

Posterior Cervical Instrumented Fusion

Posterior cervical fusion is done through the back (*posterior*) of the neck. The surgery joins two or more neck vertebrae into one solid section of bone. The medical term for fusion is *arthrodesis*. Posterior cervical fusion is most commonly used to treat neck fractures and dislocations and to fix deformities in the curve of the neck. Metal hardware is attached to the neck bones during the surgery. This hardware is called *instrumentation* (figure 1).

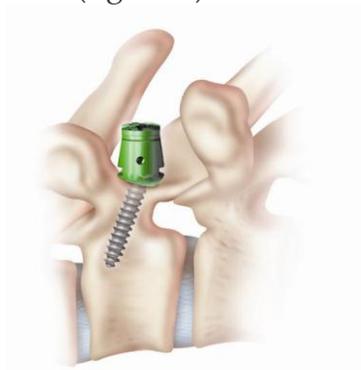


Figure 1

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What parts of the neck are involved?

Surgeons do this surgery through the back part of the neck. The muscles on the back of the neck cover the bony ring around the spinal cord. The bony ring, formed by the *pedicle* and *lamina* bones, is called the *spinal canal*. The spinal canal is a hollow tube that surrounds the spinal cord as it passes through the spine. The lamina acts like a protective roof over the back of the spinal cord. Facet joints line up on both sides along the back of the spinal column.

What happens during the operation?

Patients are given general anesthesia to put them to sleep. This surgery is done with the patient lying face down on the operating table. The surgeon makes an incision down the middle of the back of the neck. Retractors are used to gently separate and hold the neck muscles and soft tissues apart so the surgeon can work on the back of the spine (Figure 2).

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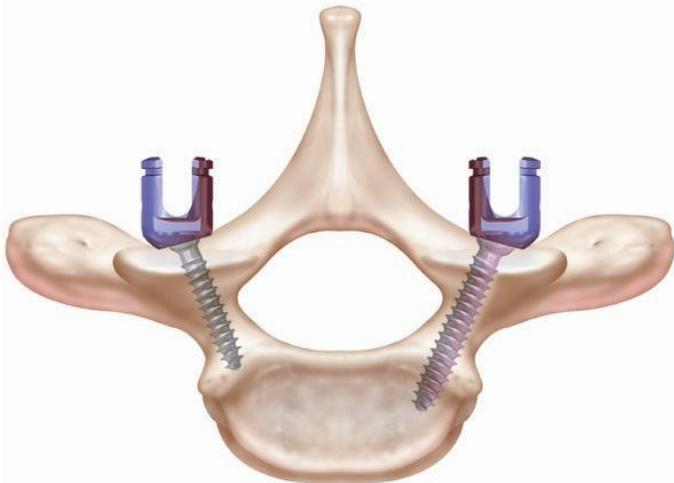
Figure 2

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A layer of bone is shaved off the surface of the outer ring (the *lamina*) of each vertebra to be fused. This causes the surface to bleed and to stimulate the bone to heal. (This is similar to the way the two sides of a fractured bone begin to heal.) With an x-ray guided machine, screws are placed on both sides of each vertebrae (Figure 3) and then connected by a rod on both sides (Figure 4). Small strips of bone are grafted from the top part of the pelvis and laid over the back of the spinal column. This *bone graft* also helps stimulate the bones to heal together, or *fuse*. The muscles and soft tissues are put back in place, and the skin is stitched together. You are then placed in a rigid neck collar for approximately one month to lock the bones firmly in place.

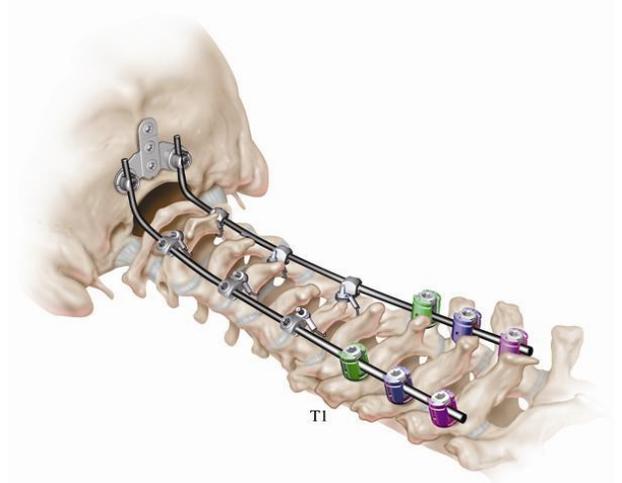
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Figure 3



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Figure 4



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What might go wrong?

As with all major surgical procedures, complications can occur. Some of the most common complications following posterior cervical fusion including but not limited to, medical complications, problems with anesthesia, blood clots, etc. Other complications include:

- Infection following spine surgery is rare but can be a very serious complication. Some infections may show up early, even before you leave the hospital. Infections on the skin's surface usually go away with antibiotics. Deeper infections that spread into the bones and soft tissues of the spine are harder to treat and may require additional surgery to treat the infected portion of the spine.
- Any surgery that is done near the spinal canal can potentially cause injury to the spinal cord or spinal nerves. Injury can occur from bumping or cutting the nerve tissue with a surgical instrument, from swelling around the nerve, or from the formation of scar tissue. An injury to these structures can cause muscle weakness and a loss of sensation to the areas supplied by the nerve.
- Fusion surgery requires bone to be grafted into the spinal column. The graft is commonly taken from the top rim of the pelvis. There is a risk of having pain, infection, or weakness in the area where the graft is taken.
- Sometimes the bones do not fuse as planned. This is called a *nonunion* or *pseudarthrosis*. (The term *pseudarthrosis* means false joint.) If the joint motion from a nonunion continues to cause pain, you may need a second operation. Smoking increases the risk of nonunion by greater than 30%.
Check our website for more information on smoking cessation.

- Posterior cervical fusion is an involved surgery. Not all patients get complete pain relief with this procedure. As with any surgery, you should expect some pain afterward. If the pain continues or becomes unbearable, please call our office.

What happens after surgery?

You will be placed in a rigid neck brace after surgery for approximately one month. Patients usually stay in the hospital 1-2 nights. A physical therapist will schedule daily sessions to help patients learn safe ways to move, dress, and do activities without putting extra strain on the neck. Patients are able to return home when they are stable and pain is controlled with oral pain medication. Activities should be kept to a minimum in order to give the graft time to heal, however walking as much as possible is strongly recommended. Outpatient physical therapy is usually started four to six weeks after the date of surgery.

What should I expect as I recover?

Rehabilitation after posterior cervical fusion can be a slow process. If the spinal cord was injured from the compression, patients may need intensive and ongoing rehabilitation for the neurological condition. When the spinal cord has not been damaged, patients may need to attend therapy sessions for two to three months and should expect improvement in symptoms to take up to twelve months.

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