Anterior Cervical Fusion Surgery

A guide for patients and their caregivers
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About the Spine

The spine is a stack of bones that runs down the middle of your back. It starts at the bottom of your skull and goes all the way down to your tailbone. The spine:

• supports your body
• allows you to move freely.
• houses and protects the spinal cord—the nerve center of your body.

View of the spine from the front

The spine has 26 bones

• There are 24 bones (vertebrae) that start at the top of your spine. These are the separate bones that connect like puzzle pieces. There are:
  – 7 vertebrae in the neck area (cervical)
  – 12 vertebrae in the chest area (thoracic)
  – 5 vertebrae in the lower back (lumbar)
• The next to the last bone of your spine is the sacrum. The sacrum is actually 1 large bone made of 5 fused bones.
• The bone at the very end of the spine is the tailbone (the coccyx).
There are discs between most of the bones in the spine

There are soft pads of tissue between most of the vertebrae in your spine. These are called discs. The only vertebrae that do not have a disc between them are the top 2.

Details about the discs

- Each disc has a spongy center (nucleus) and a tougher outer ring (annulus). Movement in the nucleus is what makes it possible for the vertebrae to rock back and forth on the disks. This gives you the flexibility you need to bend and move.
- The discs absorb shock caused by movement.
- The discs also keep the bones from rubbing up against each other when you move.

Cross-section of a vertebra and disc
The spine has 3 natural curves

A healthy spine with proper alignment has 3 natural curves: cervical, thoracic, and lumbar.

• These curves keep your body balanced.
• These curves support your body when you move.
• These curves distribute weight through the spine, making back injuries less likely.

Muscles support the curves of the spine

Strong, flexible back muscles help support the curves of your spine. They do this by holding the vertebrae and discs in correct alignment. Strong and flexible belly, hip, and leg muscles also help support your back.

View of the spine from the side

[Diagram showing the spine with labeled curves: Cervical curve, Thoracic curve, Lumbar curve, and Pelvic curve]
The spinal cord runs through the middle of your spine

- The spinal cord is the nerve center of your body.
  - It runs through the center of your spine
  - It connects your brain to the rest of your body.
  - It starts at the base of your brain and usually ends at the first or second lumbar vertebrae.

- All along the spine and at the end of the spine are nerve roots.
  - Nerve roots exit and enter the spinal canal on both the left and right sides and the end of the spine.
  - The job of the nerve roots is to carry electrical signals to and from the spinal cord and the muscles, organs, and other parts of your body.
Anterior Cervical Fusion Surgery

What is anterior cervical fusion surgery?

• A spinal fusion is when 2 or more of the bones in the spine are joined or “welded” together.

• Cervical fusion is when the bones that are joined are in the neck area of your spine.

• Anterior means your surgeon will operate on the front of your spine.

Why bones are fused

Joining the bones together will limit how much they move. This may help lower your pain or fix other problems you are having. The number of bones you will have joined together depends on the problems you have.

In addition to your fusion, you will also have either a cervical discectomy or a corpectomy

Cervical discectomy and fusion

This involves removing one or more of the herniated or degenerative discs that is between the vertebrae then replacing the disc with bone. (please explain what this should say. Instructions on last draft weren’t clear. One person said no bone, another said bone). This allows the two vertebrae on either side of the disc to join together as a single unit. Your surgeon may use a titanium plate and screws to hold the bone in place as your vertebrae fuse together.

Cervical corpectomy and fusion

This involves removing the disc and a portion of the vertebrae to allow the bones to fuse together. You will have titanium plates and screws put in place to secure the bone as it heals.
How are the bones fused together?

Fusions are made with bones grafts and with or without instrumentation. Your surgeon will remove one or more discs from between your vertebrae. Then you surgeon will replace the disc(s) with bone. This will allow the vertebrae to fuse together as one. You may have a titanium plate and screws placed to hold the bone in place as it fuses.

Bone grafts

To fuse the spine, very small pieces of extra bone are needed. This is called a bone graft. The bone that is attached to the spine acts like a “cement” that fuses the vertebrae together. The fusion stops motion between the two fused vertebrae. This means you will have a slight loss in flexibility, but you may feel like you can move better after surgery because your problem has been fixed.

Are there different kinds of bone grafts?

There are many different types of bone grafts. Two of the more common types are grafts from a patient’s own body (autograft) and grafts from a bone bank (allograft). There are also artificial bone graft materials that can be used.

Autografts

At Vanderbilt, bone from your own spine will always be used to join your vertebrae together. Your surgeon may also need to use bone from your hip to make the fusion. If bone from your hip is used, your surgeon will take a small amount from the top part of your pelvic bone. The bone that is used for the graft will be removed during your spinal fusion surgery. A separate procedure is not needed to take the bone. Your surgeon will talk with you about all of this before surgery.

Allografts

Sometimes bone from people who have died is also used to fuse the vertebrae together. This bone is collected, tested, and stored in bone banks. Bone donors are checked for their cause of death and medical history. Tests are done to check for viruses such as HIV and hepatitis. The bone is also treated before it is used as a graft. The risk of getting a disease from bone graft is extremely low. Your surgeon will talk with you if they decide to use bone from a donor in addition to your own bone.

