

Laminectomy, Decompression and Fusion with Facet Bolts

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Summary

The patient developed severe leg cramping at night, causing muscle spasms and her feet to invert. She also had severe back pain, primarily on the right side. This patient had undergone previous decompression at L4-5 and L5-S1.

Diagnosis

MRI revealed a grade 1 spondylolisthesis at L4-5 with neural foraminal narrowing and lateral recess stenosis, and severe spinal stenosis at L3-4.

Procedure

The surgeon performed partial Laminectomies at L3, L4 and L5, along with decompression and lateral recess decompression and foraminotomies at L3-4 and L4-5. Facet Bolts were implanted at L4-5 along with locally harvested bone graft.

Results

The patient had resolution of back pain on the first post-operative day, and was walking and discharged on the third day. At two months, she had returned to normal activity, and at five months could lift 50 lb. bags of dog food without back pain or radiculopathy.

History and examination findings

The patient was an 84-year-old female who had previously experienced a herniated disc at L4-5 and lateral recess stenosis at L5-S1, with subsequent pain in the right lower back, buttock, and leg. In 2006, she underwent surgery to treat the right L4-5 herniation, undergoing lateral recess decompression at L4-5 and L5-S1.

In late 2008, the patient developed severe bilateral leg cramping, which occurred only at night. She reported that the pain caused her toes to curl and her feet to invert. These symptoms had been occurring for four months. She had significant pain in the midline lumbosacral region, primarily on the right side, but denied radicular pain.

Examination of the patient revealed a well-healed scar on the midline. Upon palpation, the patient reported some facet joint and sacroiliac joint pain. The straight leg raise test was negative for disc herniation. She demonstrated normal tone and equal deep tendon reflexes. Her motor strength was 5 out of 5, her gait was normal, and results of a sensory examination were within normal limits.

MRI revealed grade I spondylolisthesis at L4-5 with bilateral neural foraminal narrowing and lateral recess stenosis secondary to the spondylolisthesis at L4-5. She also showed severe spinal stenosis at L3-4. At the area of the spondylolisthesis, the patient showed no significant motion between the flexion and extension views.

Discussion

According to the medical literature, degenerative spondylolisthesis has been found to most often affect the spine at the L4-5 level. It has also been seen more commonly in women, who may be five to six times more likely to be affected by the condition than men, possibly due to more laxity in the ligaments of women.¹



Pre-Op X-ray

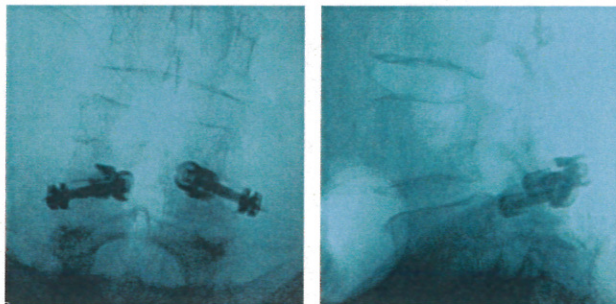
Only a small number of patients seeking care for degenerative spondylolisthesis – about 10 to 15 percent – go on to have surgery. Patients presenting with the condition are typically older than 50 years of age and may have lower back pain, radiculopathy, and neurogenic claudication. This claudication often triggers leg and buttock pain, either unilaterally or bilaterally. In the presence of radiculopathy, the L5 nerve root is most commonly affected.¹

Surgical procedure

The use of Facet Bolts appeared advantageous for this patient for several reasons, according to the clinician. Due to her advanced age, a procedure to achieve vertebral fusion without having to extend the surgery

away from the midline could provide the obvious benefits of reducing surgical trauma to the site and minimizing blood loss. Given her history of earlier surgery in the area, using Facet Bolts would preclude the need to dissect significant scar tissue to expose the pedicles, which would be required with pedicle screw instrumentation. Facet Bolts offered the potential for a simpler, faster surgery that could potentially allow the patient to recover more quickly.

During the procedure, the surgeon performed partial laminectomies at L3, L4, and L5, along with decompression and lateral recess decompression and foraminotomies at L3-4 and L4-5. The Facet Bolts were used bilaterally to fuse L4-5, which also involved the use of locally harvested autologous bone graft. The estimated blood loss was roughly 300 cc. In the clinician's experience, if the patient had undergone a more extensive fusion procedure requiring bone harvested from the iliac crest, blood loss might have been 50 to 100 percent greater. The bone that was removed during the patient's decompression procedures several years earlier did not create an impediment to the installation of the Facet Bolts.



Post-Op X-rays

The bolts are put into place with a Facet Gun®. The bolts are put through the facet joint and are held in place with proximal and distal locking washers. Bolts are available in four lengths to accommodate facet thicknesses ranging from 9 to 21 millimeters. The washers are toothed, allowing them to tightly grip the surface of the bone, and they help to compress the joint. The bolts require a smaller incision than some other fusion alternatives, which can provide many benefits to the patient, including less bone resection, less postoperative pain, and shorter recovery time.

Recovery and follow-up

The patient showed resolution of leg pain on the first postoperative day. On the first day following the procedure, she was able to sit up and dangle her legs from the side of the bed, and she was walking without complaints by the time of her discharge. She left the hospital after a 3-day recovery, and her sutures were removed at 10 days. Follow-up X-rays showed good placement of the bolts.

At 2-month follow-up, the patient reported that she was able to resume her activities of daily living. At five months, she gradually discontinued the use of her back brace and, to some surprise on the part of the clinician, she reported that she could lift a 50-pound bag of dog food without back pain or radiculopathy. Additional X-rays showed that the procedure had resulted in stable fusion.

The clinician regularly operates on octogenarians, and is familiar with the additional complexity and potential for complications in this population, particularly those with a history of previous spinal surgery.

Discussion

Recent research has found evidence for benefits of lumbar fusion even in the older segment of the population. In a group of 224 patients treated with single-level, screw-and-rod instrumentation and iliac crest bone graft, those who were 65 or older had similar improvement in Oswestry Disability Index scores at two years as younger patients. The older patients also showed similar improvement in Short Form-36 physical component summary scores. However, it should be noted that mean blood loss in these older patients was considerably higher (438 milliliters) than in the above-mentioned case study, as was mean hospital stay (4.4 days). In this study, the authors concluded that lumbar arthrodesis is a very reasonable treatment option for appropriately selected patients sixty-five years of age or older with degenerative disc disease.²

SOURCES

1. Vibert, BT, et al, Treatment of Instability and Spondylolisthesis, *Clinical Orthopedics and Related Research*, Feb 2006.
2. Glassman, SD, et al, Outcome of Lumbar Arthrodesis in Patients Sixty-five Years of Age or Older, *Journal of Bone & Joint Surgery*, 2009; 91.

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