Lumbar Spinal Fusion Surgery

Fig 1: X-ray of pedicle screws in place (lateral view) during spinal fusion

A spinal fusion surgery is designed to stop the motion at a painful vertebral segment, which in turn should decrease pain generated from the joint.

There are many approaches to lumbar spinal fusion surgery, and all involve the following process:

- Adding bone graft to a segment of the spine
- Set up a biological response that causes the bone graft to grow between the two vertebral elements to create a bone fusion
- The boney fusion - which results in one fixed bone replacing a mobile joint - stops the motion at that joint segment

For patients with the following conditions, if abnormal and excessive motion at a vertebral segment results in severe pain and inability to function, a lumbar fusion may be considered:

- Lumbar Degenerative Disc Disease
- Lumbar Spondylolisthesis (isthmic, degenerative, or postlaminectomy spondylolisthesis)

Other conditions that may be treated by a spinal fusion surgery include a weak or unstable spine (caused by infections or tumors), fractures, scoliosis, or deformity.

Spine Fusion Risks and Complications

The most common risk of any of the modern spine fusion surgery techniques is the failure to relieve lower back pain symptoms following the surgery. In the best of all situations, this risk occurs in a minimum of 20% of spine fusion surgeries. The likelihood of this result becomes even more frequent with fusions of three or more levels. This outcome is commonly referred to as "failed back surgery syndrome".

There is also a risk that the vertebrae may not fuse together following the surgery, called pseudoarthrosis. With modern techniques happens in approximately 5% to 10% of spine fusion surgeries.

- It is well documented in the medical literature that people who smoke have a lower rate of successful spine fusion.

- If pedicle screws are used, there is a risk that the screws may break or become loose and may require further surgery to remove or revise the screws and rods.

- Anterior grafts and cages can migrate or subside, which may require repeat spine surgery. If the anterior devices were placed anteriorly (from the front), rather than through a PLIF or TLIF (approaches through the back), it is safest to do this revision spine fusion surgery with a posterior approach (from the back).

All spine fusion surgeries have the potential for complications. Thankfully, most of the complications occur infrequently. The complications that can occur include those that would be associated with any type of surgery, **such as infection, bleeding, and anesthetic complications.**

Another potential complication of spine fusion surgery in the low back includes any type of nerve damage. Although major loss of the strength and sensation to the legs or loss of bowel or bladder control can occur, it is rare. In a small percentage of men who have an anterior fusion, an infrequent complication results in difficulties with ejaculation following spine fusion surgery. There is a small plexus of nerves in front of the L5-S1 disc space that helps control ejaculation. If these nerves are affected (which can happen 1% of the time) then a valve will not close that forces the ejaculate outward. The ejaculate then follows the path of least resistance, which is up into the bladder.

The most significant side effect of this complication is that it is very difficult to complete conception. Potency is not affected, and the sensation of sex is still largely the same. In about half of cases this complication resolves over the course of about 6 to 12 months.

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