

Anterior Lumbar, Oblique Lateral, and Transforaminal Lumbar Interbody Fusions: A Comparison of Perioperative Complications

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Learning Objectives

By the conclusion of this session, participants should be able to:

1) Describe the complication profiles of anterior lumbar, oblique lateral, and transforaminal interbody fusion approaches

2) Discuss, in small groups, which operative factors and complications are similar throughout all interbody fusion approaches and what complications are different between the three approaches

3) Discuss whether the complications with certain approaches are acceptable with respect to the benefits gathered from that approach or any additional training needed to learn a specific approach

4) Identify potential reasons for OLIF as the modality with the lowest complication rate in our cohorts

Introduction

Interbody fusions can be performed via anterior lumbar (ALIF), oblique lateral (OLIF), and transforaminal (TLIF) approaches. We sought to compare complication rates of these modalities.

Methods

Retrospective review of ALIF, OLIF, and TLIF cohorts was undertaken. Demographics, ASA scores, operative time, estimated blood loss, infection, intraoperative CSF Leak, vascular injury, post-operative ileus, motor deficits and 90-day readmissions were evaluated.

Results

213 patients were included: 90 ALIF patients, 49 OLIF patients, 74 TLIF patients. OLIF patients were older than ALIF and TLIF (67y vs 61y and 61y; p<0.05). ALIF cohort (52% male; 67% prior surgery) had larger percentage of males and prior spinal surgeries than OLIF (37%; 59%) and TLIF (36%; 54%). No significant differences were observed in ASA scores and procedure time. OLIF cases had significantly less blood loss compared to ALIF and TLIF (229ml vs 814ml and 578ml; p<0.05). Near-identical infection rates were seen for ALIF, TLIF, and OLIF (4% vs 3% vs 2%; p>0.05). TLIF had highest risk for durotomy (3%), followed by ALIF (1%) and OLIF (0%). Vascular injury was highest for ALIF (8%) compared to OLIF (2%) and TLIF (0%). Post-operative ileus was highest in ALIF patients (20%), compared to OLIF (6%) and TLIF (3%). At most recent follow-up, ALIF (19%) and TLIF (15%) had more motor deficits than OLIF (6%). OLIF (4%) had marginally lower rates of 90-day surgery related readmissions than TLIF (8%) or ALIF (7%).

Conclusions

Within our series, OLIF had the lowest complication rate when compared to ALIF and TLIF. This may be because of the minimally invasive approach, avoidance of direct neural manipulation either posteriorly or through the lumbar plexus, and operating through a corridor without needing to mobilize the great vessels.