

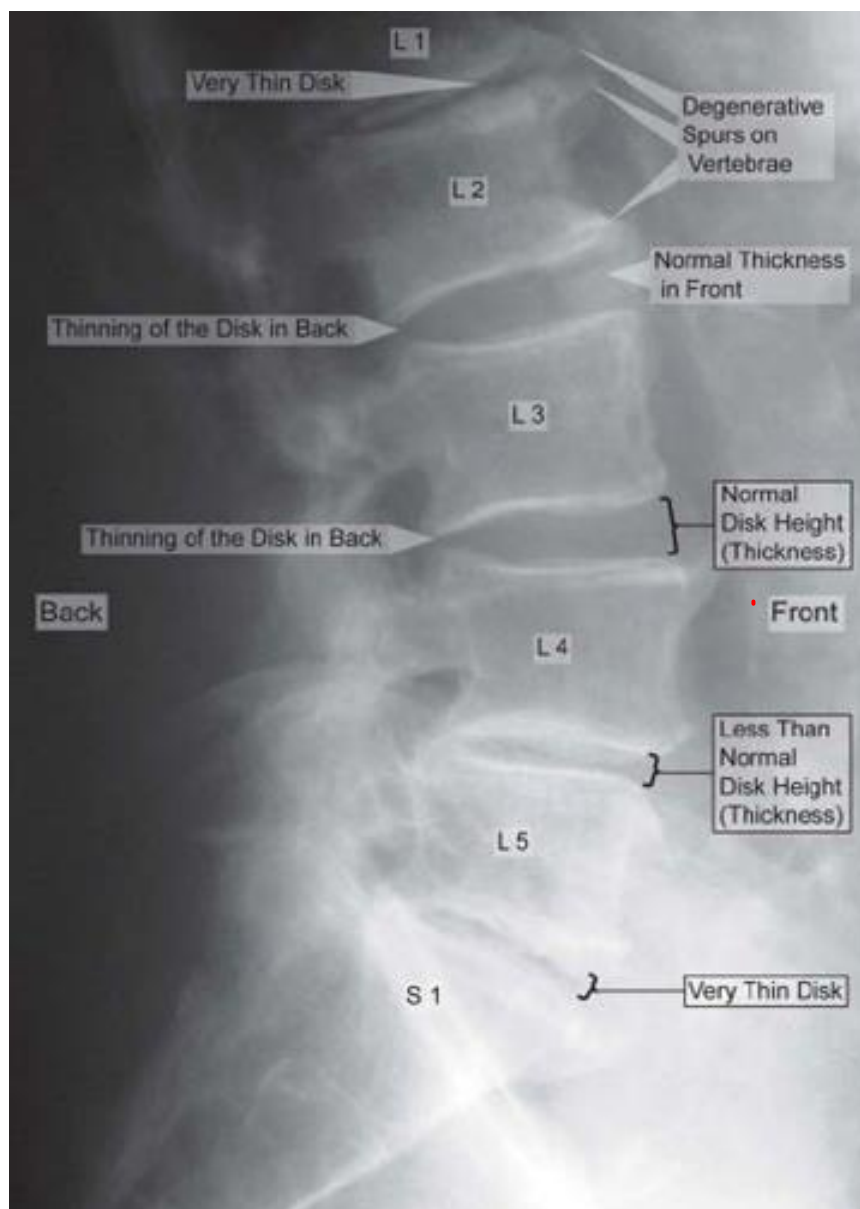
# Degenerative spine disease in Homoeopathic Terminology

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## *Introduction*

Degenerative spine disease (Syphilis/ Psora/ Sycosis) is a major cause of chronic disability in the adults. It is a normal part of aging. Neck and back pain are one of its most common outcomes.



## Skiagram showing Degenerative spine disease



Normal and degenerated IVD

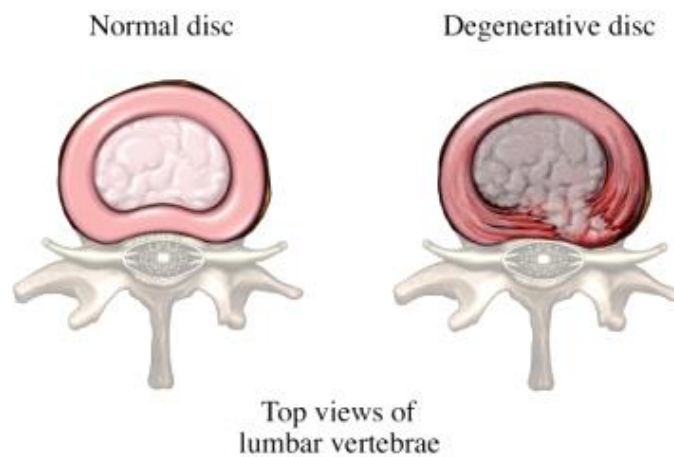
### *Origin of Pains*

Pain can originate from bone, joints, ligaments, muscles, nerves and intervertebral disks, as well as other paravertebral tissues.

