Spinal Stenosis

Symptoms & Treatments

By Dr. Tony Mork, Endoscopic Spine Specialist

Welcome to this guide on Spinal Stenosis!

Hi, I'm Dr. Tony Mork. If you're reading this, you — like millions of people out there — are probably suffering from pain in the shoulder, arm, hand or buttock, leg and/or foot. Back pain can be caused by spinal stenosis as well. You may suspect that you're suffering from this condition, or perhaps your doctor has already confirmed that you are.

I hope this guide helps you to better understand the possible causes of your pain and gives you a clear idea about what options you have for treatment and more importantly, for relief.

In addition to the information provided in this guide, you'll also find links throughout to relevant video explanations and real patient stories. (Click these videos to watch them in your internet browser.) Please let me know if you have any questions.

Dr. Tony Mork

Board-Certified Endoscopic Spine Surgeon

What is Spinal Stenosis?

Spinal stenosis is a common condition that occurs when the space around the nerves or spinal cord narrows. This narrowing puts pressure on the spinal cord and/or the spinal nerve roots, often leading to pain, tingling, numbness and muscle weakness. The condition usually begins gradually and progresses over time. Depending on where the narrowing takes place, you may feel these symptoms in the lower back, buttocks, legs and feet, shoulder, arms and hands.

Who Gets Spinal Stenosis?

Spinal stenosis affects men and women equally and is most common in older adults (50+); typically, the normal "wear-and-tear" effects of aging and arthritis of the spine cause it. (Degenerative changes of the spine are seen in up to 95% of people by the age of 50!) However, it may occur in younger people who are born with a small spinal canal or those who have a herniated disc.

Types of Spinal Stenosis & Symptoms

The most common forms of spinal stenosis are cervical (the neck) and lumbar (the lower back). Thoracic spinal stenosis, which affects the mid-back, is much less common. Many people show evidence of spinal stenosis on MRI scans but have no signs or symptoms. Symptoms generally develop slowly over time (again, most patients are over 50) and they may come and go. Unfortunately, these symptoms can eventually become chronic and quite debilitating. Symptoms vary, depending on the type and severity of spinal stenosis:

1. Lumbar Spinal Stenosis

When stenosis occurs in the lower back, it's called lumbar spinal stenosis. This is the most common form of spinal stenosis. An estimated 400,000 Americans suffer from leg pain and/or low back pain caused

by lumbar spinal stenosis!

Lumbar spinal stenosis symptoms may include:

- Lower back pain
- Tingling, weakness, numbness or pain that radiates from your lower back into the buttocks and legs (sciatica)
- Weakness, stiffness, numbness, cramping or pain in your legs, thighs or feet that makes it hard to walk (claudication)
- Loss of sexual activity frequently accompanies painful back conditions

More serious symptoms include:

- Abnormal bowel and/or bladder function (cauda equina syndrome)
- Partial or complete leg paralysis. (This is considered a medical emergency and you should get to an emergency room as quickly as possible!)

You're typically comfortable at rest but symptoms flare up or get worse when you:

- Stretch or extend your back, i.e. when you walk (especially downhill)
- Stand straight for prolonged periods
- Lean backwards

The pain gets better, sometimes almost immediately, when you:

- Flex your spine forward, i.e. when you walk uphill
- Lean over something (like a grocery cart)
- Sit or lie down

2. Cervical Spinal Stenosis

When stenosis occurs at the level of the neck, it's called cervical spinal stenosis. Like lumbar spinal stenosis, it's frequently caused by age-related degeneration but may also be congenital or caused by disc herniation. Unlike stenosis in the lower back, cervical spinal stenosis can cause symptoms in both the upper and lower extremities. This condition can be more dangerous because it involves compression of the actual spinal cord, whereas lumbar spinal stenosis involves compression of the spinal nerves going to the buttocks and lower extremities.

