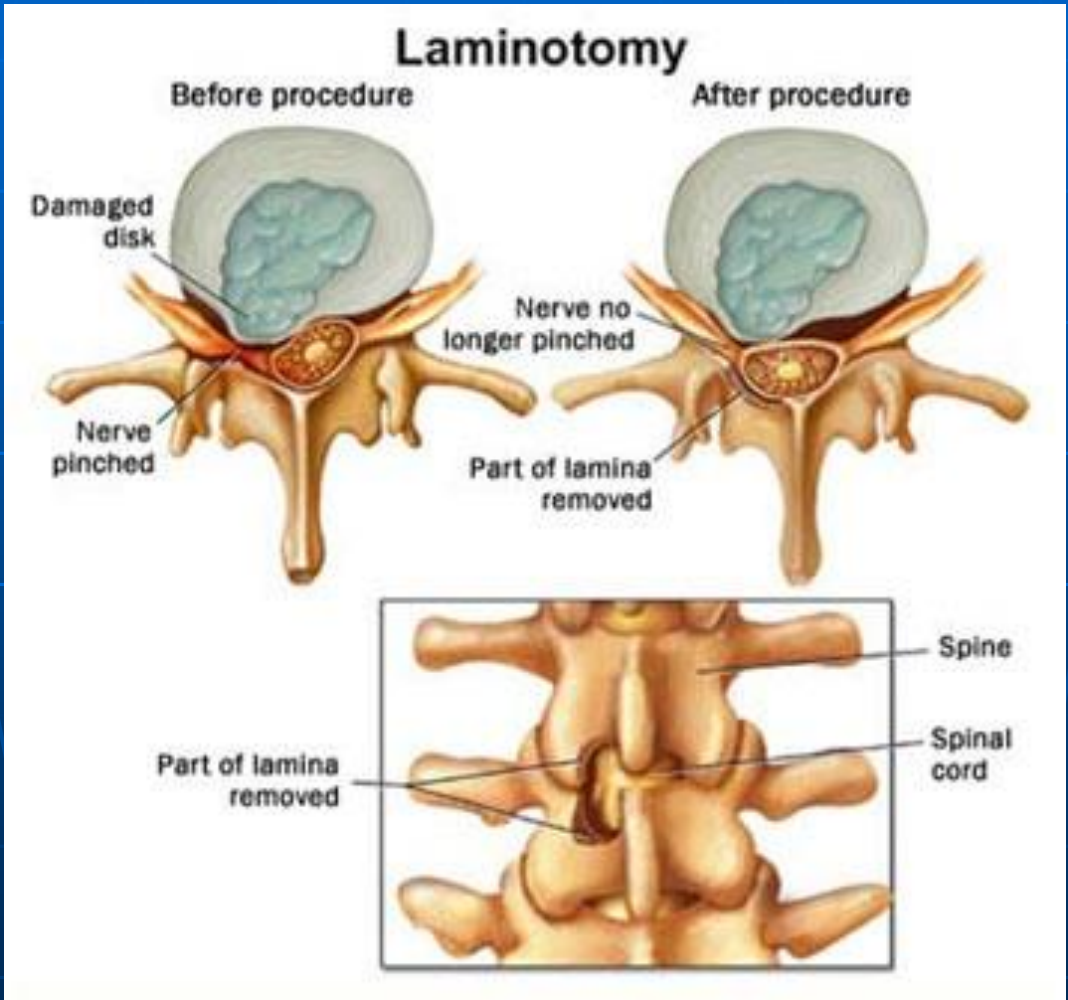