## **a- INTERVERTEBRAL DISK (IVD) DISEASE**

### *Anatomy of IVD*

Intervertebral disk consists of the nucleus pulposus surrounded by the anulus fibrosus. Both the anulus and the nucleus are composed of collagen and proteoglycans. The nucleus contains relatively more proteoglycans to give it a looser gelatinous texture. The anulus has more collagen, and the collagen becomes progressively more compact and tougher at the periphery. The outer anulus is attached to the adjacent vertebral bodies at the site of the fused epiphyseal ring.



Normal and degenerated disc

### *Function of IVD*

Together with the cartilaginous end plates of the adjacent vertebral bodies, the intervertebral disk forms a disk complex that gives structural integrity to the interspace and cushions the mechanical forces applied to the spine.

### *Effects of Aging on IVD*

With aging, certain biochemical and structural changes occur in the intervertebral disks. There is an increase in the ratio of keratan sulfate to chondroitin sulfate, and the proteoglycans lose their close association with the disk collagen. The disk also loses its water-binding capacity and the water content decreases down to 70%.

The vertebral end plates also become thinner and more hyalinized. This degree of disk degeneration is considered a normal part of aging.

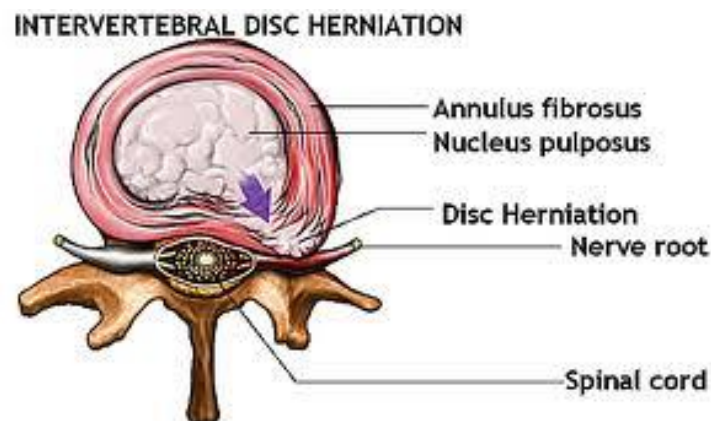
With more advanced degeneration (Syphilis), dense disorganized fibrous tissue replaces the normal fibrocartilaginous structure of the nucleus pulposus (Sycosis), leaving no distinction between the nucleus and anulus fibrosus.

Development of annular tears weakens the anulus (Psora) and allows nucleus to protrude into the defect. Tears that extend through the outer anulus induce ingrowth of granulation tissue and accelerate the degenerative process (Sycosis/ Psora/ Syphilis).

Advanced degeneration (Syphilis) can lead to gas formation or calcification within the disk (Psora/ Sycosis). Also, fissures develop in the cartilaginous end plates, and regenerating chondrocytes and granulation tissue form in the area (Sycosis/ Psora/ Syphilis).

### **b- Disk Degeneration**

One of the earliest signs of disk degeneration is loss of water content or desiccation (Psora/ Syphilis), most noticeable in the nucleus pulposus. Calcification is not uncommon in chronic degenerative disk disease.



### *Types of Disc Degeneration*

**Desiccation** - loss of disk water (Psora)

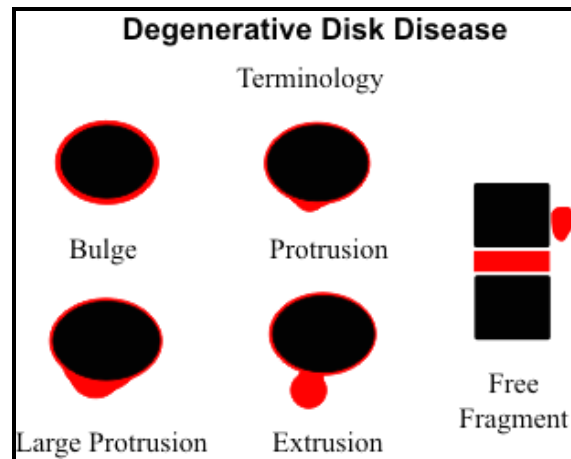
**Disk bulge** - circumferential enlargement of the disk contour in a symmetric fashion (Psora)

