

## Richard Kube II, MD

### Disc Degeneration, Nerve Impingement, and Stenosis in the Cervical Spine

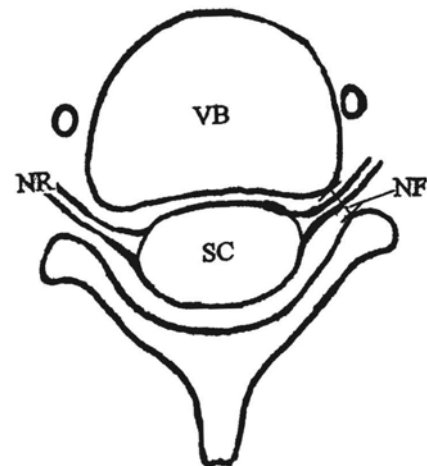
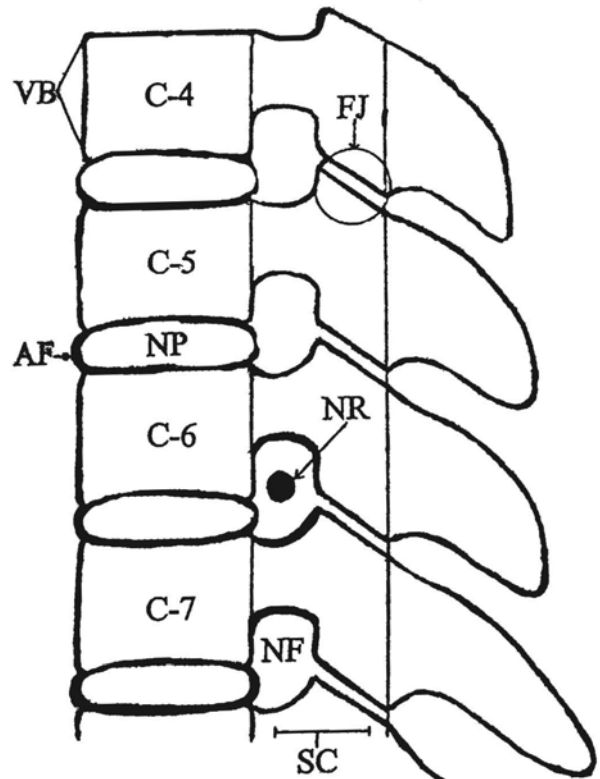
Nerve impingement is a condition in which abnormal pressure is placed on the nerves in the cervical spine [neck] and is often related to degeneration of the discs. In order to understand the various problems that can occur in the cervical spine, you must first have an understanding of the anatomic structures involved.

The cervical spine is composed of seven bones called cervical vertebrae. They are numbered 1 to 7 from the top to the bottom. They are referred to by their number. C1 is the top bone and C7 is the bottom bone. The vertebral body [VB] is the large, weightbearing part of the spine. The bones are connected to each other by ligaments, muscles, and discs.

The disc is made up of two parts. The tough outer part of the disc is called the annulus fibrosus [AF]. It provides the strength of the disc. The soft inner part of the disc is called the nucleus pulposus [NP]. It acts as a shock absorber and also helps to maintain the height of the disc.

Motion is allowed between the vertebrae by two structures. In the front of the spine, motion occurs at the level of the disc. In the back of the spine, motion occurs through small, flat joints called facet joints [FJ].

The spinal cord [SC] lies behind the vertebral bodies and discs and is protected on its backside by an arch of bone. Coming off of the spinal cord are the nerves that go to the shoulders, arms, and hand. These nerves are called nerve roots [NR] and are named after the vertebrae below them. For example, the C7 nerve root exits the spine between the C6 and C7 vertebrae. The hole through which the nerve root exits the spine is called the neural foramen [NF].

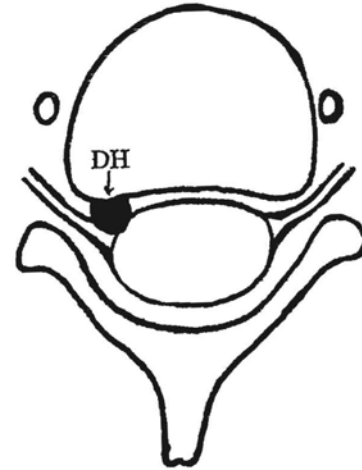


#### Cross section of the Cervical Spine

[As would be seen on a CT scan or MRI]

