

Virginia Spine Institute - FAQs

1. What are common causes of back pain?

Back pain is one of the most common ailments known to man. Approximately 80% of the adult population will develop a significant episode of back pain sometime during their life.

Fortunately, most of these will spontaneously resolve. However, approximately 10% to 20% will develop into significant chronic and/or recurrent episodes of back pain.

Wear and tear conditions, such as degenerative arthritis and degenerative disc disease, are some of the most common causes. Low back joint restrictions and/or sacroiliac joint restrictions are also a common cause of acute low back pain. Muscle pulls and tears may also cause low back pain, but usually the symptoms from muscular etiologies are short-lived.

Weak or de-conditioned muscles, lack of flexibility, and poor posture all aggravate underlying conditions and worsen symptoms. Uncommon causes of pain include infection, cancer, fractures, aneurysms, and/or internal organ problems.

2. What is a disc?

A spinal disc is the ligamentous structure that attaches one vertebra (a spinal bone) to the adjacent vertebra. The purpose of the disc is to allow for motion of the spine. Many people consider the disc to be a "shock absorber" between the bones of the spine (vertebrae); however, this is just one purpose of the disc. The more important function of the disc is to allow for motion in the spine. Specifically, the disc is a very tough ligament that allows the spine to move in multiple directions, i.e., flexion, extension, side-bending to the right or left, rotation to the right or left, and distraction and compression along the axis of the spine. A healthy disc has a soft central portion, which is often likened to a jelly-like center. The outer portion of the disc consists of very tough ligaments, which are arranged in a circumferential fashion. It is made of multiple layers criss-crossing as they encompass the jelly-like center. It is this very tough outer ligamentous portion that allows the spine to move in multiple directions. The disc itself does not have any specific blood supply or nerves within the disc. However, the outside of the disc is richly innervated with nerve fibers. It is these nerve fibers on the outside of the disc which, when stimulated or irritated, cause the patient to feel severe back pain. The nerves that supply pain sensation to the outside of the disc are not to be confused with the nerves that pass behind the disc and travel down into the extremities. When the nerves that travel down into the extremities get pinched, a pattern of pain that radiates into the extremities is produced. Pain radiating into the extremities from a pinched nerve is called radicular pain. Pain or irritation of the nerves that innervate the outside of the disc produce central or back pain if the disc in question is located in the low back. If the disc is located in the neck, then neck pain is produced.

3. How do disc injuries cause back pain?

An injury to the disc can cause pain in several ways. First, the injured disc can be painful just by tearing the outer portion of the disc and irritating the nerves that innervate the outer edge of the disc. Secondly, the injured disc may begin to degenerate, causing enzymes to be

produced. These enzymes can leak out of the disc and further irritate the nerves on the outside of the disc. This is a common cause of chronic back pain. Third, the injured disc is often weakened and does not function properly. Specifically, it does not prevent abnormal motion of one vertebra in relation to the next. For example, if a knee ligament or shoulder ligament were injured and stretched, the individual would lose support in that knee or shoulder. The same happens at a microscopic level in the back when a disc is injured. This allows for micro-translation movements of the disc, which causes irritation of the nerves that innervate the disc, as well as of the surrounding facet joints and supporting tissues. This micro-instability then further accelerates the degenerative process and causes further increased production of degenerative enzymes in the disc, which further aggravates the back pain. This is the most common scenario present in chronic low back pain situations. An injured disc can also cause a piece of disc tissue to break off and compress the surrounding nerves as they pass to the lower extremities next to the disc. Pinching of these nerves usually causes leg pain if the pinch is in the low back or arm pain if it is in the neck; however, depending upon the position of compression, they may also cause central pain in the neck or in the low back.

4. How did I herniated my disc?

Some disc herniations occur during extreme injuries, such as motor vehicle accident, excessive lifting episodes or falls. In those instances, the mechanism of injury is obvious, as pain will often develop soon after the event. However, other patients develop a herniation without an obvious, known trauma. In those instances it is often postulated that the herniation may have developed due to one of several mechanisms. First, a significant injury may have had a cumulative effect on the disc, but was unrecognized at that time. Second a series of relatively minor injuries may have had a cumulative effect on the disc. Finally, simple progressive degeneration, or “wear and tear” may have weakened the disc to the point of herniation.

