

Clinical and Radiologic Outcomes of Two Different Direct Decompression Techniques: Endoscopic-Assisted OLIF-360 MIS Versus OLIF-360 Mini-Open: A Matched-Pair Comparison Analysis

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Introduction

Oblique lumbar interbody fusion (OLIF) provides effective indirect decompression with favorable sagittal and coronal correction. However, its efficacy may be limited in patients with significant central or foraminal stenosis requiring direct neural decompression. Endoscopic-assisted OLIF has been introduced to overcome this limitation by enabling direct ventral decompression through the lateral corridor. Comparative data between endoscopic-assisted OLIF-360 MIS and mini-open OLIF-360 with direct decompression remain scarce.

Materials and Methods

A retrospective matched-pair analysis was performed including **30 patients** undergoing single- or two-level OLIF-360 for degenerative lumbar pathology with symptomatic stenosis. Fifteen patients treated with **endoscopic-assisted OLIF-360 MIS** were matched 1:1 with fifteen patients treated with **OLIF-360 mini-open** based on age, sex, BMI, diagnosis, operated level(s), preoperative Oswestry Disability Index (ODI), Visual Analog Scale (VAS) for back and leg pain, disc height, and radiologic stenosis severity.

All procedures were performed in **lateral decubitus position** with anterior/lateral interbody fusion followed by posterior percutaneous instrumentation. Clinical outcomes included ODI and VAS scores. Radiologic outcomes included disc height (DH), foraminal height (FH), spinal canal cross-sectional area (CSAC), fusion status, and complication rates. Pre- and postoperative values were compared within and between groups.

Results

Both groups demonstrated significant postoperative improvement in ODI and VAS scores ($p < 0.001$), with **no significant difference in final clinical outcomes** between groups. Endoscopic-assisted OLIF-360 MIS achieved **significantly greater improvement in CSAC**, indicating more effective direct central decompression ($p < 0.05$), while both techniques showed comparable restoration of DH and FH. The endoscopic group showed **lower intraoperative blood loss** and reduced posterior soft-tissue trauma, whereas operative time was slightly longer compared with the mini-open group. Fusion rates at final follow-up were comparable, and no significant difference in complication rates was observed.

Conclusion

Endoscopic-assisted OLIF-360 represents a safe and effective alternative to mini-open direct decompression in appropriately selected patients