

# Spondylolysis and Spondylolisthesis

## Mechanism of Injury

### Spondylolysis

This is most likely a stress fracture which occurs in the pars interarticularis (supporting struts) of the vertebrae. It is often caused by overloading of the spine in the lumbar area during repetitive movements. It could be one side or both sides involved.

### Spondylolisthesis

With continued overloading and movement, the anterior longitudinal ligament, which is the only major support structure to the front of the vertebral column, weakens causing one vertebrae to slide forwards on the other to a variable degree

## Sports

It mainly occurs in sports with heavy spinal loading - Bowling in Cricket, Gymnastics, Weightlifting, Wrestling, Javelin

## Incidence

- No sexual predominance
- It is reported in 3-7% of the normal population but higher in predisposing sports

## Types

Once a spondylolisthesis occurs it is usually classified in four gradings dependent on the amount of movement viewed.

## Pathology

This is not generally classified as a congenital condition, it is thought that there may be a congenital weakness in the par interarticularis (vertebral support struts). General Activity will cause 3-7% of the population to develop a stress fracture at

the site.

Forward slippage of the vertebrae on the vertebrae below causes a shearing overload onto the intervertebral discs causing disc prolapses and degeneration. Traction can also be applied to the nerve roots causing nerve root pain.

Symptoms:

- Pain may or may not be present. Usually occurs in the lower lumbar region and often radiates into the buttocks.
- Generally increases with activity.
- Pain in the legs is often caused by traction to the nerve roots. This can also be accompanied by Paraesthesia (Pins and Needles) and muscle weakness.

Signs:

- There may be a dimpling of the skin at the level of instability.
- Limitation of Spinal Movement
- Increased lower spine and gluteal protective spasm.
- Straight Leg Raise (SLR) may be positive
- Tenderness over the lower lumbar spine
- Neurological signs may be present (decreased sensation, reflexes etc)

Investigations

The following investigations will be useful to determine the diagnosis:

- MRI to look for inflammatory signals and rule out other spinal pathology
- CT Scans
- X-ray - Oblique views show the the classical 'Scotty Dog' signs

Treatment

## Conservative

- Rest from aggravating activity &ndash; total or relative
- Ice
- NSAIDS (Non Steroidal Anti-inflammatory Drugs &ndash; Ibuprofen up to Voltarol)
- Hold/Relax Stretching to Hip Flexors
- Strengthening exercises to Gluteal Muscles (without pain)
- Core stability exercises to increase abdominal control

## Surgery

Is only really contemplated if conservative treatment fails. The surgical options include intervertebral fusion with or without screw fixation to stabilise the unstable levels.