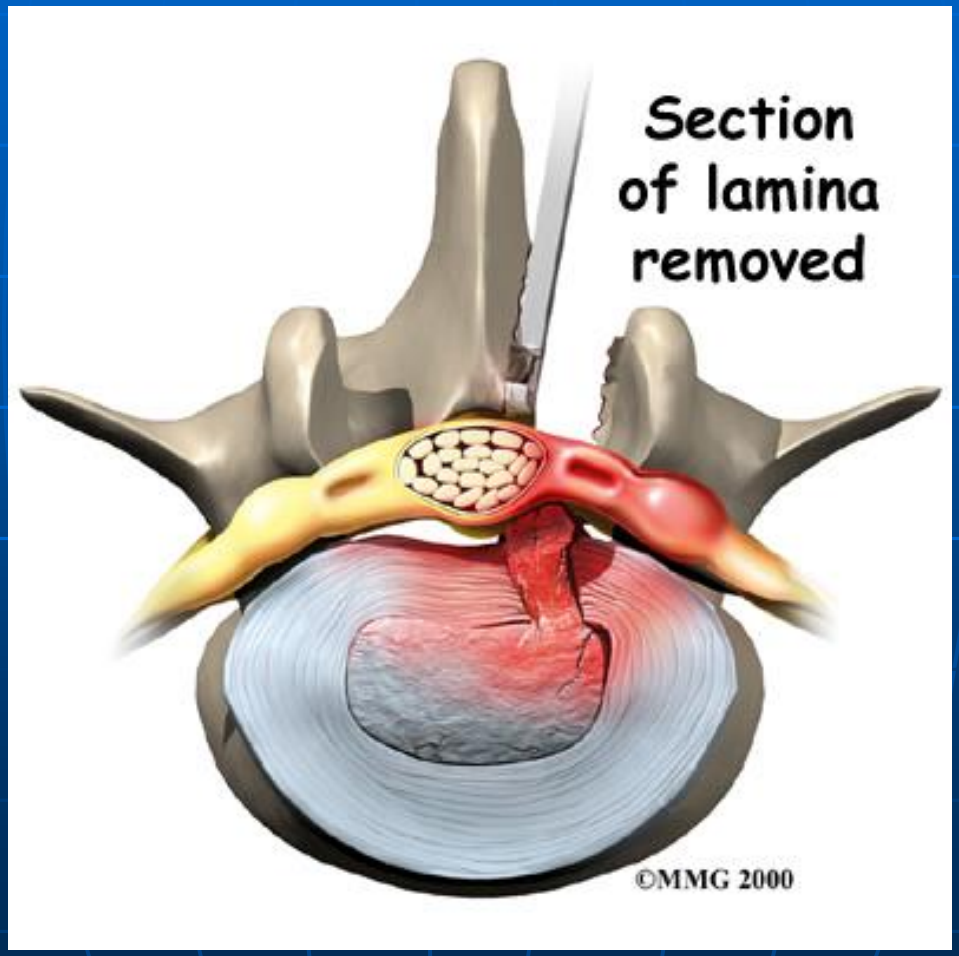
Decompression

