

Minimally Invasive TLIF-Case Report

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Background:

Minimally invasive spine surgery (MIS) has gained popularity in recent years. The interest in MIS is due to technological advances and the recognition that the trauma induced by open surgery and muscle stripping may be a considerable contributor to failed back syndrome. Proponents of MIS report anecdotally that their patients experience less trauma, are released from the hospital sooner, use less medication after surgery and return to work sooner than their open patients. Skeptics of these techniques question the quality of the operation and cite that the reduced access to the spine may compromise their ability to address the pathology and lead to declining outcomes over time. Presented here is a case study for one patient treated with MIS pedicle screws (PathFinder® - Abbott Spine) and TLIF interbody fusion.

Initial History and Physical Exam

The patient is a 58-year old male who is a laborer with progressive and disabling back and left lower extremity pain, numbness, tingling, and weakness. Symptoms began approximately 2 years prior to surgery with no apparent cause with a gradually progressive course. Pain was considered to be a dull constant ache that was worse in the left lower extremity than the lower back. Patient rates pain (VAS) 8/10. Symptoms are worse with walking and standing and better with sitting and/or lying down. Patient denies any constitutional symptoms. He has undergone chiropractic care, physical therapy, and has tried various NSAIDS, muscle relaxants and a narcotic. Epidural injections have also been tried without any sustained benefit. He feels that his overall condition is worsening. The patient is in good general health and a non-smoker.

SF-36 Physical Component Score is 24. Oswestry Disability Score is 43.

Height 5' 10"
Weight 210 lbs.

The patient stands with no significant deformity. His gait is antalgic and he is unable to heel or toe walk. He has no tenderness to palpation along his spine and there are no significant masses or swelling. Back range of motion testing reveals that fingertips come

to 12 inches on forward flexion, extension of 5 degrees, lateral bending of 25 degrees, and rotation of 30 degrees. Motor testing reveals 5/5 strength with the exception of left ankle dorsiflexion and long toe extension. Sensory testing demonstrates 1/2 sensation to the left lower extremity with the L5 dermatome. Reflexes at the knee and ankle were symmetric. Long tract signs were not present. Straight leg raise test was positive on the left at 40 degrees in the sitting and supine position. Motion at the hip, knee and ankle joint was full and without pain. Pulses in both ankles were normal.

Diagnostic tests

Plain films including AP, lateral, flexion and extension films revealed grade I spondylolisthesis at L4-5 with disc space narrowing and posterior element sclerosis. Dynamic views demonstrated instability at L4-5.

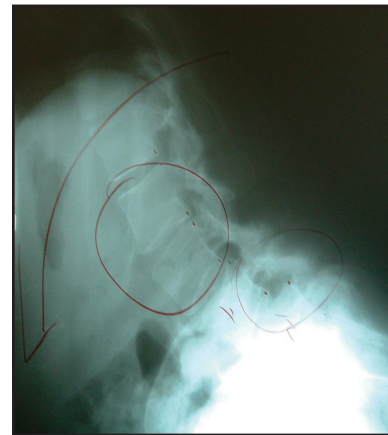


Figure 1

MRI of the lumbar spine revealed anterolisthesis at L4-5 with degenerative changes at L4-5 and L5-S1. Left para-central herniated disc with resultant neural compression is noted. Central and lateral recess stenosis is also present.



Figure 2

Figure 3

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Impression and Plan

1. Spinal stenosis L4-5
2. Spondylolistheis L4-5
3. Herniated Disc L4-5

The patient and his physician had a thorough discussion regarding the nature of his condition and the treatment options. After obtaining informed consent the patient underwent minimally invasive transforaminal lumbar interbody fusion (MITLIF) using a tubular retractor system and percutaneous insertion of pedicle screws at L4-5.

Result

The Operative time was 135 minutes and the estimated blood loss was 100 cc.

There were no intra-operative complications. The hospital stay was 1.5 days. In the post-operative period, the patient did not experience any complications and returned to work with modified duty at 3 weeks. Patient returned to full duty at 8 weeks post-op. Narcotic use was discontinued at 4 weeks post-op.



Figure 4

At 12 month follow-up, the patient has resumed many of his normal activities including riding his bike, playing tennis and performing karate. His VAS is 1/10 and SF-36 Physical Component Score is 46. Oswestry Disability Score is 8. Radiographically, there are no signs of motion on flexion extension.

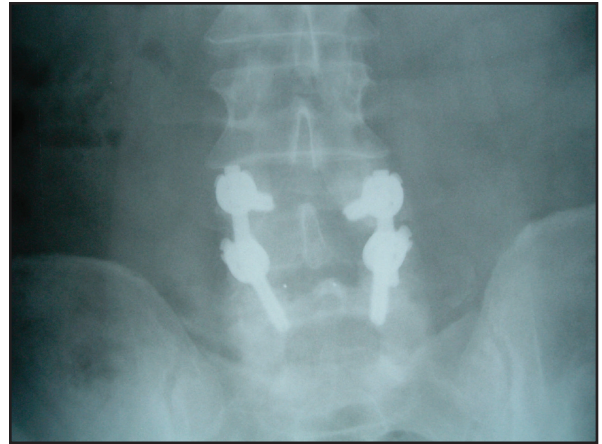


Figure 5

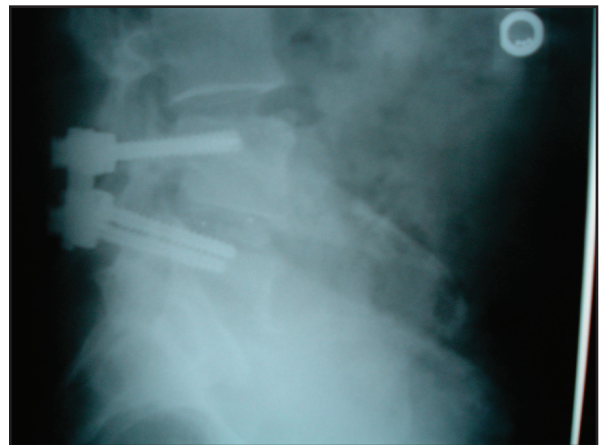


Figure 6

Conclusion

Minimally invasive transforaminal lumbar interbody fusion appears to be a safe and effective method for neural decompression and interbody bone grafting. MITLIF offers several advantages to the traditional open technique including reduction in soft tissue trauma, blood loss, hospital stay, patient perceived level of disability, and the potential for earlier return to function. Prospective, randomized outcome studies are required for MITLIF efficacy validation.