

# Management of Spondylolisthesis in the Young

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Spondylolisthesis is defined as the forward slippage of one vertebra on the vertebra below. The word is derived from Greek: spondylo - defined as “spine” in Greek and listhesis - defined as “to slip or slide”. This forward slippage can be the result of many causes and is classified based on the reason for the slip. Depending on the cause, the most common spinal levels involved are either L5-S1 (in particular for isthmic spondylolisthesis) or L4-L5 (in particular for degenerative spondylolisthesis). In this article, I will mainly describe the current concepts and management of isthmic spondylolisthesis, which occurred largely in the younger population.

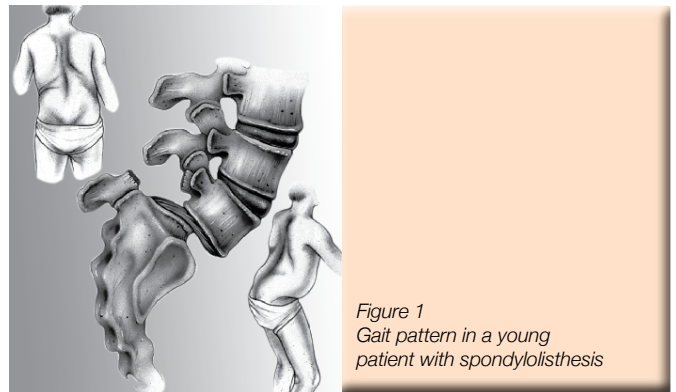
Isthmic spondylolisthesis has three sub-types ie lytic fatigue fracture type; elongated (microfracture healed with elongation) type; and acute fracture (secondary to trauma). The lysis or defect occurs in the pars interarticularis of the vertebra, which forms a link between the superior and inferior articular processes of the vertebra.

## Clinical Findings & Common Symptoms

The patients are typically in their adolescent growth spurt. Usually, the patient has a history of hyperextension activities or sports. The most common culprits are gymnastics, diving, weight lifting, football linemen, volleyball, and soccer. Most slips probably occur in the isthmic form between the ages of 10 and 15, but present somewhat later with pain, if they ever present with pain.

Most adolescents with spondylolysis or spondylolisthesis are asymptomatic and pain free. While back pain is the most common presenting complaint, leg pain or “sciatica” is also common. For example, the L5 nerve root is irritated in L5-S1 isthmic spondylolisthesis, and can cause pain in the buttocks, anterior thigh, anterior calf/shin, and the dorsum of the foot. Numbness can be seen in the same distribution. If weakness occurs due to L5 irritation, the ability to lift the foot and big toe may be impaired. A patient may walk with a foot drop, but this is rare. If the slip occurs at a different level, a different pattern of pain, numbness, and weakness will occur.

Examination will reveal different findings depending on the amount of slip. Most children with these forms of spondylolisthesis have tight hamstrings. Scoliosis is associated with spondylolisthesis in five to seven per cent of children. The gait is described as “waddling” due to hamstring tightness (Figure 1).



*Figure 1  
Gait pattern in a young patient with spondylolisthesis*

## Radiographic Findings & Diagnosis

Plain radiographs are adequate to make the diagnosis of spondylolisthesis. The amount and percentage of slippage is important. In children, the angle the sacrum makes with the rest of the spine is also important. If these angles or percentage of slippage change with flexion and extension, then dynamic instability exists.

In spondylolysis ie pars defect resembling “Scotty dog” on an oblique view (Figure 2), the diagnosis may not be evident in plain x-rays. A CT scan and an MRI can define the pars defect better. They also can both help to define nerve root impingement (the MRI is better at doing this). An MRI will also help to define the status of the disc at the impaired level and at the level adjacent to the slip.