## Defining the Problem

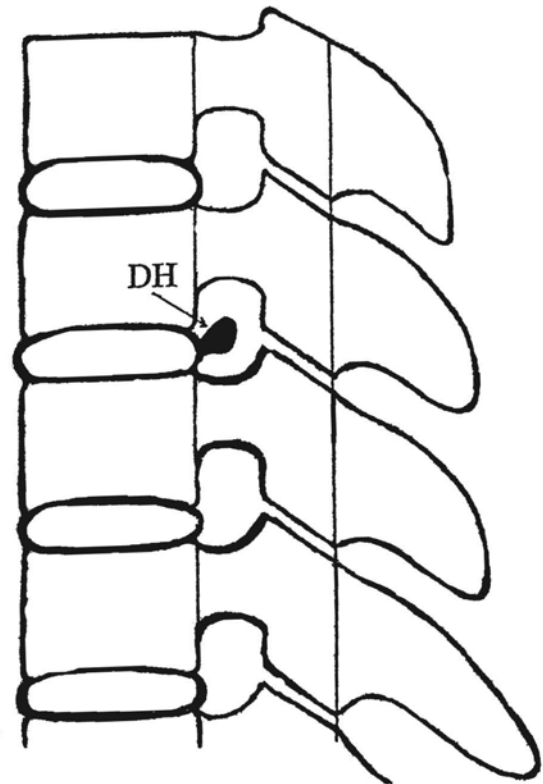
Of all the parts of the cervical spine, it is the disc that leads to the majority of problems that can cause impingement of the nerves. The cervical disc's main function is to provide a strong but stable connection between the vertebral body above and below it. It functions as a joint in the front of the spine. Like many other joints in the body, it can be injured. This can occur quickly because of a traumatic accident or slowly wear out over time as a process of aging. A worn out disc is called a degenerated disc. Not all degenerated discs cause problems, and in some respects disc degeneration is considered a normal part of the aging process. However, in some people, the damaged or degenerated disc can cause pain or weakness by placing abnormal pressure on nerve roots and/or the spinal cord [nerve impingement]. One way in which this can occur is through a process called cervical spinal stenosis.



## Cervical Disc Herniation

A herniation is when the inside of a structure is pushed to the outside of a structure through a hole that should not be there. When the soft central part of a disc is pushed out through a hole in the tough outer part of the disc it is called a disc herniation [DH]. When this occurs, the herniated piece of disc can put pressure on the spinal nerves. This can cause several problems. Some people experience pain in the back part of their neck which spread up to the back of their head, down between their shoulder blades, or to the top part of their shoulder.

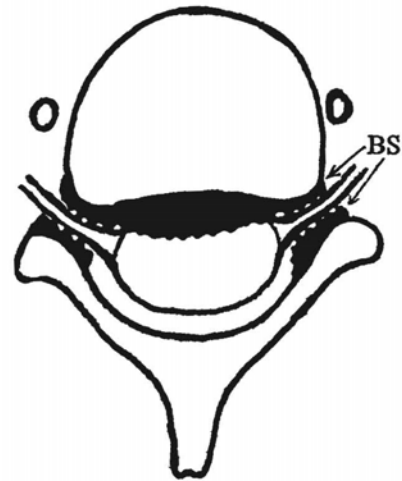
When the herniated piece of disc pushed on a nerve root to the right or left, it can cause pain which shoots down the right or left arm respectively as well as possibly muscle weakness. If the piece of disc is more central in location, it can push directly on the spinal cord and cause symptoms in the arms or legs of shooting pain, weakness, leg clumsiness, or a decrease in balance with walking. The symptoms which are experienced can be quite variable between patients ranging from very mild to incapacitating.