Genetically engineered protein (BMP) grafts

A genetically engineered protein (BMP) may also be used create your fusion. The use of BMP will be discussed with you if your surgeon feels this would be helpful in your situation.

How do the bone grafts stay in place?

Spinal fusions with instrumentation

A bone graft takes time to completely grow into the bone and become stable. Most fusions include the use of instruments to hold the bones in place while the graft fuses together. In a cervical fusion, your surgeon attaches a plate and screws in your vertebrae. They are placed in a way that will keep the spine stable while it heals. The plate and screws are generally made of titanium.
Spinal fusions without instrumentation

Sometimes, doctors will decide to do cervical spinal fusions without plates and screws. These fusions only use the bone grafts. This means your surgeon will join your bones together by using nothing other than added bone graft material. This might be the case for you if you are having a cervical discectomy and fusion.

Why do I need spinal fusion surgery?

Compression or squeezing on the nerves in the spinal cord or nerve roots may be causing many of the different types of symptoms that you may be experiencing. These symptoms may include:

- headaches in the back of your head
- pain in your neck, shoulder, upper back, arm, or fingers, as well as occasional or frequent numbness, tingling and weakness
- more serious problems, such as the loss of balance and problems with coordination and dexterity.

What causes spinal nerves to be compressed?

- Degenerative disc disease: When a disc in the spine ages and loses its ability to cushion the vertebrae. As it degenerates, the disc looses its elasticity. This can cause the disc to crack, flatten, or even turn into bone. As the disc flattens, vertebrae on either side of the disc rub together, which can cause bone spurs. These bone spurs can put pressure on the nerves.

- Herniated disc: When the outer part of a disc (annulus) tears. The tear allows the soft watery material on the inside of the disc to come out. The herniation can then cause pressure on spinal nerves or the spinal cord. This may cause pain and other problems.

- Bulging disc: When the soft, inner part of the disc stays inside the annulus, but it is no longer in the right place. When this happens, the bulging disc can cause pressure on the spinal nerves or the spinal cord, which can cause pain and other symptoms.

- Spinal stenosis: When bone spurs grow into and narrow the space through which the nerve roots exit the spinal canal. This can cause pain and other symptoms.

- Spondylosis: This is degenerative arthritis of the spine. The arthritis can cause pressure on spinal nerve roots, which can cause pain and other symptoms.

- Radiculopathy: Pressure on the root of the spinal nerves that may cause pain and other symptoms.

- Myelopathy: When there is pressure or compression on the spinal cord, which can cause pain and other symptoms.

- Pseudoarthrosis: This is a condition that happens when bone fails to fuse together.

- Radiculopathy: This is when there is pressure on the root of the spinal nerves, which can cause pain and other symptoms.

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- Pseudoarthrosis: This is a condition that happens when bone fails to fuse together.
What are the benefits of a spinal fusion?

Most people have back surgery to lessen the pain and symptoms that are caused by their back problems. Some have surgery to keep their problems from getting any worse. Benefits of a successful spinal fusions may include:

- less pain in the back and legs
- less weakness or numbness in the legs
- the ability to be more active and have a better quality of life
- improved physical fitness
- increased productivity, including being able to return to work or other activities.

What are the risks of a spinal fusion?

Like any surgery, a spinal fusion has its risks. However, your surgeon would not recommend this procedure for you unless the expected benefits far outweigh the risks. Risks include:

- Scarring. Anterior incisions usually will gradually fade over the next year, so that the incision is hardly noticeable.

- Pain after surgery should be expected. The good news is that these pains will subside. The worst pain typically lasts for 2 to 4 weeks. Thereafter, the pain will slowly lessen. It is possible that you will have some pain that last for as long as 3 to 6 months.

- There is the risk of infection.

- Surgery risks damage to nearby structures, including the esophagus, trachea, thyroid gland, vocal cords, and arteries.

- There is the risk of damage to the spinal cord or nerves.

- You may bleed too much and need a blood transfusion

- You may have a hoarse voice or problems swallowing that may last for several weeks. In rare cases this may be permanent.

- You may have damage to the superior laryngeal nerve or recurrent laryngeal nerve. Damage to the superior nerve would make you unable to scream or sing high notes. Damage to the laryngeal nerve could make you unable to talk louder than a whisper. These complications are rare. They usually get better on their own. Rarely, a person needs surgery to fix the damage.

- Injury to the vertebral artery that causes you to have a stroke.

- Injury to cervicothoracic nerve causing the eye to droop and eye dryness.

- Your bone graft shifts or becomes displaced.

- Failure of the metal plates and screws to bind to the bone.

- Your bone graft does not heal like it should and you need another surgery.

- A blood clot forms in your arms or legs

- Heart problems and even death.
Risks of anesthesia

You will have general anesthesia during your surgery. The goal of general anesthesia is to make you sleep through your surgery and not feel any pain. General anesthesia is different from regional anesthesia, where only part of your body is numbed and you may be awake. Risks of general anesthesia include:

- throat discomfort
- injury to teeth or dental work
- harm to the eyes, including blindness
- damage to your vocal cords, which may affect your ability to speak
- headache
- backache
- nerve damage
- being aware during surgery
- allergic reactions
- stroke
- heart attack
- death.

