

Lumbar fusion procedures

Advice sheet for patients

by

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This advice sheet is intended specifically for patients of Mr Alexander Montgomery, and is intended as an aid for patients either undergoing or considering spinal fusion procedures. The information in this sheet is specifically to supplement the advice that you either will or have received from your consultant in clinic. If you have any queries or concerns arising from the guidance in this advice sheet then you should discuss this directly with your consultant.

INTRODUCTION

Posterior lumbar spinal fusion refers to a group of procedures used to prevent motion at a segment of the spine, by using bone graft to fuse one segment of the spine to another. Screws, rods and cages are often used to reduce the movements of the spine to aid this process while the healing occurs.

This procedure may be performed for a number of reasons, including degenerative disc disease (wear and tear of the disc), spondylolisthesis (slipping of one segment of the spine upon another), instability (this is likely to be due to wear and tear, but can be due to a fracture, tumour or infection), or deformity. If decompression of the spinal cord is required (e.g. for spinal stenosis, or narrowing of the spinal canal), sometimes this can leave instability, which may then require stabilisation.

The instrumentation used can include rods and screws placed in from the back, with bone graft placed inserted as well (posterolateral fusion). Another technique includes placing cages of bone graft between the vertebra (TLIF or PLIF). Often, a combination of the techniques is used, depending on your anatomy and the reason for requiring a fusion.

Bone graft comes from a number of sources. A small amount can be taken

from the spine itself. Often this is not sufficient, so bone can either be taken from your pelvis or synthetic bone graft can be used. Bone from your own pelvis gives a higher rate of successful fusion but involves an extra stage to the operation, which can give some discomfort afterwards.

EXPECTED BENEFITS

Posterior lumbar spinal fusion is performed for a number of reasons, so it is difficult to quantify the rates of success. If performed with a decompression for pain down the legs, 80% of patients experience an improvement in their symptoms. If performed for degenerative back pain, the rates of improvement are lower, at 60-70%, with 5% experiencing a worsening of their symptoms.

RISKS OF SURGICAL TREATMENT

Death: The risk of death is low; probably less than 1 in 350. It would be from unexpected events such as blood clots in the legs passing to the lungs (pulmonary embolus) or catastrophic blood loss from major blood vessels. The risk will vary according to patient factors such as heart disease, high blood pressure, smoking, and specific age-related risks.

Paralysis: The risk of paralysis, which means loss of use of the legs, loss of sensation and loss of control of bowels and bladder is low, probably occurring less than 1 per 150 operations. It could occur through bleeding into the spinal canal after surgery (an extradural spinal haematoma). The risk of paralysis is higher if patients are taking blood thinning medication (warfarin or aspirin) or if there is an incidental durotomy (leakage of spinal fluid). If an adverse event of this nature were to occur, every effort would be made to reverse the situation. Sometimes paralysis can occur as a result of damage to the blood supply of the nerves or spinal cord, and this is not reversible.

Infection: Superficial wound infections are not rare and may occur in 2% to 4% of spinal operations. Risks of infection are increased in diabetic patients, patients on steroids or those with lowered resistance to infection.

Deep spinal infections are much more serious but less common. A deep spinal infection occurs in less than 1% of cases.

Antibiotics are given to reduce the risks of infection and the surgery is performed in ultra-clean air-flow theatres. If a deep infection occurs it can require repeat operations to washout the spine, and a prolonged and extensive course of antibiotics.

Incidental durotomy: This is where an opening occurs in the dura, which is the lining of the spinal canal. The spinal fluid within the spinal canal will drain out of the hole. It may occur deliberately if the surgeon intends to do it as part of the operation. It may occur as a result of the disc or bone being very stuck to the lining of the spinal canal. This occurs in approximately 8% of cases.

If there has been a previous spinal operation durotomy is even more common, because of scarring. Repeat or revision operations have a higher risk of complications than first time operations.

Sometimes the hole in the spinal lining (the dura) can be repaired with stitches or a patch. Sometimes it is safer to leave it to heal. Sometimes the surgeon will insert a drain to divert the fluid. Usually the leak of fluid dries up within a few days and there are no long-term effects. Sometimes, despite precautions, spinal fluid will leak through the wound. This represents a risk of potential infection and meningitis, and further surgery may be required to correct the situation.