5. What are the symptoms of a herniated disc?

The herniated disc is defined as a disc where the outer lining has been torn, and the inner soft disc material has expressed out of the tear and compressed the adjacent nerve roots as well. This pressure on the nerve roots tends to cause not only low back pain but leg pain, as well. This can be accompanied by numbness and weakness, which can be progressive in nature in its more severe form. When disc herniations are very severe, they can even affect the function of the control of the bowel and bladder. This is called cauda equina syndrome and tends to be very unusual complication of disc herniation.

6. What is the difference between a herniated disc and bulging disc?

A normal healthy disc has a usual height and shape. As a disc begins to degenerate and lose its normal water content, it begins to lose some of its ligamentous strength. With this loss of water content, there is usually a loss of height, which causes the edge of the disc to protrude beyond the edges of the bone. This is comparable to letting air out of a car tire. As a car tire

loses air, the tire broadens out as it loses height. The same is true for a disc. When the disc extends beyond the normal edge of the bone by greater than 50% of the circumference, it is termed a bulging disc.

A herniated disc occurs when a portion of the disc extends beyond the edge of the normal adjacent bony edges and measures less than 50% of the circumference of the disc. A disc herniation usually occurs when the outer lining of the disc becomes torn, allowing a portion of the disc material to be expressed out of the normal confines of the disc itself. If this disc material extends out and pinches one of the nerves passing by as it goes to an extremity, it often produces radicular pain into that extremity. Specifically, if a part of the disc extends out of the disc in the low back and pinches one of the nerves to the leg, then pain will extend down into the leg in a pattern of the nerve being pinched. If the disc material that is herniated does not pinch or irritate a nerve going to an extremity, often there will be no leg symptoms. In fact, there may be no symptoms or just back pain. A bulging disc may pinch a nerve, again causing extremity pain. More often than not, a bulging disc is associated with back pain.

7. Are all bulging discs and/or herniated discs painful?

Many people have discs that are degenerative or abnormal and yet experience no symptoms. It is also possible that they may have had symptoms at one time, but they improved without any specific intervention. Many times, these degenerative discs are not painful at all until some significant injury or trauma damages them further, leading to significant instability and pain. The bottom line is just because a disc is abnormal does not mean it has to be painful.

8. What is the treatment for herniated discs?

When a disc herniates, the initial symptoms of pain, numbness, and weakness may be quite severe. As time allows for healing to occur, the symptoms will often subside. The pain will usually subside within a few weeks. The numbness and weakness may take longer. The initial treatment is directed towards relieving the inflammatory pain with non-narcotic anti-inflammatory medication such as NSAIDs or a short course of steroids. Occasionally a brief treatment of narcotic pain medication may be necessary. As the pain subsides, a course of physical therapy will aid in the healing process and help prevent deconditioning. The use of resistive exercise will help re-strengthen the weakened muscles. If the pain fails to respond to conservative measures or the numbness and weakness are progressive, then surgical decompression may be indicated.

9. What is the natural history of low back pain?

The natural history of low back pain is to improve over a few days to one to two weeks. In fact, 90% of patients report that the pain has subsided by two months without any intervention. However, 40% of patients develop significant recurrent symptoms within six months of the initial onset of symptoms. Fortunately, most recurrences are not disabling but may lead to chronic problems with intermittent episodes of exacerbation. Approximately 10% to 20% of patients who develop low back pain develop significant chronic low back pain, which limits them.

10. When do most people develop significant low back pain?

The usual age of onset of severe low back pain is between 30 and 50 years of age. The most likely reason for this is that the degenerative process has begun, and individuals in that age range are still active enough to be stressing their bodies thereby placing the somewhat degenerative disc at risk for injury. It is also common in this age group for individuals to be very preoccupied with their life and occupation so that they may not take as good care of themselves as when they are younger. This leads to increased stress on the disc thereby predisposing them to injury and significant pain. The incidence of low back pain is equal between males and females. It is not uncommon for adolescents to experience low back pain. While this was previously thought to be a sign of severe potential problems, it is now recognized as common entity and usually not dangerous. Fortunately, it is often self-limiting if these adolescents learn good body mechanics and participate in a proper strengthening and conditioning program for their spine and overall body.

