



THE UNIVERSITY OF TOLEDO

**Mina Tanios, M.D.**

Assistant Professor of Spine Surgery  
Department of Orthopaedic Surgery  
419-383-3761

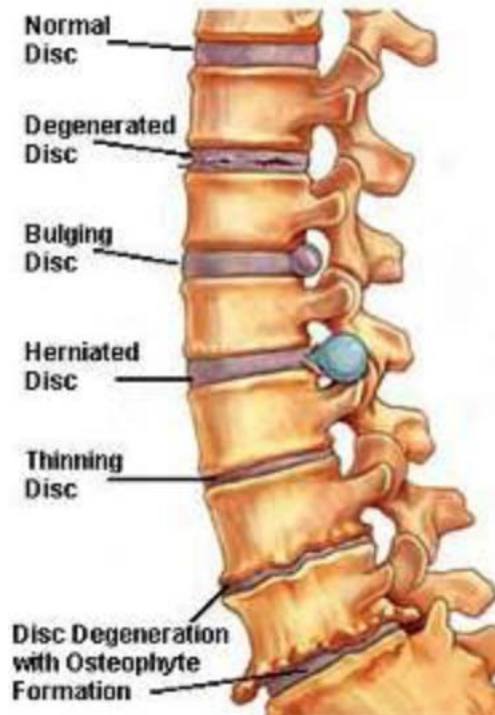
**Spondylosis** (spinal osteoarthritis) is a degenerative disorder that may cause loss of normal spinal structure and function. Although aging is the primary cause, the location and rate of degeneration is individual. The degenerative process of spondylosis may affect the cervical (neck), thoracic (mid-back), or lumbar (low back) regions of the spine.

A genetic predisposition and/or injury may increase a person's risk of developing spinal osteoarthritis. Patients typically report their first symptoms between the ages of 20 and 50 years, and more than 80% of individuals older than 40 years have radiologic (X-ray) evidence of the condition. Lumbar spondylosis is especially common in people older than 40 years. According to the Arthritis Foundation, spondylosis affects about 75% of individuals over the age of 60 years.

**Spondylosis often affects the following spinal elements:**

**Intervertebral Discs.** As people age, certain biochemical changes occur affecting tissue found throughout the body. In the spine, the structure of the intervertebral discs (annulus fibrosus, lamellae, nucleus pulposus) may be compromised. The annulus fibrosus (e.g., tire-like) is composed of 60 or more concentric bands of collagen fiber termed lamellae. The nucleus pulposus is a gel-like substance inside the intervertebral disc encased by the annulus fibrosus. Collagen fibers form the nucleus along with water and proteoglycans. The degenerative effects of aging can weaken the annulus fibrosus' structure, causing the 'tire tread' to wear or tear. The water content of the nucleus decreases with age affecting its ability to rebound following compression (e.g., shock absorbing quality). The structural alterations from degeneration may decrease disc height and increase the risk for disc herniation.

### Examples of Disc Problems



**Facet Joints.** The facet joints are also termed zygapophyseal joints. Each vertebral body has four facet joints that work like hinges. These are the articulating (moving) joints of the spine that enable extension, flexion, and rotation. Like other joints, the bony articulating surfaces are coated with cartilage. Cartilage is a special type of connective tissue that provides a self-lubricating and low-friction gliding surface. Facet joint degeneration causes loss of cartilage and formation of osteophytes (e.g., bone spurs). These changes may cause hypertrophy or osteoarthritis, also known as degenerative joint disease.

**Bones and Ligaments.** Osteophytes (e.g., bone spurs) may form adjacent to the end plates, which may compromise blood supply to the vertebra. Further, the end plates may stiffen due to sclerosis; a thickening or hardening of the bone under the end plates. Ligaments are bands of fibrous tissue connecting spinal structures (e.g., vertebrae) and protect against the extremes of motion (e.g., hyperextension). However, degenerative changes may cause ligaments to lose some of their strength. The ligamentum flavum (a primary spinal ligament) may thicken and buckle posteriorly (behind) toward the dura mater (a spinal cord membrane).

### Spondylosis Symptoms and Different Spinal Levels:

**Cervical (Neck).** The complexity of the cervical (neck) anatomy and its wide range of motion make this spinal segment susceptible to disorders associated with degenerative change. Neck pain from spondylosis is common. The pain may spread into the shoulder or down the arm. When a bone spur (osteophyte) causes nerve root compression, extremity (e.g., arm) weakness may result. In rare cases, bone spurs that form at the front of the cervical spine, may cause difficult swallowing (dysphagia).

**Thoracic (Mid-Back).** Pain associated with degenerative disease is often triggered by forward flexion and hyperextension. In the thoracic spine disc pain may be caused by flexion--facet pain by hyperextension.

**Lumbar (Low Back).** Spondylosis often affects the lumbar spine in people over the age of 40. Pain and morning stiffness are common complaints. Usually multiple levels are involved (e.g., more than one vertebra). The lumbar spine carries most of the body's weight. Therefore, when degenerative forces compromise its structural integrity, symptoms including pain may accompany activity. Movement stimulates pain fibers in the annulus fibrosus and facet joints. Sitting for prolonged periods of time may cause pain and other symptoms due to pressure on the lumbar vertebrae. Repetitive movements such as lifting and bending (e.g., manual labor) may increase pain.

### **Treatment Options:**

Although spondylosis can be very painful, most patients respond favorably to nonsurgical treatments.

- First-line treatment may include analgesics (pain medications), anti-inflammatory drugs, and muscle relaxants.
- Physical therapy may include ice/heat, massage, and/or ultrasound.
- Stretching and warm-up exercise (as tolerated) helps to ready the patient for active exercise.
- Strengthening exercises can help improve spinal flexibility, build strength and endurance.
- To help reduce pain, you may be admonished to lose weight.
- To prevent pain flare ups, the physical therapist instructs patients how to move without exacerbating pain, which includes how to improve and maintain good posture.

Seldom is spine surgery needed to treat spondylosis that develops in the back or neck. However, in some cases, nonoperative therapies do not provide adequate pain/symptom relief. Nerve compression may become severe and/or the symptoms of spinal osteoarthritis progressively become worse, and/or lead to significant extremity (arm, leg) weakness and numbness. In some cases, a back or neck surgery may be recommended. There are many factors, including the patient's general health that requires careful evaluation if a spinal procedure is considered.

**Read more about spondylosis at [spineuniverse.com](http://spineuniverse.com) and [spine-health.com](http://spine-health.com)**