**Cervical Disc Herniation**

## Cervical Spinal Stenosis

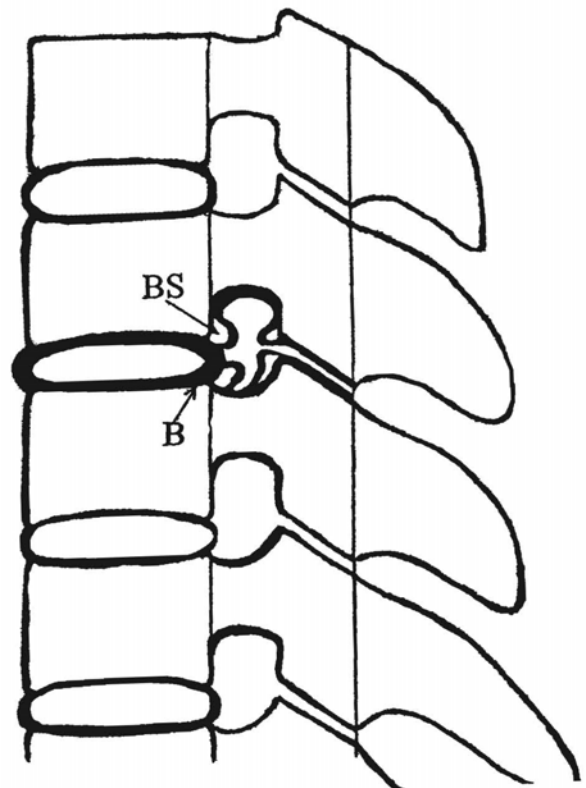
Spinal stenosis is a condition in which the bone tunnel in which the spinal cord lies becomes too small because of degenerative changes to the disc and facet joints. When the disc degenerates, it loses height. This causes the tough outer part of the disc to bulge [B] into the spinal cord area [the spinal canal]. The loss of disc height places increased stress on the facet joints, which can lead to arthritis of these joints. These changes cause the vertebral bodies and facet joints to make bone spurs [BS] which crowd in the spinal cord and/or the nerve roots. The bone spurs on the nerve roots can cause pain and weakness in the arms. The bone spurs and bulging disc pushing on the spinal cord can cause arm symptoms as well as pain and weakness in the legs, loss of balance with walking, and loss of bowel and bladder control. Pressure on the spinal cord is called cervical myelopathy. Symptoms between patients can be quite variable ranging from very mild to incapacitating.



## Cervical Degenerative Disc

Degenerative disc disease is arthritis in the spine. It occurs when the disc loses its water content and height and it can begin to bulge (B). This can lead to wear in the facet joints and bone spurs (BS).

Typically, the arthritic pain is perceived as neck pain. This neck pain can be referred from the top of the head to the base of the shoulder blades. Headaches can also be experienced. Motion in the neck will often increase the pain.



**Cervical Spinal Stenosis**

## **How is Spinal Disease Diagnosed?**

### **XRays**

X-rays show bone well but do not show soft tissues like discs. They can show bone spurs but do not give enough information to be able to judge the degree of neurologic impingement. They can give us the big picture of the overall health of the spine and are useful for diagnosing instability between spinal segments.

### **MRI**

Magnetic Resonance Imaging is the study of choice in most circumstances for the evaluation of lumbar disc herniations and spinal stenosis. MRI shows soft tissues like discs and spinal nerves very well and will also demonstrate other problems such as tumors or infections in the spine. The MRI machine generates 2 dimensional pictures of the spine from several angles. An MRI cannot be done on patients with cardiac pacemakers or metal aneurism clips. If you have an MRI you must lie very still or the pictures will become blurred and useless.

### **CT Scan**

Computed Tomography or CAT scans use x-rays to generate 2 dimensional pictures of the spines. It demonstrates bone spurs very well. Sometimes the CT scan is combined with myelogram in which x-ray dye is placed in the fluid around the spinal nerves. This then allows the CT scan to demonstrate where the bone spurs and soft tissues are pressing on the nerves. People with cardiac pacemakers and aneurism clips can have a CT scan.

### **Selective Nerve Root Blocks**

A selective nerve root block is a procedure performed by an interventional pain specialist in which, under fluoroscopy [live video x-ray], a needle is placed next to a single nerve root, such as the left C5 nerve root. A small amount of local anesthetic and cortisone [steroid] is placed around the nerve root. This procedure is done for two reasons. The local anesthetic works immediately and wears off in a few hours. If the patient experiences relief of his or her symptoms during this time period, it confirms that the nerve root which received the block is indeed the location of the problem. It is important to remember how you felt for the first hour after the injection and report this to the doctor who ordered the test on your follow-up visit. The cortisone which is placed with the local anesthetic decreases the inflammation round the nerve. This can provide partial or lasting symptoms relief in some patients. The steroids usually take a day to two weeks to start working if they are going to help.

### **Facet Blocks**

A facet block is a procedure in which an interventional pain specialist places a mixture of steroids and local anesthetic into one or some of the facet joints in the cervical spine. This procedure is done for two reasons. One reason is to try to localize the specific joints that are causing your pain. The other reason is that the medicine in the injection often provides significant pain relief for a patient while he or she is in therapy. Sometimes the steroid can provide long term relief of pain for patients.

