Anterior Cervical Discectomy and Fusion (ACDF)

What is anterior cervical discectomy and fusion?

Anterior cervical discectomy [disk-EK-tuh-mee] and **fusion (ACDF)** is surgery for treating damaged or worn discs in your neck. During this procedure, a surgeon removes the damaged disc and fills empty disc space with a spacer. ACDF may also be done to treat trauma or infection.

Why do I need ACDF?

The most common reason to have this surgery is to relieve pressure on "pinched" nerves or the spinal cord. Nerves become pinched when discs are worn or injured or when a spinal bone or vertebra [VUR-tuh-bruh] develops bone spurs. Common symptoms include pain, as well as numbness or weakness in your arms or legs. ACDF can relieve pressure on pinched nerves and the spinal cord and may ease the pain, numbness, and weakness.

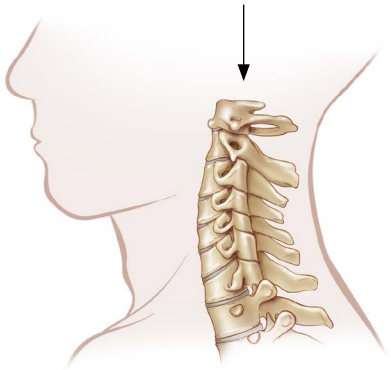
How long does ACDF surgery take?

ACDF surgery can take between 1 to 4 hours. It may take longer, depending on how many discs will be removed, how badly the discs or vertebrae [VUR-tuh-bray] are diseased, and other factors. Your surgeon will give you a general idea about how long your surgery might last.

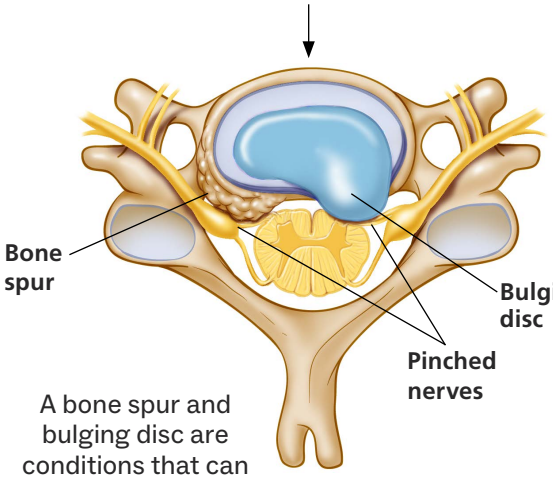
How effective is ACDF?

Your spine team will make sure that this is the right operation for you. Most patients are very satisfied with their results.

Cervical vertebrae are the bones in your neck.



Cervical spine shown from the top.



A bone spur and bulging disc are conditions that can cause a pinched nerve.

In general, ACDF is:

- **Most effective in relieving arm pain from a pinched nerve root.** Numbness and weakness often take longer, and some symptoms may be permanent. Remember that it can take time for the nerve to heal and recover.
- **Much less effective in relieving neck pain.**

How do I prepare for surgery?

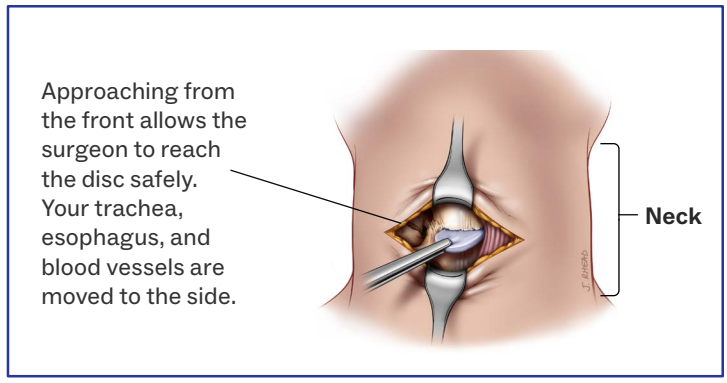
Follow these steps to help your surgery go better:

- **Stop smoking.** If you smoke, stopping before your surgery is crucial for your recovery. Non-smokers have fewer complications related to surgery. More importantly, smoking prevents bone growth and could cause your surgery to fail.
- **Stop certain medicines.** Stop taking aspirin 2 weeks before surgery. Stop taking anti-inflammatory medicines, such as ibuprofen (Advil, Motrin) and naproxen (Aleve), 1 week before surgery. If you take blood thinners, ask your doctor when to stop taking them. You can continue to take most of your other regular medicines, but tell your doctor about everything you take.
- **Ask about a neck brace.** You may need to wear a neck brace during your recovery. Your care team will show you how to use it and how long you need to wear it.
- **Ask for time off work.** Ask your doctor how long you may need to be off work, and make arrangements with your employer.

