

Minimally Invasive Oblique Lateral Interbody Fusion for L4-5: Clinical Outcomes and Peri-operative Complications

Jin-Sung Kim Prof, MD, PhD; Won Suh CHOI MD; Ji Hoon Sung MD



Introduction

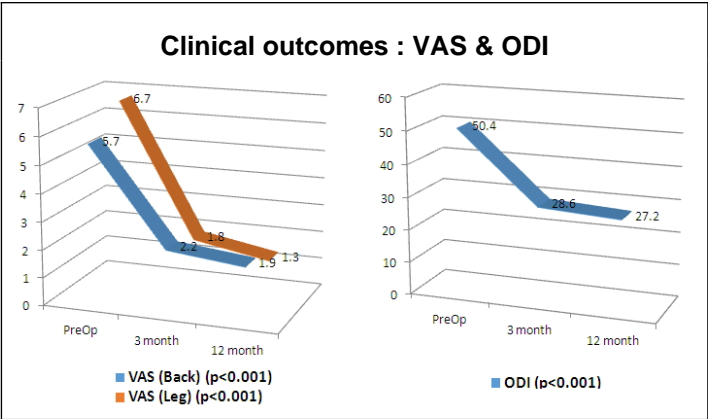
Minimally invasive oblique lateral interbody fusion (OLIF) has steadily gained popularity as the fusion method. However, the complication rates reported in the literature vary greatly between authors. In this research the authors report the clinical outcomes and peri-operative complications of OLIF at L4-5.

Methods

The authors retrospectively reviewed prospectively acquired records of 32 patients with L4-5 spondylolisthesis or foraminal stenosis who had undergone OLIF by single surgeon between June 2013 and March 2016. Outcome measures included VAS, ODI, fusion and subsidence rates, and peri-operative complications.

Results

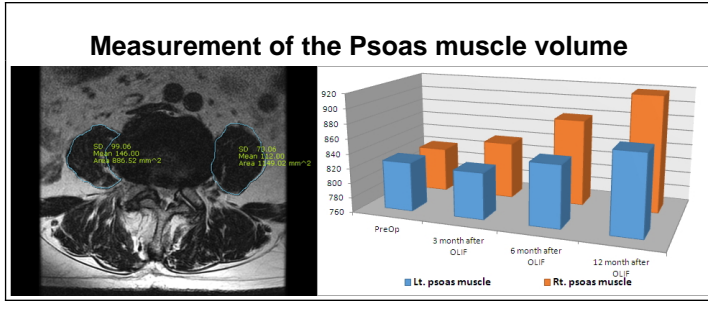
32 patients (10 males, 22 females, and mean age 66.6) met the study inclusion criteria. After OLIF procedures, all patients underwent posterior screw fixation in prone position, with additional laminectomy in 4 patients. The average VAS score for back/leg improved from 5.7/6.7 to 1.9 /1.3 (both p<0.0001) and the average ODI score improved from 50.4 preoperatively to 27.2 at the last follow-up (p < 0.0001).



Radiological evidence of fusion on computed tomography scans was noted in 57.0% of the patients in 6 months and 90.6% in 12 months. Significant subsidence during the follow-up periods occurred in 2 (6.3%) out of 40 OLIF levels in 32 patients. Disc height and foraminal heights were significantly increased. Lumbar plexopathy was noted in 5 (15.6%) patients, and consisted of transient motor weakness in 3 (9.4%) patients and numbness in different in 4 (12.5%) patients (Sensory Dermal Zone III in 3, II in 1). All lumbar plexopathy symptoms resolved within 3 months postoperatively.

Radiologic outcomes				
	PreOp	PostOp	Δ PostOp - PreOp	P-value
Disc Height (°)	8.4 (±1.9)	11.4 (±1.9)	3.0 (±2.4)	< 0.001
Foraminal Height (ipsilateral side)(mm)	19.0 (±2.3)	20.3 (±2.6)	1.3 (±1.4)	0.001
Foraminal Height (contralateral side)(mm)	17.7 (±3.7)	19.9 (±2.8)	2.1 (±2.0)	< 0.001
Segmental Lordosis (°)	3.8 (±5.3)	5.8 (±3.3)	2.1 (±4.3)	0.05
Whole Lumbar Lordosis (°)	40.6 (±15.1)	42.4 (±10.2)	1.8 (±9.4)	0.477

Mean distance of the OLIF corridor at L4-5 was 18.89(±4.54)mm, safe and enough to insert the OLIF cage. Mean volume of the right psoas muscle was increased significantly after the operation immediately. Mean volume of the left psoas muscle decreased at immediate postoperative period, but increased significantly after 6 months postoperatively.



Conclusions

Minimally invasive OLIF at L4-5 vertebral segment is a safe and effective technique in terms of clinical and radiological outcomes with low risk of peri-operative and rare permanent complications.

References

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- Molinares DM, Davis TT, Fung DA: Retroperitoneal oblique corridor to the L2-S1 intervertebral discs: an MRI study. J Neurosurg Spine:1-8, 2015