Damage to spinal nerves: The spinal nerve causing the pain may be already damaged by the disease process. The disc prolapse can cause scarring within the nerve such that it is unable to recover despite technically successful surgery. The nerve can be stretched in trying to remove the disc lying under the nerve. The nerve can also be damaged by direct surgical trauma or by pressure effects necessary to control bleeding.

Damage to blood vessels: This can result in significant bleeding, which can potentially be life threatening. Damage to the main blood vessels at the front of the spine (the aorta) has been known to occur. The main blood vessels to the legs can also be damaged, which could result in loss of a limb. Events of this nature are rare, occurring in less than 1 per 10,000 operations.

Damage to vital organs: The liver, kidneys and bowel are in front of the discs and are theoretically at risk of injury. This again could potentially be life threatening, but is rare.

Failure of fusion: This can occur due to failure of the bone to heal around the site of the fusion. It can be due to a number of factors, including movement at the fusion site, cigarette smoking, being overweight, diabetes and certain medications. Often, with time, fusion will be achieved; however, if this does not occur it may potentially require a further procedure.

BEFORE YOUR OPERATION

You will be contacted by a member of the team to discuss your pre-admission process, and to ensure you are fit to go ahead with the procedure.

Please inform the team if you are:

- Diabetic
- Have a cough, cold, or any kind of infection.

You must also inform us prior to attending if you are taking any of the following medications:

- Aspirin, warfarin, clopidogrel (these are likely to need to be stopped some days before the surgery).
- Antibiotics

Information for females: We will need to know the start date of your last menstrual period due to the use of X-ray equipment. If you think you might be pregnant, please contact us for advice.

Blood tests and blood matching: You will need a routine blood test prior to your procedure. You will also get a blood match in case you need a blood transfusion during or after the operation.

ON THE DAY OF THE PROCEDURE:

- Ensure that you do not have anything to eat after midnight the night before your surgery. You may drink water only till 2 am.
- Bring a list of your medications with you. When you arrive at the hospital, a nurse will complete your admission details and check that you are fit for your procedure.
- You will see your surgeon on the ward prior to being taken down to theatre. You will be asked to sign a consent form, which details the risks and benefits of the procedure, and you will have an opportunity to ask any further questions you may have at this time. You will get a 'mark' on your back with a pen. Though the site of the operation is obvious, this is still a requirement.
- The anaesthetist will also see you on the ward prior to the operation, to explain the anaesthetic and to answer your questions.
- From the ward you will be taken down to the theatre where the anaesthetist and the team await you.

THE PROCEDURE:

- The procedure is performed in the operating theatres under a general anaesthetic and is always carried out using fluoroscopy (live X-ray) to ensure that the right levels are done.
- You are positioned stomach down. The surface of your skin is always cleaned thoroughly with antiseptic. Sterile drapes are used to protect the whole surgical field. The theatres have ultra-clean filtered air and laminar airflow to direct any air-borne particles out of the theatre. Antibiotics are given to help reduce the risk of infection.
- Once the X-ray machine has been used to locate the relevant level, an incision is made in the relevant area on your back (often near the centre). The muscle is dissected with as little blood loss as possible. Retractors are then inserted and the operating microscope is used to do the rest of the procedure.
- Screws are first inserted in to the vertebra (pedicles) ready to stabilise the spine with rods when the procedure is finished. For a decompression, more bone is removed along with the ligament surrounding the spinal canal. If the facet joint (the joint between two different vertebra) is causing some of the narrowing of the spinal canal, some of this may have to be removed as well to complete the decompression. This is called an undercutting facetectomy.
- If an intervertebral cage is required following the decompression, then the adjacent nerve root is very gently retracted and the disc is approached. An X-ray is taken at this point to re-confirm the correct level. With the nerve root carefully protected, the disc is then removed and the area washed out. The cage is then inserted between the two adjacent vertebrae, with bone graft inside it.
- Bone graft may be from the bone removed from the initial decompression, or from your pelvis, or a synthetically made graft may be used. This will be discussed with you prior to the procedure.
- The wound is then closed with multiple layers. Your skin is likely to be closed with sutures under the skin. It is likely that a drain will be inserted to help drain blood from the operation site for the first few days. You will see the outside of the drain next to you on the ward.
- You will wake up in the recovery area in the Operating Department. You will be quite sleepy and may not recollect this part. You will be asked to move all of your limbs to ensure your nerves are all working properly. Once the recovery staff are happy that you are ready, you will then be taken back up to the ward on a trolley.