# Cervical Stenosis and Degenerative Disc

## Do I Need Surgery?

### Cervical Spinal Stenosis

There are two basic types of cervical stenosis, although some patients have both types. The first type of stenosis consists of symptoms in the neck and arms only caused by bone spurs on the nerve root. These patients are treated similarly to the patients with a cervical disc herniation. The second type of patient has symptoms from bone spurs squeezing the spinal cord itself. This is called cervical myelopathy and is much more serious. Studies have shown that without surgery about 25-30% of patients have improvement of their stenosis symptoms. However, in about 70-75% of patients with cervical myelopathy treated without surgery, there is no neurologic improvement and many have a slow, progressive worsening of their neurologic injury [Data from The Spine fourth edition, Rothman and Simeone, p. 467]. Surgery is done to prevent progression of the neurologic injury and create the best environment possible to allow the nerves to recover. The longer and more severe the symptoms, the less likely that they will improve without surgery and surgery becomes less effective in returning a patient to a normal neurologic status.

### Cervical Degenerative Disc

With cervical degenerative disc disease, there are often several discs and facet joints that are involved. These discs and facet joints are each capable of producing pain over a wide region of the neck, shoulders, upper back and even over the head. Since there is a wide region affected by each disc and facet, there is considerable overlapping and it is very difficult to determine which disc or facet is causing pain in a particular place. It is for this reason that surgery for symptoms of neck pain only is extremely controversial and rarely performed.

## When is it Reasonable to Consider Surgery?

1. When your pain cannot reasonably be controlled with medications, physical therapy, and/or cortisone [steroid] injections. Pain and/or weakness are the most common reasons people have surgery for cervical stenosis. Only the patient knows best how much pain or weakness he or she is having and if they want to have something done about it.
2. When your symptoms last longer than 2-3 months and keep you from doing what you enjoy doing or are preventing you from working or having a good quality of life.
3. When your stenosis has caused significant weakness in your arms.
4. When your symptoms seem to get better but keep returning when you do your job or other things you enjoy doing and prevent you from having a good quality of life.
5. All patients with cervical myelopathy, unless other medical problems prevent the surgery from being safe and all patients with weakness that is becoming worse.

## What Kind of Surgery is Done for Cervical Stenosis?

If the stenosis is present at one level, an Anterior Cervical Discectomy and Fusion [ACDF] is performed at the involved level. In this procedure, a one to two inch incision is made on the front of the neck. The front of the spine is reached by taking advantage of the space between the trachea [wind pipe] and esophagus [food tube] on one side and the carotid artery on the other. An x-ray is taken to confirm that the correct disc has been found. The entire disc is then removed to allow access to the bone spurs. Once they are removed, a piece of bone from the bone bank is placed in the disc space. The bone graft will fuse the two bones and the graft into one bone. A small titanium plate and screws are placed over the bone graft to connect the vertebral bodies above and below the graft together. The wound is closed with absorbable sutures. A small drain is placed in the wound and pulled out the following day.

In some cases, a vertebroectomy is performed when two or more levels are involved. This involves all the parts of an ACDF with the addition of removal of the central part of the vertebral body and placement of a long bone graft or spacer over the entire area. All levels involved are fused into one long bone. Sometimes, the patient will require the placement of screws and rods in the back of the spine as well.

In some cases of stenosis where the nerve compression involves 3 or more levels, patients can undergo a Laminectomy in which a bony arc in the back side of the spine is removed to decompress the spinal cord. This procedure will most often include a fusion as well.

Cervical disc replacements and other motion preserving technologies are other options. At the present time, they are approved by the FDA for general use and are indicated for select patients.

## What are the Results of Surgery?

For spinal stenosis, surgery is more than 90% successful at stopping the progression of neurologic deterioration [Zang, S.H., Yin, H., Yang, K., et al.: Anterior intervertebral disc excision and bone grafting in cervical spondylotic myelopathy. *Spine* 8: 1619, 1983]. The majority of patients will have improvement of their neurologic function in the months following surgery, but not all patients will return to normal. Patients with preoperative improvement compared to those operated on earlier.