Cervical stenosis symptoms may include:

- Neck pain and headaches
- Weakness, numbness, tingling and/or stiffness in your neck, shoulders, arms, hands, or legs
- Burning pain that shoots from your shoulder down your arm

More serious symptoms include:

- Balance and coordination problems, such as shuffling or tripping while walking
- Clumsiness in your hands, such as being unable to button a shirt, turn a doorknob or open a jar
- Loss of "position" sense (the ability to "know" where your arms and legs are when you have your eyes closed)

More on The Causes of Spinal Stenosis

Aging

As already mentioned, spinal stenosis most often results from the "wear-and-tear" effects of aging, including arthritis. Either structural changes or inflammation can begin the process. All of the factors below

may cause the spaces in the spine to narrow:

- Your body's ligaments can thicken (ligamentum flavum)
- Bone spurs develop on the bone and into the spinal canal
- Herniated disc(s)
- Facet joints break down and enlarge

Arthritis

As you age, your spinal discs, which act as shock absorbers between your vertebrae, become drier and start losing their spongy quality. This subjects them to greater pressure. Tears in a disc's exterior (or annulus) may allow some of the soft inner material to escape and press on the spinal cord or nerves. At the same time, the bones and ligaments of the spine can thicken due to long-term swelling (inflammation) and arthritis, leading to stenosis.

Osteoarthritis is the most common form of arthritis and is more likely to occur in middle-aged and older people. It's a chronic, degenerative process that may involve multiple joints of the body. It can occur in any joint, but usually affects your hands, knees, hips or spine. Osteoarthritis breaks down the cartilage in your joints and is often accompanied by overgrowth of bone, formation of bone spurs and impaired function. If osteoarthritis affects the spine's facet joints and discs, the condition is sometimes referred to as spondylosis.

Rheumatoid arthritis usually affects people at an earlier age than osteoarthritis does and is associated with inflammation and enlargement of the soft tissues (the synovium) of the joints. When rheumatoid arthritis affects the joints in the spine, it is far more common for the neck (cervical spine) to be affected than for the lower back.

Other Causes:

- **Bone diseases** like Paget's Disease or achondroplasia (rare)
- **Heredity:**
    - Spinal canal is too small at birth

    - Instability of the spine (spondylolisthesis)
- **Trauma:**
    - Accidents and injuries that cause pressure on the nerve roots or the spinal cord.
    - Displaced bone from a spinal fracture may damage the contents of the spinal canal.
- **Tumors of the spine:** Irregular growths of soft tissue can press on the spinal cord and nerves.

When to See a Doctor

Make an appointment with your doctor if you have persistent pain, numbness or weakness in your back, legs or arms.

If your family doctor suspects that you have spinal stenosis, he or she may refer you to a doctor who specializes in disorders of the nervous system (neurologist). Depending on the severity of your symptoms, you might also be referred to a spinal surgeon.

What You Can Do Beforehand

Before the appointment, you might want to prepare a list of answers to the following questions:

- When did you first notice this problem?
- Has it gotten worse over time?
- Have your parents or siblings ever had similar symptoms?
- Do you have other medical conditions?
- What medications or supplements are you taking regularly?

Your doctor may ask some of the following questions:

- Do you have pain? Where is it?
- Does any position ease the pain or worsen it?
- Do you have any tingling, numbness or weakness?

- Do you feel clumsier lately?
- Have you had any difficulty controlling your bowel or bladder?

How Is Spinal Stenosis Diagnosed?

Diagnosing spinal stenosis involves a complete evaluation of your spine. This process always begins with a medical history and physical examination. Your doctor will be able to order tests to help rule out other conditions and help you discover whether spinal stenosis is the cause of your pain. Imaging studies, like the MRI and CT scan, are often used to determine the extent and location of the nerve compression.

Medical History

A thorough medical history is the most important aspect of your evaluation, as it will tell your doctor about your individual symptoms, possible causes of spinal stenosis and other potential causes of back pain.