**Protrusion** - a bulging disk that is eccentric to one side but < 3 mm beyond vertebral margin (Psora/ Sycosis)

**Herniation** - disk protrusion that extends more than 3 mm beyond the vertebral margin (Psora/ Syphilis/ Sycosis)

**Extruded disk** - extension of nucleus pulposus through the anulus into the epidural space (Sycosis/ Syphilis)

**Free fragment** - epidural fragment of disk no longer attached to the parent disk (Psora/ Sycosis)



### *Effects of Disk Degeneration*

As a consequence of intervertebral disk degeneration, normal axial loading on the spine stretches and lengthens the anular fibers, resulting in rounded, symmetric bulging of the disk beyond the margins of the vertebral body (Psora/ Syphilis).

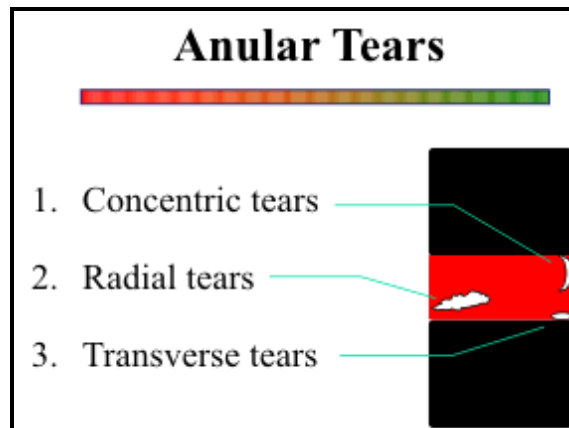
A bulging disk encroaches on the ventral spinal canal and inferior portions of the neuroforamina but does not displace or impinge the nerve roots (Psora/ Sycosis).

### *Anular Tears*

An anular disc tear occurs when the substance of the annulus fibrosus "rips" or "tears" and allows that highly pressurized and potentially "evil" nucleus pulposus to escape outward toward the periphery of the disc (Syphilis/ Sycosis).

### *Types of Anular Tears*

There are three types of anular tears in degenerated disks.



*Type I (Concentric tears)* - These are caused by rupture of the short transverse fibers connecting the lamellae of the annulus.

*Type II (Radial tears)* – In these tears the longitudinal fibers are disrupted through all layers of the annulus, from the surface of the annulus to the nucleus. Radial tears tend to be more irregular and obliquely oriented.

*Type III (Transverse tears)* – These result from rupture of Sharpey's fibers near their attachments with the ring apophysis. Transverse tears are located at the periphery of the annulus adjacent to the vertebral margins.

#### *Fate of Anular tears*

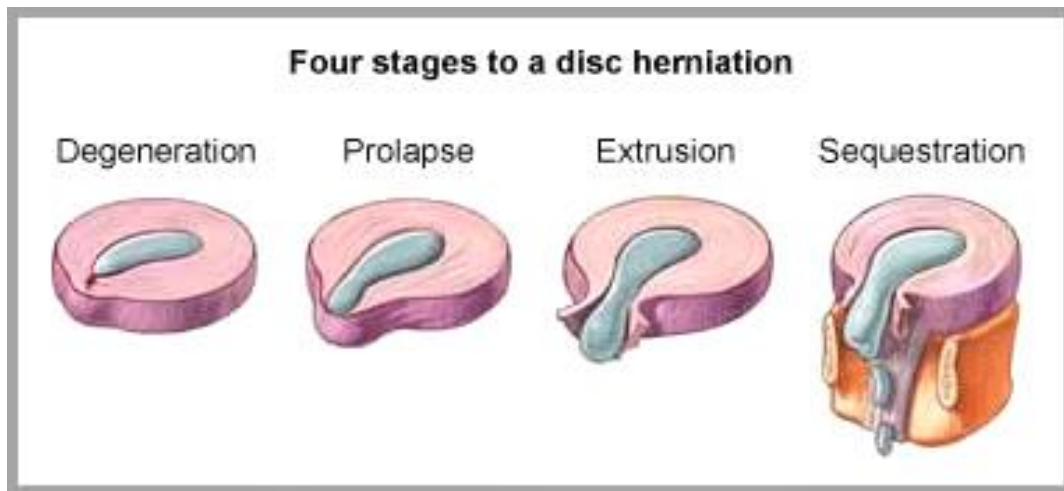
Complete disruption of the annulus exposes the nuclear material to the epidural tissues (Syphilis), inducing a focal inflammatory reaction (Psora). Vascular granulation tissue forms and grows into the disk through the annular tear (Sycosis). Degeneration of the intervertebral disk (Syphilis) has secondary effects on the adjacent vertebral end plates and bone marrow. Fissures develop in the cartilaginous end plates in show with disk degeneration (Syphilis). Vascular granulation tissue grows into the fissures (Sycosis) and induces an oedematous reaction and vascular congestion in the adjacent bone marrow (Psora).