## What is the Recovery Period Like?

For a single level ACDF, most patients can go home the next day. Patients that have two or more level surgery usually stay in the hospital for a day or two. It is very rare to require a blood transfusion after surgery as most of these surgeries have only a small amount of blood loss. The pain from surgery is greatest for the first 1 to 3 days after surgery and slowly improves from there. Pain is usually controlled by narcotic pain medicine [pain pills]. About 50% of patients are off their pain pills within 10 days. Your first follow-up appointment will be in 6-8 weeks from the time of surgery.

Restrictions after surgery consist of no lifting over 15 pounds for 6 weeks and you cannot take any aspirin or anti-inflammatory medicines [arthritis pills, Advil, Aleve, Motrin, Ibuprofen] for 3 months.

You are allowed to drive when you can turn your neck comfortably without the use of pain pills. In the patients who require a collar after surgery, they cannot drive until they are released from their collar.

You can return to work when your symptoms allow. Most people take about 2 weeks off of work. If your job requires heavy lifting, you will need to be put on light duty status with a 15 pound working restriction. You should not work if you are taking enough pain medication to affect your judgment or reaction time.

You will not be allowed to get your wound wet in the shower until after 1-2 days when there is no drainage.

# Cervical Disc Herniation

## Do I Need Surgery?

Studies have shown that many people with cervical disc herniations get better without surgery. The majority of people who get better without surgery see gradual improvement in their symptoms in the first 6-8 weeks. People with more severe symptoms initially are more likely to have persistent symptoms. Non-operative treatment of cervical disc herniation consists of physical therapy, medication, traction, and possibly cortisone injections. As long as your symptoms are improving, surgery is not indicated. If your symptoms do not improve with non-operative treatment or your improvement has stopped at a level you cannot live with, surgery is a reasonable consideration.

## When is it Reasonable to Consider Surgery?

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2. When your symptoms last longer than 2-3 months and keep you from doing what you enjoy doing or are preventing you from working or having a good quality of life.
3. When your stenosis has caused significant weakness in your arms.
4. When your symptoms seem to get better but keep returning when you do your job or other things you enjoy doing and prevent you from having a good quality of life.
5. All patients with cervical myelopathy, unless other medical problems prevent the surgery from being safe and all patients with weakness that is becoming worse.

## What Kind of Surgery is Done for Cervical Disc Herniations?

The most common procedure performed for a cervical disc herniation is called an Anterior Cervical Discectomy and Fusion [ACDF]. In this procedure, a one to two inch incision is made on the trachea [wind pipe] and esophagus [food tube] on one side and the carotid artery on the other. An x-ray is taken to confirm that the correct disc has been found. The entire disc is then removed to allow access to the bone spurs. Once they are removed, a piece of bone from the bone bank is placed in the disc space. The bone graft will fuse the two bones and the graft into the bone. A small titanium plate and screws are placed over the bone graft to connect the vertebral bodies above and below the graft together. The wound is closed with absorbable sutures. A small drain is placed in the wound and pulled out the following day.

You may also need a cervical corpectomy. If multiple discs are involved, the entire vertebra is often removed and a spacer put into its place. The bone taken from your neck is placed into the spacer to promote fusion of the bone. A small titanium plate and screws are sometimes used to help stabilize the spacer.

Cervical disc replacements are another option. At the present time, they are approved by the FDA for general use in select cases.

## What are the Results of Surgery?

For a single level ACDF, 90-95% of patients have a satisfactory result [Orthopaedic Knowledge Update: Spine 2, p.302]. Failure to obtain a fusion occurs in 2-10% of patients and is more common on multilevel cases. Surgery on the cervical spine is better at relieving pain down the arm than pain in the neck, although, this often improves with surgery that involves a fusion. Satisfaction rates are a little lower for two level ACDF procedures. Results of disc replacements are at least as good as for fusion.

## What is the Recovery Period Like?

For a single level ACDF, most patients can go home the next day. Patients that have two or more level surgery usually stay in the hospital for a day or two. It is uncommon to require a blood transfusion after ACDF and only slightly more common to require transfusion with cervical corpectomy.

The pain from surgery is greatest for the first 2 to 3 days after surgery and slowly improves from there. Pain is usually controlled by narcotic pain medicine [pain pills]. About 50% of patients are off their pain pills within 10 days. Your first follow-up appointment will be in 6-8 weeks from the time of surgery.

Restrictions after surgery consist of no lifting over 15 pounds for 6 weeks and you cannot take any aspirin or anti-inflammatory medicines [arthritis pills, Advil, Aleve, Motrin, Ibuprofen] for 3 months.