Physical Examination

During the physical exam, your doctor will try to find the location of the pain and figure out how it affects your movement. You may be asked to:

- Sit, stand and walk. While you walk, your doctor may ask you to try walking on your toes and then your heels.
- Bend forward, backward and sideways
- Lift your legs straight up while lying down. If the pain is worse when you do this, you might have sciatica, especially if you also feel numbness or tingling in one of your legs.
- Your doctor will also move your legs in different positions, including bending and straightening your knees. Your doctor will be checking your strength and ability to move.

- To test nerve function, the doctor will use a rubber hammer to check your reflexes.

The following tests may be done:

- An X-ray of the spine to check for osteoarthritis, bone spurs and narrowing of the spinal canal
- X-rays of the hips or knees
- Tests to check the circulation in your legs and to rule out other diseases with similar symptoms
- An EMG to check the nerves going to your legs
- A CT scan, which takes more detailed images of the back and spinal canal than an X-ray can. CT scans give your doctor a better view of areas of compression within the spinal canal and gives the best images of bone.
- An MRI scan of the spine. MRIs are helpful because they show more soft tissue structures, including nerves, muscles, and ligaments, than seen on X-rays or CT scans. MRIs are helpful at showing exactly what is causing spinal nerve compression and have become the most frequently tool to diagnose spinal stenosis.

Dr. Mork also uses a procedure called Spinal Pain Mapping, which helps identify the part of the spine causing pain. This makes it much easier to choose an effective treatment.

Who Treats Spinal Stenosis?

Internists, chiropractors, or pain management doctors may provide nonsurgical treatment of spinal stenosis. Rheumatologists, who treat arthritis and related disorders, and neurologists, who treat nerve diseases, may also provide treatment. Orthopedic surgeons and neurosurgeons also provide nonsurgical treatment and perform spinal surgery if it's required. Physical therapists may also provide treatment.

What Are Some Nonsurgical Treatments?

If your doctor determines that spinal stenosis is causing your pain, he or she will usually try nonsurgical treatments first. Nonsurgical treatments do not correct the narrowing of spinal stenosis itself but may provide long-lasting pain control and improved quality of life, without requiring more invasive procedures.

Nonsurgical treatment includes:

- Education about spinal stenosis and how to relieve symptoms (you're getting started now with this guide!)
- Over-the-counter medications like acetaminophen (Tylenol), or nonsteroidal anti-inflammatories (NSAIDS) such as ibuprofen (Advil, Motrin) or naproxen (Aleve) may relieve pain. Your doctor may also prescribe other medications to help with pain and muscle spasms.
- Cold packs and heat therapy may help your pain during flare-ups
- Regular, low-impact exercise is very important. It will help you build and maintain strength in your arms, upper legs and abdominal muscles. This will improve your balance, ability to walk, bend and move around. A physical therapist can show you which exercises are right for you. Riding a stationary bicycle, which allows for a forward lean, can relieve symptoms. Swimming can also be a good option.
- Weight loss, to relieve symptoms and slow progression
- Corticosteroids (either oral or by injection) may provide some temporary relief and sometimes work for a few years. If your stenosis is severe, these may not work.
- A lumbar brace or corset to provide some support and help you regain mobility. This approach is sometimes used for patients with weak abdominal muscles or older patients with degeneration at several levels of the spine.
- A type of talk therapy called cognitive behavioral therapy may be helpful if the pain is having a serious impact on your life. This

technique helps you better understand your pain and can help you to better manage it.

What Are Some Alternative Therapies for Spinal Stenosis?

Alternative (or complementary) therapy refers to a range of medical therapies that are beyond the scope of conventional medicine but may be used alongside it to treat disease and ill health. Complementary therapy usually helps to relieve symptoms and improve quality of life. The most common complementary treatments for spinal stenosis are:

1. Chiropractic Treatment:

This treatment is based on the philosophy that restricted movement in the spine reduces proper function and may cause pain. Chiropractors manipulate (adjust) the spine to restore normal spinal movement. They may also employ traction to help increase space between the vertebrae and reduce pressure on affected nerves. Many people report that they benefit from chiropractic care.