What happens before surgery?

About 1 to 2 days before surgery, you will receive instructions on where to check in. You will need to fill out some paperwork before your procedure, including a consent form. Be sure to:

- Follow all instructions on when to stop eating and drinking before your surgery. This will help prevent complications from anesthesia.
- List all of your current medicines and bring the list with you to the hospital. Include over-the-counter medicines and vitamins.

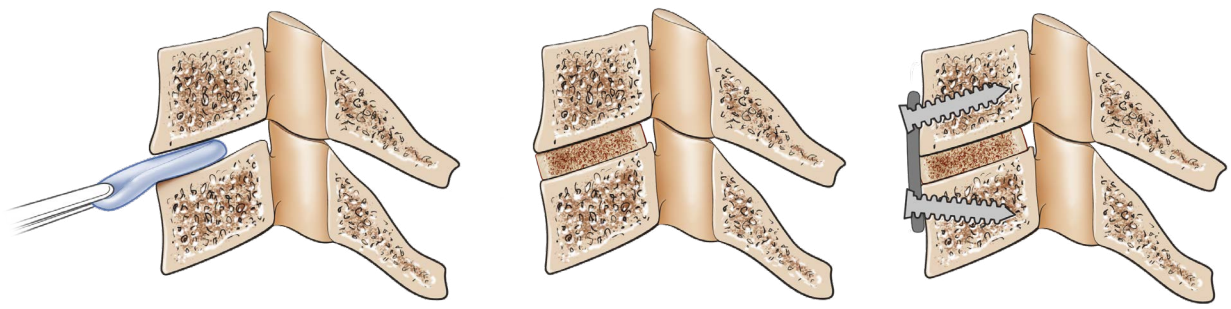


What happens during surgery?

You will lie face up on the operating table so the surgery can be done through your neck. An anesthesiologist will put you to sleep so you will not feel or remember the surgery. You will also be given antibiotics to prevent infection.

1. The surgeon will make an incision (cut) in the front of your neck and move your **trachea** [TREY-kee-uh], **esophagus** [eh-SOF-uh-guh s], and blood vessels to the side. X-rays will be taken to identify the problem disc.
2. The surgeon will carefully remove the damaged or worn disc and bone spurs that are putting pressure on your nerves. A microscope helps the surgeon see clearly and perform this surgery safely.
3. The disc space will be filled with a spacer, which is usually made of **titanium** [tie-TAY-nee-uh m], specialized plastic, or bone.
4. In many cases, a thin metal plate made of titanium will then be screwed tightly to the vertebrae above and below the disc space.
5. The surgeon or the assistant will close the incision.

The surgeon will remove the damaged disc, fill the empty disc space with a spacer and bone, and secure the vertebrae with a plate and screws.



What happens after surgery?

- You will wake up from surgery in the recovery area. A nurse will watch your vital signs until you are ready to leave the area.
- You will be asked to walk the day of the surgery.
- You will likely go home the day of, or the morning after, your surgery. If you've had surgery on several discs, you may need to stay longer. You will be allowed to go home as soon as your doctor says it's okay. Patients who have severe symptoms or spinal cord injury may have additional care needs, including longer hospital stays and recovery.
- Throat sensitivity and swelling are common after surgery. These generally peak around 3 days after surgery and gradually improve. Expect to have some difficulty swallowing during this time. If you find it very hard to swallow or it doesn't get better, call your doctor. It can take several weeks or even months for swallowing to return to normal. Some changes may be permanent.

Where does the bone for fusion come from?

