Deteriorate or Fight Back

At 71 years old, Richard Norton started to have low back and leg pain and tingling in the feet. He was able to continue his normal routine of daily living and vigorous exercise for awhile, but eventually he had to change and modify his lifestyle to accommodate the pain and symptoms. Mr. Norton was diagnosed with lumbar spinal stenosis and spondylosis. He underwent injections, physical therapy, and medications, but ultimately the conservative treatments did not withstand.

“It got to the point that the only time I was pain free was when I was sitting in my recliner with my legs up,” said Norton, “I realized that I needed to try something or slide into senility. I wanted to get back to my active lifestyle.”

In June of 2010, he underwent a spinal fusion procedure. Spinal fusion procedures are a very serious matter, and often patients are apprehensive to even hear the utterance of spine surgery. “My thought process was either I have complete faith in Dr. Orndorff or don’t do it. I didn’t worry or obsess about it, I had no concerns,” recalls Mr. Norton.

“In recommending surgery for Mr. Norton, I felt that he had exhausted all forms of conservative care. Even though he was on the older scale of patients we treat, he had long-term activity goals and wanted to be able to achieve them and maintain a good quality of life. We discussed fusion versus decompression alone, and decided together that decompression with fusion was the best surgical option for him,” reflects Dr. Orndorff.

Mr. Norton goes on to express that the experience with Dr. Orndorff, the hospital, and all the staff was wonderful, and the staff was incredibly encouraging and helpful. “I was treated very well. Everyone was so attentive to me from check-in to discharge.” Mr. Norton confides that he was glad he decided to undergo surgery before his condition became really debilitating.

“I trained for surgery and prepared for discharge. I was told that I would have to be able to walk 1 mile before I was discharged. I didn’t give in to the pain; I pushed through and stayed active. I did my part. I was proactive,” he explains.

Mr. Norton was back at the gym six months later! “I was realistic; I knew I had two options: either deteriorate or fight back.” When it comes to spine surgery, there are no guarantees, but for many, such as Mr. Norton, there can be a world of difference before surgery compared to after surgery. He adds that in order to prepare, continue and maintain success, he made sure that he listened and followed all instructions that were given to him by Dr. Orndorff and the medical staff.
Spine surgery, in general, should be considered a last resort, after failure of all forms of conservative options (medicines, physical therapy, injections, and neuro-psychologic evaluation).

Fusion surgery is typically recommended to stabilize unstable vertebral body segments during surgical decompression around the nerves and thecal sac (protective membrane around spine). I recommend fusion surgery in the setting of instability and when I feel that decompression alone will not be adequate, or that I might increase a patient’s stability.

Fusion surgery has changed dramatically even since I have finished my fellowship training. The technology of the implants we are using has increased the surface areas for fusion, which has increased the rates of fusion, and thus, improved a patient’s outcome. The biologics (medicinal product that is created from a living organism) also continue to evolve and have dramatically increased our rates of fusion as well. Consequently, we do not have to harvest bone from a patient’s hip as frequently.

My specialized training from my spine fellowship has been vital in treating spine pathologies. Whether spine surgery is performed by an orthopedic surgeon or a neurosurgeon, they should be fellowship trained. Fellowship status is the highest level of training and is a necessary step a surgeon should take in order to improve the chances of better outcomes for their patient.

In my training, I was fortunate to be taught several important principles:

1. Not everyone needs or can benefit from spine surgery.

2. For a long time, spine surgery had a bad reputation because either the procedures performed were not the correct ones to treat the patient’s pathology or we did not have the appropriate technology. Now that we have made tremendous strides with our technology, we have the technological support to perform the correct operation for the patient.

3. It is fundamentally important to offer the right surgery that will address the patient’s specific pathology, and in doing so, dramatically improve the patient’s outcome.

Common Questions Patients Ask Their Provider When Considering Undergoing a Spinal Fusion Procedure

Q: When do I need surgical intervention?
Surgery should be a last resort. The patient should have tried and exhausted non-operative treatments. Both clinical and health history factors need to be assessed, evaluated, and meet certain criteria. In the end, it is the patient’s decision.