2. Acupuncture:

Research has shown that low back pain is one area in which acupuncture has benefited people. Acupuncture is a form of Chinese medicine that has been practiced for over 2,000 years. It's based on the theory that energy flows through your body along pathways called meridians. Acupuncturists believe that illness occurs when something blocks or imbalances this energy. The goal of acupuncture is to correct imbalances of flow and restore health through stimulation.

This stimulation is done by putting very thin needles into your skin at points along the body's energy meridians. Sometimes heat, pressure, or mild electrical current is used along with needles. Most people find that it doesn't hurt.

3. Massage Therapy:

You may also see a massage therapist. Sometimes a few visits will help ease your back or neck pain.

More research is needed before the effectiveness of these or other possible alternative therapies can be definitively stated, but your doctor may suggest these therapies in addition to more conventional treatments.

When Should Surgery Be Considered & What Are The Options?

If your pain does not respond to these more conservative treatments, or if you lose movement or feeling, you may need surgery. However, surgery might be considered immediately if you have numbness or weakness that interferes with walking, impaired bowel or bladder function, or other neurological issues. The effectiveness of nonsurgical treatments, the extent of the your pain, and your preferences may all factor into whether or not to have surgery.

1. Decompressive Laminectomy

The most common type of surgery for spinal stenosis, laminectomy is an open back surgery that involves the removal of the lamina (a portion of the vertebra); some ligaments and bone spurs may also be removed. The surgery requires making an incision into the back (usually 2 to 6 inches) and may include spinal fusion.

2. Spinal Fusion

Sometimes, in spinal stenosis, the vertebrae shift or slip in relation to each other (spondylolisthesis). Abnormal motion (instability) may then occur between the vertebrae. In such cases, spinal fusion surgery (also an open back procedure, with a 3 to 6 inch incision into the back) may be required in addition to decompression, in order to stabilize the

involved vertebrae.

This procedure is performed in severe cases and involves joining the bones together with screws or bone grafts to provide spinal stability. It is often combined with laminectomy. The surgery usually lasts several hours and can be done by combining these two methods:

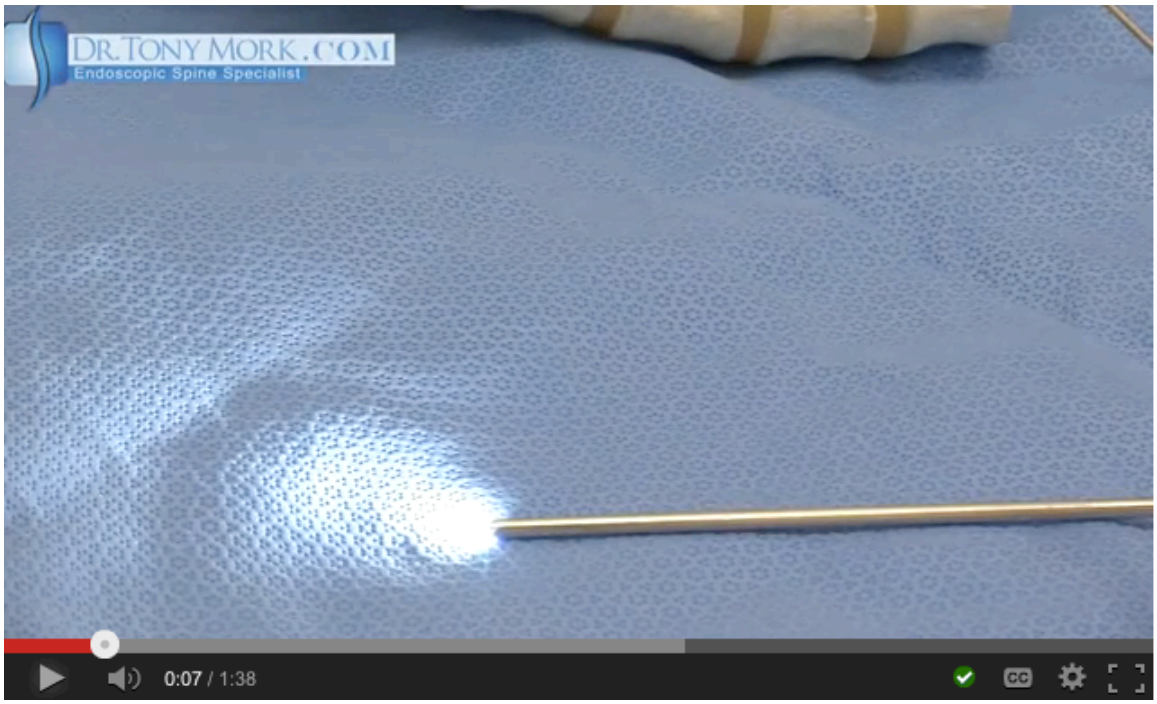
- Bone is removed from elsewhere in the body or obtained from a bone bank. This bone is used to create a bridge between vertebrae and stimulates the growth of new bone.
- Metal implants, such as rods, hooks, wires, or screws, are secured to the vertebrae to hold them together until new bone grows between them.