Your anesthesiologist will talk with you in detail about the risks of anesthesia during your pre-surgery appointment.
In order to have the best possible surgery, there are things you will need to know and do to get ready in the weeks before. Let us know if you have any questions or need any help.

Fill out and return all the medical forms we give you

There are forms the surgery scheduler will give you that you will need to fill out. These forms will ask for information about you, your personal and medical history, and your current living situation. Fill out and return all of these forms to us right away.

Get your teeth cleaned

Make arrangements to get your teeth cleaned before your surgery. You will not be able to have any dental work or teeth cleaning for 6 months after your surgery.

Get your vaccines

Plan ahead. If you need to get a live-virus vaccine and your surgery is still more than 6 weeks away, you should have your vaccines now. Though you can get a flu shot with an inactivated virus at any time, you cannot get any live-virus vaccines within 6 weeks of your surgery or for 3 months after your surgery.

Go to your pre-anesthesia appointment

You will have an appointment to meet with a member of your anesthesia team before your surgery. They will talk to you about anesthesia and what to expect. They may give you medicine that you will need to take by mouth on the morning of your surgery.

Go to your VPEC appointment

Before your surgery, you will come to Vanderbilt for what is called a VPEC appointment. This is a very important appointment: do not to miss it. At this visit:

- you will bring a list of all the medicines you take, including herbal medicines and those you buy without a prescription
- you will give some blood for testing
- you may give some of your urine for testing
- you will talk with an anesthesia nurse practitioner. Be sure to tell this person if you drink alcohol regularly
- you will find out what medicines you should not take on the morning of your surgery.
Go to any appointments or have tests done if we require them

Before your surgery it may be necessary to have a urinalysis and blood work done, an EKG, and/or a chest x-ray. If necessary, all of these tests will be scheduled for you and will be done during pre-testing when you meet with the anesthesia staff. If it has been some time since you have seen your primary physician and you have a lot of medical problems, it would be best that you see your doctor before your pre-test date.

As soon as you know you are having surgery, quit smoking

You must not smoke any time around your surgery—before or after. Smoking increases the risk of having medical problems from surgery. Some of these problems include the risk of infection in the instrumentation used in your spine and the risk that your bones and incisions won’t heal.

Call us if you develop:

- an infection of your teeth
- an infection of your fingernails or toenails
- a bladder infection
- a pimple, cut, scratch, boil, abscess, or insect bite anywhere on your body—especially on the skin over or around the area of your neck that will be operated on
- a rash or flaky skin
- a temperature higher than 100.5°F (38.1°C).

Exercise to stay strong

The stronger and more fit you are before your surgery, the better you will do after. Activities we suggest are walking, swimming and deep breathing exercises. Cardiac and aerobic exercises are also helpful if they are approved by your medical doctor and you are able to do them. You may want to work with a physical therapist or personal trainer to get as strong as you can.

Eat healthy foods to stay strong

Include fruits, vegetables, and whole grains in your diet. A healthy diet will help you have a better recovery.

Start planning for your recovery at home

Unless your doctor decides there is a medical reason for you to go to another facility, you can expect to go to your home after surgery. Patients get better faster when they go home to recover since it is helpful to heal in familiar surroundings. Start getting your home ready now, and make your recovery as easy as it can be.
Make your home safe and easy to move around in

Set up your home now so it will be as easy as possible for you to live in as you recover. Remember, as you recover you will not be able to bend, lift, twist, or stoop down. You will be very limited in your movement after surgery and need to prepare your home for this.

- Make sure you have a cordless phone or cell phone that you can reach easily.
- Cook and freeze meals in advance. Or buy frozen dinners and canned fruits and vegetables. This way, you won’t have to worry about doing a lot of cooking.
- Buy heavy or awkward things now before your surgery. This might include dish soaps, detergents, toilet paper, peanut butter, pet food, and heavy jars or cans.
- Store the kitchen items you use the most at counter-top level, above your waist, and below your shoulders.

Arrange your home to prevent falls

For the first few weeks after surgery, you will likely need to use a walker or cane (or both). Move your furniture so you have a clear path and will be able to use your walker or cane wherever you need to go.

- Pick up any clutter off the floor so you don’t trip or hurt yourself.
- Remove any area rugs in your home so you won’t trip over them.
- Tape down all electrical cords so you don’t trip over them.
- Put shower grab bars in the shower, and put rubber mats in the bathtub and shower. More falls happen in the bathroom than any other room in the house.
- Consider installing handrails on stairs in or outside of your house before your surgery.
- If your bedroom is on an upper-level floor, think about setting up a bed on the first floor of your home to use as you recover.
- Keep the items you use often within easy reach.
- Get a rolling cart to help you move items without having to carry them.
- If you have pets, make arrangements to get help feeding and taking care of them since your movement will be so limited.
**Arrange for a caregiver**

It is important that you have one or more caregivers to help you as you recover. Now is the time to ask family, friends, or others you know if they can help you once you leave the hospital. You will need help with housework, errands, and driving. Remember that you will not be able to drive for 6 weeks after surgery. You also will not be able to drive for as long as you are taking your prescription pain medicines.

