

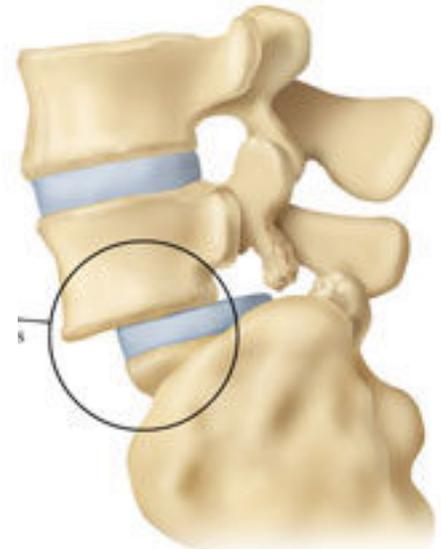
# Lumbar Spondylolisthesis or Anterolisthesis

## *Patient Educational Information*

### What is a Spondylolisthesis or Anterolisthesis?

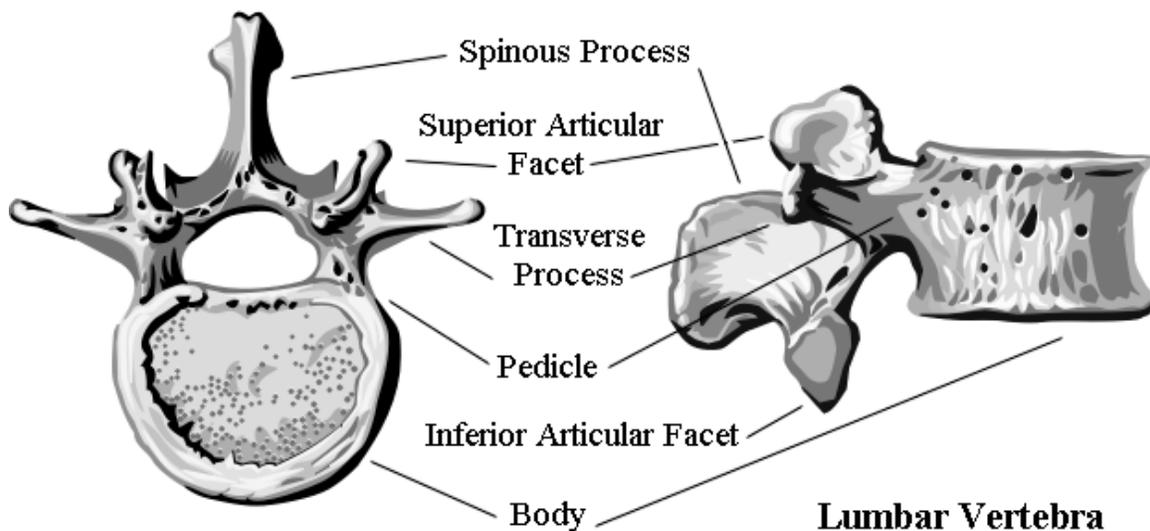
Spondylolisthesis is a condition of the spine when one of the vertebra slips forward or backward compared to vertebra above or below. Forward slippage of one vertebra on another is referred to as anterolisthesis, while backward slippage is referred to as retrolisthesis. Spondylolisthesis can lead to a deformity of the spine as well as a narrowing of the spinal canal (central spinal stenosis) or compression of the exiting nerve roots (foraminal stenosis).

Forward slip of L5/S1 vertebral bodies



While this condition can happen anywhere in the spine, it most commonly happens in the lower back or lumbar spine and that is this handout's focus. In this handout I am focusing on a spondylolisthesis of the lumbar vertebrae with forward slippage or the anterolisthesis.

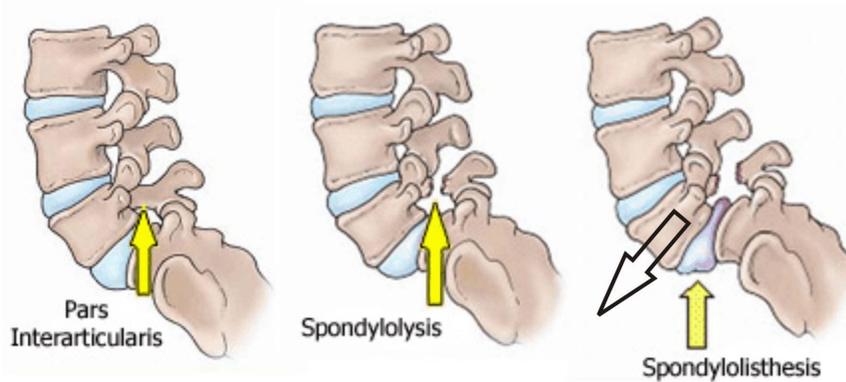
**What does a lumbar vertebra look like and what are the names commonly used to describe those parts of its bony surface?**