Q: What does “spinal fusion” mean?
Spinal fusion means to join or meld two vertebrae together. Fusion material or bone graft is planted between two vertebrae as an adjunct to fusion. The bone graft may be placed in the disc space and/or amid the transverse and spinous processes.

Q: What is the risk of fusing?
There are no guarantees. Not smoking and following the surgeon’s instructions will greatly improve the chances of fusing. Many patients do successfully fuse.
Q: Once my fusion heals, what are the chances the arthritis will come back? Will I need additional surgery at other levels?
At the index or surgery level, there is no chance. However, adjacent segment pathology (ASP) is possible. ASP is any deterioration that occurs above or below the initial surgical level(s). The literature has reported a 4.4 – 7.4% chance of patients undergoing an adjacent level lumbar surgery within four years of the initial surgery. For the cervical spine, the literature has demonstrated a 6.9% incidence of patients experiencing an adjacent level cervical surgery within two to five years of the primary surgery.

Q: How risky is spine surgery? During spine surgery am I at risk for being paralyzed?
There are no guarantees. The patient should make sure they undergo surgery by an experienced and fellowship trained surgeon. Both cervical and thoracic surgeries happen near the region of the spinal cord. There is some risk of permanent spinal cord injury, but it is still very unlikely. In lumbar surgery, it becomes less likely as the spinal cord ends around the first lumbar level. The rest of the segments, L2-S1, are part of the peripheral nervous system, where weakness is possible, but so is full recovery.

Q: What is the infection rate?
At our clinic, infection rate is minimal at 0.28%. We recommend that patients ask their own provider and hospital for their infection rate.

Q: What are the chances it will be successful?
Many people have done very well with spine surgery. In our clinic and hospital, 89.5% of patients rank their overall experience as a “9” out of “10”. The national average is 71.8%.

Q: If I fall after my spine procedure, will it paralyze me?
Very, unlikely. It is possible to have fractures around the pedicle screws and interbody, but the chance of them dislodging significantly is nearly impossible.

Q: When will I be able to return to work?
A patient’s line of work will influence this decision. Typically, a patient with an office or light duty position can return to work within four to six weeks. A patient with a hard labor or construction job usually will need three months before returning to work.

Q: What medications do I need to stop taking? What medications can I continue to take?
Stop taking NSAIDs, herbal remedies, and diet aids ten days before surgery as they can increase bleeding during surgery. Discuss other medications you take with your surgeon.

Q: How long before I can drive?
Cervical: Once you are no longer taking narcotics as well as no longer wearing your brace.
Lumbar: Once you are no longer taking narcotics.

Q: How long will I be in the hospital?
Cervical: 1 night is typical
Lumbar: Usually 2 nights, maybe 3

Q: How long will I be on pain medications?
Approximately 2 – 3 weeks

Q: When will physical therapy start?
Cervical: Approximately 4 – 12 weeks after surgery
Lumbar: Approximately 6 – 12 weeks after surgery

Q: How long does it take to rehabilitate after these procedures?
Immediately post operatively, a patient should begin walking up to one mile. Physical therapy will begin approximately four to eight weeks after surgery. It is important that the patient follows all post-op exercise and physical therapy instructions.
Goals of Fusion

The basic goals of a fusion surgery are to decompress and relieve the neural elements and realign, stabilize, and fuse the vertebrae together with bone graft to prevent motion at the articulations (places where bones meet) that are producing pain. As a result, function and neurological status should be restored and preserved.

Determining a Fusion Candidate

It should be no surprise to anyone that deciding to undergo a spinal fusion procedure is a big decision for a patient. Spinal surgical procedures are not for the fainthearted! Any surgery, whether it is spine, heart, or knee, is risky, and should be conducted in a hospital that has all the necessary personnel and equipment. Eventually, with the exception of an emergency or trauma situation, the decision to pursue a fusion surgery boils down to the patient’s own judgment. Before a patient decides to proceed with fusion, it is very important that s/he understands the pros and cons of both surgical and non-surgical options. Many patients have demonstrated incredibly successful outcomes, but not everyone. The plausibility of all manifestations resolving completely are typically not high. Most importantly, every patient is different, with unique issues and indications. A patient should expect and request that their treatment plan be individualized.