After surgery, you will need help with:

- getting to and from the hospital, physical therapy, and doctor appointments
- going to the bathroom and showering
- grocery shopping and meals
- keeping the house clean and safe for you to walk in
- caring for small children and pets.

For the first 2 weeks after surgery, it is best if someone can stay with you at night.

**Fourteen days before surgery, do these things**

Stop drinking any beer, wine, liquor, and all other alcohol drinks.

**Seven days before surgery, do these things**

Seven days before your surgery, stop taking the medicines listed below. Taking the wrong medicine too close to surgery, can keep you from having your surgery. It could also cause complications.

**Important:** If one of your doctors thinks it is not safe for you to stop any of these medicines, you must talk to the surgeon!

**Seven days before surgery, stop taking these prescription medicines:**

- blood thinners, such as Coumadin and Persantine
- all anti-inflammatory prescriptions, such as Clinoril, Indocin, Daypro, Celebrex, and Vioxx
- bone strengthening medicines, including Fosamax and Reclast. Your surgeon will tell you when you can start taking these medicines again.

If you take insulin or prednisone you may have to adjust your medicines before surgery. Make sure to tell your surgeon about all the medicines you are currently taking.
Seven days before surgery, stop taking these over-the-counter medicines:

- aspirin
- ibuprofen
- Advil
- Motrin
- Aleve
- Naprosyn (naproxen)
- any other medicines that contain aspirin, ibuprofen, or other non-steroidal anti-inflammatory drugs (called NSAIDs) that you can buy with or without a prescription.

Seven days before surgery, stop taking these herbals and supplements:

- Chondroitin
- Danshen
- Feverfew
- Fish Oil
- Garlic tablets
- Ginger tablets
- Ginko
- Ginseng
- Quilinggao
- Vitamin E
- Co Q10.
Three days before surgery, do these things

- Get everything ready to go to the hospital. Plan to bring only a few clothes and the personal care items you need, including:
  - a short, lightweight robe
  - loose fitting clothes with elastic waistbands that you can easily put on when you get ready to leave the hospital
  - t-shirts
  - shoes or slippers with a closed back and non-skid soles
  - eyeglasses, if you need them
  - a hairbrush, if you need it.

- Do not pack any valuables. You should leave all your valuables at home.

- Bring a list of all the medicines you currently take. But do not pack any of your medicines. Just bring the list.

The night before surgery, do these things

- Remove any nail polish from your fingers and toes.

- If you shower or bathe the night before your surgery, do not apply lotions, moisturizers, powders, or makeup to your body or face after your shower or before you go to bed.

- Do not eat or drink anything after midnight on the night before surgery. That means no gum, hard candy, or water. This is to prevent stomach upset and vomiting that can be caused by anesthesia.

The day of surgery, do these things

- If you shower or bathe the morning of your surgery, do not use any lotions, moisturizers, powders, or makeup to your body or face after you wash.

- You may brush your teeth. But only use a small amount of water. Spit the water out.

- You may take your morning pills. But take your pills with no more than one tablespoon of water. Pills you may take include medicines for your heart, blood pressure, or breathing, as well as any medicines you may have been given at your pre-anesthesia appointment.

The day before surgery, do these things

- Eat light meals the day before your surgery.

- The day before surgery, one of the surgery schedulers will call you to make sure you know what time to come to the hospital. Please give the surgery scheduler a choice of phone numbers to call in case the hospital needs to speak with you.
At the Hospital

Go to the admission desk when you arrive

Go straight to the patient admission desk in the main lobby on the first floor of the hospital. Check in at the hospital 2 hours before your scheduled surgery time.

Remember: The time your surgery begins may change. Much depends on the when the last surgery finished. Sometimes your surgery can start as much as a few hours later than the scheduled time. Thank you for understanding.

When you come to the hospital, leave these things at home

- Do not bring your cane, crutches, or walker when you first come to the hospital. (Have your cane, crutches, or walker brought to you when you go home.)

- Do not bring large amounts of money or valuable items, such as jewelry.

After you have checked in, we will take you to the Holding Room

After you have checked in at the admission desk, someone will take you to the Holding Room. One friend or family member can come with you.

- You will change into a hospital gown. You will give your clothes and anything else, like dentures, glasses or contact lenses, hairpins, or jewelry, to your support person to take care of while you are in surgery.

- We will put an IV into your arm. An IV is a tube that goes through your skin and puts medicine directly into your body.

- You will meet with your anesthesia team. They will talk with you about your medical history. They may start managing your pain by giving you some pills to take by mouth with a tiny sip of water.

- We will take you to the operating room on a stretcher.

- If you feel anxious or tense at any time, tell your nurse.
Surgery

• From the Holding Room, we will take you to the operating room. The staff members who are working with your surgeon and the anesthesiologists will prepare you for your surgery. You probably will not see your surgeon at this time. You will be given general anesthesia. Once you are asleep and about 30 to 60 minutes after you go to the operating room, your surgery will begin.
• When your surgery is finished, it usually takes 30 to 60 minutes to wake you up and put you on the hospital bed before you are taken out of the operating room.
• When your surgery is finished, the surgeon will speak with your family.

