

### **Intervertebral Foramina**

Disease in the region of the intervertebral foramina can cause compression of the emerging nerve roots. The roots can also be compressed at different sites along its path. Presentation of **cauda equina** or nerve root entrapment will therefore depend in which root is compressed, and where it is compressed.

### **Disc Herniation**

Disc herniations can be described according to either the **direction** (**Slide 1**, **Slide 2** and **Slide 3**) or the layer they occur in. The descriptions are those of disc protrusion, extrusion and sequestrations, all of which can be visualized well on an MRI scan.

Before maturation, the disc herniation can occur between the ring 'apophysis' and the vertebral body proper, also known as '**Ring Apophysis Separation**'. Discal herniation into the gap between the annular ring apophysis and the underlying body results in no or partial union of the ring apophysis in adult life. The defect is contiguous with the nucleus.

End-plate irregularities (**Schmorl's nodes**) occur owing to local discal herniations at sites of previous vascular channels or cortical defects. The defect is usually well corticated and can be seen on the plain film, tomogram, CT scan, discogram (**Slide 1** and **Slide 2**) and with MRI scanning. The discogram is generally not painful.

Defects at end-plates also occur after trauma, usually vertebral compressive in nature. Here, a cortical flake is depressed into the adjacent body; the lesions are painful in life and at discotomy, where contrast medium enters the vertebral body, before healing takes place.

### **Cauda Equina Syndrome**

Cauda Equina Syndrome is due to a lesion of the lower lumbar and sacral nerve roots within the spinal canal. Depending on the cause, presentation usually begins with a prodromal stage of back pain and some mild leg symptoms. Symptoms and signs are those of a lower motor neuron lesion. Paresthesia, numbness, clumsiness and weakness, initially affecting the legs and subsequently perineal involvement, eventually results in urinary retention.

This frequently progresses within 48-72 hours and neurological status may not be retrievable even with appropriate management. The cause is most commonly a massive midline disc sequestration into the spinal canal, usually at L4-5 or **L5-S1**, rarely at L3-4. It may also occur with spondylolisthesis, in which case the sacral roots stretch over the posterior corner of the upper end-plate of S1.