11. What is degenerative disc disease (DDD)?

Degenerative disc disease is basically arthritis of the disc. The disc serves as a “cushion” between the bones of the spine. With age, stress and strain, these disc can become arthritic and “wear out.” In this situation, these discs are termed degenerative. The first line of treatment is conservative treatment, which often includes anti-inflammatory medications, physical therapy and a back education class to strengthen and stabilize the spine. Patients learn how to prevent placing great amounts of stress on the back and how to lift properly, which can protect the back. In patients where the conservative treatment fails, we will often have to perform a fusion where we remove the disc and the arthritis and fuse one bone to its adjacent segment to alleviate the stress and the painful disc.

12. What is lumbar instability?

True Lumbar Instability occurs when the ligaments, discs and joints that support the bones of the spine are damaged to the point they can no longer hold the bones together. This causes back pain. As the bones move out of place, they can pinch the nerves and cause leg pain and weakness. The term “Lumbar Instability” is sometimes used instead of Internal Disc Disruption, or Derangement. This is a similar condition in that there is damage to a disc which leads to back pain, although there is no visible abnormal movement of the bones. The abnormal motion is microscopic.

13. Does smoking cause back problem?

Smoking has been linked to accelerating the degenerative process of disc degeneration. Smoking has also been linked to increased perception of pain amongst individuals who undergo treatment. It has also been associated with increased use of narcotics in trying to control pain and increased dissatisfaction with non operative and operative treatment of back problems and other orthopedic disorders. In patients who undergo surgery, the overall success rate is much lower in patients who smoke than in patients who do not smoke when

all other factors are equal. The bottom line is that we know that smoking causes heart disease, lung disease, vascular disease, and cancer. In addition, smoking has now been linked to increased perception of pain and spinal problems.

14. Is bed rest a good treatment for back pain?

Traditionally, bed rest was the recommended treatment for back pain. However, many recent studies have shown that bed rest is counterproductive and often detrimental in treating back pain. Bed rest allows muscles to de-condition and has been shown to significantly slow the rate of recovery of patients from acute back pain. The recommended activity modification for patients with back pain is to stop whatever activity is causing the back pain. Specifically, if bending and lifting cause back pain, then bending and lifting should be avoided. If a twisting motion, such as playing golf, causes back pain, then playing golf should be stopped. However, the individual with the back pain should remain as active as they can be as long as they are not having pain. Bed rest should only be used in cases where the patient is having severe pain and cannot even tolerate simple activities of daily living, such as standing, walking, or sitting without suffering from severe pain. In these cases, then a very short course of bed rest combined with appropriate medication is often found to be beneficial. However, that period of bed rest should be limited to the amount of time it takes to get the pain under control after which time the patient should be placed into an aggressive rehabilitation program consisting of strengthening and joint mobilization.

15. What is Spinal Stenosis?

Spinal stenosis is a condition that affects the elderly. It is the most common spinal condition leading to surgery in people over the age of 60. In this condition the spinal canal is narrowed to a degree where the spinal cord or nerve roots may be compromised. The pinching results from a combination of disc bulging, hypertrophy or enlargement of the facet joints and thickening of a ligament called the ligamentum flavum. The resulting symptoms of pain, numbness, and weakness are called neurogenic claudication. These symptoms are more diffuse than those associated with disc herniations due to the involvement of many nerve roots as opposed to a single root. The symptoms are aggravated by standing and walking, which increase the curve of the lumbar spine. This causes thickening the ligamentum flavum and narrowing of the spinal canal. Sitting relieves the symptoms by straightening the spine and stretching the ligament thus opening the spinal canal.

16. What causes neck pain?

There are many causes of neck pain, and the pain itself can be divided into the categories of: mechanical, coming from the joint or the disc; radicular, coming from a nerve or nerve root; or myelopathic, coming from the spinal cord. The spine is composed of segments that have essentially three joints, the disc in the front and two facet joints in the back. These structures are very resistant to wear-and-tear for the first two decades of life but often during our twenties, these tissues start to wear out. This

mechanical pain is called degenerative disease and is the most common reason for neck pain. Radicular pain is usually sharp, electrical type pain that goes down the upper extremity in a particular pattern. It may be associated with numbness or weakness. It can be aggravated, or relieved by different motion or positions of the head or neck. Myelopathic pain refers to the symptoms coming from compression of the spinal cord. This type of pain is usually in both arms and can go down into the legs. It is also associated with numbness or weakness in the extremities in the arms and legs. Because there are so many reasons for neck pain, it is very important that the physician do a very careful history and physical exam of the cervical spine. The physical exam can also include an examination of the entire body, as well as the neurologic and vascular system, in order to determine exactly where the pain is coming from.