Each clinician has their own personal criteria and steps to determine if a patient is a fusion candidate, but in general, fellowship trained spine surgeons will determine a fusion candidate via a number of tools (imaging, a physical exam, a neurological exam, and a strength exam), a patient’s medical history, and psychosocial status. Of course, an emergency or traumatic situation may bypass some of the aforementioned criteria.

Medical history and preoperative comorbidities such as smoking, diabetes, older age, obesity, steroid use, malnutrition, and prior spine surgeries have been established as risk factors for surgical and postoperative complications. Smoking has especially been shown to have negative consequences on patients who underwent a fusion procedure. Nicotine has been shown to cause damaging vascular effects. It is believed that nicotine impedes the fusion process due to these negative vascular, cardiovascular, and pulmonary changes, as both blood flow as well the oxygenation of the blood is diminished to the spine. In our clinic, current smokers must be nicotine free (cigarettes, cigars, chewing tobacco, nicotine gum, or patches) for at least four weeks before we will schedule them for surgery. We want our patients to go in to surgery with the best possible chance of fusion.

What You Should Discuss With Your Doctor When Considering Spine Surgery

Age

A patient should consider and discuss their age with their provider when determining the appropriate non-surgical or surgical treatment. Typically, surgeons are hesitant to do a fusion procedure on someone quite young due to the risk of adjacent segment pathology. For individuals who are older, > 85 years old, assessing comorbidities is one of the most important factors when choosing the most suitable treatment.

Health, Lifestyle, and Medical History – smoking, diabetes, obesity, prior surgeries

A patient’s current health status and medical history may negatively impact both non-surgical and surgical outcomes. If applicable:
1. A patient should improve his or her health before pursuing surgical intervention,
2. STOP smoking, both before and after surgery! There is clear evidence that the fusion rates in smokers are dismal, and as a result, those patients will likely require revision fusion surgery. Additionally, smoking can increase the risk of complications – DVT/PE, poor wound healing, and cardiac and pulmonary complications,
3. It is important that a patient has his or her blood sugar under control. Uncontrolled blood sugar increases the risk of infection, poor wound healing, and pseudarthrosis (nonunion)
4. There are increased risks (infection, increased difficulty, complications with surgery, and possible acceleration of wear of adjacent segments) in patients with obesity. We ask our patients to take some ownership of their health, and if we feel that they are too heavy for surgery, we counsel and guide them to proper exercise and nutrition, prior to surgery.

**Type of insurance and financial concerns**

A patient should meet with the clinic/hospital’s patient financial counselor to discuss billing procedures, his or her insurance policy, and any financial concerns. Additionally, the patient must consider the amount of time he/she will be taking from work as well as extra costs (medications, brace, etc).

**What are my expectations?**

In order to prevent any miscommunications, patients should adequately discuss their expectations with their surgeon, the medical team, and the clinic and hospital staff.

**Am I committed to what is asked of me before, during and after surgery?**

Patients need to be willing and able to follow instructions (prepare themselves for surgery, prepare their home, prepare their family and friends).

**Do I have a personal support network?**

The patient needs to have family or friends available to assist him/her after surgery.

**Do I have an advanced directive prepared?**

*Medical Durable Power of Attorney, Living Will, Health Care Instructions*

An advanced directive will make sure that the patient’s decisions about his/her medical care will be honored in the case that he/she are unable to communicate their wishes.

**Have I asked all my questions?**

The patient should make a list of questions for the surgeon, patient financial counselor, medical staff, themselves, and family and friends.

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**Fusion is Important**

Before 2004, published short-term data supported the theory that clinical outcomes are not affected by fusion success. Thus, patients reported good to excellent outcomes in spite of a nonunion. However, a longer-term study published in *Spine* demonstrated that fusion success does have an impact on patient reported outcomes. Clinical outcomes such as pain relief, rise in activity, symptom severity, and physical function were significantly better for patients with a complete fusion compared to patients with an incomplete fusion. In addition, those with a pseudarthrosis (nonunion) had a higher incidence of an additional lumbar surgery or a second try at arthrodesis (fusion).

