

Anterior Cervical Discectomy and Fusion

What is a cervical fusion?

A cervical fusion is a procedure in which two or more vertebrae in the cervical spine are fused together. The purpose of the procedure is to relieve the pressure on the nerves, restore the normal alignment of the spine, and provide stabilization.

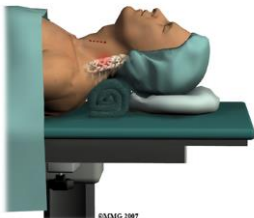


What is an ACDF?

- “A” is for “**Anterior**”. The surgeon removes damaged disc(s) through the front of your neck
- “C” is for “**Cervical**” or the neck
- “D” is for “**Discectomy**”. All or part of a disc is removed to relieve pressure on the nerves or spinal cord
- “F” is for “**Fusion**”. Two or more vertebral bones are joined together to stop painful movement and provide stability

Wear and tear or a trauma can cause the shock-absorbing discs between the vertebral bones in the neck to bulge or rupture. This is called a herniated disc. Bones and joints can get bigger and bone surfaces may develop rough edges called bone spurs. Herniated discs and bone spurs can damage the spinal cord or the nerves traveling to your muscles. This can cause pain, weakness or numbness in the neck, arms or hands. In this surgery, the unhealthy disc is removed, then replaced with a bone graft to prevent the vertebrae from collapsing and rubbing together, and a cervical plate with screws is used for stabilization. Following surgery the body begins its natural healing process and new bone cells grow around the graft to create a fusion.

Incision

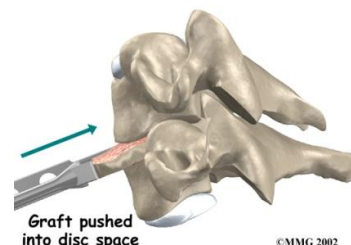
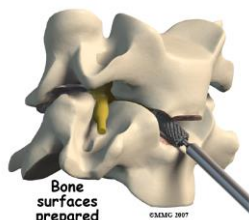
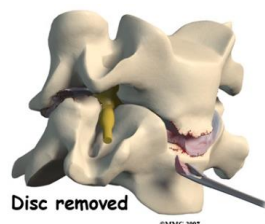
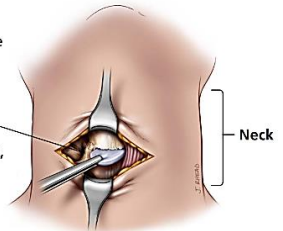


What happens during the procedure?

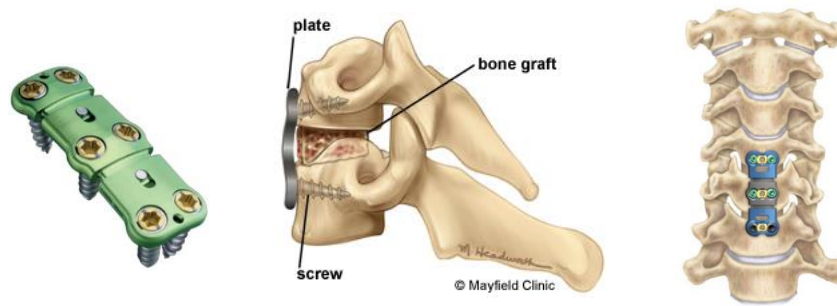
Once you are taken back to the operating room, you will slide over to the operating room table. You are then put to sleep with general anesthesia. You will lie on your back for the procedure. Once asleep, your neck area is cleaned and prepped. A horizontal incision is made on the right or left side of your neck (Figure 1). The surgeon makes a tunnel to the spine by moving aside muscles in your neck and retracting the trachea, esophagus, and arteries. Finally, the muscles

that support the front of the spine are lifted and held aside so the surgeon can clearly see the bony vertebrae and discs (Figure 2). The vertebrae bones above and below the damaged disc are spread apart with a special retractor. The outer wall of the disc is cut (Fig. 3). The surgeon removes about 2/3 of your disc using small grasping tools, and then looks through a surgical microscope to remove the rest of the disc. The ligament that runs behind the vertebrae is removed to reach the spinal canal. Any disc material and bone spurs pressing on the spinal nerves are removed. Using a drill, the open disc space is prepared on the top and bottom by removing the outer cortical layer of bone to expose the blood-rich cancellous bone inside. This “bed” will hold the bone graft material. The bone graft is then inserted into the disc space.

Approaching from the front allows the surgeon to reach the disc without cutting through the vertebrae and nerves. Your trachea, esophagus, and arteries are moved to the side.



A titanium plate is then screwed to the front of the vertebrae to hold the graft in place and provide stability during fusion. The spreader retractors are removed. The skin is then closed with dissolvable stitches. Steri-Strips is placed across the incision.



What happens after surgery?

You will wake up in the postoperative recovery area, called the PACU. A nurse will monitor your vital signs until you are ready to leave the area. Most patients having a 1 or 2 level ACDF are sent home the same day. You may have a sore throat and difficulty swallowing for a few days and may also feel pain between your shoulder blades. This will gradually go away.

What are some of the risks related to the surgery?