### **c- Disk Protrusion/Herniation**

Herniation of the nucleus pulposus takes place at the site of a radial tear of the annulus (Sycosis). Defects in the annulus with disk extending posteriorly are indicative of protrusion/herniation.

#### *Types of Disc Herniation*

Most disk herniations occur in a posterolateral direction into the spinal canal because the tough posterior longitudinal ligament is thicker and tougher in the middle and resists posterior extension near the midline.



A herniated disk usually impinges on the nerve root as it courses inferiorly toward the foramen at the next lower level. For example, an L4-L5 herniated disk impinges on the L5 root. The L4 root is likely unaffected unless there is lateral and cephalad migrations of a free fragment into the neural foramen.

The depth of penetration of the scar depends on how long the disk fragment has been in the epidural space. The vascular scar tissue is a part of the body's repair mechanism to resorb and remove the offending disk material (Psora/ Sycosis). Over time, the entire disk fragment may be resorbed (Psora/ Syphilis).

### *Free Fragments*

When an extruded disk loses its attachment to the parent disk, it becomes a free fragment or sequestration (Psora/ Sycosis). If the disk fragment is near an interspace, sometimes it can be difficult to differentiate whether or not a pedicle of attachment remains. Free fragments can migrate some distance cephalad or rostral to the disk space. Rarely, a disk fragment may rupture through the thecal sac into the intradural compartment.

### *Effect on Nerve Roots*

The most direct effect on the nerve root is from compression by the herniated disk, but the disk need not compress the nerve root directly to cause radicular pain. Fragments of nucleus pulposus within the epidural space induce a focal inflammatory reaction that can secondarily irritate the adjacent nerve root (Psora).

## *SIGNIFICANCE AND NATURAL HISTORY*

Anular tears and focal disk protrusions are frequently found in asymptomatic populations. The anuloligamentous complex is richly innervated by the recurrent meningeal nerve. Annular tears involving this complex may be a source of diskogenic pain due to exposure of the nerve endings to the acid metabolites of the protruding nucleus pulposus.

## *DEGENERATIVE DISEASE OF CERVICAL SPINE*

Cervical disk disease occurs most commonly at the levels of C5-6 and C6-7. A central disk herniation causes a myelopathy due to cord compression, along with neck pain and stiffness.

If the disk extends laterally to compress nerve roots (Psora), the pain may radiate to the shoulder, arm, or hand. Herniated disks can be midline or lateral.

### *DEGENERATIVE DISEASE OF THORACIC SPINE*

The rib cage, small intervertebral disks, and coronal orientation of the facets joints all contribute to restricted mobility of the thoracic spine, and consequently, a lower risk of disk herniation. The most common level is T11-T12, where the spine is relatively less rigid.

### **d- SPONDYLOSIS**

Spondylosis can take the form of marginal end plate osteophytes (Sycosis), enlarged uncinat processes, or facet arthrosis (Sycosis/ Syphilis). Degenerative joint disease itself, along with associated inflammatory reaction, can cause pain, or the symptoms can be derived from the osteophytes compressing neural structures (Psora/ Sycosis/ Syphilis). It is important to distinguish spondylosis from disk disease.

### *VERTEBRAL BODY OSTEOPHYTES*

Marginal osteophytes form around the periphery of the vertebral body end plates of the lumbar spine (Sycosis). The larger ones generally project anteriorly or directly lateral and do not compress neural structures (Sycosis/ Psora). Posterior and posterolateral osteophytes are more likely to cause problems.