- Removal of intervertebral disc material is performed by discectomy or minimally invasive microdiscectomy;
- Access to herniated disc may require removal of the margins of the lamina (laminotomy), unilateral laminar resection (hemi-laminectomy) and resection of the ligamentum flavum (flavectomy).
- Techniques used in spinal canal decompression include.
  - Laminoplasty
    - (osteotomy of one lamina with contralateral partial osteotomy to allow formation of a unilateral gap),
  - Bilateral laminectomy
    - with the removal of the posterior elements and deroofing of the spinal canal and/or facetectomy (excision of a part or entire facet joint).
  - Foraminotomy
    - Neural foraminal decompression is achieved by foraminotomy.
- More extensive techniques used in the management of traumatic fractures and primary or metastatic spinal tumors include resection of one or both pedicles (pediculectomy), vertebral body (corpectomy) or entire vertebra (vertebrectomy).

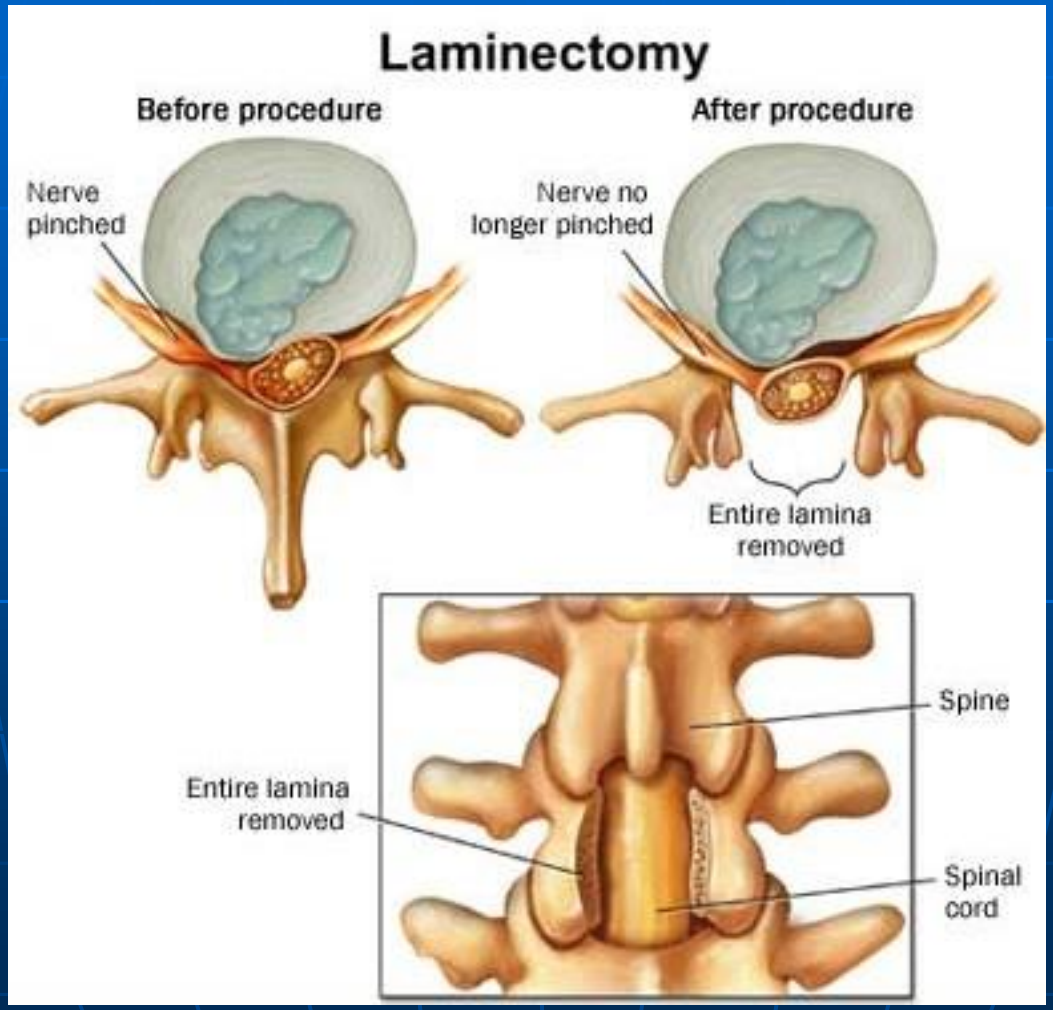
Laminotomy


Laminotomy
Before procedure
After procedure
Damaged disk
Nerve pinched
Nerve no longer pinched
Part of lamina removed
Spine
Spinal cord
Part of lamina removed