What happens during surgery

Anesthesia

Anesthesia is medicine that we will use before and during surgery to keep you from having pain during surgery. It will also relax you, limit your awareness of what is happening around you, and make you sleep. Anesthesia is part of your surgery. We will create a pain control plan just for you that is based on your personal needs and medical history.

The procedure

Incision: The incision will be made in a horizontal fashion in the front of your neck. If you have had surgery in the past on your cervical spine with a front approach, you may need to meet with an ENT (a doctor who cares for the ear, nose and throat) to evaluate the laryngeal nerves (the vocal cords). This evaluation allows the surgeon to be informed as to how your vocal cords are functioning, thus allowing the surgeon to determine which side of your neck to place the incision. The length of the incision depends on how many levels of the cervical spine need to be corrected.

Spinal cord monitoring

Spinal cord monitoring is a procedure that may be done by a nurse during your surgery. Electrodes are placed on your scalp and other parts of your body to make sure that the spinal nerves have good blood flow. If you have spinal cord monitoring, you may notice that your scalp is irritated after surgery. This irritation should go away on its own within a few days.

In case of excess blood loss

All surgeries will cause some bleeding. It is highly unlikely that you will need any blood during your surgery. However, there is always the chance you might need a blood transfusion either during or after your surgery. We will talk with you about this before surgery. If you object to getting blood products, let us know.

We will manage your pain before, during, and after surgery

Pain is a common and expected part of spine surgery; you should expect it. But know that we will help you manage your pain. Our goal is to do everything we can to help lower your pain, while managing the side effects of your pain medicine. We want you to be able to get up, move around, and function well enough that you are able to recover as quickly as possible.
**A multimodal pain approach**

The approach we will use to treat your pain is what we call a “multimodal” approach. This means we will treat your pain in multiple ways:

- We will give you different types of pain medicines.
- We will give you pain medicines at different times, including before, during, and after your surgery.

**Pain management before surgery**

In the Holding Room, we may give you a few pills with a small sip of water to help stop some of your pain before it even starts. The types of pills and the amount of pills that we give you will depend on your personal history. Your history includes any other medical conditions you have, any medicines you regularly take, and your age. The exact medicines you get will be decided by your surgical and anesthesia teams before your surgery.

**Pain management during surgery**

While you sleep during surgery, the anesthesia team will give you more medicines through your IV. This medicine will help lower the overall pain you have after surgery, as well as the pain and nausea you have immediately after the procedure.

**Pain management after surgery**

After surgery, we will continue to give you more medicine for your pain. Like before, the specific medicines we give you will depend on your medical history and the medicines you already take. In general, the medicines you get will usually include a narcotic pain medicine, a medicine to lower inflammation and swelling, and a medicine to lower nerve pain.

In most cases, we will give you prescriptions for these medicines when you leave the hospital, and you will take these medicines for several weeks.

**After surgery, you will go to the Recovery Room**

In the Recovery Room, we watch over you as you wake up after surgery. After you are awake, we will take you to your regular hospital room.

- When you wake up:
  - a nurse will help you breathe deeply and have you cough to clear your lungs
  - you will do ankle pumps to lower the risk of blood clots
  - you will have an IV in your arm so we can give you medicine as needed
  - you may get oxygen to help you breathe.

- Most people stay in the Recovery Room for several hours after surgery. How long you are there depends on how your body reacts to the anesthesia.

- If the nurse feels you are up to it, you may be allowed to have visitors once you are awake and your pain is under control.
We will give you pain medicine after surgery

We will do everything we can to lessen your pain after surgery. But some pain is simply a part of recovery. Our goal is to make you as comfortable as possible while keeping the side effects of any pain medicine you get as low as possible.

To control your pain after surgery, we will give you:

- pain medicine through your IV
- pills, including pain pills and anti-inflammatory drugs.

Other medicines might get after surgery

In addition to pain medicine, you will get:

- antibiotics to help prevent infection
- blood thinners to prevent blood clots
- medicines to stop nausea, if you need them
- muscle relaxers, such as Valium or Flexeril, if you need them to help muscle spasms.

During your hospital stay you will also have a list of “as needed medicines” that will always be available to you. These medicines will be for symptoms such as muscle spasms, nausea, indigestion, pain, and itching. If you have any symptoms that are not being controlled, please talk with your nurse.

After the Recovery Room, we will take you to a regular hospital room

Once you are ready, we will take you to your regular hospital room. You will still have your IV in so we can continue to give you medicines.

On the evening of your surgery, the surgeon will come by to see how you are doing

The surgeon will usually make their evening rounds sometime between 5:00 p.m. and 9:00 p.m. The exact time depends on when they finished their last surgery. Your surgeon will come to see you in your hospital room or the Recovery Room, depending on where you are at the time.

Your surgeon will decide if you are ready to go home or if you need to stay overnight

Most patients who have cervical spine surgery, are able to leave the hospital on the evening of the procedure or the next day. Once your medical condition is good and your pain is under control with pills, it is actually better for you to be at home than the hospital. You are likely to rest better at home in familiar surroundings. It is also good for you to be up and moving instead of lying in bed, since too much bed rest raises the risk of blood clots.

