

Lumbar Disc Proplape And Microdiscectomy

The vertebral column constitutes the vertebral bodies separated by the intervertebral discs allowing the spine to move in many directions as well as protecting the spinal cord and the nerve roots that branch out from the spinal cord to supply the muscle and skin of the body. The intervertebral disc, acting like shock absorbers, is made of two parts:

- The annulus is the outer ring made of laminated layers like an onion skin.

- The nucleus pulposus is the central part, which in childhood is a jelly like substance, which as part of the degenerative process due to ageing becomes dehydrated and less elastic which rather like an old car tyre starts to bulge. This change is very common and is known to occur in the population who have no symptoms. Factors which may be associated with disc degeneration include genetic predisposition and environmental factors such as smoking, obesity and occupation .

A disc may herniate or rupture causing either the annulus or nucleus to cause compression of a nerve root. When this occurs it may cause symptoms related to the nerve compression:

- Pain : The distribution of pain is in the area of the leg supplied by the affected nerve, usually resulting in pain being experienced in the back, radiating cross the buttock, and down the back of the thigh into the calf and foot. This is called sciatica. The pain generator is both mechanical from direct compression and inflammatory caused by the release of chemical irritants from the disc

- Sensory disturbance: Pins and needles, and / or numbness may be experienced in the area of skin supplied by the affected nerve. This is usually the calf and / or foot.

- Weakness: The nerves supply specific muscle groups and may produce weakness and diminished power if the compression is severe. This is usually manifest as weakness of ankle and toe movements

- Bladder disturbance: If a large disc prolapse occurs causing compression of lots of nerves; cauda equina compression, this may result in numbness of the 'saddle area' around the bottom and abnormal bladder function with urinary retention and incontinence. This is a surgical emergency and requires urgent investigation and treatment.

Diagnosis

The diagnosis is based on the clinical history (what the patient tells the doctor) the physical examination and radiological investigation. The standard imaging modality is a Lumbar MRI.

Lumbar MRI demonstrating a disc protusion between the 4th and 5th lumbar vertebra

The Operation

Lumbar microdiscectomy is an operation on the lumbar spine undertaken with a surgical microscope (the ' micro ' part of the operation) and microsurgical techniques. The use of the operating microscope has several advantages due to the illumination and magnification that it affords. e.g.The procedure can be undertaken through a small skin incision and thus allow discharge from hospital within 1 - 3 days off the operation . Discectomy referring to the removal of the disc is in fact a misnomer as the operation results in only a small part of the disc being removed so as to allow satisfactory nerve decompression

Indications For Lumbar Microdiscectomy

- Persistent sciatica The natural history of a disc prolapse causing sciatica is one of resolution of pain for the majority of patients within three months of its onset with some patients improving rapidly and others taking longer. There is currently no good evidence to indicate that any one treatment is better than another in allowing a more successful recovery. Whilst a number of different treatments may be advocated it is unclear as to whether any improvement is due to :

- a. The natural history; Spontaneous resolution of symptoms with the passage of time.

- b. Direct affect of the treatment

- c. The ' placebo affect ' : The patient believes that the treatment will work

- Recurrent episodes of sciatica

- Sciatica associated with a neurological deficit: Usually significant muscle weakness. Sensory disturbance alone is not a reason for surgery; it is known that is as likely to improve with surgery as compared to without with approximately 50% of patients improving within three months of its onset

- Acute severe sciatica : An early operation undertaken within a few days of the onset of symptoms is associated with a more rapid resolution of symptoms and return to work as compared to conservative (non - surgical treatment). However it is probable that at three months from the time of onset of symptoms that the majority of patients will be improved whether surgery has been undertaken or not.

The Operation

The operation is undertaken with the patient under general anaesthesia.

The patient is placed prone (on their front) on the operating table. The lower back is prepared with a sterilising fluid and an intravenous dose of antibiotic administered. An X - ray is taken to identify the appropriate vertebral level before a small midline incision is made in the lower back. Through this opening, retractors are placed having dissected the overlying muscle from the bone. Another X - Ray is taken to confirm the correct level. The operative procedure is now undertaken through the operating microscope. A small window is made between the laminae (bone) of the vertebrae by removing the intervening ligament. This exposes the dura (the lining of the nerves) and the compressed nerve root. The nerve is then mobilised and retracted to expose the disc protusion. The annulus is incised and the compressing fragment of disc material is removed using special instruments so as to decompress the nerve. Closure is then undertaken and usually metal staples are used to suture the skin. These clips can be removed one week following the operation.

Postoperative Course

Immediately following the operation the patient is moved to the recovery area where after about one hour the patient returns to the ward. The patient is allowed to eat and drink and may get put of bed to go to the toilet. Regular analgesic medication is perscribed for post - operative pain relief which should be continued after returning home and taken until the patient is pain free. The patient is encouraged to mobilise freely, although sitting may be restricted for the first two days. The patient can be discharged from hospital within 1 - 3 days depending on particular personal and family circumstances. Metal staples are used to suture the skin incision; Removal is undertaken 7 days following the operation usually by the practice nurse at the GP's surgery or at the outpatients where the operation was undertaken. The patient may be seen by a physiotherapist following the operation for instruction as to the best way to move and get out of bed following the operation as well as instruction for back exercises. Formal physiotherapy is not usually necessary following discharge from hospital.

