

FACT SHEET

MINIMALLY INVASIVE SPINE SURGERY



In minimally invasive spine surgery, surgeons make small incisions, usually with the aid of microscopes or endoscopic visualization (very small devices or cameras designed for viewing internal portions of the body). This inside view of the patient's body is projected onto television screens in the operating room.

Minimally invasive techniques offer several advantages, including tiny scars instead of one large scar, minimal muscle-related injury, a shorter hospital stay (two to three days versus five to six), reduced postoperative pain, a shorter recovery period and the ability to return to work and daily activities much sooner.

Neurosurgeons (surgeons who specialize in the treatment of diseases and disorders of the brain, spinal cord, peripheral nervous system and sympathetic nervous system) and orthopaedic surgeons (surgeons specializing in the surgical treatment of bone and joint disorders) at The George Washington University Hospital Spine Center perform the following minimally invasive spine procedures.

Disc Surgery

Radiculopathy may occur in the neck (cervical) or low back (lumbar). Most patients respond to nonsurgical treatment. However, when symptoms are severe enough to interfere with the enjoyment of daily activities, surgery is needed. Symptoms can include weakness in the arm or leg, and burning pain in the arm or leg (sciatica).

Cervical (Neck)

Surgeons at the GW Spine Center offer minimally invasive treatment for both cervical and lumbar radiculopathy. For cervical radiculopathy patients who do not have arthritis of the joints in the neck, a small incision can be made in the neck. A microscope decompresses the spinal nerves to relieve pain. Many patients go home the same or next day following the procedure.

For patients with pre-existing arthritis of the neck, the best option can be anterior discectomy and either fusion or disc replacement. Anterior discectomy for decompression of the nerve roots is a minimally invasive procedure with very high success rates. The procedure involves a small incision on the neck. Once the decompression is performed, either a fusion or disc replacement may be performed. That decision is made before the procedure, based on the extent of arthritis and number of levels in the neck that are diseased. With

either procedure, most patients are able to go home from the hospital the same or next day.

Lumbar (Low Back)

Lumbar radiculopathy, or sciatica, causes a stabbing pain that shoots from the back or buttocks into the leg. It can also cause numbness or weakness in the leg and foot. The most frequent cause of this condition is a herniated/ruptured disc in the back, also known as lumbar disc disease. When a disc is herniated, it can create pressure against one or more of the spinal nerves, leading to severe pain, numbness or weakness in the lower back, legs and/or feet.

With minimally invasive disc surgery, a half-inch incision is made in the back so the procedure can be performed through a small hollow tube. A tiny camera is placed into the tube, allowing a clear view of the nerve and its relationship to the herniated disc. This enables the surgeon to remove the herniated disc.

Not all herniated disc patients are eligible for minimally invasive spine surgery. The ideal candidate has a well-maintained disc height, preferably with 30 percent or less disc collapse, and no evidence of severe spinal stenosis (build-up of bone in the spinal cavity). Benefits of this approach include reduced time in the hospital and a faster recovery.

Spinal Stenosis Surgery

Lumbar spinal stenosis (LSS) occurs as a result of aging and everyday wear and tear on the spine. Symptoms can include persistent, progressive lower back pain, numbness or weakness in the buttocks and legs and symptoms that improve with resting, lying down or bending forward. Stenosis of the spine can also occur in the cervical (upper spine and neck) or thoracic (middle spine) region of the body.

Microendoscopic laminotomy (MEL) is an exciting new treatment option for patients who are candidates for spinal stenosis surgery. MEL accomplishes the same goal of an open laminectomy, but is minimally invasive.

With fluoroscopic (X-ray) guidance, a thin needle is placed under the skin on one side of the midline spine. A small (up to one inch) incision is made around this needle. A set of tapered metal dilators are passed over the guiding needle, and the tissue and muscles are then gently spread off of the underlying bone.

THE GEORGE
WASHINGTON
UNIVERSITY
HOSPITAL

UHS
Universal Health

Schedule an Appointment:

To schedule an appointment, please call 1-888-4GW-DOCS

Physicians are independent practitioners who are not employees or agents of The George Washington University Hospital. The hospital shall not be liable for actions or treatments provided by physicians.

081833

FACT SHEET

MINIMALLY INVASIVE SPINE SURGERY

Next, a hollow metal cylinder is passed down to the area of the stenosis and secured. A rigid surgical microendoscopic camera placed through this cylinder provides the surgeon with a close-up, magnified view. With this close-up operative view, the surgeon can microsurgically remove the bone compressing the nerve roots. Benefits of this approach include reduced time in the hospital and a faster recovery.