At first, you will get water and ice chips instead of regular food or drink.

After surgery, you are likely to get sick if you eat regular food right away. Your body has to gradually work up to digesting a regular diet again. At first, we will give you ice chips and sips of water. Next, we will give you a clear, liquid diet.

The morning after surgery, you take more steps to slowly going back to eating the foods you normally eat. At first, you will start with soft foods and then gradually go back to more regular food.
Getting out of bed

If your surgeon decides you are ready to go home the evening of your surgery, we will help you when you first get out of bed. Even if you do stay overnight, we will encourage you to get out of bed if you can.

Starting on the morning after your surgery, whether you are in the hospital or at home, you may get up and down with assistance as much as you want and can tolerate.

Occupational or physical therapist

Your surgeon may have an occupational or physical therapist come to see you while you are in the hospital to help decide if you are going to need any extra help when you leave the hospital and go back home.

Drain

You may have a drain coming from the incision in your neck after surgery. This will depend on your surgeon.

The drain removes the extra fluid from the layers of tissue under your skin. This helps to reduce the swelling in your neck and allows the doctors and the nurses to monitor the amount of blood you have lost.

If you stay in the hospital overnight, your drain will probably be taken out the morning after surgery. Sometimes, we may leave a drain in place when a patient goes home. If you do go home with your drain, you will follow up with your surgeon in 2 to 3 days to pull it out. We will talk to you about this before you leave.

Sleeping in the hospital

It can be difficult to sleep on the evening and night of your surgery. The surgery can disturb your regular sleep cycles. Some people also find it hard to rest in the hospital in general.

Visitors

You are allowed to have visitors while you are in the hospital. You may even have 1 person age 18 or older stay with you at night. Each room has a pull-out bed.
X-rays

Before you leave the hospital on the night of your surgery or the morning after, we may take you to get X-ray images of your cervical spine.

Getting pain pills instead of IV medicine

By the time you go home, your IV medicine will be stopped and you will be switched to pain pills. Your doctor will write you a prescription for pain medicines before you leave the hospital.

Getting you ready to leave

A nurse case manager or social worker will probably visit you while you are in the hospital. They are members of your healthcare team. They can help you make plans for the things you will need to do after you leave the hospital. This may include arrangements for outpatient therapy and lab work, home health services, and other rehab programs or services. You can ask to speak with the case manager or social worker at any time during your hospital stay.

Make sure you have a ride home

You must have someone pick you up at the time you are released from the hospital. You will not be allowed to drive yourself home. And you will not be allowed to leave the hospital alone.

Am I allowed to take a taxi or a bus home?

No. You must have someone pick you up.
Caring for your incision

**Bandages**

Most patients leave with glue or steri-strips (small tape strips) on their incision(s).

- Check your incisions daily for any problems.
- Do not put any ointments or solutions over your incisions or steri-strips at any time.
- Let the steri-strips to fall off on their own. (The only exception is if they are still there 2 weeks after your surgery, then you may have someone may remove them at that time.)

**Showering and bathing after surgery**

- Do not get your incision wet for the first 4 days after your surgery. Cover your incision when you shower.
  - We will give you 4 aquaguards when you leave the hospital; you will use these to cover your incision when you shower.
  - Put one on before you get in the shower. Then take it off and throw it away after you get out of the shower.
- On the 5th day after your surgery, it is safe to get your incision wet when you are in the shower. You no longer have to cover it.
- On the 5th day after your surgery, clean your incision using soap and water when you are in the shower. Then gently pat your incision dry with a towel.
- No tub baths for 4 weeks after surgery.

**Bathing and swimming after surgery**

You cannot take a tub bath for 4 weeks after your surgery. You must also avoid pools and hot tubs during this time. Four weeks after your surgery it is OK for you to bathe as long as your incision is closed and healing well.

**Raising your arms overhead when you shower or brush your hair**

It is OK for you to raise your arms over your head to wash and brush your hair.

**Fighting infection**

- Always wash your hands before and after you touch your incision.

- Call us at (615) 875-5100 if your incision:
  - gets redder
  - swells
  - feels warm or begins to hurt
  - begins to drain or smell bad
  - separates at the edges.

- Also call us at (615) 875-5100 if:
  - you are unable to swallow
  - you have a temperature higher than 101.5°F (38.6°C).
Your surgeon may want you to wear a neck brace after surgery

After your surgery, you may need to wear a neck brace as you recover. Your surgeon will decide if you need one after your surgery.

If you are given a brace to wear

If you are given a brace to wear, we will give you specific instructions before you leave the hospital in addition to the instructions below.

• You may remove your brace 3 or 4 times a day for up to 1 hour at a time. When your brace is off, do not:
  – flex your neck (bring your head to your chest)
  – extend your neck (lift your chin up high and away from your chest).

• You can remove your brace when you need to shower or shave.

• For 6 weeks after surgery, you must ALWAYS wear your brace when driving or riding in a motor vehicle.

