of microdiscectomy?

Microdiscectomy is generally a safe procedure with high patient satisfaction. Risks include:

- Nerve injury — <1%; risk of permanent deficit is very small.
- Persistent or unchanged pain — ~10%.
- Recurrent disc herniation — 5–10% lifetime risk; repeat surgery required in some cases.
- Dural tear (CSF leak) — 1%; most repaired intraoperatively without long-term consequence.
- Wound infection — <1%.
- Bleeding requiring further surgery — <1%.
- General anaesthetic and hospital risks (heart attack, stroke, DVT/PE, anaphylaxis, pneumonia) — collectively <1% in routine cases.
- Death — <0.1% for elective surgery.

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### Other surgical options

For most patients, microdiscectomy remains the operation of choice. In selected cases:

- Lumbar decompression (laminectomy/foraminotomy) — used when bony narrowing rather than a disc herniation is the primary cause.
- Lumbar fusion — may be added for associated instability, spondylolisthesis or recurrent disc herniation.
- Endoscopic or tubular microdiscectomy — Newly emerging minimally invasive alternatives in appropriate patients (not provided by Dr. Russell).

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### How can recurrence be prevented?

Following successful surgery, patients can reduce the risk of recurrence by:

- Safe lifting technique — lift with the legs and avoid twisting while loaded.
- Maintaining a healthy body weight.
- Quitting smoking — strongly associated with disc degeneration and poorer surgical outcomes.
- Regular core-strengthening exercise (Pilates, yoga, supervised physiotherapy or gym programs).

## References

1. Weinstein JN, Tosteson TD, Lurie JD, et al. Surgical vs nonoperative treatment for lumbar disk herniation: the Spine Patient Outcomes Research Trial (SPORT). JAMA. 2006;296(20):2441–2450.
  2. Peul WC, van Houwelingen HC, van den Hout WB, et al. Surgery versus prolonged conservative treatment for sciatica. N Engl J Med. 2007;356(22):2245–2256.
  3. Kreiner DS, Hwang SW, Easa JE, et al. An evidence-based clinical guideline for the diagnosis and treatment of lumbar disc herniation with radiculopathy. Spine J. 2014;14(1):180–191.
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## Helpful Links

<https://www.healthdirect.gov.au/sciatica>

<https://www.spine-health.com/conditions/sciatica>

<https://www.nhs.uk/conditions/slipped-disc/>

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