The lumbar neural foramen has the shape of an inverted teardrop, with the nerve root positioned in the superior aspect of the foramen. Fortunately, small osteophytes project first into the inferior aspect of the foramen and are unlikely to compress the nerve root until they get quite large.

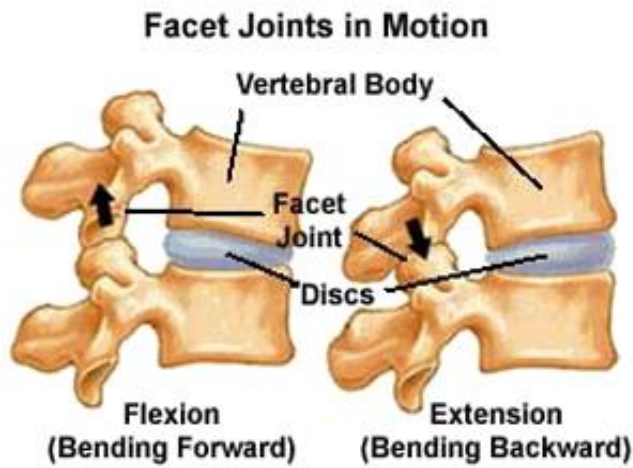
### *UNCO-VERTEBRAL AND FACET JOINT ARTHROSIS*

Some degree of spondylosis is invariably associated with degenerative disk disease. Decrease in height of the intervertebral disk places more stress on the facet joints and unco-vertebral joints, leading to degenerative joint disease (Psora/ Syphilis). Moreover, with the loss of structural strength at the disk level, exaggerated motion occurs at these joints, accelerating the degenerative changes and placing stress upon the posterior supporting ligaments as well (Psora/ Sycosis/ Syphilis).

The unco-vertebral joints (uncinate processes) are unique to the cervical spine. With degeneration (Syphilis), osteophytes develop at these joints and project into the lateral spinal canal and foramina (Sycosis). Symptoms are caused by impingement of nerve roots as they exit the foramina (Psora).

### *Facet arthrosis syndrome*

Not all back pain or sciatica is due to intervertebral disk disease. Degeneration of the facet joint can cause a facet arthrosis syndrome, consisting of back pain aggravated by rest and relieved by repeated gentle motion.



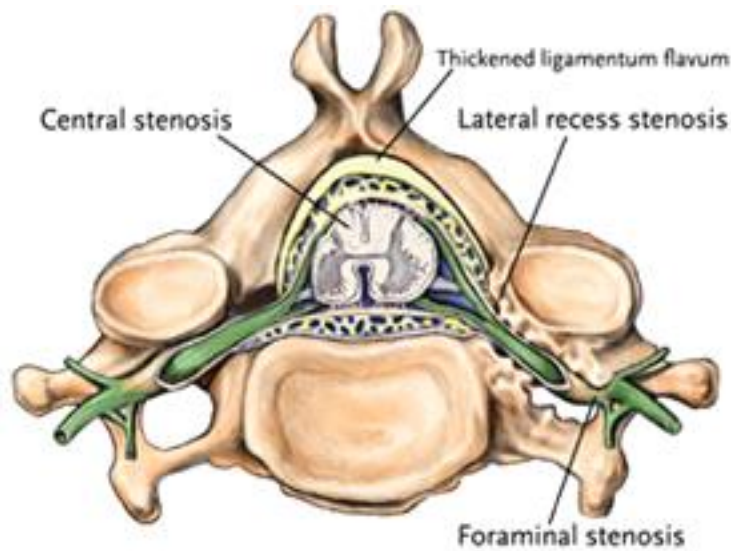
A- Normal Facet Joints



B- Small Arrows- Facet Joint arthrosis

### *Lateral recess syndrome*

Facet joint hypertrophy, along with osteophyte formation along the posterior lateral margins of the vertebral body, can encroach upon the lateral recesses of the spinal canal and the neural foramina. Compression of the existing nerve roots results in a radicular pain syndrome, called the lateral recess syndrome.



