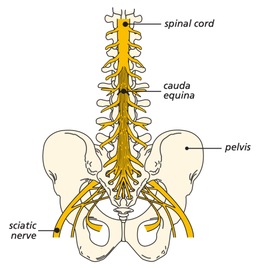
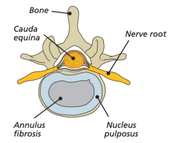
Diagram showing the position of the cauda equina

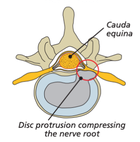


The commonest cause for cauda equina syndrome is an acute lumbar disc protrusion, involving a very large fragment of disc material which protrudes centrally into the spinal canal. This is a different situation, to when a lumbar disc protrudes and compresses on a nerve root(s), which branch out at the side of the spinal column and travels down to the corresponding leg(s). This could cause radicular pain, commonly known as sciatica and not cauda equina syndrome (see diagrams opposite).

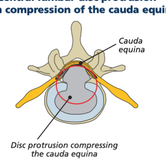
Overhead (axial) view of a normal lumbar disc



Lumbar disc protrusion with compression of the nerve root



Central lumbar disc protrusion with compression of the cauda equina



Other causes of cauda equina syndrome include:

- a more modest acute disc bulge, in the presence of severe spinal stenosis (narrowing of the central spinal canal) from degenerative changes such as facet joint arthritis
- a spinal tumour
- an infection, haemorrhage (bleed), cysts/fatty collections or inflammation in the spine
- severe spinal injury, such as a fracture, stabbing or gunshot incident

- a birth defect, such as an abnormality with the blood vessels (arteriovenous malformation – AVM).

In certain circumstances, such as in spinal stenosis, symptoms may come on more gradually and can often be mistaken for signs of simply 'getting older'.

Presentation in Secondary Care

Has the patient developed any of the following in the last 14 days?

- **New (≤ 14 days) or deteriorating** difficulty initiating micturition or impaired sensation of urinary flow
- **New (≤ 14 days) or deteriorating** altered perianal, perineal or genital sensation S2-S5 dermatomes – area may be small or as big as a horses' saddle (subjectively reports or objectively tested)
- Severe or progressive neurological deficit of both legs, such as major motor weakness with knee extension, ankle eversion, or foot dorsiflexion
- **New (≤ 14 days) or deteriorating** loss of sensation of rectal fullness
- **New (≤ 14 days) or deteriorating** sexual dysfunction (achievement of erection or ability to ejaculate, loss of genital sensation)

Select the answer

NO | YES

Has the patient developed any of the following?

- Sudden onset bilateral radicular pain or unilateral radicular leg pain that has progressed to bilateral
- **14 days or more** difficulty initiating micturition or impaired sensation of urinary flow
- **14 days or more** altered perianal, perineal or genital sensation S2-S5 dermatomes – area may be small or as big as a horses' saddle (subjectively reports or objectively tested)
- **14 days or more** loss of sensation of rectal fullness
- **14 days or more** sexual dysfunction (achievement of erection or ability to ejaculate, loss of genital sensation)

Select the answer

NO | YES

NO

Reassure patient and write to the GP for ongoing care

YES

Are symptoms static or deteriorating

Select the answer

Static or No new CES symptoms | Deteriorating or New CES symptoms

Static or No new CES symptoms

Acquisition / urgency of MRI is at clinician's discretion

Urgent referral to MSK triage service

To be seen within 2 weeks, highlight referral as Urgent / Bilateral Radicular Pain and document:

- signs
- symptoms
- frequency
- duration
- progression
- time and date of assessment
- subjective perianal sensation
- document no CES symptoms or signs
- safety net the patient

Triage patient for CES symptoms

Select the answer

Static or No new CES symptoms | Deteriorating or New CES symptoms since referral

Deteriorating or New CES symptoms

Perform bladder scan
If a patient is unable to void then undertake a bladder scan and if > 600ml, catheterise the patient and document if sensate and perform a catheter tug.

If a patient is able to void, carefully document the following:-
Pre void volume;
Post Void Residual volume (PVR);

If PVR >200ml in a patient with suspected CES then CES is 20 times more likely.

If PVR>600ml catheterise and document if sensate and catheter tug. This avoids bladder distension injury.

Radiology

YES

Perform bladder scan
(do not use in isolation)

f a patient is unable to void then undertake a bladder scan and if > 600ml, catheterise the patient and document if sensate and perform a documented catheter tug outcome.

If a patient is able to void, carefully document the following:-
Pre void volume;
Post Void Residual volume (PVR);
If PVR <200ml this does not exclude CES
If PVR >200ml in a patient with suspected CES then CES is 20 times more likely.
If PVR>600ml catheterise and document if sensate and catheter tug. This avoids bladder distension injury.

