

LUMBAR DECOMPRESSION & INSTRUMENTED FUSION

DEFINITION:

A lumbar decompression is where a laminectomy is performed to relieve pressure on the thecal sac. A laminectomy removes a trough of bone changing the tight “O” of the spinal canal to a “U”. The removed trough of bone is only for muscle attachment and not for stability. The thecal sac contains nerves in the lumbar region, which supply the legs, bladder, bowel and genital region.

The lumbar region does not contain the spinal cord. The spinal cord finishes at L1 level. There are only nerves below this level from L2 to the sacrum.

If there is instability, that is one vertebra moving on another, titanium screws and locking rods (*called instrumentation*) are inserted to lock the vertebrae on top of one another to relieve pain on movement. This will be reinforced, by packing the removed bone around the screws and rods at the sides of the spine (*fusion*). The disc is not removed. No bone blocks or “cages” filled with bone are inserted between the vertebra.

Relieving the pressure on nerves, the instrumentation and bone packing is called a decompression and instrumented fusion.

INDICATIONS:

The main reason for performing this operation is lumbar stenosis, where there is pressure on the lumbar nerves, causing problems with walking and standing, pain in the legs, reduced balance and problems with bladder function. Sitting or lying down can relieve these symptoms.

There may be associated slip of one vertebra on another, called spondylolisthesis.

Wear and tear in your back (spondylosis) causes the small joints (facet joints) holding the vertebra together at the back to thicken (facet arthropathy). This is associated with disc bulging, and thickened ligaments causes narrowing (stenosis) of the vertebral canal containing the nerves.

SUCCESS OF THE OPERATION:

70 - 80% of patients report significantly improved pain, function and reduced analgesic requirements. 20% of patients will be the same after the operation and approximately 5% will be worse with increased pain and reduced function.

RISKS OF THE OPERATION:

The total risk of something going wrong (*complication*) is 5%. The medical risks of any operation are infection, bleeding drug allergy, heart attack, DVT, pulmonary embolus, pneumonia, urinary tract infection, general anaesthesia and death.

The specific risks of this operation are again infection, (*needing wound washout or removal of metalware*), metalware failure with fracturing of screws (*if no fusion or non-union occurs*), nerve damage (*especially nerve roots L3 - weakness of thigh, L4 - weakness of leg, L5 - foot drop and S1 weakness pushing foot down*), CSF leak (*leakage of spine fluid from tearing of the lining of the nerves*).

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RISKS OF THE OPERATION (CONT.):

Blood transfusions are rare and the need for this is reduced by the use of the “Cell-Saver”, which is a machine used during the operation. Any blood loss from the patient is filtered and returned to the patient, thus minimising the risk of blood transfusion.

BEFORE SURGERY:

Tell Mr Malham about any medical conditions or previous operations. If you have a medical condition such as diabetes, heart problems, high blood pressure or asthma, Mr Malham may arrange for a specialist physician to see you for a pre-operative assessment and medical care following the neurosurgery.

Inform Mr Malham of medication that you are taking and/or have allergies to medications. Patient must stop using the following, 10 days pre-operatively:

- Aspirin
- Plavix
- Iscover
- Asasantin

Patient must stop using blood thinning medication (*such as Warfarin*), 3-5 days pre-operatively.

THE OPERATION:

The operation is performed under general anaesthetic. A catheter will be placed in your bladder after you are asleep. You will then be positioned face down on a special frame.

The skin incision area is marked with x-ray computer image guidance.

The skin is painted with antiseptic and injected with local anaesthetic.

A cut is made through the skin, opening of the lumbar fascia, which wrap the muscles. The back muscles, which run up and down, are carefully dissected away from the bone of the spinous processes, laminae, facet joints and transverse processes. The muscles are then held away with Lumbar Decompression & Instrumented Fusion 2 special retractors. The correct spine level is again checked by computer image guidance. The spinous processes and inside part of the lamina are carefully removed. This exposes the underlying yellow ligament, which is also removed exposing the dura and underlying compressed nerves. Where the nerves exit through holes in the bone (*foramina*), these openings are carefully widened, relieving any pressure on the exiting nerves.

Supporting titanium screws are inserted very carefully under x-ray computer image guidance into the pedicles of the levels requiring support. Screws are inserted on both sides, at each level needing to be secured. The vertebra above and below are connected with rods and locked into position. Through this same incision, a bone window is elevated on the back of the hipbone (*posterior iliac crest*) for harvesting of cancellous bone, and then the cortical bone window is replaced. This harvested cancellous bone is mixed with the spinous process and lamina bone already removed. The bone is then packed along the side of the spine, between the transverse processes and facet joints and around the titanium screws and rods for extra support. This packing bone may be mixed with artificial bone substance called bone morphogenetic (*BM-Infuse*) to improve the healing of bone (*fusion*).

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THE OPERATION:

All bleeding is carefully controlled.

A temporary drain is left in the laminectomy site for any oozing of blood from the muscles that may cause bruising, and brought out through the skin separately for safety. The wound is then closed. All layers are sutured and skin closed with special skin staples or a dissolving suture. You will then be turned onto your back, awoken from general anaesthesia and the breathing tube removed.

You will be taken to the recovery room.

AFTER SURGERY:

After the Lumbar Decompression & Instrumented Fusion surgery, you will be carefully observed in the recovery room by the nursing staff for 1 hour. Your blood pressure, pulse, breathing and leg strengths will be carefully monitored.

During the first night after the operation, you will be woken regularly to have your observations performed. You will have pain relief medication given to you by the nursing staff or via an intravenous drip, which you control by pushing a button, called "patient controlled analgesia" (PCA). The PCA has a safety lock out so you cannot overdose on the painkillers no matter how many times you press the button.

The day after the operation you will be gently mobilized with the physiotherapist, and walked around your room and then around the ward. Over the next 2 - 3 days, your walking will improve and you will be encouraged to take 3 - 4 small walks per day.

The wound drain is removed 48 hours after the operation.

When you are able to get out of bed unassisted, your bladder catheter will be removed, usually after 3 - 4 days.

Once your pain is comfortable, you will be given regular oral analgesia and the drip will be removed from your arm. You will be given small injections under the skin of your abdomen to prevent clots forming in your calves, called deep venous thrombosis (DVT).

If you have skin staples the District Nurse or your GP will remove these 10 days after the operation.

Usually you will be able to return home 5 - 8 days following the operation. This will be when you are independent with walking and performing tasks of daily living such as showering, toileting and dressing.

If you require intensive inpatient post-operative rehabilitation, this will be organised by Mr Malham and discussed with you.

For the next 4 weeks after the operation, you should take 3 - 4 small equal walks per day, initially 5 minutes, aiming for 20 minutes each walk. You should avoid bending/twisting and lifting objects greater than 5 kilograms and only sit for meals 20 - 30 minutes in duration.

Mr Malham will review you approximately 4 - 6 weeks after you leave hospital or the rehabilitation centre. At your post-operative review, your progress, any further treatment needed and return to work timing will be discussed.

Do not drive until you have been reviewed post-operatively by Mr Malham.

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