17. What is a herniated disc?

A disc is the shock absorber between adjacent vertebrae. When it deteriorates it may "bulge," "slip," "rupture," or "herniate" and press on the spinal cord or nerve roots. Herniation means that a piece of disc is somewhere it does not belong.

18. Compare a bulging disc to a herniated disc?

Normally the annulus of the disc acts as a strong covering for the disc. Bulging discs usually have a weakened annulus causing them to bulge under the stress of the body's weight, while herniation implies a tear in the annulus resulting in a piece of disc material moving out toward the nerves or the spinal cord.

19. Are bulging discs normal in an adult?

Bulging discs are extremely common. The incidence of significant disc changes on an MRI scan is almost identical to the age of the patient. For example, if 100 40-year old patients underwent MRIs of the cervical spine, approximately 40% of them would show some degenerative disc changes. While these changes are technically abnormal, they are extremely common and occur as a consequence of the normal aging process.

20. Does whiplash cause disc herniations?

A whiplash injury to the cervical spine can cause damage to the muscular or ligamentous structures of the spine. If the whiplash does injure the annulus of the disc, this can contribute to a herniated disc of the neck. It is extremely unlikely that a whiplash injury would cause a herniated disc in a previously normal disc. The more common situation is that someone already has significant degenerative disease of their spine and is involved in some sort of traumatic incident which exacerbates their preexisting symptoms.

21. Should I have an MRI for my neck pain?

The decision to have a MRI scan should be made by your physician after a careful history and physical examination. Unless there is evidence of a significant neurological deficit, allowing the passage of some time is desirable prior to obtaining the MRI scan. The reason for this is that the vast majority of patients with arm or neck pain will improve by themselves without having to have any sort of therapy or testing. Therefore, the MRI scan and whatever findings may be found in the MRI scan can actually lead to significant confusion in terms of patient diagnosis. If you are, however, suffering significant weakness, problems walking, or any trouble with your bladder, an MRI is essential.

22. What can I do to avoid neck surgery?

It is important to realize that neck and arm pain related to cervical disc disease is often a benign condition that will resolve with rest, medication, and sometimes physical therapy. If you are suffering from neck or arm pain related to cervical disc disease, it would be best to be evaluated by a spine specialist. Then, after other potentially more serious conditions have been ruled out, one can begin a program of neck rehabilitation. This consists of a workplace evaluation to maximize office ergonomics. Also, important sleep and rest habits have to be included. Lastly, alterations in work around the home or recreational activities can alleviate much of the problem.

23. Are there alternative therapies available to help me to deal with neck pain?

Anti-inflammatory agents, oral steroids, physical therapy, injections, and electrical stimulation are all valuable alternatives to surgery. Determining the proper one depends upon the specific patient.

24. When do I need surgery?

If the pain is progressive, severe, and disabling, I would strongly consider surgery.

Numbness, tingling, and weakness are all possible signs of nerve compression and may indicate a need for surgery. To summarize: intractable pain, progressive nerve damage, or deformity of the spine.

25. Will I have irreversible damage if I delay surgery?

If pressure on a nerve or the spinal cord lasts for a long period of time, it is possible that the changes in the nerve or spinal cord can become permanent. This would generally be the case in someone who had significant weakness or clumsiness as symptoms of their spinal degeneration. For patients who primarily have neck pain, there is probably little chance of permanent damage if surgery is delayed, as long as their problem is related to simple degeneration. Of course, patients with cancer, infections, fractures, or instability involving the spine may need much more urgent attention. In general, the longer nerve compression or spinal cord compression exists, the less likely the chance of a complete recovery.

26. When do I need a fusion?

The decision to perform a cervical fusion for patients with disc disease is complex. Depending upon the shape of your spine, the nature of the disc disease, and your symptoms, your surgeon may opt to perform a cervical fusion at the time of a discectomy. Not every patient who has a cervical discectomy requires a fusion. There are both anterior and posterior approaches to taking pressure off the nerves that do not require a fusion. However, fusions are commonly performed and are extremely useful in patients with significant loss of disc space height, deformity of their neck, significant neck pain in addition to arm symptoms.

