Spondylosis, Spondylolysis, and Spondylolisthesis

One of the common clinical questions asked by attorneys and adjusters is the significance and relationship of Spondylosis, Spondylolysis and Spondylolisthesis. Because these three conditions are often related there remains some confusion regarding their significance as it relates to trauma. This newsletter will attempt to clear up some of the confusion about the “Spondylo” conditions.

When you break the words down, Spondylo- means spinal, -osis means abnormal condition/degeneration, -lysis means defect/fracture, and -listhesis means slipping.

**Spondylosis** is a broad term referring to degenerative changes of the spine. These degenerative changes can occur anywhere in the spine and affect the disc, vertebral endplates, and facet joints. When the degenerative changes extend to the spine’s facet joints the proper term would be Spondyloarthrosis. For most people, spondylosis is an asymptomatic (pain free) condition and is an incidental finding on spinal radiographs.

Spondylosis can have significant consequences which include joint instability, predisposition to disc herniation, and development of osteophytes (bone spurs) which could press on the spinal nerves resulting in radiculopathy. Sometimes the osteophytes can compromise blood supply to vital neurologic structure in the brain and spinal cord. Most concerning is the potential for narrowing of the spinal canal as the disease progresses to it’s advanced stages resulting in spinal stenosis and myelopathy.

Spondylosis is often nothing more than a radiographic finding without clinical significance and should not be considered the primary source of a patient’s pain. Particularly since the degenerative process may takes several years to a few decades to develop during which time the patient is pain free. That being said, the existence of spondylosis may predispose the patient to greater potential consequences from otherwise insignificant occurrences. In our office the majority of patients never had spinal complaints prior to trauma, while a large percentage have spondylosis on their initial x-rays.

Since the process of spondylosis is many years in the making, and most are pain free prior to trauma, it is clear that spondylosis is not the primary causation of their pain.
Spondylolysis refers to a defect in a specific part of the facet joint called the pars interarticularis or just “Pars”. This defect can cause potential instability in the vertebra.

Spondylolysis is found in approximately 6% of the population in the U.S., occurring predominantly in the lower lumbar spine. Although it is typically found in the developing spine of a young male athlete who over trains, it can also be found as an acute fracture resulting from trauma in the adult spine. Less than half of those with spondylolysis develop spondylolisthesis.

It’s important for the doctor, patient and attorney to appreciate the trauma relationship to spondylosis. For most patients, the presence of spondylosis is a complicating factor which predisposes them to far greater injury potential. This complication may result in greater injury, longer recovery, less desirable outcome, and greater physical impairment. It is a misrepresentation for a doctor, attorney or carrier to suggest that the spondylosis resulted in the pain and impairment if the patient has no history of spine pain prior to the trauma. In a similar fashion, Diabetic patients also have complications resulting in greater injury, longer recovery and greater impairments. Who would blame the post traumatic pain on the diabetes?

Spondylolisthesis is an anterior (forward) slipping or displacement of one vertebra on another. Spondylolisthesis has been classified into five major types:

1. Dysplastic - congenital bony anomalies of the spine allow the slipping, or listhesis, to occur;

2. Isthmic - most common form of spondylolisthesis, lack of normal bony continuity in each pars interarticularis or isthmus, permits displacement. The isthmic form of Spondylolisthesis is properly termed Spondylolytic Spondylolisthesis;

3. Degenerative - slipping vertebra remains a single bone but has become unstable because of degenerative joint disease of its facet or zygapophyseal joints (spondyloarthrosis). This is often referred to as a non-spondylolytic spondylolisthesis;
4. **Traumatic** - fracture through the pars or other part of the vertebra. This is usually caused by severe violence and results in the anterior displacement. The acute injury may be further identified by radionuclide bone scan, comparison to prior radiographs or CT scan.

5. **Pathologic** - slipping is a sequel of deforming or destructive bone disease affecting the articular facets.

A routine lateral x-ray taken while standing confirms the diagnosis of spondylolisthesis and/or the degenerative changes associated with spondylosis.

Even though Spondylolysis can be diagnosed by oblique views of the lumbar spine demonstrating the classic “Scotty Dog” fracture of the Pars, CT scan is much more sensitive for fractures that can easily be missed on standard x-ray. If a fracture is identified on either x-ray or CT scan, a bone scan can definitively determine if the fracture is acute.

The significance of Spondylolisthesis in the post-traumatic patient requires a thorough examination and review of past medical history to establish causation.

Many patients with symptomatically inactive spondylolisthesis or spondylolysis develop symptoms which represent an acute progression of an existing slippage, new slippage from a previously stable spondylolysis, or aggravation of a previously silent secondary ossification center without slippage.

In the absence of a documented history of neck or lower back pain, the presence of Spondylolisthesis, Spondylosis or Spondylolysis should be considered previously inactive. The newly activated symptoms may or may not be related to the previously inactive condition. Therefore, any impairment or disability resulting post traumatically would reasonably be considered a sequela of the trauma and therefore be causally related. The Spondylos can be considered a predisposing or confounding factor resulting in a less favorable prognosis.

As always, I look forward to your questions, comments, and feedback.