

# **Perioperative and Radiographic Outcomes between Static and Expandable Cage in Patients undergoing Minimal Invasive Transforaminal Lumbar Interbody Fusion: Meta-Analysis**

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**INTRODUCTION:** The static intervertebral fusion cage was introduced in the 1990s and has become the device of choice in transforaminal lumbar interbody fusion (TLIF). Expandable cages (EC) are a relatively new invention hypothesized to provide greater restoration of disk height and foraminal height, along with improvement in segmental lordosis, compared with static interbody cage (SC). Therefore this meta-analysis of static and expandable cage in TLIF was conducted with the aim of updating the comparison of the two for postoperative outcomes, intraoperative outcomes, and radiographic parameter in patients undergoing minimal invasive lumbar transforaminal interbody fusion.

## **METHODS:**

This systematic review was conducted according to the PRISMA guidelines. Relevant studies that reported postoperative outcomes, intraoperative, and radiographic parameter of either technique was identified from Medline and Scopus from inception to September 25, 2022.

## **RESULTS:**

In a total of fifteen studies there were 908 and 673 patients in SC and EC groups. The unstandardized mean difference (UMD) of VAS of back and leg, ODI, blood loss, operative time, length of stay, anterior disc height, posterior disc height change, Lumbar lordosis change, segmental lordosis, and foraminal height in EC were -0.16 (95%CI: -0.91 to 0.58) scores, -0.22 (95%CI: -0.70 to 0.26) scores, -0.50 (95%CI: -1.37 to 0.37) scores, -0.27 (95%CI: 0.55 to 0.27) cc, -0.31 (95%CI: -1.03 to 0.41) minutes, -0.08 (95%CI: -0.56 to 0.39) days, -2.68 (95%CI: -5.89 to 0.53) degree, 0.87 (95%CI: -0.27 to 2.02) degree, 4.55 (95%CI: -3.96 to 13.06) degree, 0.09 (95%CI: -0.20 to 0.38) degree, and -2.99 (95%CI: -6.55 to 0.56) degree without statistically significant difference when compared to SC group. The chance of having complications, fusion, subsidence, and reoperations in SC were 0.76 (95%CI: 0.43 to 1.32) times, 1.39 (95%CI: 0.72 to 2.69) times, 0.25 (95%CI: 0.07 to 0.89) and 1.60 (95%CI: 0.69 to 3.69) times when compared to EC. No significant differences were noted for complications, fusion, and reoperations between two groups.

## **DISCUSSION AND CONCLUSION:**

This meta-analysis indicated that expandable cage has about 4 times higher risk of having postoperative subsidence when compared to static cage in patients undergoing TLIF. However there were no differences in term of intraoperative blood loss, operative time, length of stay, radiographic change, back and leg pain, disability score, complications, fusion, and reoperation rates.