Spinal Fusion for the Lumbar Spine

Patients with degenerative spinal disease may require spinal fusion surgery to stabilize the vertebrae and alleviate severe, chronic back pain. Spinal fusion involves correcting an unstable part of the spine by joining two or more vertebrae. Traditional open-surgery spinal fusion has been associated with a low complication rate and pain relief for 90 percent of patients; however, many patients report back pain and fatigue as a result of muscle loss that can occur following surgery.

Laparoscopic spinal fusion is a minimally invasive alternative. The lower spinal vertebrae are repaired through an incision directly over the spine (posterior lumbar approach). The upper spinal vertebrae are repaired through an incision in the back or side of the neck (cervical spine). The middle spinal vertebrae are repaired through an incision made in the chest and abdomen (anterior thoracic spine). The abnormal or injured vertebrae are repaired and stabilized with bone grafts, metal rods or both. Benefits of this approach include reduced time in the hospital and a faster recovery.

Spinal fusion with decompression of the nerve roots can be the best option for patients who have spinal arthritis and nerve compression. Fusion can eliminate incapacitating low-back pain. Surgeons use current technology to make small incisions and perform the necessary nerve decompression and bone fusion. Special screws are placed through one-centimeter incisions to hold the spine in place while healing takes place. Hospital recovery time is between two to three days for most patients.

Microscopic Lumbar Discectomy

Each year, approximately one percent of adults in the United States experience lumbar disc herniation that causes sciatica, pain that radiates from the lower back through the leg.

Microscopic lumbar discectomy is a procedure that can be performed as outpatient surgery or as inpatient surgery with a one-night stay in the hospital. The minimally invasive procedure involves making a one-inch incision so the surgeon can remove the disc fragment causing the pain. A smaller incision leads to less blood loss, decreased postoperative pain and a quicker recovery.

Scoliosis and Kyphosis Surgery

Scoliosis is the condition of lateral, or side-to-side, spinal curves. On an X-ray, the spine of a scoliosis patient looks more like an “S” or a “C” than a straight line. A normal spine curves gently backward (kyphosis) in the upper back and gently inward in the lower back (lordosis). Some of the bones in a scoliotic spine may also be slightly rotated, causing a difference in the person’s shoulder height when standing, a prominence in one part of the back of the chest (thorax) or a prominence in the lower back when standing or bent over. The degree of scoliosis may range from mild to severe.

Nonfusion Technologies

Dynesys

Dynesys is a spinal system that offers an alternative to the traditional fusion treatment by using flexible materials to stabilize the spine. Dynesys can provide added stability while keeping vertebrae in a more natural position than traditional fusion surgery.

This procedure is recommended as an alternative to fusion surgery to treat degenerative slipped discs in the thoracolumbar, lumbar or sacral regions. The surgical procedure generally takes a few hours. It involves removing a portion of the affected disc(s) and bone from the spine and implants the Dynesys dynamic stabilization system. The system is attached to the bone (pedicle) on each side of the affected vertebrae and discs. The implants create an active push-pull relationship that stabilizes the affected joint while still keeping the vertebrae in its natural position and allowing controlled limited motion.

Although full recovery from surgery and improvements in back pain can take several weeks, many patients experience almost immediate relief of any leg pain, and recovery is often shortened because fusion is not required. Rehabilitation is prescribed by most doctors and should be followed to ensure a full recovery and a positive outcome.

The primary advantage of the Dynesys system is the preservation of the intervertebral discs and structure of the affected vertebrae and preservation of motion. During clinical trials, patients benefited from a significant reduction in pain and the possibility of resuming normal daily activity sooner thanks to reduced hospital recovery time.

Cervical Disc Replacement

The GW Spine Center was the first nonmilitary hospital in the Washington, D.C. area to offer total cervical disc replacement to the public. Cervical disc replacement offers an alternative to spinal fusion for patients suffering from the symptoms of degenerative disc disease (DDD) of the cervical spine. Individuals suffering arm pain or weakness caused by DDD may be candidates for cervical disc replacement.

The Prestige ST Cervical Disc System is used to replace damaged discs with an artificial disc designed to maintain motion and flexibility at the treated level. This prosthetic disc is constructed of stainless steel in a unique, two-component configuration. The two-piece ball-and-trough design allows for the motions of a natural intervertebral disc: flexion, extension, side bending and rotation.

Cervical disc replacement surgery involves replacing a diseased or damaged disc with the prosthetic disc. The two components are placed in the disc space between the vertebrae and attached to vertebral bodies on either side. The Prestige ST Cervical Disc System is available in a variety of sizes, allowing for close matching to a patient’s anatomy.

THE GEORGE
WASHINGTON
UNIVERSITY
HOSPITAL

UHS
Universal Health