



Anterior Cervical Discectomy & Fusion

Overview

Anterior cervical discectomy and fusion (ACDF) is a surgical procedure performed to remove a herniated or degenerative disc in the cervical (neck) spine. The surgeon approaches the spine from the front, through the throat area. After the disc is removed, the vertebrae above and below the disc space are fused together. Your doctor may recommend a discectomy if physiotherapy or medication fails to relieve your neck or arm pain caused by inflamed and compressed spinal nerves. Patients typically go home the same day; recovery time takes 4 to 6 weeks.

Discectomy literally means "cutting out the disc." A discectomy can be performed anywhere along the spine from the neck (cervical) to the low back (lumbar). The surgeon reaches the damaged disc from the front (anterior) of the spine through the throat area. By moving aside the neck muscles, trachea, and oesophagus, the disc and bony vertebrae are accessed. In the neck area of the spine, an anterior approach is more convenient than a posterior (back) because the disc can be reached without disturbing the spinal cord, spinal nerves, and the strong neck muscles of the back. Depending on your particular case, one disc (single-level) or more (multi-level) may be removed.

After the disc is removed, the space between the bony vertebrae is empty. To prevent the vertebrae from collapsing and rubbing together, the surgeon fills the open disc space with a plastic cage. The cage serves as a bridge between the two vertebrae to create a spinal fusion. Following surgery the body begins its natural healing process and new bone cells are formed around the cage. After 3 to 6 months, the cage should join the vertebrae above and below to form one solid piece of bone.

After fusion you may notice some range of motion loss, but this varies according to neck mobility before surgery and the number of levels fused. If only one level is fused, you may have similar or even better range of motion than before surgery. If more than two levels are fused, you may notice limits in turning your head and looking up and down.

What are the indications?

You may be a candidate for discectomy if you have:

- diagnostic tests (MRI, CT) show that you have a herniated or degenerative disc
- significant weakness in your hand or arm
- arm pain worse than neck pain
- symptoms that have not improved with physiotherapy or medication

ACDF may be helpful in treating the following conditions:

- **Bulging or herniated (slipped) disc:** The gel-like material within the disc can bulge or rupture through a weak area in the surrounding wall (annulus). Irritation and swelling occurs when this material squeezes out and painfully presses on a nerve.
- **Degenerative disc changes:** As discs naturally wear out, bone spurs form and the facet joints inflame. The discs dry out and shrink, losing their flexibility and cushioning properties. The disc spaces get smaller. These changes lead to foraminal or central stenosis or disc herniation.

The surgical decision

Most herniated discs heal after a few months of nonsurgical treatment. Your doctor may recommend treatment options, but only you can decide whether surgery is right for you. Be sure to consider all the risks and benefits before making your decision. Only 10% of people with herniated disc problems have enough pain after 6 weeks off.

Procedure

The procedure is performed under general anaesthetic. A small incision about 4cm is made across the right hand side of the neck. A space is then created between the food pipe (oesophagus), and windpipe (trachea), and the large blood vessels



in the neck. The gap between these structures leads down to the vertebra and disc.

Once the disc or discs to be operated on have been exposed, the whole disc is removed using a microscope for improved vision, and special instruments. The disc or bone pressing on the nerves is then removed completing the decompression part of the operation.

The space then created is filled with the cage implant which is made of a medical grade plastic material called PEEK.

The wound is then sewn up with dissolvable sutures, and a dressing applied.

A collar may be used in the first few days and weeks to aid recovery.

After the surgery

Restrictions

- If you had a fusion, do not use non-steroidal anti-inflammatory drugs (NSAIDs) (e.g., aspirin; ibuprofen, naproxen, or diclofenac) for 6 months after surgery. NSAIDs may cause bleeding and interfere with bone healing.
- Do not smoke. Smoking delays healing by increasing the risk of complications (e.g., infection) and inhibits the bones' ability to fuse.
- Do not drive for 2 to 4 weeks after surgery or until discussed with your surgeon.
- Avoid sitting for long periods of time.
- Avoid excessively bending your head forward or backward.

Activity

- You may need help with daily activities (e.g., dressing, bathing), but most patients are able to care for themselves right away.
- Gradually return to your normal activities. Walking is encouraged; start with a short distance and gradually increase to 1 to 2 miles daily. A physiotherapy program may be recommended.
- If applicable, know how to wear a cervical collar before leaving the hospital. Wear it when walking or riding in a car.

Bathing/Incision Care

- You may shower 1 to 4 days after surgery. Follow your surgeon's specific instructions.

What are the results?

Anterior cervical discectomy is successful in relieving arm pain in 92 to 100% of patients. However, arm weakness and numbness may persist for weeks to months. Neck pain is relieved in 73 to 83% of patients. In general, people with arm pain benefit more from ACDF than those with neck pain. Aim to keep a positive attitude and diligently perform your physiotherapy exercises.

What are the risks?

No surgery is without risks. General complications of any surgery include bleeding, infection, blood clots (deep vein thrombosis), and reactions to anaesthesia. If spinal fusion is done at the same time as a discectomy, there is a greater risk of complications. Specific complications related to ACDF may include:

Hoarseness and swallowing difficulties. In some cases, temporary hoarseness can occur. The recurrent laryngeal nerve, which innervates the vocal cords, is affected during surgery. It may take several months for this nerve to recover. In rare cases (less than 1/250) hoarseness and swallowing problems may persist and need further treatment with an ear, nose and throat specialist.

Vertebrae failing to fuse. Among many reasons why vertebrae fail to fuse, common ones include smoking, osteoporosis, obesity, and malnutrition. Smoking is by far the greatest factor that can prevent fusion. Nicotine is a toxin that inhibits bone-growing cells. If you continue to smoke after your spinal surgery, you could undermine the fusion process.



Cage migration. In rare cases (1 to 2%), the cage can move from the correct position between the vertebrae soon after surgery. It's more likely to occur if multiple vertebral levels are fused. If this occurs, a second surgery may be necessary.

Transitional syndrome (adjacent-segment disease). This syndrome occurs when the vertebrae above or below a fusion take on extra stress. The added stress can eventually degenerate the adjacent vertebrae and cause pain.

Nerve damage or persistent pain. Any operation on the spine comes with the risk of damaging the nerves or spinal cord. Damage can cause numbness or even paralysis. However, the most common cause of persistent pain is nerve damage from the disc herniation itself. Some disc herniations may permanently damage a nerve making it unresponsive to decompressive surgery. Be sure to go into surgery with realistic expectations about your pain. Discuss your expectations with your doctor.