Lateral recess Syndrome

### *SYNOVIAL CYSTS*

Juxta articular synovial cysts (Psora/ Sycosis) are associated with facet arthropathy, generally of fairly severe degree. They consist of a fibrous wall, often with a distinct synovial lining, and a cystic centre that may or may not communicate with the facet joint. They are found



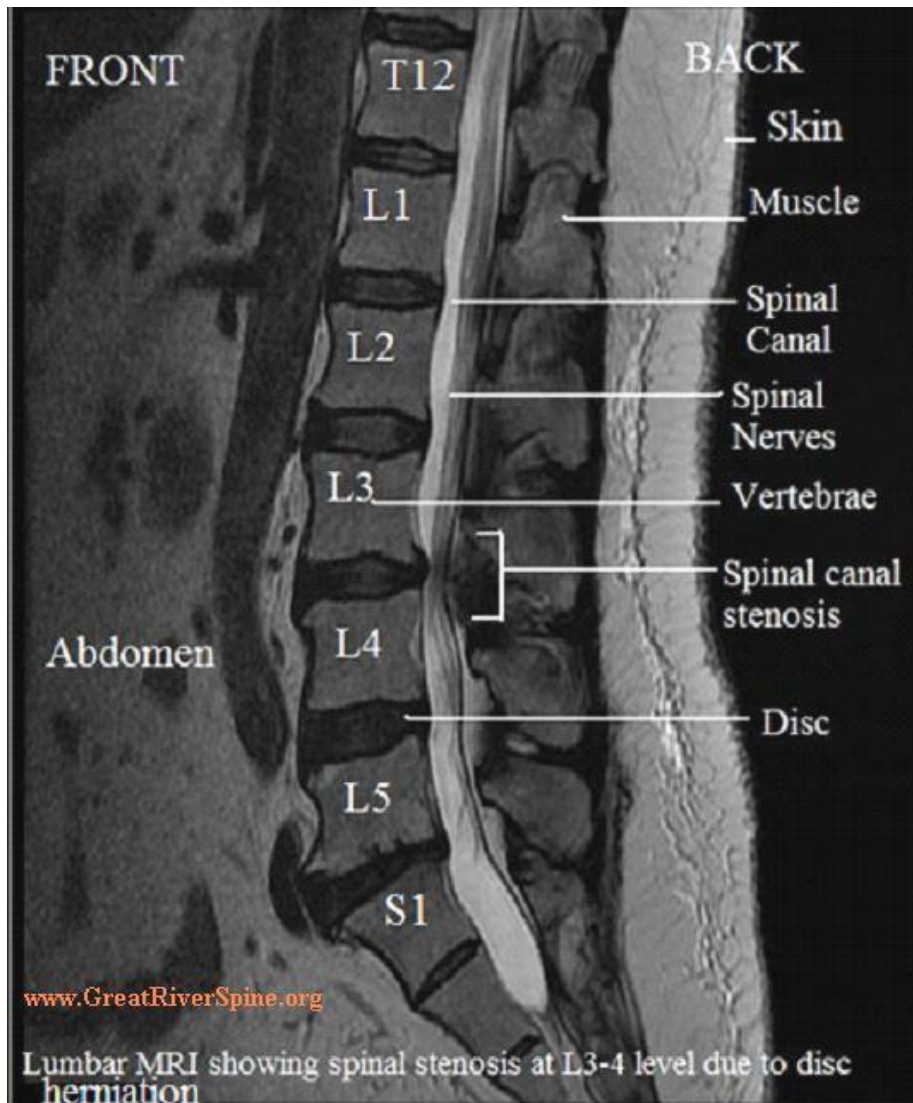
most frequently at L4-5 which is the more mobile segment of the lumbar spine. Synovial cysts can compress the dorsal nerve roots and cause radicular symptoms (Psora).



MRI Scan of Lumbar Spine showing Synovial Cyst (Red Arrow at L4-5 Level)

### **e- SPINAL STENOSIS**

Spinal stenosis is the constriction of the canals and various foramina of the spine. If adequately severe, the stenosis can compress neural structures within the spine and cause neurological symptoms. Spinal stenosis can involve the spinal canal, the lateral recesses, or the neuroforamina. Spondylosis and spinal stenosis are commonly associated with intervertebral disk disease, particularly in patients over 50, and they are main causes of neck and back pain and radiculopathy.



### *Causes of Spinal Stenosis*

- 1- Congenitally short pedicles (Psora)
- 2- Acquired as a result of combined facet hypertrophy (Psora/ Sycosis)
- 3- Degenerated bulging disk (Syphilis)
- 4- Hypertrophy of the ligamentum flavum (Psora/ Sycosis)
- 5- Spondylolisthesis
- 6- Trauma
- 7- Surgical fusion

Congenital spinal stenosis can be idiopathic or associated with a developmental disorder, such as achondroplasia (Psora/ Syphilis), hypochondroplasia (Psora), Morquio's mucopolysaccharidosis (Psora/ Sycosis), and Down's syndrome (Psora/ Sycosis).

