

Minimally Invasive Transforaminal Lumbar Interbody Fusion: Comparison of Two Techniques

G. C. Tender¹, D. Șerban²

¹Department of Neurosurgery, Louisiana State University, New Orleans, LA, USA

²Department of Neurosurgery, "Bagdasar-Arseni" Emergency Hospital, Bucharest, Romania

Abstract

Background: Minimally invasive transforaminal lumbar interbody fusion (MI TLIF) is very popular in the United States. Two techniques are commonly used, based on either tubular or pedicle-screw-based retraction.

Materials and Methods: Sixty patients underwent MI TLIF between 2009 and 2012, using the tubular technique (43 patients) or screw-based-retractor technique (17 patients). Perioperative parameters and 1-year outcomes were reviewed.

Results: For the tubular technique, the average operative time, blood loss, and hospital stay were 189 min, 170 ml, and 3.37 days, respectively. The visual analog scale (VAS) score improved from 9.7 preoperatively to 2.6 at 1-year postoperatively. There were two incidental durotomies, none resulting in a CSF leak. There was one re-intervention for removal of a misplaced pedicle screw. For the screw-based-retractor technique, the average operative time, blood loss, and hospital stay were 223 min, 257 ml, and 3.29 days, respectively. VAS improved from 9.4 to 1.9. One patient who had an incidental durotomy developed a postoperative compressive hematoma with resultant cauda equina syndrome requiring re-intervention. There were no re-interventions for revision of instrumentation.

Seven patients were lost at the 1-year visit. The fusion rate at 1-year was 100%.

Conclusion: Both techniques can be used with good results, but each technique offers distinct advantages and challenges that can be tailored to individual patients.

Key words: minimally invasive, transforaminal lumbar interbody fusion, TLIF, percutaneous pedicle screws

Corresponding author: Gabriel C. Tender, MD

Associate Professor of Neurosurgery

2020 Gravier Street, Suite 744, New Orleans, LA 70112, USA

E-mail: gtende@lsuhsc.edu