



## Low back pain, Parkinson's disease, epilepsy, carpal tunnel syndrome, brain tumors and more— A brief look at when to see a neurosurgeon

Take this quick word association test. What do you think of when you hear “neurosurgeon?” You probably said to yourself “brain surgeon.” You’re half right. Actually, less than half right. Neurosurgeons do operate on the brain and that is their public image. But neurosurgeons spend about 70 percent of their time treating spine problems.

Neurosurgeons are medical specialists who diagnose and treat the entire nervous system. That means they treat disorders of the brain, spinal cord and spinal column, plus the nerves that travel through all parts of the body such as the hands, legs, arms and face. They routinely see patients for low back pain, carpal tunnel syndrome, epilepsy, stroke, Parkinson’s disease, sciatica, pinched nerves in the neck, sports injuries, chronic pain and a host of other ailments.

The American Association of Neurological Surgeons, a scientific and educational association for neurosurgeons, recently completed a statistical study that shows the range of neurosurgeons’ expertise. The number one surgical procedure performed by neurosurgeons was spine (includes back and neck disorders), followed by brain (includes aneurysms, tumors and head injuries), CSF shunting (for hydrocephalus), peripheral nerve (includes carpal tunnel), pain-functional (includes medication pumps and deep brain stimulation) and blood vessel abnormalities (includes strokes).

That study focused on surgical procedures. However, despite that study and notwithstanding what their name implies, neurosurgeons are not simply surgeons. That is another common misconception about neurosurgeons. Their role in treating disease is far more extensive than performing surgery.

Neurosurgeons often provide or recommend non-surgical care. They diagnose what is wrong and work with the patient to develop the optimal treatment plan, whether that includes surgery or not. For example, most cases of back pain are treated with anti-inflammatory medication, physical therapy and muscle relaxants. A common treatment a

generation ago, surgery is now considered necessary for only a small percentage of back pain patients.

Some of the specific disorders of the brain, spine and nerves commonly treated by neurosurgeons include:

**Aneurysms** – an abnormal increase in diameter (dilation) of a blood vessel.

**Carotid artery disease** – a disorder affecting one of the major blood vessels that carry blood to the head and neck.

**Carpal tunnel syndrome** – a painful condition that occurs when the ligaments in the wrist are inflamed after being aggravated by repetitive movements.

**Cerebral palsy** – a motor nerve disorder caused by a permanent brain defect or an injury at birth or soon after.

**Cervical spine disorders** – conditions that cause constant pain in the neck or shoulder, tingling or numbness in the arms or weakness when using arms or hands.

**Chronic pain** – pain that generally persists or reoccurs over a long period of time.

**Craniosynostosis** – a birth defect in which the bones of the skull close prematurely, limiting or distorting the skull’s growth.

**Epilepsy** – a disorder that causes abnormal electrical discharges in the brain.

**Head injury** – a major health problem commonly occurring in teens and young adults. The most common effects of a head injury are a hematoma (blood clot in the brain) or contusion (“bruised brain”).

**Herniated disc** – a break in the cartilage surrounding a disc in the spine, causing pressure on spinal nerves that produce pain down the legs.

**Hydrocephalus** – a disorder in which too much spinal fluid, usually under high pressure, accumulates in the cavities of the brain.

**Low back pain** – the second most common chronic pain after headaches. Causes include disc herniation, spinal stenosis, tumors, infections and inflammatory diseases.

**Lumbar spinal stenosis** – a narrowing of the spinal canal that may result in nerve compression as well as pain that travels from the

lumbar spine into the legs.

**Parkinson’s disease** – a slowly progressing disorder caused by damage to brain cells. Symptoms include tremor, or involuntary and rhythmic movements of the hands, arms, legs and jaw, stiffness of the limbs, loss of spontaneous movement and an unsteady walk.

**Pituitary tumors** – growths in the pituitary gland, which rests at the base of the brain.

**Sciatica** – inflammation of the sciatic nerve, usually accompanied by pain and soreness of the thigh and the leg.

**Spina bifida** – occurs during the third and fourth weeks of pregnancy, when a portion of the fetal spinal cord fails to close properly. As a result, the child is born with a part of the spinal nerve roots protruding from the back. With early treatment, the child can lead an active and productive life.

**Spinal cord injuries** – commonly referred to as a “broken” neck or back, spinal cord injuries can lead to paralysis and loss of motor function in the arms and legs.

**Stroke** – caused when normal blood supply to the brain is interrupted. This can happen by a blood clot (ischemic stroke) or bleeding in the brain (hemorrhagic stroke).

**Trigeminal neuralgia** – a disorder of the facial nerve, which may cause painful spasms.

**Tumors of the brain and spinal cord** – symptoms occur due to pressure on neural structures, with resultant irritation or destruction.

Neurosurgeons are well prepared to deal with a variety of complex cases. They have one of the longest training periods of any medical specialty. They spend four years in an accredited medical school, complete an internship that may last a year and then complete five to seven years in a neurosurgical residency program. In addition, some neurosurgeons opt to complete an additional fellowship in a specialized area of study after their residency.

The years of training are necessary because of the complexity of the nervous system. The advanced training also enables neurosurgeons to use some of the most sophisticated techniques in medicine. Few medical specialties come close to neurosurgery in terms of technological advances. Neurosurgeons use three-dimensional brain imaging, incision-free stereotactic neurosurgery, operating microscopes and other cutting-edge techniques to treat patients.

To locate a neurosurgeon in your area, visit the Find a Neurosurgeon section of the Web site of the American Association of Neurological Surgeons at [www.aans.org](http://www.aans.org).