Watch this video for more about the differences between spinal fusion and decompressive surgery:

3. Endoscopic Spine Surgery

Endoscopic spine surgeons believe that, if surgery is necessary, then it should be performed through the smallest possible incision, with minimal disturbance of soft tissues and without a fusion. Endoscopic spine surgery is truly minimally invasive (versus something like this.)

Endoscopic spinal surgery is performed through a hollow tube or port, using an endoscope that has its own magnification optical system and light source:



In addition to the optics, all the remaining equipment (laser, suction, etc.) is also placed through the tube to perform this surgery. Typically, the smallest tube used is 3 millimeters and the largest tube is 16 mm in diameter, which is smaller than a dime. The tube size depends on the equipment used and surgery being performed.

Endoscopic surgery is decompressive in nature, to avoid a spinal fusion when possible. This procedure can address both soft tissue (discs) and bone issues (stenosis). The size of the tubes are small, so the soft tissue

trauma and scar tissue formation will be minimal, and less surgical exposure means less pain postoperatively and a quicker recovery.

An obvious benefit of endoscopic spinal surgery is that the tube through which the surgery is performed can be placed directly on the area or structure to be operated on. This minimizes any disruption or trauma to surrounding soft tissues that are not problematic.

The endoscopic approach is usually less painful than laminectomy and spinal fusion surgery. Endoscopic surgery can often be performed under conscious sedation (twilight sleep) as an outpatient. Smaller incisions and conscious sedation (vs. the general anesthesia used in laminectomies and spinal fusions) lead to lower risks and fewer complications.

The success rates are very similar to or slightly better than open surgical procedures (particularly fusion procedures) with a much smaller complication rate (long term and short term) -- not to mention the smaller incision size, faster recovery time and less post-op pain.

In the event that endoscopic spinal surgery does not provide enough relief, a fusion can still be performed. But, one cannot perform a fusion first and then easily go on to do an endoscopic spinal surgery, expecting the same results.

Real Patient Stories:

Lee Hopkins, a patient with arthritis and spinal stenosis, talks about why he chose endoscopic surgery over a spinal fusion.

Robert Sadler recounts the invasive traditional surgeries recommended for him, versus the endoscopic procedure he chose.

Tom Coons, who also opted for endoscopic surgery for his lumbar spinal stenosis, speaks about what the actual procedure was like for him.

What Are the Major Risks of Surgery?

All surgery, particularly that involving general anesthesia and older patients, carries risks.