## Lumbar Anterolisthesis (Continued)

### What does having a spondylolisthesis mean?

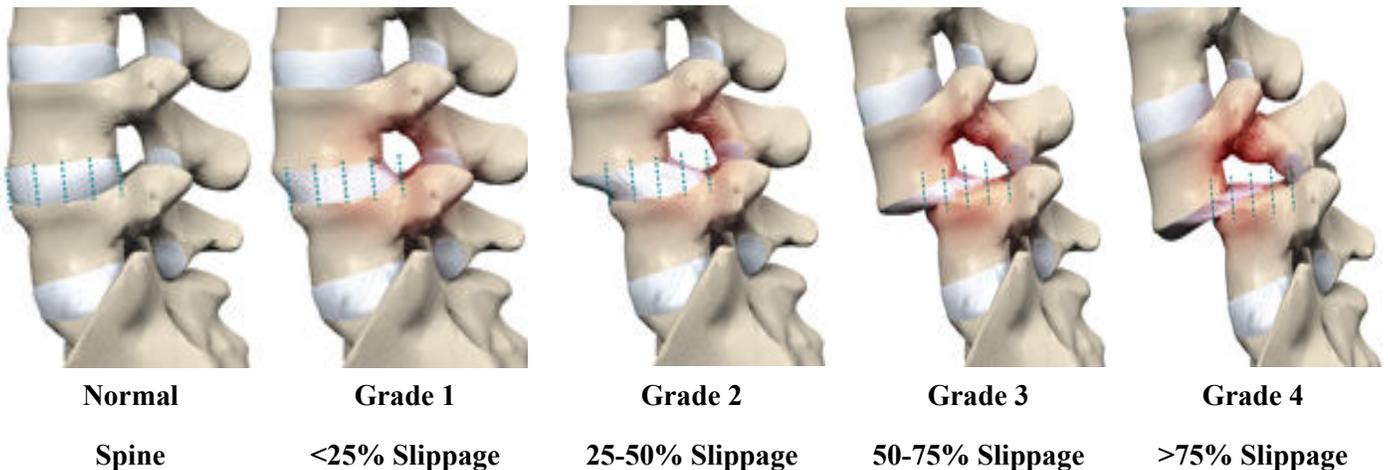
Like with most things related to our body the answer isn't simple. What caused it in the first place can be related to genetics, trauma, gradual repetitive trauma, and other related conditions allowing the vertebra to relatively move forward, compared to the vertebra above and below. The pedicle or "pars" is part of the vertebra that helps hold the body of the vertebra in place and when there is a *defect* in the portion of the vertebra, it can lead to a spondylolisthesis. A breakdown in the "pars" bony tissue caused by trauma, genetics, or disease can be called a *spondylolysis*.



For instance in one study investigated the natural history of spondylolysis and spondylolisthesis from onset through more than 45 years of life in a population of 500 first grade children (starting in 1955). Interestingly the study found that subjects with pars defects follow a clinical course similar to that of the general population, with any "slip progression" of the vertebra lessening over time.

Beutler WJ, Fredrickson BE, Murtland A, Sweeney CA, Grant WD, Baker D. **The natural history of spondylolysis and spondylolisthesis: 45-year follow-up evaluation.** *Spine.* 2003 May 15;28(10):1027-35.

### Grading Spondylolisthesis Positions



## **Lumbar Anterolisthesis (Continued)**

### **Can conservative care be helpful for a patient with spondylolisthesis?**

A study of conservative treatment for spondylolisthesis found conservative care” is usually successful in controlling symptoms and restoring function and only a small percentage of patients require surgical intervention for pain or progressive spondylolisthesis. Based on current evidence, treatment requires activity restriction (i.e., temporary discontinuation of the aggravating sport or activity) and may require bracing to achieve treatment goals, although healing, pain relief or both may occur without brace application.”