You are allowed to drive when you can turn your neck comfortably without the use of pain pills. In the patients who require a collar after surgery, they cannot drive until they are released from their collar.

You can return to work when your symptoms allow. Most people take about 2 weeks off of work. If your job requires heavy lifting, you will need to be put on light duty status with a 15 pound working restriction. You should not work if you are taking enough pain medication to affect your judgment or reaction time.

Damage to esophagus can require repair and possibility of a temporary feeding tube for severe infection. All the common risks and complications of this surgery have been discussed. There are many more complications that could occur but they occur so infrequently they are not listed or discussed.

You will not be allowed to get your wound wet in the shower until after 1-2 days when there is no drainage.

If you have decided to have surgery, the following questions and answers are things YOU NEED TO KNOW beforehand:

### When can I return to work?

After a 1 to 2 level fusion, most patients are able to return to work in 2 weeks on light duty and full duty at 6 weeks. A small number of patients return to work in a few days, when they are unable to take off for 2 weeks [several of my surgeon friends went back to work in 2-3 days]. For more difficult cases, multilevel fusions, or people who have a complication, it might take longer. Patients with disc replacements generally return to work and activities faster.

### If you are fusing [permanently locking] bones together in my neck, will I lose motion in my neck?

50% of the motion in our neck occurs between the skull and the top two cervical bones. The majority of surgeries are done below this. If you have a very degenerated disc at the level which you are going to have surgery, you have already lost some of the motion that comes from those areas. A fusion will stop all motion between the levels being fused. In general, patients who have a single level fusion do not tend to be able to tell a difference in motion once they have recovered from the surgery. For two levels, they might or might not be able to tell. For three levels or more, people are aware that they have lost motion.

### What is the timeline on my limitations?

SHOWERING: You must keep your wound dry for 1-2 days and it must not be draining before you can get it wet in the shower.

HOT TUB/BATH: You should **not** soak your wound in warm water for an extended period of time for 3-4 weeks.

DRIVING: You can drive if you are not wearing a brace, off of narcotic pain pills, and can turn your body without significant discomfort. These are good rules to follow, but you yourself are ultimately responsible for your own driving safety.

EXERCISE: Walking, stationary bike, and no bouncing aerobics can be resumed when your pain allows.

NONCONTACT SPORTS: Activities like golf, weight lifting, running, swimming, road biking and bouncing aerobics can be resumed in 3 months.

CONTACT SPORTS: Karate, wrestling, football, aggressive basketball, or any other aggressive sport in which you could receive a blow to your back should not be undertaken for 3 to 6 months and you should be sure you have regained your strength, balance, and coordination first.

TANNING: You should protect your scar from the sun for one year.

### What medicines should I not take BEFORE surgery?

HERBAL MEDICINES: These must be stopped 2 weeks before surgery. Failure to do so can result in the cancellation of your surgery.

ASPIRIN AND ANTIINFLAMMATORY MEDICINES [ADVIL, MOTRIN, IBUPROFEN, ALEVE, AND OTHER ARTHRITIS MEDICATIONS INCLUDING

PRESCRIPTION ARTHRITIS MEDICINES]: These medicines cause blood to be “thinned” [not clot as well] leading to increased bleeding during surgery and an increased risk of suffering a bleeding complication. They should be stopped a week before surgery.

COUMADIN [WARFARIN], AND OTHER BLOOD THINNERS OR PLATELET INHIBITORS: You must discuss this with your surgeon so you can make a plan to be off of it long enough to be ready for surgery.

### You should take your other prescription medicines as usual.

The morning of surgery you can take them with a small sip of water, but not with anything else [no coffee, milk, soda — JUST WATER].

### What medicines should I not take AFTER surgery?

Aspirin and anti-inflammatory medicines — they decrease the ability of the bones to heal together and should not be taken for 6 weeks. One baby aspirin a day for you heart is ok.

### Can I go on a diet to lose weight before or after surgery?

NO. No dieting two weeks before or six weeks after surgery. Your body needs calories and good nutrition to heal well. Poor nutrition is associated with an increased infection rate.

### What do I need to know about the metal screws and plate in my neck?

It is made out of titanium. It is only taken out if it is causing a problem and this is rare. It should not set off alarms at the airport.

### Why am I not allowed to smoke before or after surgery?

Smoking before surgery increases your risk of certain anesthetic complications. The earlier you stop and/or the less you smoke, the better.