### *STENOSIS OF LUMBAR SPINE*

Congenital spinal stenosis is often asymptomatic until middle age, when secondary degenerative changes develop. The acquired type is a disease of adult men with moderate to severe degenerative spine disease (Syphilis). The syndrome of neurogenic or spinal claudication includes bilateral lower extremity pain, numbness, and weakness that is poorly

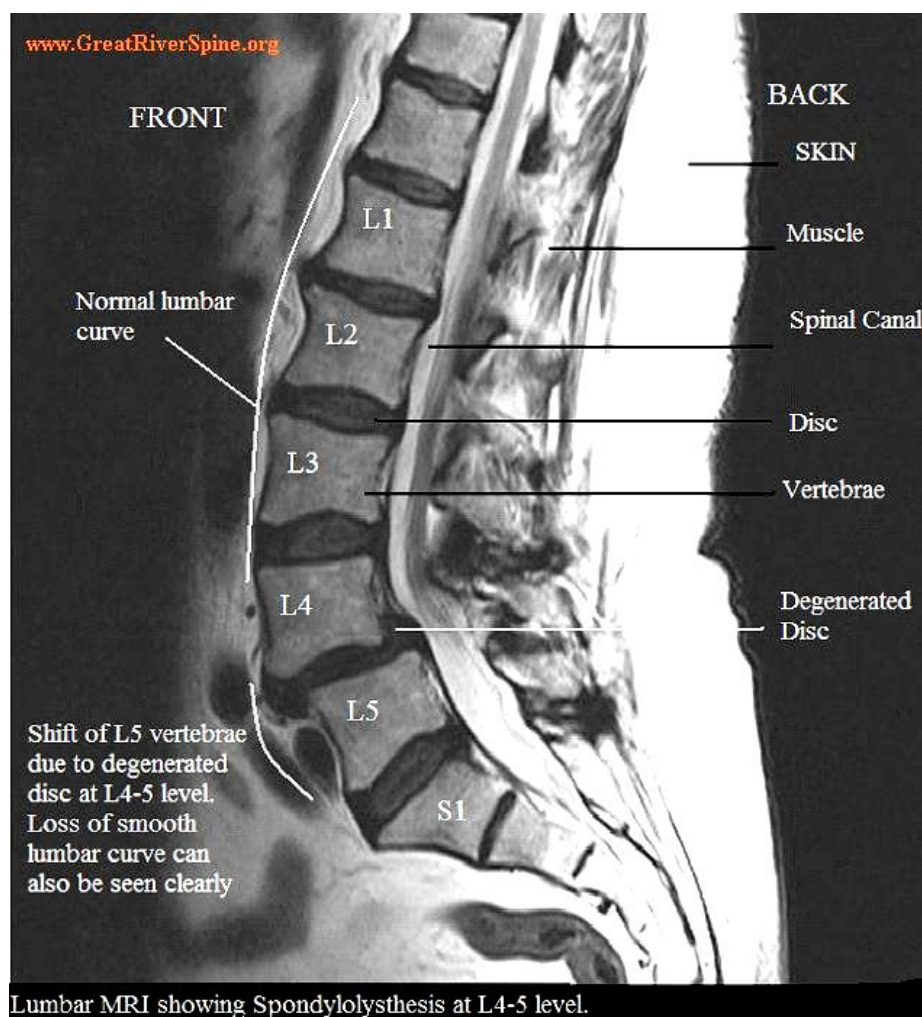
localized and usually associated with low back pain (Psora/ Syphilis). The symptoms are worse with standing or walking and relieved when the patient lies down.

### *STENOSIS OF CERVICAL SPINE*

When bulging disks, spondylosis, and ligamentum flavum hypertrophy (Psora/ Sycosis) progress to constrict the spinal canal and cord, a spinal stenosis develops. In patients with a congenitally borderline or narrow canal, relatively mild degenerative changes (Syphilis) are sufficient to cause spinal stenosis. The spinal cord is more susceptible to traumatic injury in patients with spinal stenosis.

### **f- SPONDYLOLISTHESIS**

Spondylolysis (Syphilis) refers to a cleft or break in the pars interarticularis of the vertebra. It 93-95% occurs at L5, and most are bilateral. The etiology is uncertain, but a stress fracture from repeated trauma to the spine may be the cause.



Lumbar MRI showing Spondylolisthesis at L4-5 level.

