

# Spondylolysis & Spondylolisthesis

## *Description*

Spondylolysis (spon-dee-loh-lie-sis) refers to a fracture, break or defect in one of the bones, called a vertebra, in the lumbar spine (lower back). This is most commonly the fifth (but occasionally the fourth) lumbar vertebra. This is often a stress fracture in the pars region of the vertebrae related to overuse. Spondylolysis is sometimes referred to as a “pars defect”. (Figure 1) In some cases, the defect becomes severe enough for the vertebra to slip out of place. This is called spondylolisthesis (sponde-loh-lis-thee-sis). If the vertebra slips far out of place, there may be pressure on nerves going to the legs. (Figure 2a and 2b).

Some people may be predisposed to these conditions. Certain sports—those which put stress on the bones of the back, especially in hyperextension or bending backwards—are more likely to cause spondylolysis and spondylolisthesis.



**Figure 1a and 1b**  
Radiograph of low grade spondylolisthesis of L5-S1 and spondylolysis (pars lucency).



**Figure 2a and 2b**  
X-ray and CT scan images of severe spondylolisthesis.

## *Symptoms*

Symptoms may begin with back pain and stiffness, as well as hamstring tightness. Slippage that compresses nerves may cause bowel or bladder problems or pain radiating down the legs. However, not all patients with spondylolysis or spondylolisthesis have pain or other symptoms.

## *Diagnosis*

Your child’s doctor will examine your child’s back, and do a neurological exam to check his/her nerves. X-rays are often used to make the diagnosis, though sometimes other tests such as MRI or bone scan are required.

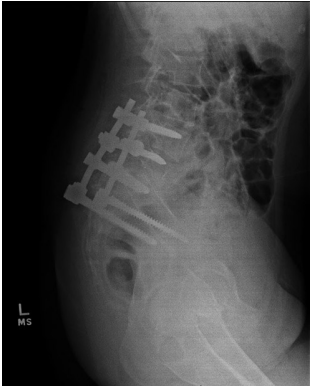
## *Treatment*

### Nonsurgical

Treatment of spondylolysis begins with nonsurgical management. This includes a break from activities, and may also include anti-inflammatory medication, such as ibuprofen. In some cases, physical therapy may be done to stretch and strengthen the muscles of the abdomen and core. Occasionally a brace may be used. Usually these treatments are effective and activities may gradually be resumed. Periodic x-rays are usually also performed to monitor the position of the vertebra.

## Surgical

If non-surgical measures are not successful, or if the slip of the bone is severe and/or continues to worsen, surgery may be done to stabilize the vertebra. Often screws and rods are used to hold the vertebra in place. In some situations, a spondylolysis may be repaired and bone grafted. However, the most common surgical procedure for spondylolysis or spondylolisthesis is a fusion of the involved vertebrae. (Figure 3)



**Figure 3**  
X-ray of the same patient after surgical fixation.

## **FAQs**

### **Q: What is spondylolysis?**

Spondylolysis refers to a break or defect in one of the bones in the lumbar spine, called vertebra. This most commonly affects the fifth (but occasionally the fourth) lumbar spine bone. This is a common cause of low back pain in adolescents.

### **Q: What is spondylolisthesis?**

This is when the spondylolysis defect in the bone becomes severe enough for the spine bone to slip on its adjacent bone. If the spine bone slips far out of place, there may be pressure on nerves going to the legs.

### **Q: Are there certain activities or sports that cause spondylolysis and spondylolisthesis?**

Sports that put a lot of pressure on the low back, especially in extension, can lead to spondylolysis and spondylolisthesis. These sports include football, gymnastics, and cheerleading.

### **Q: Is it always painful?**

No. In many cases it does not cause any pain or problems.

### **Q: What are symptoms associated with spondylolysis and spondylolisthesis?**

The first symptom is usually low back pain and stiffness. There may be tightness of the hamstrings. In more advanced slips, there may be difficulty with bowel or bladder function, or pain radiating down the legs.

### **Q: What will happen at the doctor's office?**

Your child's doctor will examine your child's back and do a neurological exam to check his/her nerves. X-rays are often used to make the diagnosis, though sometimes other tests such as an MRI or bone scan are required.

### **Q: Will my child need surgery?**

Often surgery is not needed. Initial treatment begins with activity modification, and sometimes anti-inflammatory medications (such as ibuprofen), physical therapy, and occasionally, a brace. This is often enough to decrease the pain and allow your child to gradually return to normal activity. In severe cases where non-surgical treatment is not successful or there is a severe or progressive slip, surgery may be needed. This stabilizes the bones in a good position, sometimes with internal rods and screws.