Mr Peter Wilde F.R.A.C.S. (Orth) F.A. Orth A.

ORTHOPAEDIC SURGEON
Provider no. 437669X

Degenerative Spondylolisthesis (Slipping Vertebra)

Every level of the spine is composed of a disc in the front and paired facet joints in the back. The disc acts as a shock absorber in between the vertebrae, whereas the paired facet joints restrain motion. They allow the spine to bend forwards (flexion) and backwards (extension) but do not allow for a lot of rotation. As the facet joints age, they can become incompetent and allow too much flexion, allowing one vertebral body to slip forward on the other. This slippage is known as a degenerative spondylolisthesis, which is Latin for "slipped vertebral body."

Degenerative spondylolisthesis is far more common in individuals older than 65 and is more common in females than males by a 3:1 margin. It is most common at the L4-L5 level of the lower spine, but can also happen at L3-L4. It is relatively rare at the other levels. It may also occur at two levels or even three levels of the spine.

Symptoms

As the facet joints degenerate they often get larger, which can encroach upon the spinal canal that runs down the middle of the spinal column, resulting in spinal stenosis. The symptoms of a degenerative spondylolisthesis are very commonly the same as that of spinal stenosis. Patients usually complain of pain *or a tired feeling* down the legs when they stand for a prolonged period of time or try to walk any distance. Generally, they do not have a lot of pain while sitting, because in the sitting position the spinal canal is more open. In the upright position, the spinal canal gets smaller accentuating the stenosis and pinching the nerve roots in the canal.

The nerve root pinching can lead to weakness in the legs, but true nerve root damage is rare. There is no spinal cord in the lumbar spine, so even for patients with severe pain, there is no danger of spinal cord damage. If the stenosis becomes very severe, or if the patient also has a disc herniation, they can develop cauda equina syndrome where there is progressive nerve root damage and loss of bladder/bowel control. This is a very rare clinical syndrome, but is a medical emergency.
Back pain and/or leg pain are typical symptoms of degenerative spondylolisthesis. Some patients do not have any back pain with degenerative spondylolisthesis and others have primarily back pain and no leg pain.

Treatment options

There is a range of non-surgical treatment options (such as pain medications, ice or heat application) that may help with some of the pain of a degenerative spondylolisthesis, but there are really three options a patient will ultimately have to choose from.

Activity modification. Patients can modify their activities so they spend more time sitting and less time standing or walking. If they want to be more active they could try stationary biking as activity in the sitting position should be tolerable.