Hemi-laminectomy



Bilateral laminectomy

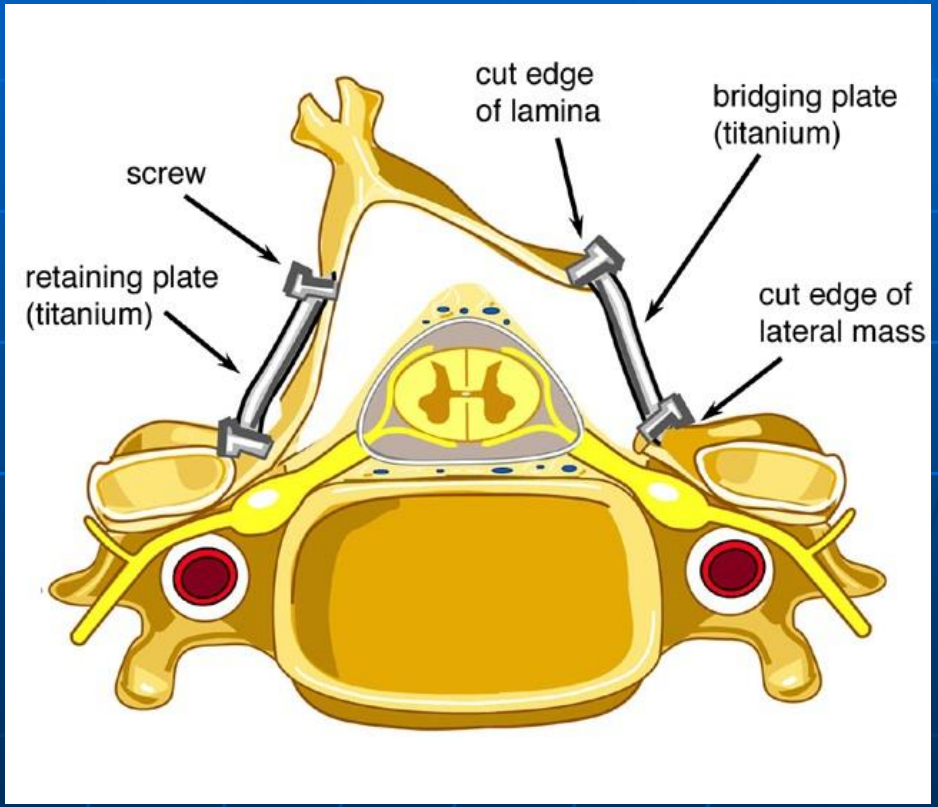


Laminoplasty

Laminoplasty is an alternative to **laminectomy**. **Laminectomy** is the removal of all of the lamina.

Unlike **laminectomy**, **laminoplasty** preserves spinal stability because the lamina is not removed.

This may decrease the need for other procedures to stabilize the spine. It also helps maintain movement in your spine.



Post Op Gad Changes

- Bilateral facet enhancement persist at 6 months in 60% of patients
- Paraspinal muscle enhancement in all patients up to 6 months.
- Nerve root enhancement in 81% initially, 31 % at 6 months.

Post Op Gad Changes

- Up to 6 months post op may look like pre-op exam.
- Post-discectomy changes may mimic the pre-operative state due to edema in soft tissues and disruption of the annulus.
  - Enhancement may be present due to early sterile inflammatory response, later granulation tissue and/or fibrosis.
- Inter body spacer = general term.

Spine Post-op States

- Short term (within a week)
  - Misplaced instrumentation.
  - Wrong level of surgery
  - Unexpected fluid collections
- Intermediate (weeks to months)
  - Unexpected fluid collections
  - Infection
- Longer term (> 6 months)
  - Migrated/failed fusion
  - Pseudarthrosis
  - Accelerated degeneration