The most common complications of spinal stenosis surgery are:

- A tear in the membrane covering the spinal cord at the site of the operation (dural tear)
- Nerve damage

- Infection
- A blood clot that forms in the veins of the legs (deep venous thrombosis)

These conditions can be treated but may prolong recovery. The presence of other diseases and the physical condition of the patient are also significant factors to consider when making decisions about surgery.

Because endoscopic spine surgery does not always require general anesthesia, it can carry less risk than open back surgery (laminectomy, fusion surgery) for that reason alone. Other risks include dural leak, nerve damage and bleeding, but these are very rare, especially when using conscious sedation.

Blood loss during an endoscopic procedure is usually minimal. Nonetheless, as with any surgery, complications are possible with. As always, the experience of the surgeon plays a very important role.

What Happens After Spinal Surgery?

With any spinal surgery, pain may persist for a few days after the procedure(s), requiring the use of pain medications and NSAIDs to reduce swelling. The immediate discomfort following spinal fusion is generally greater than other types of spinal surgeries and can last for months.

Your doctor will likely recommend a light form of exercise, like walking, right after spinal surgery to reduce swelling and pain. The use of an ice pack may also ease pain. Taking hot showers and using hot compresses may help alleviate muscle pain.

How Long is the Recovery Period After Surgery?

Full recovery after fusion surgery for spinal stenosis typically takes six months to one year, depending partially on the patient's progress in rehabilitation and the extent of the surgery.

Open-back surgery often requires a lengthy postoperative hospital stay, and the patient may require pain medication for several weeks. The incisions can take up to two weeks to heal.

Spinal fusion also often results in a longer recovery period than other procedures. A patient's activity is often restricted for 3 to 4 months after the procedure and a brace may be required. The levels of the spinal column above and below a spinal fusion are more likely to be stressed when the spine moves.

Endoscopic surgery recovery times are much shorter, with fewer side effects and complications. Post-surgery pain, stiffness, and swelling are to be expected, even after a minimally invasive operation like endoscopic spine surgery. But, unlike with open-back surgery, most endoscopic patients can expect to regain close to full mobility within a month, whereas those who undergo open-back surgery usually require at least twice that period of time – or much longer – to start feeling normal again.

Real Patient Stories:

Donna Betts, who had several endoscopic procedures performed over a week, describes her post-surgery experiences.

Dr. Neil Chamberlain compares the short recovery time he had with endoscopic surgery, versus a spinal fusion he'd previously had.

Gary Bergeron talks about being free of pain after endoscopic surgery for spinal stenosis—and about getting back on the golf course, just two months later.

What is Post-surgery Rehab Like?

After spine surgery, you will likely be prescribed walking and strengthening exercises for the lower back and abdomen, to help stabilize your spine.

Physical therapy may be started soon after surgery or may start 2-3 months after, depending on the nature of the compression being addressed. Sometimes, endoscopic patients require little or no physical therapy postoperatively.

What Are the Long-Term Outcomes of Surgical Treatment for Spinal Stenosis?

Removal of the obstruction that's causing the symptoms usually gives patients some relief; most patients have less leg pain and are able to walk better following surgery.

Published results from the Spine Patient Outcomes Research Trial (SPORT), the largest trial to date comparing surgical and non-surgical interventions did find that, for patients with spinal stenosis, surgical treatment was more effective than non-surgical treatment in relieving symptoms and improving function.

Outlook (Prognosis)