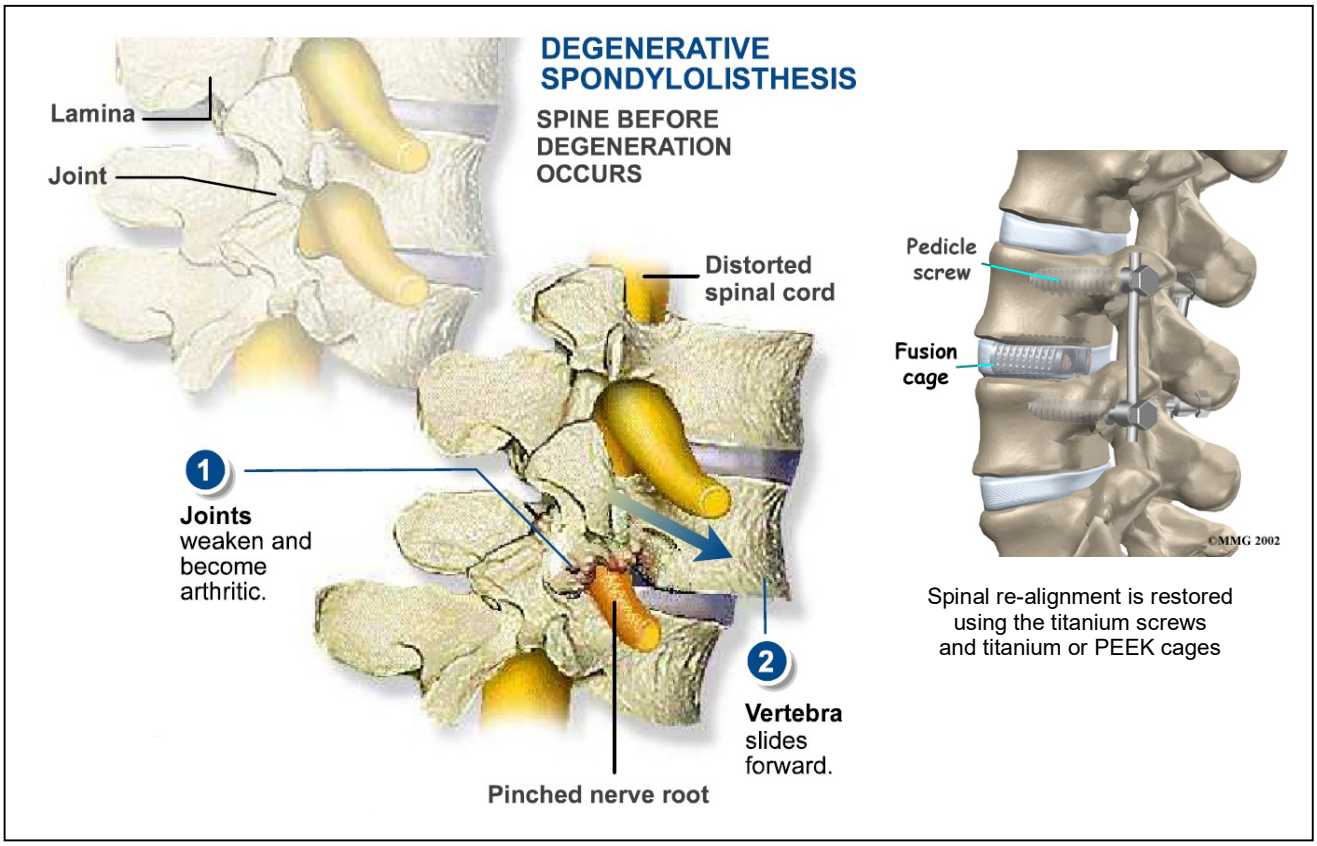
Epidural injections. These work to help curb pain and increase a patient's function in up to 50% of patients, and if it does work it can be done up to three times per year. The length of time that the epidural can be effective is variable as the pain relief can last one week or a year.

Surgery. For patients with severe pain and difficulty functioning, surgery can be done that includes a decompression with pedicle screw instrumentation plus spine fusion. Decompression surgery alone is usually not advisable as the instability is still present and a subsequent fusion will be needed in up to 60% of patients. Herkowitz et al did a randomized controlled study of fusion with and without pedicle screw instrumentation and found the fusion rates were much higher in the patients with instrumentation, but the clinical results were about the same. However, when Kurz et al followed these same patients up 10 years later, the patients with a solid fusion ultimately fared significantly better than those that had not fused.

Spinal fusion surgery for a degenerative spondylolisthesis is generally quite successful, with upwards of 90% of patients improving their function and enjoying a substantial decrease in their pain. The hospital stay typically ranges from one to four days. It is a difficult surgery to recover from as there is a lot of dissection, and it can take up to a year to fully recover. Usually, most patients can start most of their activities after the fusion has had three months to heal. Once the bone is fused, then the more active the patient is the stronger the bone will become.

There are numerous risks and possible complications with surgery for degenerative spondylolisthesis and they are basically the same as for any fusion surgery. There are risks of non union (non fusion, or arthrodesis), hardware failure, continued pain, adjacent segment degeneration, infection, bleeding, dural leak, nerve root damage and all the possible general anaesthetic risks (e.g. blood clots, pulmonary emboli, pneumonia, heart attack or stroke). Most of these complications are rare, but increased risks can be seen in certain situations. Conditions that increase the risk of surgery include smoking, obesity, multilevel fusions, osteoporosis (thinning of the bones), diabetes, rheumatoid arthritis, or prior failed back surgery.

Since degenerative spondylolisthesis is a condition that disproportionately affects individuals over age 60 or 65, the surgery does present some additional risk. Surgical risk is more directly related to the overall health of a patient not his or her absolute age. Particularly in patients who have multiple medical problems, surgery can be very risky. For some patients, even if non-surgical treatments have failed to alleviate their symptoms, surgery may present too much risk. Intermittent epidural injections combined with activity modification may be their best option.



After a fusion procedure, degeneration of the spinal segment adjacent to the fusion is possible. In an attempt to alleviate transferring extra stress to the next segment, there are many different devices currently being studied that hold the promise of being able to replace the function of the facet joint without having to include a fusion procedure (e.g. Wallis procedure). It is too early to determine whether or not the results of these newer technologies are better or worse than the standard fusion procedure.