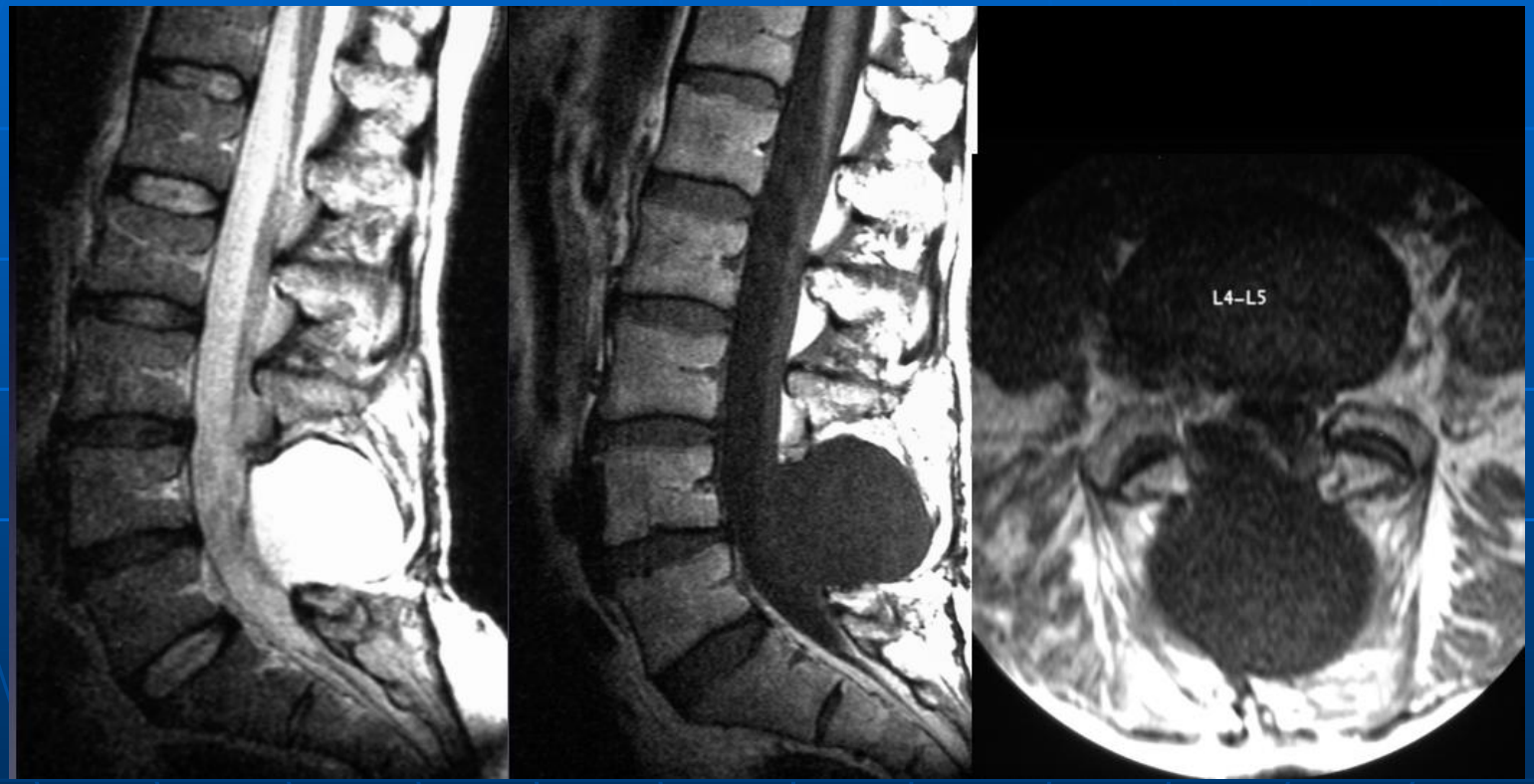
Post-op Fluid Collections

- Fluid collections around the surgery site in the immediate post-op
  - hematomas or dural leaks.

