Outcomes and Complications of Minimally Invasive Transforaminal Lumbar Interbody Fusion in the Elderly: A Systematic Review and Meta-Analysis

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Disclosures

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Introduction

• Minimally invasive transforaminal lumbar interbody fusion (MIS-TLIF) was introduced in the early 2000s by Foley & Lefkowitz
• MIS-TLIF has less perioperative morbidity compared to open procedures
• Elderly patients aged 65 years and older comprise an increasing portion of patients eligible for lumbar fusion
• Few studies have examined complications and outcomes of MIS-TLIF in elderly patients
Methods

• PubMed MEDLINE, Scopus, Embase, and Google Scholar were queried for published studies reporting on complications and/or outcomes of MIS-TLIF in patients 65 years and older through February 2021

• Primary outcomes were major, minor, and overall complication rate, fusion rate, and differences in patient-reported outcome measures across included studies
Results

- 12 studies included for final analysis
- 701 elderly patients
- 1025 levels fused
- Mean patient age of included studies ranged from 68.8 to 83.7 years old
- Follow-up ranged from 6 to 36 months
Results

For single-level fusions:

- Pooled length of stay was 5.88 days
- Pooled operation time was 175 minutes
- Pooled estimated blood loss was 207 mL
Results

- Pooled fusion rate was 86%
- Overall complication rate of 25%, comprising 20% minor and 5% major complications
- Complication rates increased with number of levels fused, though not reaching significance
Results

- 5 studies directly compared patients 65 and older to younger patients
- Significantly higher rates of major, minor, and overall complications in elderly patients, with respective odds ratios of 2.15, 2.20, and 2.21
- No difference in surgical complication rates between elderly and non-elderly
- Medical complication rate was significantly higher in elderly patients
Results

- MIS-TLIF in elderly patients resulted in significant improvements in Oswestry Disability Index (ODI) as well as visual analogue scale (VAS) back pain (BP) and leg pain (LP)

- Mean improvements of 30.7 points for ODI, 3.9 points for VAS-BP, and 5.1 points for VAS-LP

- All patient-reported outcomes improved beyond the respective minimum clinically important difference (blue dashed line)
Summary Points

• MIS-TLIF can be performed in elderly patients with a high fusion rate and significant improvements in patient-reported outcomes

• Elderly patients have a higher complication burden than non-elderly patients, due primarily to medical complications as opposed to surgical

• Given continued trends in patient demographics, further study is needed to characterize impact of complications and elucidate medical optimization of elderly patients for MIS-TLIF