Disc degeneration

The intervertebral disc is made up of a tough outer layer and a softer inner layer that acts as a cushion and resists compressive forces. It is like a firm sponge and has a large water content in the middle. With age the disc loses water and becomes less well nourished. This is normal and happens in all of us. In some people the disc deteriorates to a greater extent, probably due to genetic influences. Sometimes the outer layer tears (an annular tear) which can be a source of back pain. It is postulated that a tear may be a precursor for a disc prolapse where the soft inside bulges or comes out and presses on a nerve, but disc prolapses can occur without any pre-existing tear. It is suggested that degeneration in the disc in some form leads to a prolapse i.e. prolapse cannot occur in a normal disc.

When a disc degenerates it also loses height and the tension is lost in the spine as it has collapsed down which theoretically leads to increased movement at this level, leaving less space for the nerves and causing the facet joints at the back of the spine to become arthritic.

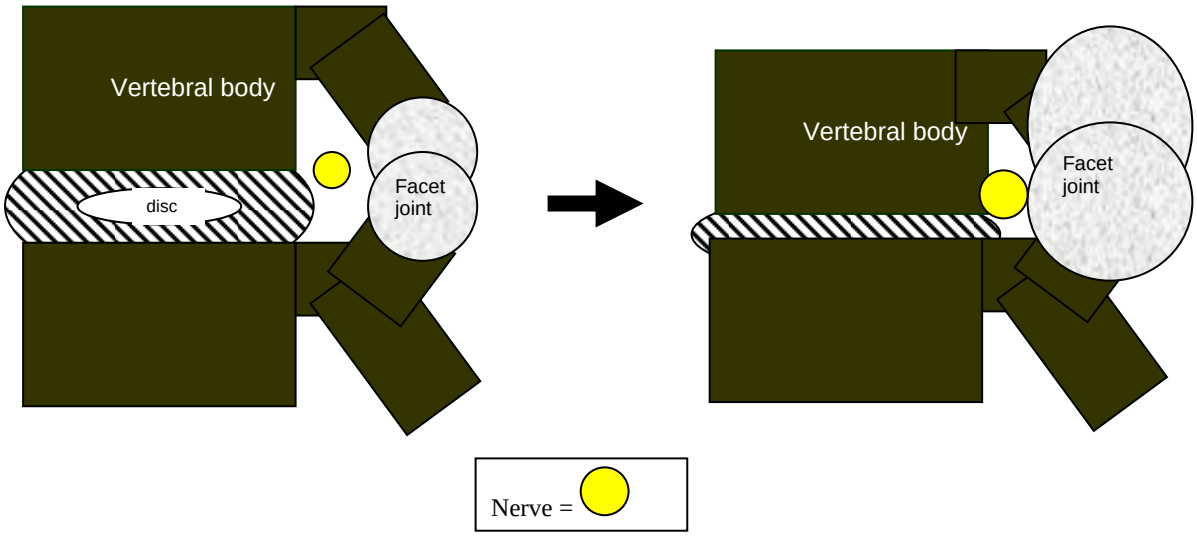

Figure showing normal on left, In disc degeneration, disc may collapse causing facet enlargement and less space for the nerve.

The key point is that disc degeneration is a radiological diagnosis i.e you can see it on xrays or scans. It is not a clinical diagnosis as many people with a degenerate disc are not symptomatic, but in some it can cause significant pain and disability.

Discs can be painful themselves (discogenic back pain) or cause pain from the effects of the height loss across the disc space. When the disc closes height, the tension across the segment is less and ‘instabiltiy’ across the segment occurs. ‘Instability’ is in inverted commas as the spine is not wobbly, but there is abnormal movement across the segment with reduced height. This may lead to spinal stenosis, spondylolisthesis (degenerative), spinal deformity or facet joint arthritis (see diagram above).

Discs seldom degenerate symmetrically and if they degenerate very asymmetrically then the spine can collapse on one side more than the other leading to a spinal deformity. This is the main cause of a degenerative scoliosis in adults.

For further information on these conditions see the appropriate help sheets.