BACK ON THE WARD:

- On the ward you will be allowed to sit up and you will be given something to eat as soon as you feel up to it.
- The next day after the operation, the physios and nurses will indicate when they feel you are ready to sit out, stand, and then start walking (if you have an incidental durotomy (see above) you will be expected to stay flat).
- You will be in some discomfort after the procedure, and the anaesthetist will normally commence you on a PCA (Patient Controlled Analgesia – normally morphine). You may well receive a visit from the pain team to help you control your pain.
- Your drain will be removed after a day or two, depending on how much it is draining. Your catheter will be removed once you are mobile enough.
- Once your pain is under control and the physiotherapists and nurses are happy that you are mobilising safely, and your wound is dry, you will be allowed to go home.
- The area around the operation site may cause discomfort to varying levels for at least six weeks after the procedure. The team will ensure you have adequate painkillers to take home with you when you leave hospital. **Ensure that you have some spare dressings to take with you as well.** Your dressings should be left alone and kept in place unless there is wound fluid (diluted blood) coming through, in which case the dressings will need to be changed.

ONCE BACK HOME:

- Keep your wound dry at all times, including when washing.
- Keep yourself mobile, but do not undertake any strenuous activity for the first three weeks. Do not lift anything heavy.
- If you have a journey to work and have a desk job, it may be 6 to 8 weeks before you can fully get back to work. You can start intermittently working from home when you feel comfortable to sit for short periods of time. A manual job may require 12 weeks off work.
- Do not drive for 6 weeks following the procedure.

FOLLOW-UP BACK IN CLINIC

At 2 weeks:

- An appointment will be made to come for you to the clinic to have your wound inspected. You are likely to still be uncomfortable from the procedure, and may not at this stage be feeling the benefits of the operation.
- If all is well, a physiotherapy appointment will be made at this point. If you don't have a physiotherapist assigned to you we will be able to arrange this for you.

At 6 weeks:

- You will have another check in the clinic at the 6-week post-op point. This is to ensure that you have made a good recovery and to answer any further questions that you might have. It is also to ensure that you are engaged in an appropriate physiotherapy exercise regime.
- You will have an X-ray at this appointment. This should be done prior to your appointment, so it is advisable to arrive half an hour earlier for this.
- You should now be ready to return to your desk job.
- You can now commence driving if all is well.
- You can now also start increasing your activity levels.

At 4 to 6 months:

- You will have a further appointment to check your progress, answer any questions, and to obtain an X-ray. Again, it is advisable to arrive half an hour before your appointment for the X-ray.
- If all is well, you may not be seen for a further 6 to 12 months to X-ray your back again. Your physiotherapist will monitor your progress until they feel that you are able to continue the regime at home without their assistance.

OVERALL PROGRESS:

There is often a faster improvement in pain following the procedure if performed for pain in the legs, rather than for back pain. There will be some improvement over the first 3 months, but it can take up to a year to see the full benefits. You will be seen in clinic to assess the fusion with X-rays.

During this period, it is important to allow the fusion to heal. Cigarette smoking and certain medications (such as anti-inflammatories) can delay the fusion, so

should be avoided. During this period it is important to keep mobile, but avoid excess stresses or sudden movements of your back.

CAN SIMILAR PROBLEMS OCCUR AGAIN?:

Yes. Even if your operation is successful, we do know that the adjacent vertebral levels can have accelerated wear and tear following a fusion procedure. The natural history of your spine may also be such that the other levels would wear down regardless of whether or not you had surgery.

IMPORTANT INFORMATION:

You will have several chances to discuss the operation with the healthcare professionals looking after you. You must make sure that explanations are given in terms you understand, and if there is anything that you are not entirely clear about then you must ask.

Some of the above information has been used courtesy of The British Association of Spinal Surgeons (BASS) - <http://www.spinesurgeons.ac.uk>

For further information please contact us at –

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