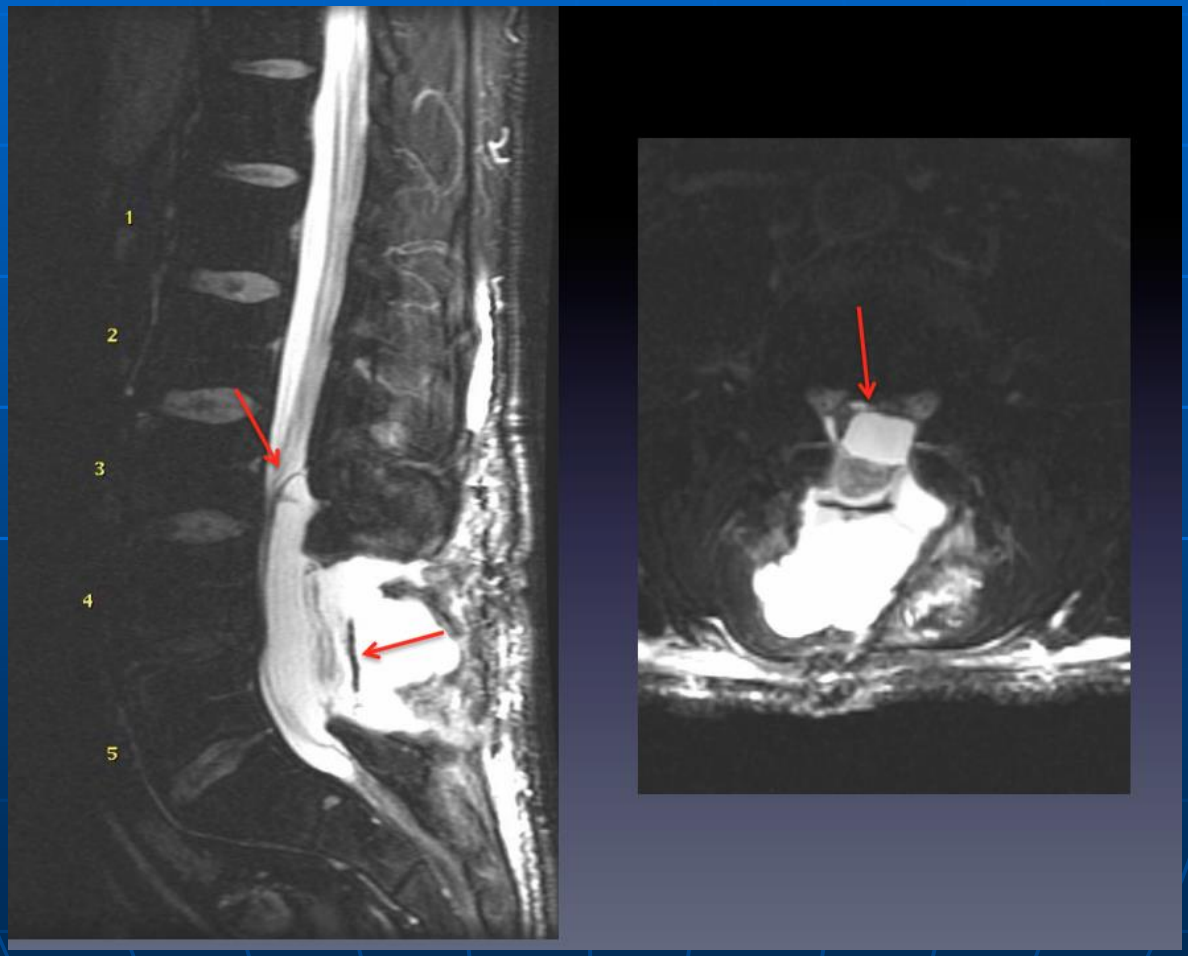
Pseudomeningocele

- Collections of CSF extending from spinal canal to posterior paraspinal soft tissues.
- May extend through incision and dissect to the superficial soft tissues and skin.
- May also dissect into the epidural/subdural spaces.
- Called pseudomeningocele because they have no arachnoid lining – lined by fibrous tissue.
- Match CSF in signal.
- Often incidental and asymptomatic but may be responsible for LBP or radiculopathy.

Post-op Pseudomeningocele continued back pain after laminectomy



Pseudomeningocele with Floating Dural Patch



Sterile Radiculitis

- Intradural nerve roots should not normally enhance on MRI at 0.1 mmol/kg.
- Intrathecal root enhancement found in 20% of asymptomatic patients 6 weeks after surgery but only in 2% at 6 months.
- In symptomatic patients, enhancement of intradural roots found at the surgical site extending above and below more than 6-8 months after surgery.

Sterile Arachnoiditis

- Sterile inflammatory process of the arachnoid resulting in permanent deformity of the cauda equina and chronic symptoms.
- Cause of chronic post-op pain in 6-16% of cases.
- Etiology
  - surgery
  - intradural blood
  - LP
  - prior infection
  - prior intraspinal injection of anti- inflammatory, chemo Rx.
- Enhancement may not be present.
- Severity of imaging findings are generally not proportional to degree of symptoms present
-

Arachnoiditis Ossificans