Spondylolisthesis refers to forward displacement of one vertebra over another, usually of the 5th lumbar over the body of the sacrum, or of the 4th lumbar over the 5th.

### *Grading of Spondylolisthesis*

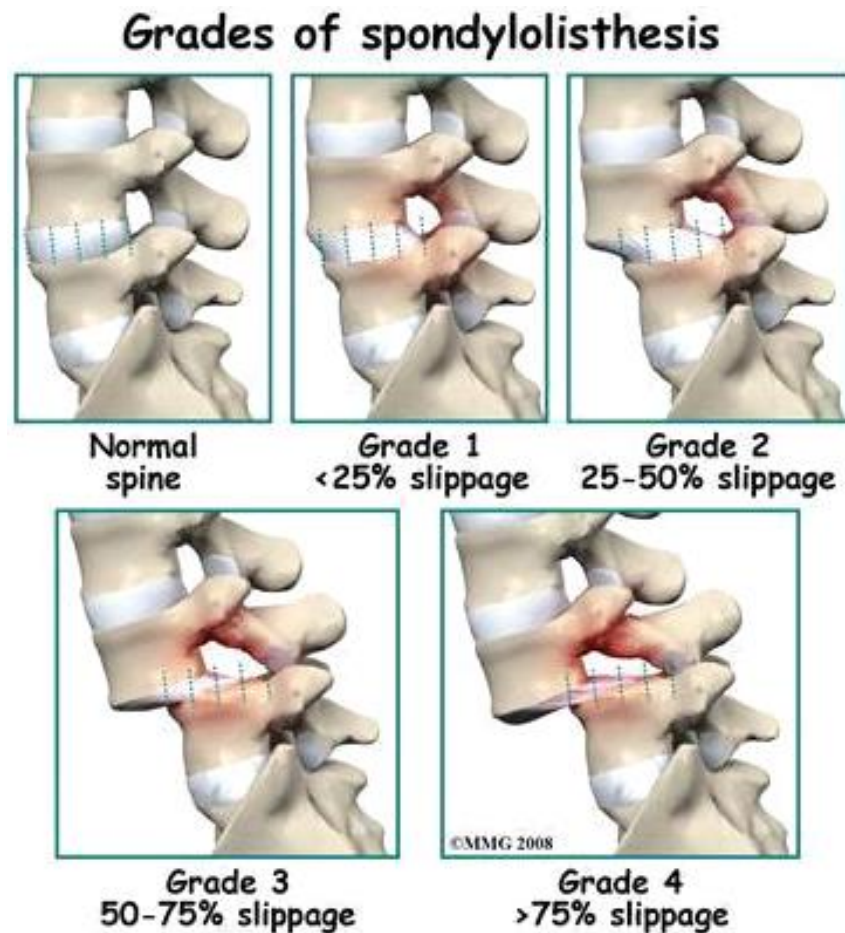
It is graded according to how far the vertebral body moves forward on the one below.

Grade 1 = 1 - 25%

Grade 2 = 26 - 50%

Grade 3 = 51 - 75%

Grade 4 = 76 - 100%



### *Types of Spondylolisthesis*

There are two types of spondylolisthesis.

#### **1- Isthmic (open-arch type), associated with spondylolysis (Psora/ Syphilis)-**

In this type, the pars defect divides the vertebra into an anterior part (vertebral body, pedicles, transverse processes, and superior articular facet) and a posterior part (inferior facet, laminae, and spinous process). The anterior part slips forward, leaving the posterior part behind. As a result, the spinal canal elongates in its anteroposterior dimension, so that spinal canal stenosis is uncommon with isthmic spondylolisthesis.

## Isthmic Spondylolisthesis

- Spondylolysis:
  - 95% at L5
  - Usually bilateral
- Subluxation graded 1 - 4
- Canal stenosis rare
- Foraminal stenosis common
- Imaging:
  - Elongated canal in AP
  - Horizontal-bilobed foramen



### 2- Degenerative (closed-arch type) (Syphilitis)-

Subluxation at the facet joints allows forward or posterior movement of one vertebra over another. A degenerative spondylolisthesis narrows the spinal canal, and symptoms of spinal stenosis are common. Hypertrophic facet arthrosis is a frequent cause of foraminal narrowing.

## Degenerative Spondylolisthesis

- Occurs in patients over 60
- More common in women
- Most common level is L4-5
- Associated with severe facet joint disease
- Subluxation narrows spinal canal
- Hypertrophic facets encroach on foramina



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Radar 10



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