• If you have any irritation from the brace rubbing your skin, you may use talcum powder between the brace and your skin. But do not let any powder get near or on your incision.

• If the brace rubs a sore or blister on your skin, call the clinic right away.

• If you have a soft neck brace and need to clean it you may wash your neck brace in cold water in the washing machine; but you will need to let it air dry. Do not put it in the dryer.

• If you have a hard plastic neck brace, you can simply wash it in the sink with soap and water.

Swelling

After this surgery, it is common to have neck swelling. The swelling can last for weeks, even a few months. Every week, the swelling should improve a little bit. If you notice that the swelling is not getting better, call us.

Pain

It is normal to have pain after surgery. Pain is part of the healing process. With time, you should have less pain than you had before surgery.

Pain and spasms between your shoulders

When a spinal disc degenerates, it collapses. This causes the vertebrae on either side of the disc to fall closer together. When the bone graft is put in place, it stretches the disc height back to its normal place and the vertebrae are also pushed apart. This changes the structure of the spine and the muscles around it. Your body needs to adjust. Once the bone heals and your body has adjusted to the new position, the pain should go away.

Before your bones fuse, you may actually have more pain after surgery than you did before.

About 20 percent of patients have more pain after this surgery than they did before surgery. The pain is cause by small movements of the unfused bone irritating the nerves. Once the bones fuse, the pain will get better.
Understand your prescription pain medicine

- When you left the hospital, we probably gave you a prescription for pain medicine. While you may need prescription pain medicine at first, it is best to start lowering how much you take as soon as you can.

- If you were taking narcotics preoperatively, do not take those with any new prescriptions you get from the surgeon.

- Take your pain medicine exactly the way your doctor tells you.

- Pain medicine can make you constipated. Drink plenty of water and eat more fiber (found in foods like fruits, vegetables, and whole grains) to help you stay regular.

- If you are going to need a refill of your pain medicine, call our office at least 7 days before your current prescription runs out. Sometimes you may have to wait 24 hours for a refill. We can't give refills at night or on weekends.

- Things to remember:
  - You cannot call in to the pharmacy for a refill prescription. You must call our office.
  - You can either pick your prescription in person or ask us to mail it to you at your home address.

Expect to take less pain medicine over time!

Prescription pain medicine is addictive; it is important that you do not become dependent on it. We will expect you to use less prescription pain medicine over time.

- When you first leave the hospital, we will give you a prescription for pain medicine with specific instructions.

- We recommended that you wean your narcotic use slowly and not abruptly. If you are taking 2 narcotic tablets every 4 hours as needed, then wean to 1 tablet every 4 hours, then 1 tablet every 5 hours, and so on until you are able to stop taking these narcotics all together. You may be given specific weaning instructions when you are discharged.

- Six weeks after surgery, you should no longer be taking any prescription pain medicine.

Important: Six weeks after your surgery, we will stop refilling prescriptions for pain medicine. If you think you still need prescription pain medicine after 6 weeks, we will refer you to your regular doctor. There are no exceptions to this rule.
Do not take too much acetaminophen

Severe liver damage may occur if you take more than 4,000 mg of acetaminophen (Tylenol) in a 24-hour period. If you take acetaminophen (Tylenol), take it alone. Do not take it with any prescription pain medicine.

- Today more than 600 over-the-counter and prescription medicines have acetaminophen in them. Some patients exceed the recommended dose either by accidentally taking multiple acetaminophen-containing products without realizing it, or by not following dosing instructions.
- Narcotics such as Percocet, Vicodin and Norco have acetaminophen in them—from 325 mg to 500 mg per tablet. It is very important that you know the dosage and that you do not combine it with other products containing acetaminophen.

If you were taking a prescription bone medicine before surgery

Your surgeon will tell you when it is OK for you to start taking these medicines again. Do not start taking any bone medicine—including Forteo, Fosamax, and Reclast—until you talk with your surgeon.

Swallowing problems are common

It is common to have trouble swallowing after surgery. During the surgery, the trachea and esophagus are gently held to one side so the surgeon can see and operate on your spine. The movement of the trachea and esophagus may cause swelling after surgery, which may cause:

- throat tenderness
- throat pain
- a choking type of sensation,
- a feeling of fullness in their neck.

These symptoms will slowly go away over the next few weeks or months. Your difficulty with swallowing may persist for months. In very rare cases, these problems may be permanent. Be careful when eating and drinking. Use caution when eating dry foods, large portions of meat or when swallowing large pills. Remember to chew carefully and to take small bites of food. Sleeping with the head of the bed up at 30 degrees for 7 days after your surgery will help to lower the swelling.

For 6 months after surgery, do not take any NSAIDs

Do not use any NSAIDs (Non-steroidal anti-inflammatory medicines) such as Ibuprofen, Motrin, Advil, Aleve, Celebrex, etc. for at least 6 months after surgery. These medicines will actually slow the fusion healing process. Once you no longer need your prescription pain medicine, we recommend you take acetaminophen (Tylenol) when you have pain.
If you cannot even swallow sips of water

This is very rare, but sometimes patients find they are not able to swallow even small sips of water. If this happens to you in the first 5 to 7 days after your surgery, you need to return to the hospital. We will readmit you and give you fluids through an IV.