The risks of the procedure include but are not limited to: medical complications including heart attack, stroke, and blood clots, there is a risk of worsening of nerve related symptoms including weakness, numbness, tingling, or burning. There is a small risk of hematoma formation, implant loosening or breakage, failure of instrumentation, and wound breakdown. On occasion, this means that a patient has to be taken back to the operating room. There is a risk of infection which may occasionally require removal of the instrumentation. There is a risk of not fusing, known as non-union or pseudoarthrosis, sometimes requiring revision surgery, note this risk is almost 50% in smokers. There is also a risk that the level directly above or below the fusion will progress to the same issue as the level(s) treated. There is a risk of hoarseness and swallowing difficulties. In some cases, temporary hoarseness can occur.

How much range of motion will I lose?

After the 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. Whether or not you notice the change in your day-to-day life will depend on how many vertebrae were fused and the types of activities you are used to doing. Most patients do not notice a significant change. In fact, some patients can do more than before surgery since movement may be less painful.

Will my symptoms completely go away after surgery?

Not all patients get complete relief with this procedure. As with any surgery, you should expect some increase in pain due to the actual procedure. You will be discharged with pain medication to help make the pain tolerable, however, post-surgical pain may not be completely alleviated until you fully heal. It may take up to a year to see improvement in your preoperative symptoms. Some patients may need to be referred to a pain center for long term pain management.

What can I expect after surgery?

- **Hoarseness/Difficulty swallowing:** The recurrent laryngeal nerve, which controls 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.
- **Nerve pain:** It is normal to have increased nerve pain after surgery due to inflammation from the surgery, this will improve over several weeks once the inflammation begins to decrease. It is also not unusual to get an increase in nerve pain 1-2 weeks after surgery, this is typically attributed to the steroids giving during and after surgery completely wearing off and increased activity. Ice packs will help to reduce the inflammation. 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 surgery. Like furniture on the carpet, the compressed nerve doesn't spring back.
- **Muscle spasms:** Muscle spasms in the low back and legs are common after surgery and usually decrease after a few weeks. Heating pads will help to relax the muscles.
- **Soreness/Numbness:** It is normal for the incision to be sore for a few weeks after the surgery. The incision will start to itch shortly following surgery, this is a sign of healing. It is also normal to have some areas of numbness around the incision because there are some sensory nerves that are cut with the incision. The numbness will sometimes take several months to improve. It is also normal for the numbness to increase during the first few weeks following surgery. As the nerves regenerate, some people may experience occasional shooting pain, dripping sensation, or tingling near the incision.
- **Lethargy:** All patients are tired when they return home and need frequent rest during the day. Even simple activities of daily living such as showers may make you feel more tired. Though we do not want you to lie in bed all day, it is okay to rest numerous times throughout the day. It is important to walk as much as you can tolerate, remember one of the risks after surgery is clots to the legs. Staying in one spot for too long will increase this risk. Walking should start slowly at a comfortable distance and then gradually increase as tolerated. Remember to try not to overdo it, this will only set you back. Due to the overall tiredness, you may find yourself a little more irritated or aggravated with things than usual, this is normal and will get better.

How long is the recovery period?

Recovery for this surgery is about 3 months. Majority of the fusion occurs within the first three months of surgery. It may take up to a year to completely fuse and may take up to a year to see improvement in symptoms.

What are some of my restrictions after surgery?

You will be given detailed discharge instructions outlining the dos and don'ts after surgery. A few of the main things are:

- **No Driving-** You are restricted from driving during the first month following surgery. At your first postoperative visit, x-rays of the cervical spine will be reviewed. You need to complete these x-rays a few days prior to the visit and bring the films. The prescription to have this completed is in your surgery packet. These x-rays will be reviewed during your visit and if everything looks good some restrictions, including driving will be lifted.
- **No Lifting-** Lifting should be limited to less than 5lbs, this is about a gallon of milk.
- **No Flying-** Flying is not recommended during the recovery period until you are at least 6-8 weeks following surgery.

When can I return to work?

The range of patient's being out of work is anywhere from 6-12 weeks. A lot of this will depend the type of job you have and how you are recovering. Some patients are able to return early on light duty with reduced hours. Remember, everyone heals differently. We will discuss the plan for return to work at your first postoperative visit.

How long do I have to wear the collar?

You should wear your collar at all times, except in the shower, until your first postoperative visit. We will review your postoperative x-rays and if it demonstrates evidence of healing, you will be able to wean off the collar at that point.

Why do I have to use a bone stimulator?

The bone stimulator has been proven to increase fusion rates. It is not like a TENS unit, you won't feel it. The bone growth stimulator uses a low-strength pulsed electromagnetic field to increase your vascular supply. A strong blood supply is required by the body to create new bone. Typically it is recommended to wear the stimulator every day for at least 3 months following surgery.

What about outpatient physical therapy?

If you did not require inpatient rehabilitation or physical therapy, outpatient physical therapy is not recommended until after your first post-operative visit. This allows time for the fusion to start. The length of therapy will depend on your symptoms and your progress.

What type of metal is the instrumentation made of?

The screws and rods are titanium. This means you are safe to undergo MRIs and typically will not set off security metal detectors.

Does smoking have an effect on my fusion?

YES! Smoking significantly increases your risk of not completely fusing. Incomplete fusion or non-union will increase the likelihood of worsening or persistent symptoms, requiring subsequent revision surgery. Smoking also increases the risk of infection and medical complications under general anesthesia and after surgery. Please see our smoking section.