Your surgeon may use donor bone from the bone bank or small bits of your own bone from your neck. In some cases, bone may be taken from your hip. The harvested or donor bone is packed into a plastic or metal (titanium) spacer. Sometimes, a small block of bone may be placed into the disc space instead of a spacer.

Why is a metal plate attached to the vertebrae?

The metal plate helps keep the vertebrae from moving so that the fusion can heal properly. The plate does not need to be removed later.

How will this affect the spinal discs above and below the fused vertebrae?

When vertebrae are fused together, all motion between them is lost. This may place additional stress on surrounding discs, which can cause them to degenerate and cause symptoms over time.

Possible benefits	Risks and possible complications	Alternatives
ACDF may relieve arm pain and numbness or weakness caused by a pinched nerve root or spinal cord. In some cases, the surgery may also relieve neck pain.	• **Blood loss.** Blood loss from ACDF is usually very small. But as with any surgery, there is always the potential for major or even life-threatening blood loss. • **Hoarse voice or swallowing difficulties.** • **Failure of fusion (fewer than 1 in 50 cases).** If the bone fusion fails to heal, you may need to have more surgery. • **Infection (fewer than 1 in 100 cases).** Even with antibiotics and careful sterile techniques, there is still a very small risk of developing a wound infection. • **Damage to spinal nerves or the spinal cord (fewer than 1 in 10,000 cases).** If nerves or the spinal cord are damaged, you could end up with permanent pain, numbness, or weakness in your arms or legs. • **Failure to relieve symptoms.** Your surgeon will do everything possible to give you the best results. Even so, surgery may not relieve all your symptoms.	ACDF is usually done after non-surgical treatment options have failed. These can include: • Medicines • Physical therapy • Spinal injections • Other non-surgical treatments If you feel your symptoms are not severe enough to have surgery, speak up. This may change your surgeon's recommendation regarding surgery.

Will I lose movement or flexibility?

You will lose movement between the bones (vertebrae) that are fused. 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.

What do I do when I get home?

Once you go home from the hospital, you will need to take it easy until the bone graft heals solidly. This can take 2 to 6 months or longer.

Use pain medicine as directed. You may feel pain from your incision and in your shoulder blades. The pain should gradually go away.

Safely manage your pain by:

- **Taking all pain medicines exactly as prescribed by your doctor.** This will keep your pain from getting worse and make it easier to manage. **It will not take away your pain completely.** Pain medicine may cause constipation. You may need to take an over-the-counter stool softener or laxative.
- **NOT taking anti-inflammatory medicines,** such as ibuprofen (Advil, Motrin) or naproxen (Aleve), because these medicines slow bone healing.

Avoid strenuous activity. You should be able to get back to many of your regular activities within just a few weeks of surgery. However, DO NOT do any strenuous physical activity until your doctor says it's okay. This will be based on your symptoms and x-rays of your spinal fusion. Your doctor will tell you when it is safe for you to go back to your regular activities.

When you're ready, start taking short walks every day. The right kind of movement can help you heal.

Follow these guidelines:

- Try not to twist or bend your neck.
- Do not do activities that require raising your arms above your shoulders for very long. In other words, you can wash your hair but you shouldn't paint the ceiling.
- Do not drive until your doctor says it's okay.
- Do not lift anything heavier than 10 pounds (such as a gallon of milk or large cat). Hold objects close to your body.
- Showering is okay. Do not take a bath, soak in a hot tub, or go swimming until the incision is healed (about 2 weeks).

Go back to work when your doctor says it's okay. This will depend on how hard you have to work. If you work at a desk, you may be able to return to work within a week. If your work is physically hard and you do not have the option of a light-duty assignment, you may need to take more time off — up to several months — until the bone has healed completely.

When should I call my doctor?

Call your doctor right away if:

1. **You notice signs of infection at the surgical site (incision),** such as red or swollen tissue, fluid drainage, or a fever of 101.5 °F (38.6 °C) or higher.
2. **Your incision opens.**
3. **Your pain is uncontrolled,** even when taking your medicines as prescribed. Your doctor can decide if you need a different medicine or if your prescription needs to be adjusted. Uncontrolled pain may also be a sign of another problem.
4. **You are constipated (can't poop) or can't urinate (pee).** It is important to drink enough fluids during recovery to keep your body hydrated and help you avoid constipation.

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