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Anterior cervical discectomy and fusion or disc replacement

What is the difference between a cervical disc replacement and a cervical fusion?

The aim of both of these operations is to relieve you of your arm, and occasionally leg, symptoms. They are generally not intended to treat neck pain.

Both types of surgery require a discectomy. This is the removal of the damaged disc to allow the decompression of the nerves and spinal cord to give you relief from your symptoms. After the discectomy has been performed there is a choice between using either a disc replacement or a fusion device to reconstruct your cervical spine.

In a **cervical disc replacement**, the disc is replaced with an artificial disc. The artificial disc is designed to allow preservation of neck movement at that level.

In a **cervical fusion** the disc is replaced with an artificial spacer called a 'cage'. The cage is designed to stabilise the vertebrae on either side of it, allowing fusion between the two levels to occur. Sometimes a plate is needed to be put on the front of the spine to provide some extra stability. A cervical fusion is not intended to allow any movement at the operated level.

Which type of operation is best for me?

If you have significant wear and tear in your neck and the natural movement has already been lost, if there is structural instability or localised deformity (kyphosis) in your neck, or if the spinal cord has been damaged by being severely compressed then you should have a fusion. If you have a cervical disc prolapse, then there is more of a choice. It is important to remember that when treating a cervical disc prolapse both operations are good operations.

The problem with fusing a disc is that the movement from that disc that is removed is transferred to the discs above and below. In theory, this can result in an increased rate of disc degeneration in these adjacent discs. Cervical disc replacements are now being increasingly used to treat cervical disc prolapses.

Unfortunately, a cervical disc replacement does not guarantee that you will have no further neck problems in the future, and it does certainly not prevent further wear and tear in the adjacent level discs. Currently, there is no convincing data that a cervical disc replacement is any better than a fusion in the long term. However, most spinal surgeons would aim to preserve motion and function where possible. If a disc replacement does not work, then it can always be converted into a fusion.

How do we perform an anterior cervical discectomy?

A cervical discectomy is performed under a general anaesthetic. The operation takes about one and a half to two hours. Once asleep the patient is placed on their back on the operating table. X-ray is used to identify the correct area of the neck.

A small incision is made in the front of the neck, just to the right of the Adam's apple. The incision is normally about three cms long, usually within an existing skin crease. In order to expose the front of the spine the neck structures need to be carefully retracted out of the way. Once the correct level has been confirmed the disc is removed. This is done with the aid of an operating microscope. The microscope provides magnification as well as an excellent light source. The use of a microscope allows makes the operation safer. In addition to removing the disc, bony overgrowths secondary to wear and tear may also have to be removed to allow a satisfactory decompression of the nerves and the spinal cord.

Following the discectomy and decompression, the cervical spine has to be reconstructed using either a fusion cage or a cervical disc replacement.

The wound will be closed with a fine, dissolvable suture, and covered with a dressing. A drain will be left in at the end of the operation, coming out through the skin in the front of your neck close to the incision. The drain will normally be removed the following morning.

What are the risks of anterior cervical spine surgery?

Infection – The risk of infection is less than 1%. All patients receive a dose of intravenous antibiotics when they are going off to sleep. If you develop an infection it is most likely to be a superficial wound infection that will resolve with a short course of oral antibiotics. Occasionally patients develop a deep infection. This is much more serious and may require a prolonged course of intravenous antibiotics or additional surgery.

Bleeding – The normal blood loss during this operation is minimal. **If you are on any medication that has the potential to thin your blood such as aspirin, clopidogrel, warfarin, rivaroxaban or any other blood thinning medication then we do need to know about this prior to the date of your operation as this will usually need to be stopped prior to your operation. If you take anti-inflammatory tablets, then you must stop taking them seven days before your operation as these drugs can also affect blood clotting.**

Once you are back on the ward there is a very small risk of bleeding into the wound. This could affect your breathing. If this did occur, you would need to go back to theatre. It is for this reason that a drain is left in the front of your neck overnight.

DVT – Developing blood clots in the legs (deep vein thrombosis – DVT) is a risk of any surgery. We worry about DVTs as bits can break off a travel around your body. This is called an embolus. An embolus can affect your breathing, cause you to have a stroke, and could potentially be fatal. DVTs occur in approximately one in 200 patients having back surgery. An embolus is a much less common occurrence. We minimize the risk of DVT by asking patients to wear hospital stockings following their surgery (TEDS), and mechanical pumps during and immediately after surgery. These pumps squeeze your lower legs, helping the blood to circulate. They are put on when you go to sleep and

stay on until you start to mobilise. We encourage early mobilisation as this also helps to prevent DVTs. If a patient is considered to be high risk for a DVT then we will prescribe blood thinning medication for a couple of weeks after your surgery.

Please tell your surgeon if you take the oral contraceptive pill as certain types of pill need to be stopped pre-operatively as they increase the risk of blood clots.

Spinal cord injury – Any surgery on your neck carries the risk of paralysing you. Fortunately, this is incredibly rare. However, if you were to become paralysed during a cervical spine operation you could lose all arm, leg, bowel, bladder and sexual function. This type of injury could occur during surgery but could also occur following surgery if you were to develop a haematoma (blood clot) that causes compression of your spinal cord.

Nerve injury – During this operation there is a 1% risk of physical nerve damage. This can lead to loss of nerve function with persisting pain, weakness, and numbness in the arm in the territory of that nerve. This may be permanent.

Dural tear – This is a tear in the thin lining that surrounds the spinal cord. This is more commonly seen with revision rather than primary neck surgery. If there is a tear, then it causes a leak of spinal fluid (CSF) and will therefore normally need to be repaired. If there is a persisting CSF leak then this can cause wound problems, headaches, and very rarely meningitis. If there was an on-going CSF leak you may need to go back to theatre to have it addressed.