27. Why is surgery often done through the front of the neck?

There are a number of reasons why the operation is done from the front. First, is the location of the problem. Usually, the pressure on the nerves and the pressure on the spinal cord are from the front, and so it makes much more sense to take the pressure off the spinal cord from this approach. If surgery were carried out from the back of the neck, we would actually have to move the spinal cord out of the way. Second, the approach from the front is much less invasive than it is from the back. We hardly have to cut any muscles when we go from the front. It's a very bloodless procedure going in from the front, and it's basically the standard way that we take pressure off the nerves.

28. What effect does a fusion have on the rest of the cervical spine?

The effect that a fusion would have depends on what level of the spine is fused and how many levels are fused. Most of the nodding and turning of the head occur at the uppermost

cervical levels, which are relatively rarely involved in cervical fusion operations. The most common fusions are performed in the middle of the cervical spine. By causing the bones to grow together at one or more levels, some of the stress of head motion will be transferred to adjacent cervical spinal levels. There is a suggestion that this may cause accelerated breakdown at the adjacent spinal levels, although this has not been proven. Once again, however, one should not have a cervical fusion unless it is considered absolutely necessary. At that point, the risk of degeneration at adjacent segment levels may be worth taking.

29. Should I have allograft bone, autograft bone, or synthetic bone?

The decision whether or not to use allograft, autograft, or synthetic bone is based upon many factors including the patient's smoking history, the patient's age, the degree of osteoporosis, and the use of an anterior cervical plate. This is an individualized decision and the patient's own preference is very important in making this decision. Some patients would prefer not to have any foreign material implanted into their bodies and other patients are very eager to avoid the potential pain and morbidity of a graft harvest from their own hip. This is something that really needs to be discussed on an individual basis. Synthetic bone grafts are actually similar to plastic which holds the disc space open until fusion can occur. Bone morphogenetic protein (BMP) can be used as well to help fusion occur.

30. Will the surgery lessen my mobility?

A one-level, anterior cervical fusion will not lessen your mobility, especially if you already have degeneration in that disc. By definition, in having a disc herniation, that disc must already be degenerated. The most common places where discs herniate, which are at the C5-C6 or C6-C7 levels, do not contribute much to cervical motion, so you will not notice any significant decreased movement after surgery.

31. Will I have pain after surgery?

All patients have some pain after surgery. The use of a muscle splitting approach such as an operation in the front of the neck, seems to significantly decrease the pain of surgery. The use of allograft bone rather than the patient's own hip bone can also decrease the pain after surgery. Some people will have a little hoarseness and a sore throat for a short period of time. Generally with medications, people can go home within a day or so after of surgery.

32. Will my fusion help my neck pain and arm pain?

The overall good outcome rate for cervical disc surgery is very high. The majority of patients with radicular symptoms improve dramatically. Our treatment for neck pain is less successful.

I would estimate that only 50-60% of patients without significant injury or deformity of the spine that undergo surgery have significant resolution of the neck pain. The fusion rates vary based upon the type of bone graft used and the number of levels operated upon. Your surgeon can go over these numbers with you.

33. What are my risks?

The risks of any surgery include: bleeding, infection, and the risk of general anesthesia. Anterior approaches to the spine entail dissection through the anterior neck which involve structures such as the trachea, the esophagus, and the carotid arteries. Any of these structures could potentially be injured by the surgical approach. As well as removing the disc we are working right next the spinal cord and nerve roots. These structures could be injured and may cause weakness or numbness in the arms, as well as potential as bowel, bladder, or sexual dysfunction. The vertebral artery is close by and can also be injured during discectomy and this could result in a life threatening stroke. The of a serious complication from a cervical discectomy is extremely low and most serious reported complication rates are in the 1-3% range.

34. Will I have to wear a collar after surgery?

The need for a collar after surgery depends upon the extent of surgery and the specific risks of the patient. Bigger surgeries are more likely to need a brace afterward. Risks include smoking, prior surgery, and osteoporosis which generally require longer times in a collar. In an uncomplicated patient, I place a cervical plate and screws to completely avoid the need for a collar.

35. When will I be back to my normal activities? Driving?

You will be able to go back to normal activities like exercising and driving when you feel like it unless you are wearing a collar. You cannot drive in a cervical collar as it limits your ability to turn your head. In general, patients who have anterior cervical discectomies with plates placed are usually driving with in a week or so. We ask the patients not to drive unless they are off pain medications and are feeling comfortable enough to drive.