Single Level MIS TLIF vs LLIF at L4/L5: A Comparison of Patient Reported Outcomes and Recovery Ratios

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Background

Two popular techniques utilized for lumbar arthrodesis are minimally invasive transforaminal lumbar interbody fusion (MIS TLIF) and lateral lumbar interbody fusion (LLIF). Prior literature comparing techniques have focused on complications with outcome analysis not stratified by lumbar level.

Aims and Objectives

To compare patient-reported outcomes (PROMs) and recovery ratios (RR) following single-level MIS TLIF and LLIF at L4/L5.
Methodology: Data Collection

### Inclusion Criteria
- Primary, elective single level MIS TLIF or LLIF procedures at L4/L5

### Exclusion Criteria
- Surgeries indicated for trauma, infection, or malignancy

### Demographics

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<th>Preoperative</th>
<th>Intraoperative</th>
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<td>Operative duration</td>
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<td>Gender</td>
<td>Estimated blood loss</td>
<td>Postoperative VAS pain score on postop days 0 and 1</td>
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<td>Ethnicity</td>
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<td>Postoperative narcotic consumption on postop days 0 and 1</td>
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<td>BMI</td>
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<td>Spinal diagnosis</td>
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### PROMs collected at preop and 6-weeks, 12-weeks, 6-months, 1-year, and 2-years postop
- Visual Analog Scale (VAS) back and leg
- Oswestry Disability Index (ODI)
- 12-Item Short Form Physical and Mental Composite Scores (SF-12 PCS / SF-12 MCS)
- PROM Information System physical function (PROMIS PF)
Methodology: Statistical Analysis

- Patients were grouped into two cohorts: MIS TLIF or LLIF
- Demographic and perioperative characteristics were compared between groups using chi-squared and Student’s t-test for categorical and continuous variables, respectively
- Delta scores were calculated as the difference between preoperative and each postoperative value
- RR was defined as the proportion of postoperative improvement to total potential improvement and was calculated for all PROMs at all timepoints
- Differences in mean PROM scores, delta values, and RR at each timepoint were evaluated using an unpaired Student’s t-test
Results: Baseline Characteristics

407 patients were included, mean age of 56.3

Cohorts differed in BMI and Insurance
Results: Perioperative Characteristics

LLIF cohorts saw shorter operative times and length of stay

LLIF cohort also showed significantly less postoperative narcotic consumption
Results: Postoperative Improvement

LLIF cohort demonstrated improved midterm VAS pain scores
Results: Comparison of Recovery Ratios

No significant differences were noted for recovery ratios between TLIF and LLIF cohorts.
Discussion / Conclusion

- For patients undergoing single level fusion at L4/L5, those who underwent LLIF demonstrated significantly reduced LOS and postoperative narcotic consumption and significantly improved VAS back at 6-months and VAS leg at 12-weeks and 6-month versus patients undergoing MIS TLIF.

- While 2-year PROMs and recovery ratios did not significantly differ between procedures, our findings may suggest improved midterm follow-up pain scores for patients undergoing LLIF.