**Cervical Fusion Criteria**

The combination of the patient and situation will determine whether surgery is not at all necessary, open to consideration, highly recommended, or urgent. In general, demonstrated radiographic instability (instability found in medical imaging) is an indication for spinal fusion. The literature has defined instability as greater than 3 mm of movement, or greater than 11 degrees of range of motion in a standing or neutral position.
In a flexion/extension position, instability has been described as larger than 3.5 mm of movement or a range of motion greater than 20°. Natural looking images (x-ray, MRI, CT) or only minimal disc degeneration and segregated neck pain rarely would be considered reasons to pursue surgery. Similarly, an imaging abnormality, but no physical marks and non particular symptoms, typically would not be an indication to undergo a fusion procedure. However, surgery may be an option when there is an existence of a valid radiographic abnormality, and not longstanding, or insensitive to conservative treatments, despite a lack of neurological deficits (no difficulties with walking, able to hold a spoon). Additionally, neck pain with reproducible and accurate neurological evidence and symptoms such as numbness and tingling in the arms and fingers, and positive sensory and motor assessments (lack of sensations and strength), could be considered rationale for surgical intervention.

### Lumbar Fusion Criteria

Similar to the cervical spine, treatment will be guided by the intensity of symptoms and the fundamental goal of improving a patient’s function. Yet, the indications for lumbar fusion can still be debatable. The literature has cited indications for lumbar fusion including spondylolisthesis of grade 2, 3, or 4 that requires decompression, after multiple discectomies, demonstrated habitual pain, after a bilateral facetectomy, or radiographic instability with advancing neurologic deficits or pain. Radiographic instability for the lumbar spine has been specified as movement of more than 3 mm, and at L5/S1 as 5 mm of motion or a range of motion greater than 10° in the flexion/extension position.

Back pain and the obscurity of radiographic parameters (such as stenosis, disc herniation, or instability) is the most challenging diagnostic predicament for the patient and physician. It is nearly impossible for the physician to narrow the pain to a specific motion segment. Typically for patients who present with pain as their main symptom and an absence of definitive radiographic signs, conservative treatment is the most logical care path.
What to Ask Your Potential Surgeon

What's your training and educational background?
The surgeon should have completed an orthopedic surgery or neurosurgery residency program as well as a spine fellowship.

How long have you been in practice?
Our surgeons have been in practice for at least six years. Although the number of years may make a patient feel more comfortable, we value a surgeon's training (fellowship trained), and that they continually educate themselves and are up to date on the latest technology and advancements.

How many fusion surgeries have you performed?
Since our surgeons have been in practice for quite a few years, they have both performed more than 300 fusion procedures. Although the number of surgeries may make a patient feel more comfortable, we (again) value a surgeon's training (fellowship trained), and that they continually educate themselves and are up to date on the latest technology and advancements.

Do I really need a fusion? Would decompression alone suffice?
We recommend fusion surgery in the setting of instability and when decompression alone will not be adequate to relieve the neural elements.

What are your safety scores or ranking?
Our infection rate, VTE, PE, mortality and readmission rates are minimal at 0.28%, 0%, 0%, 0%, and 2.83%, respectively. We recommend that patients ask their own provider for their rates. A patient should feel comfortable with the hospital’s and surgeon’s safety record.

What are your quality or satisfaction scores or ranking?
Our patient satisfaction scores average ~4.8 out of 5.0. We recommend that patients ask their own provider for their quality and satisfaction scores. A patient should feel comfortable with the hospital’s and surgeon’s quality and satisfaction scores.

Fusion Gold Standard

At this time, fusion procedures will continue to prevail as the gold standard of treatment for patients who have squandered all forms of conservative therapies. The motion suppression decreases pain, preserves space for the decompressed spinal cord and nerve roots, and limits kyphosis, or a hunchback posture of the spine. Additionally, fusion procedures can be completed successfully at multiple levels, which is often the case for many patients. As Mr. Norton says, “don’t deteriorate, fight back.”

*For a full list of references please visit SpineRF.org