

Adult Isthmic Spondylolisthesis



**North American Spine Society
Public Education Series**

What Is Adult Isthmic Spondylolisthesis?

The spine is made up of a series of connected bones called “vertebrae.” In about 5% of the adult population, there is a developmental crack in one of the vertebrae, usually at the point at which the lower (lumbar) part of the spine joins the tailbone (sacrum). It may develop as a stress fracture. Because of the constant forces the low back experiences, this fracture does not usually heal as normal bone. This type of fracture (called a spondylolysis) is simply a crack in part of the vertebra (**Figure 1**) and may cause no problem at all. However, sometimes the cracked vertebra does slip forward over the vertebra below it. This is known as **adult isthmic spondylolisthesis**.

*(Another type of spondylolisthesis is **degenerative spondylolisthesis**, in which slip-page develops as a result of arthritis of the small joints of the spine and degeneration of the discs.)*

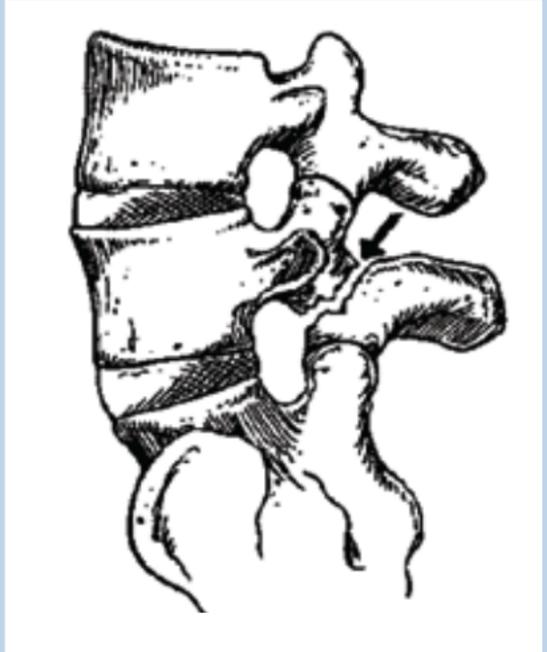


Figure 1. Arrow points to crack in the vertebra.

What Are the Symptoms?



Isthmic spondylolisthesis may not cause any symptoms for years (if ever) after the slippage has occurred. If you do have symptoms, they may include low back and buttocks pain; numbness, tingling, pain, muscle tightness or weakness in the leg (sciatica); increased sway back; or a limp. These symptoms are usually aggravated by standing, walking and other activities, whereas rest will provide temporary relief.

Studies have shown that 5-10% of patients seeing a spine specialist for low back pain will have either a spondylolysis or isthmic spondylolisthesis. However, because isthmic spondylolisthesis is not always painful, the presence of a crack (spondylolysis) and slip (spondylolisthesis) on an X-ray image does not mean that this is the source of your symptoms.



How Is it Diagnosed?

Your doctor will begin by taking a history and performing a physical examination, and may order X-ray studies of your back. However, sometimes it is difficult to see a crack and/or slippage on an X-ray film, so additional tests may be needed. A computed axial tomography (CAT) scan can show a crack or defect in the bone more clearly. A magnetic resonance imaging (MRI) study may be ordered to clearly show the soft tissue structures of the spine (including the nerves and discs between the vertebrae) and their relationship to the cracked vertebra and any slippage. It also will show whether any of the nearby discs have suffered any wear and tear because of the spondylolisthesis (slippage).

If isthmic spondylolisthesis is present, it can be graded as I, II, III or IV (Figure 2) based on how far forward the vertebra has slipped.

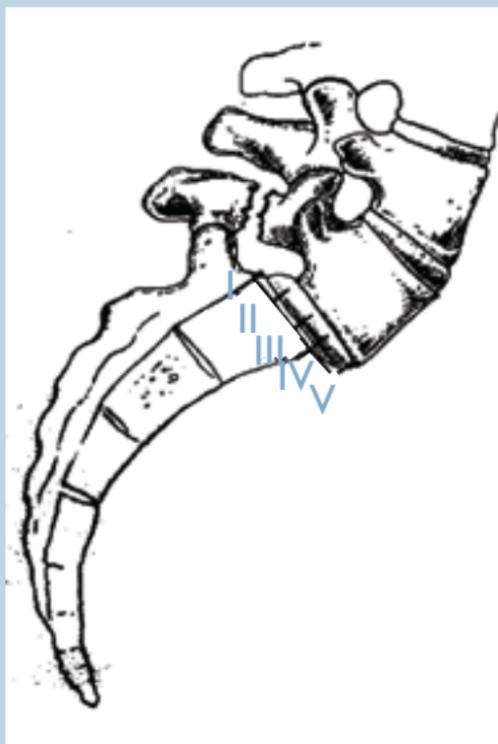


Figure 2. Grades I through IV show the degree of slippage

What Treatments Are Available?



If your doctor determines that a spondylolisthesis is causing your pain, he or she will usually try nonsurgical treatments at first. These treatments may include a short period of rest, anti-inflammatory medications (orally or by injection) to reduce the swelling, analgesic drugs to control the pain, bracing for stabilization, and physical therapy and exercise to improve your strength and flexibility so you can return to a more normal lifestyle. If you are told to rest, follow your doctor's directions on how long to stay in bed. Generally, if recommended at all, this would be limited to a few days. (Strict bed rest is usually not necessary.) Ask your doctor whether you should continue to work while you are being treated.

