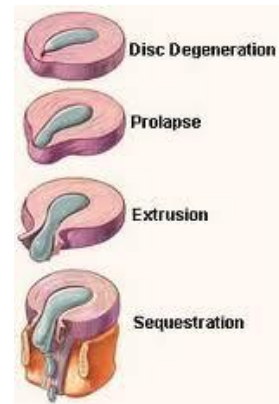




- Disc herniation occurs mainly due to physical stress between L4/L5 or L5/S1 (where stress is most severe).
- Age: any age but not common in very young and elderly people.
- The spinal cord ends at the lower border of L1 vertebra. Spinal cord passes through spinal canal of vertebrae. Spinal cord occupies 1/2 of thoracic canal and 1/3 of lumbar canal.

- Disc herniation can be classified as:

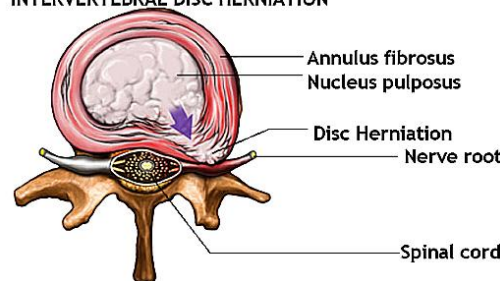
- **Contained disc herniation:** disc material herniated through inner annulus but not outer annulus. Therefore, the material is contained but still can disturb the path of the nerve.
- **Non-contained disc herniation:** disc material penetrates inner and outer layers of the annulus. The material may reside beneath the posterior longitudinal ligament, penetrate through it or it can be sequestered as a free fragment.



- Postero-lateral disc herniation:

- Protrusion of the disc is usually postero-lateral into the vertebral canal where it may compress the roots of spinal nerve.
- Notice that an L4-L5 disc herniation –for example- will protrude and compress L5 nerve root.

INTERVERTEBRAL DISC HERNIATION



- Central (posterior) herniation:

- In lower lumbar segment central herniation may result in S1 radiculopathy (radicular pain in low back and legs which is known as sciatica) → straight leg raise test is used to diagnose it.



- A protruded disc above 2<sup>nd</sup> lumbar vertebra may compress the spinal cord itself or result in cauda equina (urinary retention is the most common finding).



- **Far lateral disc herniation:**

- It may compress nerve root above the level of herniation. Therefore, L4-L5 far lateral herniation may result in L4 radiculopathy → femoral stretch tst is used to diagnose it.



- **Disc pressure/failure:**

- Intradiscal pressure is higher when sitting than when standing (sitting/leaning forward > sitting > standing > lying on side > supine).
- Pressure is elevated by bending forward, bending to side, lifting, coughing, sneezing and straining.
- Notice that flexion, extension and lateral bending all produce small displacements of the nucleus.



- **Dermatomes and myotomes:**

Level	Root	Muscle affected	Sensory loss	Reflex
C4;C5	C5	Deltoid, biceps	Lateral arm	biceps
C5;C6	C6	Wrist extensor, biceps, triceps (supination)	Radial forearm	brachioradialis
C6;C7	C7	Triceps, wrist flexors (pronation)	Middle finger	triceps
C7;C8	C8	Finger flexors, interossei	Ulnar hand	none
C8;T1	T1	interossei	Ulnar forearm	none
L3;L4	L4	Quadriceps, Tibia Anterior	Medial calf	knee
L4;L5	L5	EDL,EHL	Lateral calf, dorsal foot	none
L5;S1	S1	Gasteronemius, soleus	Posterior calf, plantar foot	ankle

- **MRI in disc herniation:**

- MRI is considered as the most accurate study for disc herniation.





- **Epidural steroid injection:**

- Best effects are found in patients whose leg pain is worse than back pain.
- At least one epidural injection should be tried in most patients with disc herniation since it is often due to inflammation.