Radiology

Radiology

Emergency MRI as soon as possible, and certainly within 4 hours of request

Outcome of imaging reviewed

Select the answer

No cauda equina compression but neural compression to explain radicular pain (sciatica) | No cause for symptoms found | Cauda equina compression confirmed

Radiology

No cauda equina compression but neural compression to explain radicular pain (sciatica)

Follow pathway for Posterior Lumbar Decompression/ Discectomy
Acquisition / urgency of MRI is at clinician's discretion

Cauda equina compression confirmed

Keep patient nil by mouth
Immediate emergency referral to spinal surgical service

If transfer required, arrange blue-light
Category 2 ambulance transfer

Surgery

Assessment and documentation by surgical team

Consent
Pdf Consent Form
BASS info booklet

Catheterisation prior to surgery (if not catheterised)

Register patient on British Spine Registry

Surgery performed as an emergency.
CES sits between NCEPOD levels 1 and 2. It is time-sensitive and life-changing, but not life-threatening

Post-operative care

Presentation in Primary & Community Care

Deteriorating or New CES symptoms since referral

Refer as an emergency
to nearest hospital with Emergency MRI provision.

Note: Emergency referral after a telephone assessment identifying CES symptoms is acceptable if immediate face to face review is not possible or will delay referral.

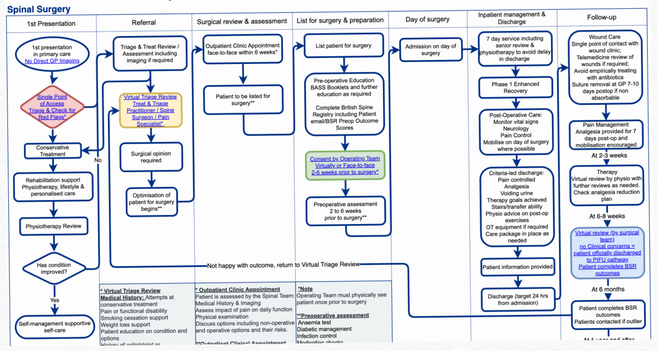
Document:
– signs
– symptoms
– frequency
– duration
– progression
– time and date of assessment
– time of referral
– person receiving referral
– advice received and from whom

Give clinical summary / proforma to patient if referral accepted

Presentation in secondary care

[redacted] Back to the start

Back and Radicular Pain:
Posterior Lumbar Decompression / Discectomy - Version 15.0
Spinal Surgery



Triage for Red Flags

Red flags remain the best tools at the clinician's disposal to raise suspicion of serious spinal pathology, when used within the context of a thorough subjective patient history and physical examination.

Emergency Spine Referral - As a guide to be seen the same day by emergency department/spinal team

- Suspected Spinal cord neurology (gait disturbance, multi-level weakness in the legs and/or arms, brisk reflexes)
- Suspected Cauda Equina Syndrome
- Major motor/radiculopathy
- Suspected Spinal Infection

Priority Spine Referral - As a guide to be seen within 2 weeks by spinal interface service or spinal team

- Past history of cancer (new onset spinal pain)
- Recent unexplained weight loss and significant spinal pain
- Objectively unwell with spinal pain (thoracic, band-like or persisting non-mechanical)
- Raise inflammatory markers with new spinal pain
- Possible immunosuppression with new spinal pain (IVDU, HIV, Chemotherapy, Steroid use)
- Known osteoporosis, with new severe spinal pain
- Age <15, or >60 years first onset axial back pain

For more detailed information on questioning please see Internal Framework Red Flags for Potential Spinal Pathologies

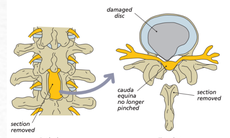
The operations most commonly performed for a lumbar disc protrusion causing CES is a discectomy/decompression through a **laminectomy** or a **laminotomy (bilateral/unilateral).**

NB: Different operations may be required for the other causes of CES.

The operations

Laminectomy

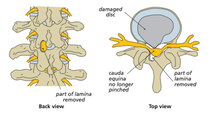
This is performed through an incision in the midline of the lower back. The muscles are held apart to gain access to the bony arch and roof of the spine (lamina). The surgeon needs to gain entry into the spinal canal by removing this bone and opening up the space surrounding the cauda equina. This allows a large enough window for the disc prolapse to be removed. The disc is entered, to remove any loose fragments of the disc material within it. A microscope is often used for this surgery, to give greater magnification of the structures.



View of the surgical removal of the lamina to get to the protruding disc material

Laminotomy (bilateral/unilateral)

This is performed through an incision in the midline of the lower back. The muscles are held apart to gain access to the bony arch and roof of the spine (lamina). Next, the surgeon needs to gain entry into the spinal canal by removing some bone, making a small window in the lamina (laminotomy) on one side (unilateral) or both sides (bilateral). This allows a large enough window for the disc prolapse to be removed. The disc is entered, to remove any loose fragments of the disc material within it. A microscope is often used for this surgery, to give greater magnification of the structures.



View of the surgical removal of one side of the lamina (unilateral laminotomy) to get to the protruding disc material

The nature of spinal surgery for CES is not a 'cure' but is aimed at providing the best chance for improvement and the return of nerve function. Sometimes however, numbness or weakness can persist, even with a technically successful operation. This will depend on

how much nerve damage has occurred beforehand. If permanent nerve damage has occurred, surgery cannot repair it. Recovery of function however, including bladder and bowel control, may continue to improve over a period of up to two years.