Damage to the sympathetic chain – Less than 1% of patients will experience a droopy eyelid following surgery. This is due to stretching of the sympathetic chain, which is a small nerve. When this does occur, it is not always obvious and nearly always recovers.

Difficulty swallowing – Following anterior neck surgery it is usual to have some discomfort on swallowing for a few days. This will normally settle over a couple of weeks. About 1-2% of patients will have some long-term discomfort on swallowing.

Hoarse voice – Following anterior neck surgery, most patients feel a bit hoarse for a few days. Occasionally the nerve to the vocal cords – the recurrent laryngeal nerve – is damaged during the operation. This may result in a change to your voice. This occurs in 1-2% of patients having this type of surgery. This can recover but can also be permanent.

Damage to other neck structures – While decompressing the spinal cord and nerves, a very rare complication is damage to the vertebral artery. This is one of the major blood vessels to the brain. Damage to a vertebral artery could lead to a stroke and potentially life-threatening bleeding. It is also possible to damage the oesophagus (food pipe) and the trachea (windpipe) but this is again a very rare complication.

Posterior neck pain – It is not uncommon for patients to experience some discomfort in the back of their neck for a few days following surgery.

Persisting symptoms – It is always possible for symptoms to persist, despite a technically successful operation. This usually reflects the degree of pre-operative nerve damage. These operations are very successful in relieving pain, but it is not uncommon for some persisting weakness or numbness,

especially when the symptoms have been there for a long time before the operation.

Implant problems – Implants may be not positioned correctly or may become loose. If this happens you made need to have further surgery to address this.

Recurrent symptoms – Unfortunately there is no guarantee that you will not experience a return of your symptoms. This can be due to the formation of scar tissue, or further degenerative processes in your neck.

Risks associated with your position on the operating table - when getting you ready for surgery, care is taken to ensure that everything is protected. The does however remain a small risk of pressure damage. This can cause some temporary skin damage to areas such as the tip of your nose and chin as well as to your torso. This would be expected to recover within two to three weeks. There is a very small risk of some damage to your vision, which includes blindness. Visual damage is reported as occurring in 1 in 10,000 cases.

Medical complications - Prior to being admitted to hospital you will go through a pre-operative assessment process. This is to ensure that you are as fit as possible for your operation. If you have a chronic condition that is found to be poorly controlled or if a new condition is identified by the pre-operative assessment, then your operation may need to be delayed in order for your medical condition to be optimised. General anaesthesia for elective surgery is very safe. Occasionally unexpected medical events (such as a stroke or heart attack) can occur under general anaesthetic or in the early post-operative recovery period. Fortunately, the risk of death under anaesthesia is very rare. Death as a direct result of general anaesthesia is reported as occurring in 1 in 100,000 cases.

Following any operation there is a small risk of post-operative medical complications, such as chest infections or urine infections.

What can I expect following my operation?

Following your operation, you should start trying to move your neck as soon as you feel able. To begin with this may be a little bit uncomfortable. You will expect to be sore in the back of your neck and across the tops of your shoulders. The aim is to do small amounts of neck movement on a regular basis. You will be seen by the physiotherapists whilst in hospital, and they will give you some simple exercises to do. For the first two weeks you should not do any exercise that hurts.

You will be in hospital for one or two nights. By the time you are discharged home you will have been safely mobilising around the ward and able to manage the stairs. Once you get home you should not plan to anything more than gentle pottering around for the first two weeks. If you need to use a computer, then you should only do so for short periods of time.

Following the operation you will have a waterproof dressing over your wound. Ideally this should be kept dry. If you do get it wet, then it should be dabbed dry. If the dressing starts to come off, then it should be changed. You should keep your wound covered and dry for 10 days. You should not soak your wound for four weeks. The nursing staff will explain to you how to look after your wound before you go home.

When you are sitting, you should aim to sit up straight and not have your neck too supported by

pillows and this will lead to you bending your neck forwards. When in bed do not use too many pillows.

You will be seen back in the clinic three to four weeks after your operation. You will normally be referred on for further physiotherapy at this stage. After two weeks you can slightly increase your activity levels and start doing a bit more walking. However, you should avoid prolonged activity, lengthy trips, housework and looking after others for the first six weeks following your operation. You should also avoid bending and heavy lifting.

Driving – For the first few weeks following your operation you should not drive. As you feel more comfortable you can start to undertake short journeys yourself. Initially you should do this with someone else in the car with you. There is no restriction with the DVLA, though there will be with your insurance company. You will need to be able to undertake an emergency stop and be in complete control of your car at all times without being distracted by pain. If this is not the case, then your insurance will NOT be valid. Unless you can look over your shoulder, you are not considered safe to drive.

Flying – You should not fly short-haul for a minimum of two weeks following your surgery. You should not undertake any long-haul flights for six weeks. If traveling on a long-haul flight within six months of your operation, then you should wear your hospital stockings when flying.

Sports – Most patients can return to low impact exercise by four weeks. You should not plan to return to any competitive sports for three months following your operation.

Returning to work – When you can return to work depends on what it is that you do and may be anything between two and 12 weeks. This will be discussed with you before your operation. Where possible, days spent working from home can be helpful as part of your return to work. Your return to work should be gradual and you should increase what you do over a period of time.

Follow-up

You will be seen back in the clinic a few weeks after your operation. An appointment will be made for you before you are discharged.

More information can be found in the booklets section of the patient's area on the British Association of Spine Surgeons website (www.spinesurgeons.ac.uk)