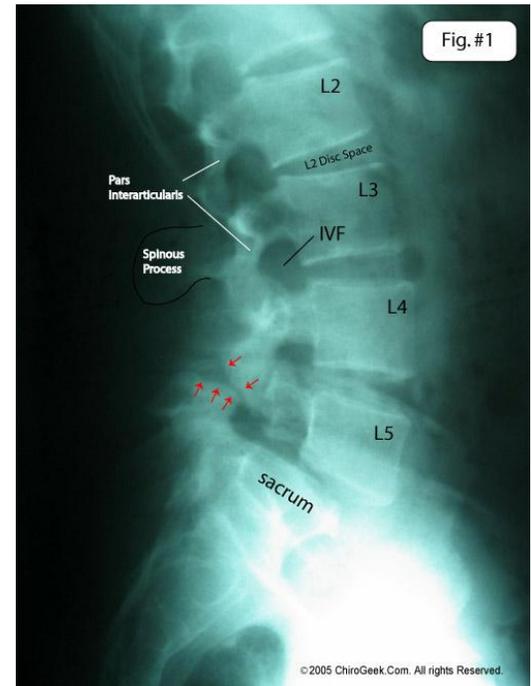


SPONDYLOLISTHESIS

The term “spondylolisthesis” refers to a condition where one of the vertebra (usually L5) becomes misaligned anteriorly (or slips forward) in relation to the vertebra below. It is generally agreed upon that inheritance/genetics plays a “major role” in the development of a pars interarticularis defect, for the prevalence of spondylolisthesis is much greater within a family-tree of those affected when compared to the general public. The majority of spondylos are detectable by age 12, and only 13% of these young spondyloses actually become symptomatic in the future. Males were affected twice as frequently as the females.

Another cause of spondylolisthesis in older people (usually around 60 years of age) is degenerative change of the intervertebral disc in combination with the facet joints. This condition, called a degenerative spondylolisthesis, results from a failure of the degenerated facets (zygapophysial joints) to restrain the natural tendency of the affected vertebra to slide forward. Although the magnitude of forward slippage is rarely greater than 15%, the condition can become quite debilitating and necessitate surgery in patients who present with the conditions most common complaint: neural claudication.

The problems with this forward slippage is that the delicate exiting nerve roots within the intervertebral foramen as well as the thecal sac itself can become compressed as the foramen and central canal are narrowed by the anterior slip. In some cases, patients may present with a precursor to spondylolisthesis, which is called spondylolysis. This terminology simply means there is a fracture, defect, or weakening of the pars interarticularis, but no separation or forward slippage has yet occurred.



How does this slip cause pain?

Let's go a little deeper: In order to understand how spondylolisthesis causes pain, we have to understand a little bit about the anatomy of the lumbar spine. When two vertebrae are in perfect alignment, they create an exiting bony hole for the spinal nerve, which is called the neural foramen or intervertebral foramen (IVF). The IVF is the body's way of protecting the delicate spinal nerve and dorsal root ganglia, which also lives in the IVF. In order to achieve this perfect alignment, the vertebra above and below must have an intact posterior neural arch (which includes the facets, pars interarticularis, lamina and spinous process). Any fracturing, congenital weakening, or congenital absence of any parts of the neural arch will result in a sliding of the body of the same vertebra forwards, which in turn can greatly reduce the size of the neural foramen. Obviously, if the neural foramen is reduced, it will "pinch" or irritate the delicate exiting nerve root and spinal nerve that lives within it, which will cause patient symptomatology.

Why does the pars interarticularis break? Significant trauma will fracture the pars because it is the weakest link. Another problem is the fact that in some patients the pars interarticularis is genetically weak and even more easily susceptible to stress fracture.. So in the unlucky individuals who were not blessed with good genes for neural arch building material, the pars may only be able to tolerate the 'activities of daily living' (135) and would be easily fractured with repeated loaded-flexion (136) and axial rotation. (139)

Grading the Spondylolisthesis:

The severity of spondylolisthesis may be classified/graded by noting the degree of anterior translation (forward slippage) of the top vertebral body in relationship to the bottom vertebral body: Slippage from 0-25% is called a Grade I spondylolisthesis; from 26-50% is called a Grade II; from 51-75% is called a Grade III; from 76-100% is called a Grade IV; and anything greater than 100% is called a Grade V spondylolisthesis or is given a special term: spondyloptosis.

Chiropractic care has shown to be a beneficial form of conservative care for spondylolisthesis.