# Treatment of Lumbar Spondylolisthesis Associated with Adjacent Level(s) Stenosis Using Minimally Invasive Unisegmental TLIF/ Pedicle Screw Instrumentation and Adjacent Level (s) Laminectomy

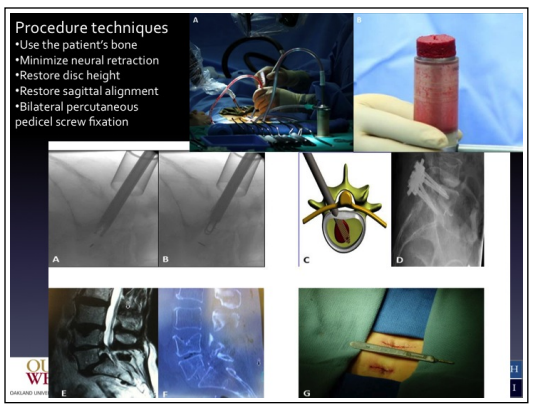
Mick J. Perez-Cruet MD MS; Namath Syed Hussain MD, MBA; G. Zachary White BS; Robert A Collins
Oakland University William Beaumont, School of Medicine, Royal Oak, Michigan; Michigan Head and Spine Institute, Detroit, Michigan

## Introduction

Patients presenting with refractory multi-level spinal stenosis and associated spondylolisthesis are often treated with multi-level decompression and multi-level pedicle screw instrumentation and fusion. Traditional open multi-segmental constructs can have significant morbidity, increase cost, and lead to repeat surgeries due to adjacent level diseases. A minimally invasive unisegmental transforaminal lumbar interbody fusion and percutaneous pedicle screw instrumentation (MITLIF) and adjacent level(s) minimally invasive (MIS) laminectomy might limit morbidity and adjacent segment disease (ASD).

## Methods

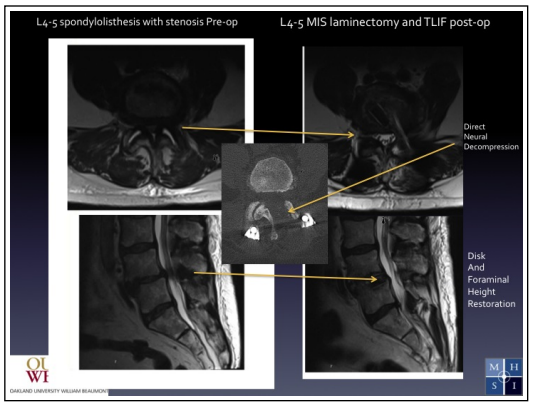
50 patients (mean age 65.8, range 30 – 87, 14:36 M:F)) presented with intractable low back pain and neurogenic claudication secondary to spondylolisthesis and adjacent level lumbar stenosis. Visual analog scale (VAS), short form-36 (SF - 36), and Oswestry disability index (ODI) scores were analyzed pre- operatively and post-operatively at 2 week, and 3, 6, 12 and 24 months. Hospital stays, complications, and ASD where analyzed.




## Results

All patients were treated with unisegmental MITLIF and adjacent level laminectomy (1 to 3 levels). MITLIF Levels included L2-3 (n = 3, 6%), L3-4 (n = 4, 8%), L4-5 (n =34, 68%), L5- S1 (n = 9, 18%). Average blood loss was 125.9 mL and average length-of- stay was 4.13 days.VAS scores declined from 6.9 pre-operatively to 2.6 at 6 months follow- up, 3.7 at 12 months, and 3.8 at 24 months post-operatively.

SF-36 physical component scores (PCS) increased from 29.3 pre- operatively to 40.3 at 6 months, 38.6 at 12 months, and 36.9 at 24 months post-operatively. SF-36 mental component scores (MCS) increased from 45.8 pre-operatively to 51.5 at 6 months, 52.0 at 12 months, and 53.5 at 24 months post-operatively with less then 6% reoperation rate.




## Conclusions

Patients with multi-level spinal stenosis and associated spondylolisthesis can be treated effectively with unisegmental MITLIF and adjacent level MIS laminectomy with excellent outcomes, and reduced adjacent segment disease in a cost effective manner.

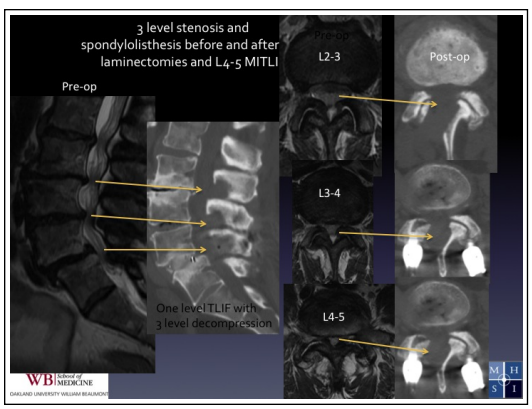

## Learning Objectives

The learning objective of this abstract is to demonstrate the advantages of MITLIF and adjacent level MIS laminectomy for the treatment of multi-level spinal stenosis in association with spondylolisthesis.

## References

1.Minimally Invasive Spinal Fusion: Techniques and Operative Nuances, Editors, Perez-Cruet MJ, Pimenta L, Beisse R, Kim D. Quality Medical Publishing, Inc. St. Louis, MO 2011

2.An Anatomical Approach to Minimally Invasive Spine Surgery, editors Perez-Cruet MJ, Khoo L, Fessler RG. Quality Medical Publishing, Inc. St. Louis, MO, 2006.




Top: Illustrative case showing pre-operative sagittal and axial MRI illustrating spinal stenosis at L3-4 and L4-5 levels and L4-5 spondylolisthesis grade I. Middle: Post-operative sagittal and axial CT after minimally invasive laminectomy with in-situ fusion. Bottom: Post-operative sagittal and axial CT showing minimally invasive laminectomy, TLIF and bilateral percutaneous L4-5 pedicle screws.