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Back to Life

Isthmic Spondylolisthesis

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Co-authored by spine-health.com

Spondylolisthesis is the term used to describe one vertebral body that has translated (slipped) in relationship to an adjacent vertebral body. There are a number of situations in which this can occur, which include degeneration of the facet joints, malformed posterior elements, trauma and previous surgery. When the slip is due to a defect in the pars interarticularis, the structural bone of the vertebra that connects two adjacent facet joints, it is classified as the isthmic type. The most common variant of this is the lytic type, which is thought to arise in the second decade of life from repetitive cycling between flexion and extension resulting in an unhealed stress fracture. It is thought to be more common in power lifters, gymnasts and football linemen, but this could be the result of these types of activities creating symptoms and therefore treatment. The L5/S1 level is most commonly involved, but it can occur in other levels in the lumbar spine.

If bilateral pars defects are present, the diagnosis can often be made with a lateral x-ray. Oblique views highlight the pars interarticularis and give the classic "scotty dog" appearance. The lysis will be through the neck of the dog. If the diagnosis is in question, CT is the imaging modality of choice to show the defect. A bone scan with SPECT images can also be helpful, especially when there is no lysis appreciated but the region of the pars in undergoing significant bone turnover as a result of a stress fracture.

Most patients with a spondylolysis defect are asymptomatic, but it is in the differential diagnosis for a young athlete with low back pain. Lytic defects alone are amenable to conservative care and should respond to anti-inflammatories, therapy and activity modification. For persistent cases, bracing and pars injections can be of benefit. In rare instances for significant pain and limitation despite non-operative care, the lysis can be repaired with bone grafting.

For patients with long standing isthmic defects and instability, significant degenerative changes occur. Severe disc degeneration comes from shear forces acting on the disc. This can cause progressive disc space collapse and an increase in the amount of the slip. Progression of the slip can cause severe foraminal stenosis and nerve root compression. Most patients will present at this stage when the leg pain becomes severe enough. Epidural injections, manipulation and core stabilization can be helpful in the short term, but many of these patients will require surgical decompression and stabilization for a good long-term outcome.

The surgery can be done a variety of different ways, but we have had great success using a combined anterior and posterior approach performed in a single surgery. The anterior portion is done first and includes removal of the damaged disc and placement of an interbody spacer to give anterior column support and create a large surface area for fusion. The spacer also provides distraction and restores the native height of the disc space while indirectly decompressing the pinched nerve root out in the foramen. Most times during the preparation and insertion of the spacer, the slip can be reduced and sagittal balance can be restored. The patient is then repositioned and the posterior portion of the case is performed. The bone defect, which allows the shear forces on the disc space, is reconstructed using pedicle screw bone anchors above and below the defect and connecting them with a metal rod. The placement of the screws is made easier by the realignment achieved during the anterior portion of the surgery, especially in cases where the slip is more severe. Posterolateral bone grafting is also performed bilaterally to increase likelihood of obtaining a solid fusion and good long-term outcome.

For more information, or to refer a patient for evaluation, please call 920-882-8200.

Back to Life was developed specifically for chiropractors, worker's compensation case managers, physical therapists, occupational therapists, athletic trainers and personal trainers to provide a better understanding of **NeuroSpine's integrated modality approach** to back pain.

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