In the immediate 2 - 4 weeks after the operation care should be taken to reduce the risk of either producing more pain or prolonging the recovery period by avoiding physical activities which by their nature may cause stress to the incision. e.g. lifting heavy weights, sitting for prolonged periods at a time (more than 1 hour)

The recovery period for resolution of post - operative discomfort is generally two to four weeks with most people able to resume normal activities and return to work within four to six weeks and sport six - eight weeks after surgery.

Results Of Surgery

The aim of surgery is complete resolution of sciatica and return to normal (for that patient) functional activity.

The success rate for Lumbar Microdiscectomy is in the order of 85 - 95%.

Revision Lumbar Microdiscectomy for recurrent disc prolapse is 60 - 80%.

Outcome from surgery is assessed at three months following the operation although for peer reviewed medical journals outcome data at two years is expected.

Whilst the majority of patients may experience significant symptomatic improvement within two - four weeks it can take longer especially in patients who have had symptoms for several months prior to surgery. It is not particularly uncommon for patients to improve initially, and then to have a mild recurrence of leg pain due to post-operative peri-neural swelling at 5 - 10 days following the operation before the symptoms again subside.

Research has shown that at one year patients who have undergone lumbar microdiscectomy for sciatica have better outcome and relief of pain compared to those who did not have surgery. However the difference is much less if the patients are compared again at 4 years. The implication of this is that the operation does not alter the longer term natural history of the degenerate intervertebral disc i.e. symptoms can occur in the future and that surgery does not protect the patient from this possibility

Potential Post - Operative Complications

The potential complications can be generally subdivided into those relating to any surgical procedure associated with general anaesthesia and those associated with the procedure itself.

- No improvement in symptoms

- Failed back syndrome due to:

- a. Recurrent disc protusion

- b. Epidural fibrosis

- Infection

- a. Superficial wound

- b. Discitis

- Increased neurological deficit

The risk of any significant functional disability due to a nerve injury is minimal, and less than 1%. Occasionally there may be a transient sensory symptom such as numbness or tingling which usually resolves spontaneously.

- Dural tear and CSF leak;

Although this sound dramatic this is a rare complication.(less than 1%). The nerves are bathed in 'brain fluid' called cerebrospinal fluid (CSF). A small hole may be made in the lining (the dura) causing a leakage of fluid. If this occurs it can cause a collection of fluid beneath the incision and can interfere with wound healing. Headache is usually the only

symptom. To prevent these problems bed rest for a period of 2 -3 days may be necessary before mobilisation is allowed. In very rare cases may it be necessary to insert a drain to divert the flow of CSF if it leaks from the incision.

FAQ

When should I have an operation ? How long should I wait?

It is not possible to be didactic, or prescriptive. All patients are different. Patients will experience pain in different ways and the functional disability caused by their pain will be different. E.g a patient might describe their pain as being 7/10 on a visual analogue scale and be able to work and yet another may describe their pain level as being similar but not able to pursue their occupation. Patients may also have different expectations of their treatment and it is important that these expectations are realistic and mirror those of the surgeon. The important point is that a patient cannot make a decision about surgery unless they are fully informed about the nature of the operative procedure and no more is this so than in spinal surgery where the general perception of spinal surgery ('You mustn't have spinal surgery, you might be paralysed!') does not bear comparison with the reality. Patients know when 'enough is enough' and that is then the time to consider surgical treatment.

One factor that is worth bearing in mind is that there is evidence that the preoperative duration of sciatica is a determining factor that affects the outcome from surgery. Patients who have had sciatica for more than eight months fare less well following surgery as compared to patients who have had sciatica for less than eight months. Generally patients who come to surgery will have had sciatica on average for between 2 - 6 months.

When can I go back to work ?

To a large extent this depends on the occupation and patient motivation. Return to a sedentary office based occupation can be resumed after 2-3 weeks, whilst a more physically demanding occupation usually necessitates a period of 4 - 6 weeks away from work.

When can I play sport?

Gentle physical activity can be commenced after about 4 weeks. This for example would include swimming, jogging on a treadmill, light weights, general stretching exercises, and activities such as yoga and pilates. More strenuous physical sports such as football, rugby, tennis, and golf requires about 8 - 12 weeks of recovery.

What can I do when I get home?

As soon as you wish! A degree of post operative wound discomfort will be present following the procedure but with the perscription of regular analgesic medication (assuming it is taken !). It is as well to be at home with this discomfort as being in hospital. The pain should not be severe usually subsiding between two to four weeks following the operation.

Do I need physiotherapy ?

Generally speaking the answer is no - there is no evidence that physiotherapy following lumbar microdiscectomy shortens the recovery period. However it is probable that you will be seen by a physiotherapist whilst as an inpatient to be given guidance as to how to mobilise following the operation to reduce the risk of exacerbating any post - operative symptoms as well as exercise instruction to regain and maintain 'spinal health' after recovery.

Physiotherapy may be required for patients who have persistent back pain and stiffness which persists after 4 - 6 weeks following operation

Will it happen again?

The risk of a recurrent symptomatic disc protusion in a sample population who have undergone lumbar microdiscectomy is approximately 5% in 10 years and does not necessarily mean that further surgery will be required.

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