If you also have trouble breathing

If you find that you are also having problems breathing, you need to call 911 or go to the closest emergency room immediately.

Staying active

Walking

Walking is excellent exercise. Walk as much as you can over the next 6 weeks while you are recovering. The aerobic activity of walking will:

• help your bones fuse by increasing the flow of blood to the area of your neck that was fused
• benefit your pulmonary, cardiovascular, and digestive systems
• help keep blood clots from forming
• increase your muscle strength and endurance.

Riding in a car and driving

• You should not drive for 6 weeks.
• Never drive when you are taking prescription pain medicine.
• If you are required to wear a brace, you should not drive during this time.
  – Some states do not allow collars when driving. If your state does not allow you to drive with a collar, you cannot drive for the first 6 weeks post-op.
  – Remember that you will have limited motion of your neck while driving and wearing your brace. Because of this, your peripheral vision will be limited and driving could be dangerous.
• When you first start driving again, avoid driving during the busy traffic times and remember to carefully position your mirrors before starting to drive.

Riding as a passenger

You may ride in a car as a passenger whenever you feel you can tolerate this.

Protect your neck as you recover

• No athletic activities until you have discussed your limitations with your surgeon at your 6 week check up.
• No lifting more than a total of 15 pounds unless otherwise instructed by your surgeon.
• No overhead activities (washing your hair and brushing your hair are OK).
• No pulling or pushing with your arms.
Sexual activity

You may have sex as soon as you feel it is comfortable. As you recover, the safest position is for you to lie flat on your back.

Preventing setbacks

If you have increased pain for more than 2 hours after an activity, it usually means you’ve done too much too soon. Don’t just reach for the pain pills. Take pain as a warning sign to slow down and pay attention to your posture and movements.

Staying safe if you have pets

If you have pets, you will probably need help taking care of them after surgery. You will not be able to lift heavy bags of pet food or bend down to the floor to fill their dishes. You will not be able to walk your dog using a leash if it is a large dog that pulls. Also, it is very easy to trip over pets, and you will need to be careful since pets may jump. Please make arrangements for assistance with pet care after your surgery.

Keep your 6-week follow-up appointment

Six weeks after your surgery, you will need to come to our office for a follow-up appointment. If no appointment has been scheduled for you within a few days after your surgery, please call us at (615) 875-5100 to set up an appointment.
Six Weeks After Surgery: What to Expect

Remember that you are still healing

Bone takes 4 to 8 months to fully fuse and heal. Until that time, you may still have some aches and pains in your neck and between your shoulder blades. All of this is normal during the healing process. Around 4 to 8 months after the fusion, you may notice a sudden decrease in your pain. That is the day that the bones all fused together and became solid. Patients have often described it as a light switch going off. Help yourself heal faster by:

- During the first few weeks, get up and walk 3 to 4 times a day. Increase the amount of time you walk each week. Getting up and moving will help feed the growing bone with oxygenated blood.
- Avoid extremes motions in your neck. The less you stress your neck, the faster you will heal.
- Don’t take ibuprofen, Aleve, aspirin or any other anti-inflammatories, as they all slow down bone healing. You may take acetaminophen products for pain.
- don’t smoke or use any tobacco products.

If you had arm weakness before surgery

If you had weakness in your arms before the surgery, you can start doing weight lifting 6 weeks after your surgery.

If you had numbness before surgery

If you had numbness for more than 3 weeks before surgery, it is possible that you still have not noticed an improvement. It often takes weeks to months for numbness to get better, especially if you had constant numbness for a long time before surgery. Until the 1-year mark, we won’t be able to tell if the numbness is permanent.
Commonly Asked Questions

How long will I have swelling in my neck?

Every patient is different. The swelling can last for weeks, even a few months. The swelling should get better a little bit each week. Call us right away if it is not slowly getting better.

How long should I avoid driving?

You should not drive while taking narcotics. You should avoid driving during the busy traffic times and remember to carefully position your mirrors before starting to drive. Some states do not allow collars when driving. You should wear your collar when driving, so if your states does not allow you to drive with a collar, then do not drive for the first 6 weeks post-op.

Why do I have pain and muscle spasms in between my shoulders?

When the disc degenerates, it collapses. When the bone graft is placed, it stretches the disc height back to it normal place, which is a change. Once the bone heals and your body adjusts to the new position of these bones, your pain should go away.

When is it safe for me to have sex again?

You can have sex as soon as you feel comfortable doing so. The safest position is for you to lie flat on your back in bed.

Should I be worried that I am having trouble swallowing?

Swallowing problems after this surgery are common. If swallowing becomes more and more difficult, you may be given a prescription for a Medrol dose pack (a steroid medicine). If you start to have trouble breathing, call 911 or have someone take you to the emergency room immediately.

When can I lift weights?

Avoid all overhead lifting. You can lift light weights that are 15 pounds are less. Hold the weights close to your body when you lift. And keep the neck in a neutral position while lifting.

Will the instruments used in my fusion cause alarms in airports to go off?

No. The materials used in your fusion are made of titanium. You will not trigger any alarms or metal detectors.