

Introduction:

Titanium-coated Polyetheretherketone (TiPEEK), as interbody cage in lumbar fusion surgery, has no difference in fusion rate compared to polyetheretherketone (PEEK). However, no comparative study has been performed in minimally invasive transforaminal lumbar interbody fusion (MI-TLIF), that stability relies primarily on interbody fusion. Questions In MiTLIF, (1) Does TiPEEK cage reduce pain scores and improve functional outcomes? (2) Does TiPEEK provide better fusion rate? Material and

Methods:

A randomized controlled trial of 82 patients undergoing 1-2 levels MI-TLIF were conducted. Patient-reported outcomes were recorded using visual analogue scale (VAS), Oswestry Disability index (ODI), and EuroQoL-5D-5L. Postoperative radiograph and computer tomography was assessed for fusion and subsidence at 6 and 12 months.

Results:

There were no difference in VAS back in PEEK compared to TiPEEK at 6 months (1.68 SD 1.79 versus 1.36 SD 1.65; $p = 0.204$), 12 months (1.17 SD 2.09 versus 1.44 SD 1.8; $p = 0.268$), and ODI at 6 months (15.58 SD 14.12 versus 15.15 SD 13.95; $p = 0.89$), 12 months (8.74 SD 12.27 versus 10.13 SD 10.19; $p = 0.58$). VAS leg and EuroQoL-5D-5L also show no difference between both groups. TiPEEK shows significantly higher fusion rate at 6 months (91.8% versus 76%; $p = 0.032$), but no difference at 12 months. There is no difference in rate of cage subsidence.

Conclusion:

TiPEEK cage in MI-TLIF shows no difference in patient-reported outcomes and subsidence during a 12 months follow-up. However, TiPEEK has higher fusion rate at 6 months.