Smoking after surgery has several negative consequences that have nothing to do with the bad things you already know about it [such as heart disease and lung cancer]. It increases your risk of wound break down and infection. It greatly increases your risk of your bones not healing [failing to have a proper fusion] and this often leads to further surgery. The nicotine in smoking is a poison to the discs in the spine and increases your risk of having problems at other levels. You should not smoke for a minimum of 3 months after surgery and after that you should just stay off of it. It is better to quit a few weeks before surgery so you don't go through smoking withdrawal during your recovery. You will not be allowed to smoke during your stay in the hospital. I do not allow nicotine patches or other nicotine replacements because this is bad for the fusion as well.

### Do I need physical therapy after surgery?

Most people do not. Patients who have had severe muscle weakness and/or balance problems because of nerve compression might need physical therapy. This will be decided on a case-by-case basis. Walking increasing amounts every day or an exercise bike or swimming are all good forms of physical therapy.

### What do I need to be able to do in order to go home?

You must be able to walk [assuming you could walk before surgery].

You must be able to urinate.

You must be able to drink liquids.

You must be able to swallow pills.

### How long am I in a cervical collar [brace]?

In the past, patients were kept in a hard collar for 6 weeks or longer. Now, because we put a plate on the bone to hold things in place, you are kept in your collar for comfort [if you have a single level fusion]. If you have a longer fusion, you could be in a brace for a longer time.

### What will my scar look like?

You will have a scar that is approximately 1 to 2 inches long that goes from side to side [horizontal] on the front of your neck. This scar runs in line with what are called skin lines which allows the scar, when fully healed, to have a very minimal appearance. The scar will go through phases of healing from a scab to a red puffy line to a thinner red line and eventually a small fine white line. The scar will continue to improve in appearance for two years. A small percent of people are prone to make big scars when they heal [called keloids] and are usually aware of it because they have big, puffy scars from injuries in their past.

## What sort of pain will I experience after surgery?

Patients complain of three main types of pain after surgery. The first is from their incision and muscles on their neck. This is the primary pain related to the surgery and is most intense for the first 48-72 hours and slowly improves after that. The second type of pain is a sore throat from the breathing tube and pain with swallowing. This typically improves in 2-4 days. Most people are able to swallow their pills a few hours after surgery even though they have some discomfort. The third complaint is pain down the legs from the nerves being irritated from the surgery. If the nerves have been pinched for a long time, it can take a while for them to recover. Not all nerves will have a full recovery although the goal of the surgery is to give the nerves the best possible environment possible for healing.

During the first 6-8 weeks of recovery, occasionally patients will mention other more random types of pain such as pain in the opposite leg or a new pain that started in the back or leg in a different place. The majority of these pains go away on their own as the back heals and should not be worried about unless they persist for more than 6 weeks.

During your recovery you will have good and bad days but should see and overall improvement on a week-by-week basis.

Surgeries done on the back of the neck are generally more painful than those done on the front.

## How long will it take for the nerves to recover?

This is quite variable among different patients. Many patients wake up from surgery with their arm pain gone. For others, it may take weeks to months for the nerve to quit hurting. If you have surgery for muscle weakness in your arms, it will take time [months] for the muscles to rebuild and for your strength to improve. Some patients do not get all of their strength back. In some surgeries, especially those done for pressure on the spinal cord itself, the main goal is to stop the continued loss of strength. A small number of patients will wake up from surgery weaker than before surgery but most of these tend to improve with time as the nerves settle down.

## What do I need to know about pain medicines?

The pain pills used after surgery are usually a combination pill containing Tylenol and a narcotic. There are many different types and they come in different strengths. The number of pills you can take is limited by the amount of Tylenol [acetaminophen] in them, as you should not take more than 4000mg [equal to 8 extra strength Tylenol pills] of Tylenol per day. They are usually taken every 4-6 hours.

The most common side effects of pain pills are drowsiness, feeling "funny", nausea and constipation. EVERYONE will get some degree of constipation from pain pills and many people require stool softener and/or a laxative while taking them. These can be purchased at the drug store without a prescription and you should not feel bad about using them. You will feel bad in 4-5 days after surgery if you don't have a bowel movement. This is not an emergency; you just need to take these medicines to control your constipation.