Standaert CJ, Herring SA, Halpern B, King O. **Spondylolysis**. *Phys Med Rehabil Clin N Am*. 2000 Nov;11(4):785-803.

### **Does pelvic balance affect a spondylolisthesis?**

In this study side view or lateral x-rays were taken of 214 subjects with developmental L5-S1 spondylolisthesis. The investigators found that pelvic balance was a constant anatomical variable specific to each individual and strongly determined sacral slope, pelvic tilt, lumbar lordosis, which were position-dependent variables. They concluded, “Pelvic dysfunction has a direct influence on the development of spondylolisthesis.”

Labelle H, Roussouly P, Berthonnaud E, Transfeldt E, O'Brien M, Chopin D, Hresko T, **Spondylolisthesis, pelvic incidence, and spinopelvic balance: a correlation study**. *Spine*. 2004 Sep 15;29(18):2049-54.

### **Spondylolisthesis: What is our research telling us?**

- Spondylolisthesis/lysis occurs in the general population and may not necessarily be a problem.
- Pelvic dysfunction may play a big part in aggravating the condition.
- While some circles recommend surgery, conservative care appears to be beneficial with much less risk.
- Spondylolisthesis is a condition that is more stable than commonly thought; yet the pain might be more associated sensitivity at the pars defect rather than secondary effects caused by the anterolisthesis.

### **What types of treatment are offered at this office?**

I have treated many patients with spondylolisthesis successfully, however not all patients may be a candidate for my care. If you have a severe unstable spondylolisthesis and you are having difficulties with bowel or bladder function, or atrophy of muscles I would likely, before beginning care, refer you to a neurologist or neurosurgeon for a consultation. If your condition appears to be unstable, sometimes we will need to work with a doctor who could use specifically placed injections to aid in creating stability helping to prevent the vertebra's forward displacement.

## Lumbar Anterolisthesis (Continued)

However, the majority of cases I see have relatively stable vertebra segments and respond well to my conservative care and this care does not involve any forceful movements of the vertebra or pelvis. Instead I use pelvic wedges or blocks, exercise balls, cupping, and sacro occipital technique (SOT) indicators and interventions to help gradually relax and modify pelvic or vertebra position, reducing the stresses on the spondylolisthesis. Muscle work is used to help reduce any related muscles pulling the vertebra forward on rest or during movement.

As patients begin care at this office for their spondylolisthesis they become an integral part of their healing process. This means for sustained improvement, specific home exercises, ergonomic modifications, and body awareness movements will be an essential part of the treatment's success. This also means the patient cannot be just a passive part of the treatment but instead becomes actively involved in their rehabilitation, learning how to help themselves for their whole life.

### Spondylolisthesis Exercises and Body Awareness

The beginning exercises are important to help the patient develop body awareness and learn how to affect their spondylolisthesis by becoming aware subtle internal body sensations when they move. It is important to understand what is happening with your body and be aware of your body's anatomy since you will need to visualize what is happening to and within your body during the exercises.

The exercises, while appearing simple are both powerful and complex, particularly when all the actions are performed correctly. The exercises that I recommend should NOT make your condition worse so I recommend starting off slowly and gently. Please contact me if your condition worsens or you have questions. The first exercise starts with you finding a spot on a wall to rest your legs and a pillow to rest your head. You will need an exercise ball (you can get them at my office – they are filled with air and will compress a bit as you lie on it) and a weight (sandbag, ankle weight or something similar).

#### Exercise #1 – Performed While on Your Back



**Step One:** Lie on your back with your feet against the wall and your head resting on a pillow. Move your pelvis as close to the wall as possible until you begin to feel a relaxing stretch in the back of your legs or thighs or lower back. Rest in this position for approximately a minute.

**Step Two:** Next lift up your pelvis a bit and place the small exercise ball under the tip of your tailbone or sacrum. Allow your pelvis to rest on the ball and your body to relax. You may begin to feel stretching in the region of your spondylolisthesis and this should feel good and relaxing. Imagine your tailbone lengthening away from your spine making space for your forward segment to move backwards.



## Lumbar Anterolisthesis (Continued)



**Step Three:** Place the sandbag or weight on your stomach right over where the vertebral segment has moved forward. Rest with your legs up on the wall, the ball under the tailbone, and the weight over the spinal segment for at least 5 minutes or longer, if possible. As you breathe out, imagine the weight pressing the segment backwards and the back of your body lengthening. If the weight is over something that feels like it is pulsing like your heart beat, move it lower until you do not feel that sensation. If you feel this pulse sensation no matter what, then do not use the weight and discuss this with me.

