

Does Obesity Affect Long-Term Outcomes of Minimally-Invasive Transforaminal Lumbar Interbody Fusion?

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Introduction

- Increased body habitus can pose significant challenges to spine surgeons performing minimally invasive lumbar fusion procedures.
- The health-related effects of obesity have also been linked to an increased risk of postoperative complications.
- The number of obese patients undergoing minimally invasive lumbar fusion is increasing.
- The purpose of this study is to evaluate the long-term safety and efficacy of minimally invasive transforaminal lumbar interbody fusion (MI-TLIF) in the obese.

Methods

- A retrospective review was performed to identify patients at a single institution who underwent MI-TLIF between 2011-2015 with a minimum follow-up of 5 years.
- Patients were divided into 2 cohorts: non-obese (BMI <30 kg/m²) and obese (BMI ≥30 kg/m²).
- Patient reported outcomes were assessed by comparing pre- and postoperative Oswestry Disability Index (ODI) and Visual Analog Scale (VAS) measurements at follow-up visits.
- Reoperation rates and time to reoperation were compared between cohorts.
- Pelvic Incidence-Lumbar Lordosis (PI-LL) mismatch was calculated from both pre- and postoperative radiographs.

Table 1. Patient demographics, perioperative data, & PI-LL mismatch

Demographic	Obese	Non-Obese	p-value
# of patients	74	88	
Age (years)	54.6 (12.6)	55.4 (11.5)	0.782
Gender (M/F)	34/40	48/40	0.275
BMI	36.5 (6.0)	26.9 (2.2)	<0.001
Follow-up (months)	88.7 (16.0)	94.0 (13.7)	0.172
Blood Loss (ml)	127.0 (65.1)	39.9 (21.5)	<0.001
Operative Time (hours)	3.2 (0.4)	2.6 (0.3)	<0.001
PI-LL Mismatch Correction	79.17%	83.33%	0.780



Table 2. Comparison of reoperations of non-obese and obese patients

	Obese	Non-Obese	p-value
Total Reoperations (%)	13 (17.6)	16 (18.2)	0.919
ASD	5	6	0.958
Pseudarthrosis	6	8	0.837
Wound Infection	1	2	0.672
Epidural Hematoma	1	-	0.259

ASD= Adjacent Segment Disease

Results

- 162 consecutive patients were included (88 non-obese and 74 obese), with a mean follow-up of 89.59 months.
- Mean BMI was 26.88 in the non-obese cohort and 36.45 in the obese cohort (p <0.001).
- VAS scores decreased by a mean of 5.3 in the non-obese group and 5.0 in the obese group (p= 0.149).
- ODI improvement was 25.7 and 24.1 in the non-obese and obese groups, respectively (p= 0.165).
- 18.18% of non-obese patients required reoperation compared to 17.57% of obese patients (p= 0.919).
- The most common reason for revision surgery in both the non-obese (50.0%) and obese (46.15%) cohorts was pseudarthrosis.
- Both cohorts achieved a similar proportion of PI-LL mismatch correction, 83.33% in non-obese versus 79.17% in obese patients (p= 0.780).

Conclusions

- Obese patients have similar surgical outcomes to non-obese patients with respect to patient reported outcomes, reoperation rates, and correction of PI-LL mismatch after long-term follow-up.
- With similar outcome profiles, MI-TLIF may be an acceptable alternative to traditional open procedures in obese patients.

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