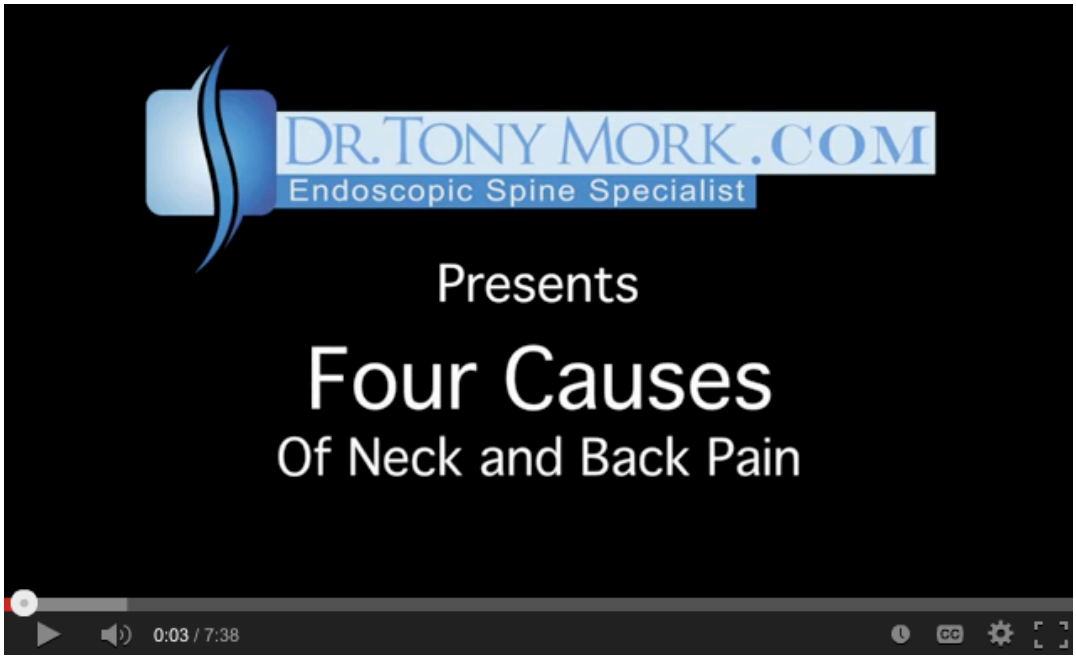
There is no cure for spinal stenosis, but many people with this condition are able to be active for many years, though they may need to make some changes in their activities or work.

Spine surgery will often partly or fully relieve symptoms. However, people who had long-term back pain before their surgery are still likely to have some pain afterward. Conventional, open-back spine surgery has a 60% to 70% success rate, and endoscopic spine surgery success rates have been similar or better.

Mark Campassi was told he needed a fusion; he chose endoscopic surgery instead, Here, he talks about his recovery and how he's doing, more than 2 years later.

Want to Know More About Endoscopic Surgery?

Dr. Mork explains 4 conditions treated with endoscopic spine surgery, including stenosis.



Dr. Mork shows some of the instruments that may be used in a cervical endoscopic spine surgery.

About Dr. Tony Mork

Dr. Mork has personally performed over 8,000 endoscopic spinal surgeries. He has also designed many of the specialized tools used in laser spinal surgery and is constantly pursuing the improvement of spinal care.

Dr. Mork has been instrumental in developing most of the current endoscopic spinal surgery techniques. He's one of the originators and wrote the original peer reviewed articles on most of the endoscopic spine surgery techniques available today. As the co-founder of Microspine and founder of the Endoscopic Spinal Academy, many others use his techniques – and he continues to move forward.

Representing the future of endoscopic laser spine surgery, Dr. Mork has been able to help patients with prior failed spinal surgeries and fusions. Unlike most surgeons, who operate based on just the MRI findings, Dr. Mork's diagnostic method will determine exactly what your problem is so that it can be resolved.

Dr. Mork operates a concierge practice, emphasizing communication, and first-class treatment. He's very committed to his patients and to their care, from start to finish – in fact, he provides all post-operative care himself.

Other benefits of working with Dr. Mork include:

- Surgery is performed in a hospital OR outpatient surgery center
- No general anesthesia required and no incision of larger than 1 inch
- No expensive physical therapy is needed

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Be In Touch!

Have questions? Would you like a complimentary review of your MRI? Please don't hesitate to be in touch! Dr. Mork looks forward to hearing from you. Email him or call toll free: 855-378-6675