

DISC DEGENERATION

The process of disc degeneration occurs over a long period of time and the exact cause is unknown. However, recent studies have postulated that the initial process that begins degeneration may be a small crack in the end plates of the vertebral bodies. Sometimes this may be caused as a result of trauma but at other times it appears to occur without cause. Following a small crack in the bone, the central core or nucleus of the disc is exposed to the body's blood stream and consequently there may be breakdown of the proteins within the nucleus. It is the proteins within the nucleus that absorb water, and this maintains the pressure within the centre of the disc.

Following breakdown of the proteins, there is loss of water content of the disc and this results in narrowing of the disc space, and an appearance of darkening of the disc when seen on a particular sequence of the MRI scan. This is termed "disc degeneration" or "deseccation", otherwise known as disc resorption.

As a result of loss of pressure within the centre of the disc, the intervertebral segment becomes generally less stiff and stable. This may predispose to tears within the outer annulus part of the disc and this is termed internal disc disruption. Scientific studies on the disc reveal that the pain fibres are only present within the outer one third of the annulus of the disc. Thus, the initial process of disc dehydration or deseccation often occurs painlessly as there are no pain fibres within the central nucleus. It is only when tears of the annulus extend into the outer one third that the condition may be painful, and yet in many people this process too is painless. It is still not known why some are painful and some not. Most people over the age of 40 have deseccated discs in their necks and backs.

Disc degeneration generally is best managed with regular exercise such as walking and swimming. It is important not to spend too much time in bed during the day as it is gravity during the day that squeezes fluid out of the nucleus and then it can be sucked back in at night when the weight is off the spine – which leads to a flow of nutrients in and out of the disc centre. (We actually grow about 1 cm overnight and shrink during the day.) In cases of more advanced degeneration, it is advisable to avoid very heavy lifting combined with twisting, but otherwise life should be as normal as possible.

Being overweight and smoking cigarettes appear to be major risk factors for ongoing pains.

Disc instability

Pain from the back may also occur because the segment is less stiff and stable compared to previously, and there may be more strain on other structures within the intervertebral segment such as the zygapophyseal joints (facet joints) or the muscles. This may lead to episodes of the back "giving way" or back strains occurring intermittently from seemingly minor activities. In this instance, the back may "go out" on a regular basis, usually settling quite quickly within 1-2 days with rest and modification of activities. This weakness or vulnerability is termed "instability".

Treatment of instability is primarily aimed at strengthening the muscles deep within the back that help to control the movements of each segment. These exercises are termed "lumbar stabilisation" or "pelvic stabilisation". They predominantly involve strengthening of the transversus abdominis and multifidus muscles deep within the stomach and back. Comprehensive strengthening programs can be organised through the gymnasium here at the Brighton Spinal Group and also at our dedicated Pilates Studio at 215 Bay St. In the long term the disc tends to stabilise over time and most people can get back to normal activities. Regular walking as mentioned earlier also helps here.

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Disc herniation.

As depicted on the diagram, disc herniation is where there is rupture of the outer part of the annulus of the disc, allowing the central nucleus to prolapse out causing irritation of the nearby nerve root. In this instance, the person may have had recurrent bouts of local back pain and now they suddenly have severe pain shooting down the leg, consistent with irritation of the nerve. Once a disc herniation takes place, it may take several weeks or months to recover from the condition, but often following this there is stabilisation of the disc and most people do get back to fairly normal activities in the long term. There may be some occasional backache and sometimes referred pain in the leg, and often the area may be somewhat stiff but usually this can be improved with regular exercises and physical therapy. 90% of disc prolapses heal well without the need for surgery.

The initial treatment of a disc prolapse involves rest and taking strong pain killers. If the pain is severe then epidural injections should be considered. If prominent weakness or numbness in the legs is present – or pain is not resolving with injections surgery may be indicated (in less than 10% of all prolapses). Once the initial severe pain has settled gradual rehabilitation with exercises can commence, but it may take up to 6 – 12 months to regain full strength and for tingling or numbness to resolve.

