Open transforaminal lumbar interbody fusion

Open transforaminal lumbar interbody fusion (TLIF) using transpedicular screws and interbody cage, which is used to treat segmental instability, is associated with a significant paravertebral muscle and ligament injury.

To conduct a comparative analysis of the effectiveness of minimally invasive fusion technique and TLIF to improve the treatment results in patients with symptomatic lumbar spine degeneration concomitant with moderate segmental instability of the lumbar spine.

The study involved 90 patients, which were divided into 2 groups. Transforaminal interbody fusion with Pezo-T PEEK cage was performed after spinal canal reconstruction in both groups. In the first group (n=45), interbody fusion was augmented by 4-point transpedicular rod fixation (Konmet, Russia); in the second group (n=45), by Coflex-F rigid interspinous spacer. Patients were followed up and the results were assessed within 24 months after surgery.

The intergroup comparison of pain level using the visual analogue scale, the need for analgesics, and quality of life according to Oswestry Disability Index score during the early postoperative period demonstrated significantly better outcomes in the second group of patients due to lesser operative trauma of the paravertebral soft tissue. Interbody fusion was observed within 20-36 months in 95% of group I patients and 94% of group II patients ($p>0.05$). Postoperative complications were observed in 17.8% of patients in group I and in 2.2% of cases in group II ($p<0.001$). CONCLUSION:

Stabilization by rigid interspinous spacer and transforaminal interbody cage provides better clinical outcomes and fewer postoperative complications as compared to the conventional TLIF technique with similar X-ray rate of bone block formation in patients with moderate segmental instability of the lumbar spine, thus optimizing the treatment of such patients [1].

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Byvaltsev VA, Kalinin AA, Belykh EG, Sorokovikov VA, Shepelev VV. [Optimization of segmental lumbar spine instability treatment using minimally invasive spinal fusion technique]. Zh Vopr Neirokhir Im N N Burdenko. 2015;79(3):45-54. Russian. PubMed PMID: 26529533.