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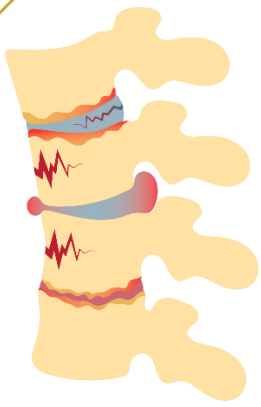
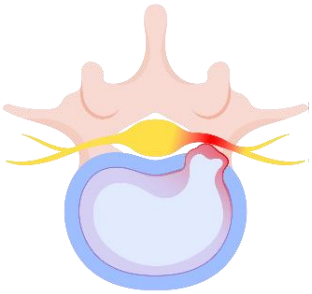
Degenerative Spinal Conditions and Spondylolisthesis



What are the definitions of degenerative spinal conditions?

❖ Disc Herniation and Prolapse:

Total displacement via a tear in the annulus fibrosus, leading to the herniation of the nucleus pulposus (disk extrusion or disk prolapse).



❖ Spondylosis:

A general term that refers to degenerative changes in the spine, which can lead to irritation or destruction of nearby nerve roots or the spinal cord.

❖ Spondylolisthesis:

Forward shift of a vertebral body above the adjacent vertebra.

How common Degenerative Disk Diseases?

- Degenerative Disk Diseases (DDD):

Age: Most seen in people aged 30–50 years.

Sex: More common in men than women. Around 80% of the population will encounter substantial back pain at some stage in their lives, with disc herniation responsible for about 5% of these instances.

- Spondylolisthesis:

Affects up to 10% of the population.

Most prevalent among children and adolescents under 18 years (congenital and isthmic spondylolisthesis) and adults over 50 years (degenerative spondylolisthesis).

Sex: More common in males for congenital and isthmic spondylolisthesis; more common in females for degenerative spondylolisthesis.

What are the types of Spondylolistheses?

Isthmic spondylolisthesis (spondylolysis form):

This type of spondylolisthesis occurs due to an abnormality in the pars interarticularis, often caused by trauma and is more common in younger individuals.

Risk factors: Repetitive hyperextension and rotation movements (e.g., in gymnastics, swimming, weightlifting)

Degenerative spondylolisthesis:

Spondylolisthesis caused by degenerative changes, occurring without any disruption or defect in the vertebral ring, is more prevalent in older individuals.

Congenital spondylolisthesis:

Results from congenital conditions (e.g., hypoplastic facets, underdeveloped pars interarticularis, sacral deficits).

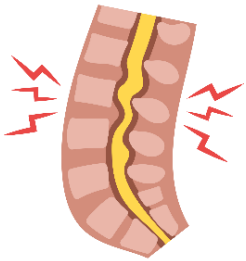
What is Degenerative Disk Disease?

- Pressure, tension, shear, and torsional forces exerted on the spinal disc.
- Degenerative changes (e.g., dehydration, annular tear).
- Disk protrusion or herniation through the annulus fibrosus into the central canal.
- Adjacent nerve root impingement.
- Sensorimotor deficits in affected nerve root.

It could be Posterolateral disk herniation/protrusion (common) or Central disk herniation/protrusion (less common)

What are the signs and symptoms of DDD?

- Sudden onset of intense neck or back pain
- Radiculopathy
- Compressive myelopathy



What are the symptoms of Spondylolisthesis?

- Asymptomatic (most patients).
- Acute or chronic lumbar pain that intensifies with activity and/or spinal extension.
- Gait issues (e.g., waddling gait, neurogenic claudication).
- Radiculopathy, Urinary or bowel incontinence, and cauda equina syndrome may develop.

How doctors assess Degenerative Disk Diseases?

Examination Findings

- Cervical Radiculopathy

Neck compression test (Spurling maneuver): evaluates for radiculopathy in the c-spine.

- Lumbosacral radiculopathy

Straight leg raise test: A straight leg raise leads to increased pain in the ipsilateral leg with radiation to the motor or sensory area of the affected nerve root.