Your doctor may also—sometimes with the help of a nurse or physical therapist—begin education and training in performing activities of daily living without placing added stress on your lower back.

If a combination of medication and therapy fails to provide relief, however, your doctor may order additional tests, which will provide greater detail so he or she can plan further treatment.



Medication and Pain Management

Your doctor may use one medication or a combination of medications as part of your treatment plan. Medications used to control pain are called **analgesics**. Most pain can be treated with non-prescription medications like aspirin, ibuprofen, naproxen or acetaminophen. Some analgesics, referred to as **nonsteroidal anti-inflammatory drugs** (NSAIDs), are also used to reduce swelling and inflammation that may occur. These include aspirin, ibuprofen, naproxen and a variety of prescription drugs. If your doctor gives you analgesics or anti-inflammatory medications, you should watch for side effects like stomach upset or bleeding. Chronic use of prescription or over-the-counter analgesics or NSAIDs should be monitored by your physician for the development of any potential problems.

If you have severe persistent pain that is not relieved by other analgesics or NSAIDs, your doctor might prescribe **narcotic analgesics** (such as codeine) for a short time. Take only the medication amount that is prescribed. Taking a larger dosage doesn't help you recover faster. Side effects include nausea, constipation, dizziness and drowsiness, and use can result in dependency. All medication should be taken only as directed. Make sure you tell your doctor about any kind of medication you are taking—even over-the-counter drugs—and inform your doctor about whether your medication is working for you.

Other anti-inflammatory medications such as **corticosteroid** (oral or by injection) are sometimes prescribed for more severe back and leg pain because of their very powerful anti-inflammatory effect. Corticosteroids, like NSAIDs, can have side effects. Risks and benefits of this medication should be discussed with your physician.

Selected spinal injections, or “blocks,” may be used to relieve symptoms of pain. These are injections of corticosteroid into the epidural space (the area around the spinal nerves) or facet joint (between vertebrae) performed by a doctor with special training in this technique. The initial injection may be followed by one or two more injections at a later date. These are most often done as part of a comprehensive rehabilitation and treatment program.

Nonsurgical Treatment

As you begin a physical therapy regimen and/or exercise program, your doctor may prescribe therapies like ultrasound, electric stimulation, hot packs, cold packs and manual “hands on” therapy to reduce your pain and muscle spasms. At first, the exercises you learn may be gentle stretches or posture changes to reduce the back pain or leg symptoms. When you have less pain, more vigorous aerobic exercises (such as stationary bicycling or swimming) combined with strengthening/stretching exercises will likely be used to improve flexibility, strength, endurance and the ability to return to a more normal lifestyle. Developing your back and stomach muscles will help stabilize your spine and support your body. Exercise instruction should start right away and be modified as recovery progresses. Learning and continuing an exercise and stretching program are also important parts of treatment, as is maintaining a reasonable body weight.

The presence of this “cracked vertebra” (spondylolysis) or “slippage” (spondylolisthesis) by itself usually does not represent a dangerous condition in the adult. Therefore, treatment is aimed at pain relief and increasing the patient’s ability to function. Although none of the nonsurgical treatments will correct the “crack” or “slippage,” they can provide long-lasting pain control without requiring more invasive treatment. A comprehensive program may require three or more months of supervised treatment.

What if I Need Surgery?

Surgery is reserved for the small percentage of patients whose pain cannot be relieved by non-surgical treatment. The pain may be caused by a pinched nerve, movement of the unstable cracked vertebra, or from nearby discs. If a spinal nerve is being compressed by the forward slip, surgery may be needed to reopen a “tunnel,” or space, for the nerve.

In addition to relieving pressure on a nerve around the crack or slippage, a stabilizing procedure or fusion may be recommended. This will stop any further slippage of the vertebra and also will prevent recurrent nerve pressure from developing at this site. The success rate of fusion surgery in relieving symptoms of isthmic spondylolisthesis is over 75%.

Occasionally the the vertebra can be repaired by placing bone graft at the site of the crack. A fusion can be performed from the front (anterior approach) or the back (posterior approach). Both require the placement of bone graft or bone graft substitute and/or instrumentation between the vertebrae being fused. The choice of approach (front vs back) depends on many technical factors including need for spur removal, location of the spurs, the patient’s unique anatomy and the experience of the surgeon.

How soon you can return to work partially depends on your job. If you spend most of the time at a desk, you may be able to return as early as two to three weeks after surgery. If your job is physically demanding, you may have to wait for the bones to fuse or heal, which may take several months. A thorough postoperative rehabilitation program is recommended to help you resume the normal activities of daily living.



Summary

- A cracked vertebra (spondylolysis) is present in 5% of the adult population and often is pain-free.
 - When the crack causes slippage of the vertebra, it is called isthmic spondylolisthesis and may or may not cause back and/or leg pain.
 - The first line of treatment is usually medication and physical therapy. Get professional diagnosis and treatment early so your doctor can prescribe the right regimen and help you recover faster. The vast majority of patients can achieve long lasting relief with nonsurgical treatment.
 - All medications should be taken only as directed and only as part of a comprehensive treatment program.
 - Persistent back and/or leg pain may require surgery. The success rate from fusion surgery with or without nerve decompression is better than 75%.
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