Many people get nauseated with pain medicine. Nausea to pain pills is a side effect, not an allergy. You should inform your doctor of past problems with pain pills. Young people are more likely to get nauseated than older people.. Here are some tips to avoid nausea with pain medicines if you are having trouble:

1. Don't take your medicine on an empty stomach.
2. Nausea can be dose related. One pain pill might be OK for you when two at a time is not.
3. Motion increases nausea. If you are having trouble, try to lie down for the hour after you take your pill.
4. You will need more pain medicine for the first few days after surgery than you will later so just take it easy for the first few days.
5. Some people find that they are able to switch to regular Tylenol a few days after surgery and often only take a pain pill at night.
6. If the above tips do not work for you, you should call your doctor.

You should not drive while under the influence of pain pills, just as you should not drive when you are drinking.

Pain pills work best when you stay ahead of the pain. For the first few days after surgery, I recommend setting your alarm for the middle of the night to take some pain medicine so that you will still have some in your system when you wake up in the morning. Also, use a piece of paper to chart when you take your medicines so that you can keep track of what and when you are taking things.

REFILLS ON PAIN PILLS ARE ONLY DONE DURING OFFICE HOURS. Pay attention to when you will run out of pills. If you need more, you must request them 48 hours in advance so that the office can properly process your request [don't wait to call until Friday if you are going to run out on Sunday, make the call on Thursday at the latest]. Some pain pills cannot be called into the pharmacy and a prescription must be picked up from the office.

#### What if I have trouble sleeping after surgery?

It is OK to take Benadryl 25 or 50 milligrams before you go to bed to help you rest. This can be purchased without a prescription.

#### Will I get antibiotics for surgery?

Everyone gets antibiotics at the time surgery. The rate of infections on the front of the spine is very low.

#### Should I use donor bone or my own bone from my hip for my fusion?

For a one level disc fusion, a bone block from a bone bank is used. If any bone is removed from your neck, it will be used instead.

For a fusion surgery on the back of the neck, bone graft from the bone bank is used.

#### What do I need to do before surgery?

1. Review when you need to be at the hospital.
2. Remember no eating or drinking after midnight before surgery.
3. If you have kept any x-rays or MRI or CT scans, bring them with you.
4. Take your regular medicines as described above.
5. Bring a list of your regular medicines and their dosages with you.
6. Be sure you have lined up someone to take you home from the hospital. You will want to have someone available to you for the first day or two you are home to help out.
7. Have simple foods lined up to eat in case you get nauseated. Saltines, 7UP, and chicken soup are popular.
8. Buy some gauze and tape for dressing changes after surgery as well as a thermometer.
9. Make sure all your questions have been answered.

#### What does a wound infection look like?

Wound infection usually occur 7-14 days after surgery. A small amount of drainage for 3-5 days after surgery is OK. Just change your dressings every 8-12 hours until they stay dry. Do not put **anything** like Betadine, hydrogen peroxide, or Neosporin on your wound, just dry dressings. If your drainage is increasing over a day or two and soaking your bandages you should call your doctor. It is normal to have a small amount of redness around the wound. If the redness is increasing, if the skin is becoming more tender to touch, or if white pus is coming out of the wound, you should call your doctor. Most people have a low grade temperature [99-101.4 degrees] after surgery. This is your body's normal reaction to the surgery. If you are having chills and sweats and/or temperature over 101.5, you should call your doctor. Feeling the patient's forehead is not an accurate way to check a temperature.

#### Am I breakable?

The combination of metal rods and screws as well as the bone graft makes a strong construct. Many people feel "breakable" after surgery and are afraid to resume their normal activities for fear of hurting their neck. As long as you follow the postoperative instructions, you should have no problems. If you have poor bone quality and/or a fusion over many levels, the doctor might have you wear a hard collar for a while to protect your back. If the doctor has any concerns about the stability of the back, he will put you in a hard collar.

### Why is my skin yellow around the wound?

This is left over cleaning solution from surgery. It will wear off with time.

### Other pain control techniques

Cold pack/heating pads: A cold pack on the wound for the first two weeks is OK if it helps your pain. After two weeks, you can use a hot or cold pack if your wound is healing well and if it makes your pain better. Avoid falling asleep on a heating pad because of the risk of getting burned.

In general, the sooner you get up and about and back to your regular activities the better you will feel. Lying around all day in bed will make you feel worse. Pace yourself and slowly increase your activities every day.

### When should I call the doctor?

If you have increasing weakness or numbness, a loss of control of your bowel or bladder, uncontrollable nausea that is not helped by the above instructions, or symptoms of a wound infection as described above, you should call your doctor.