**Step Four:** As the back of the legs and thighs stretch you may want to move closer to the wall to get a more significant stretch. Take the ball out from under the tailbone, move your pelvis closer to the wall, and reposition the ball and pillow for your head. Usually you can leave the weight in position during this transition.



### Exercise #2 – Performed While on Your Stomach

One difficulty for patients with a spondylolisthesis is that when they extend their back or legs or thighs it may worsen their vertebra's forward position. So learning how to extend your lower back or thighs and gain the awareness or feeling of helping to stabilize your back at the same time is important. This exercise is one that can help you develop body awareness as well as encourage your muscles to function in an optimal manner you're your condition.



**Step One:** While on your stomach place the exercise ball under your stomach just under where the spondylolisthesis is moving forward. Before attempting to lift your leg first become familiar with the following simultaneous “*three actions*”: breathe out fully, press your abdomen towards your spine, and hold your shoulder blades downward towards your pelvis.



**Step Two:** Before lifting the legs always begin and maintain the *three actions* and feel as if you are lifting your leg away from your spine and pelvis. Once you understand this, then with ball in place, breathe out (hold it out), abdomen against the spine, shoulder blades down, and lift one leg as if you are lengthening it away from the spine. Hold this position for 2 seconds and then lower your leg, breathe in and relax. Then repeat the same procedure for the other side.

## Lumbar Anterolisthesis (Continued)

Only lift your leg as high as possible making sure that you are not feeling your spondylolisthesis attempt to move forward. Start with 3 sets of 3 alternating lifts on each side with a full minute rest between each set. Ultimately over time building up from 3 sets of 3 lifts for one week, to 3 sets of 5 lifts the following week, 3 set of 7 lifts the third week, and then attempting 3 sets of 10 lifts in the fourth week, until you can do 3 sets of ten alternating sides, pain free.

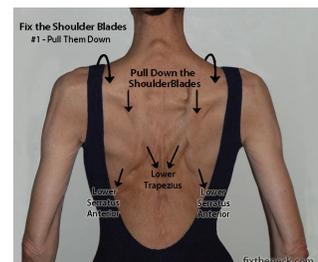
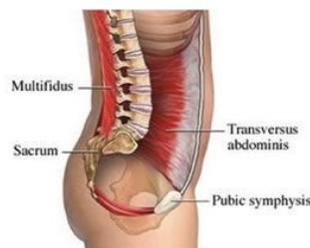
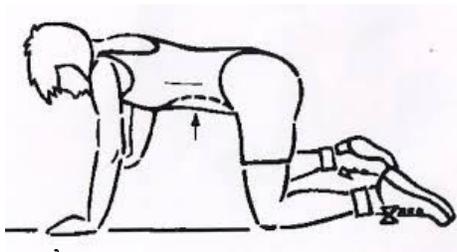


**Step Three:** Initially start with only lifting your legs until you can perform this exercise pain free and this may take you up to 4-8 weeks. Then at this time you may be ready to see if you can lift the opposite arm while you are lifting your leg. You will do the *three actions*, and at this time lift your opposite leg and arm as if to lengthen them away from your body. Similarly do the first exercise with just the legs, start with 3 sets of 3 lifts on each side and build up over weeks until you can do 3 sets of ten alternating sides, pain free.

Eventually you will be able to continue performing these activities without the exercise ball in place because you have learned what it feels like to use your muscles so that they will not bring your spondylolisthesis further forward. You will learn how to move in an extension motion without worsening your condition as well as create stabilizing strength in your body wall. Please do not rush this process, persist but take your time.

## Exercise #3– Home Rehabilitation – Breath and Intention

Probably the most important aspect of self-treating a spondylolisthesis is learning how to move, such as when getting into a car or out of a car or into a bed or out of a bed. Lifting items such as grocery bags or whatever, all of these activities on lifting or moving involves the *three actions*.



With every motion, every moment of every day, you must on physical exertion remember to fully exhale and pull your stomach inward, as if you are pressing your spondylolisthesis backwards, while simultaneously holding your scapula downward. This is sustained during the movement or lifting and if you need to breathe in, stop the movement and return to your exhalation, abdomen inward, and shoulder blades downward before continuing. The *three actions* become part of your life and need to become a habit for all activities.