Imaging

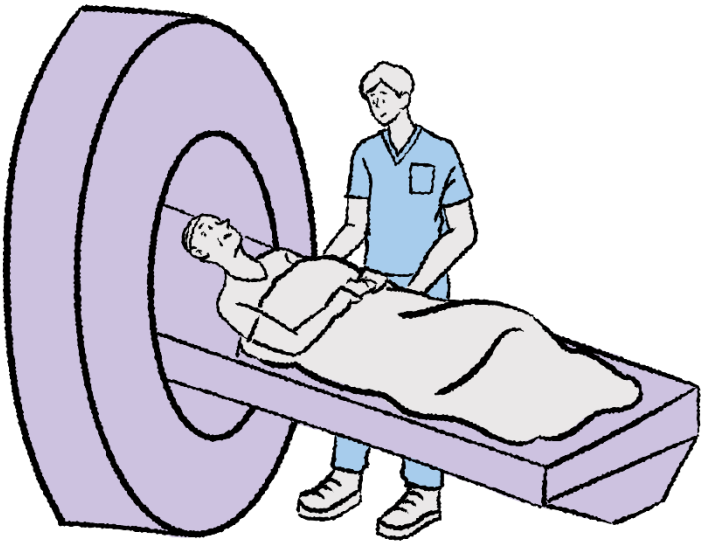
- X-ray spine:

Assess individuals experiencing new or worsening non-traumatic cervical pain without any red flag symptoms.

How doctors assess Degenerative Disk Diseases?

Continue Imaging

- CT myelogram
- MRI spine: The optimal initial imaging modality for suspected cases of radiculopathy, myelopathy, or cauda equina syndrome, enhancing diagnostic accuracy and guiding appropriate management decisions.



What are the management options?

Conservative Management

- Physical therapy, Encouragement of daily activities (discourage excessive bed rest), Pain relief with analgesics (such as NSAIDs), Short-term course of oral glucocorticoids, Braces for spondylolisthesis support
- Activity restriction advice: for instance, 1–2 days of rest during acute symptoms and avoidance of activities that exacerbate spondylolisthesis

Surgery

- Urgent: situations include notable or deteriorating neurological impairments, bowel or bladder incontinence, and emergencies involving spinal compression.
- Non-urgent: scenarios involve ongoing or progressive radiculopathy despite conservative treatments.

What are the management options?

Continue surgery

- Procedure decompression & Vertebral body fusion: Decompression and/or Fusion with or without Instrumentation
- Diskectomy: Surgical excision of the herniated segment of the intervertebral disk.
- Laminectomy (decompression surgery): Removal of the dorsal part of the involved vertebra (lamina), thereby relieving the spinal compression
- Laminotomy: minimally invasive removal of part of the lamina

What are the Possible Complications of the surgical treatment?

Bleeding, Infection at the surgical site, Nerve injury causing weakness or numbness, Failure of fusion, Blood clots, or Persistent pain or stiffness.

How long should I take to recover after surgery?

- Hospital stay: Typically, 1-3 days.
- Return to light activities: 2-4 weeks.
- Full recovery: 3-6 months.
- Physical therapy may be required for several weeks to months.

Prognosis

- ✓ Nearly 90% of disk herniations that cause acute radiculopathy begin to improve within 6 weeks and generally resolve by 12 weeks with conservative treatment.
- ✓ Success Rates of surgeries is 95%
- ✓ **Partial Relief:** In some cases, surgery may provide partial pain relief rather than complete elimination of pain.
- ✓ **Realistic Expectations:** While the goal is to alleviate pain and improve function, complete pain relief may not always be achievable.

Notes:

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Sources and References:

Mayo Clinic, Advocate Health Car, spine-health.com, uptodate-com.library.iau.edu.sa and Physical risk factors for neck pain. Scandinavian journal of work, environment & health

All illustrative images from canva.com

Review and audit:

The content of this booklet has been reviewed by Neurosurgery consultants at King Fahd University Hospital.

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