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Comparison between posterior lumbar interbody fusion and transforaminal lumbar interbody fusion for the treatment of lumbar degenerative diseases: a systematic review and meta-analysis.

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Abstract

Background: The purpose of this meta-analysis was to compare the efficacy and safety in the management of lumbar diseases performed by either posterior lumbar interbody fusion (PLIF) or transforaminal lumbar interbody fusion (TLIF).

Summary of background data: Interbody fusion was considered as "gold standard" in the treatment of lumbar degenerative diseases. Both PLIF and TLIF have been advocated and it remains controversial as to the best operative technique.

Methods: The electronic databases including Embase, PubMed and Cochrane library were searched to identify relevant studies up to September 2017. The primary outcomes were fusion rate, complications, and clinical satisfaction. The secondary outcomes were length of hospitalization, operation time, blood loss, postoperative VAS, ODI and JOA. Data analysis was conducted with RevMan 5.3 software.

Results: A total of 16 studies involving 1502 patients (805 patients in PLIF group and 697 in TLIF group) were included in the meta-analysis. The pooled analysis showed that there was no significant difference in terms of fusion rate ($p>0.05$) and clinical satisfaction ($p>0.05$) between two groups. TLIF was superior to PLIF with significantly lower incidence of nerve root injury ($p<0.05$) and dural tear ($p<0.05$). However, there was no significant difference regarding wound infection ($p>0.05$) and graft malposition ($p>0.05$). PLIF required significant longer operation time ($p<0.05$) and more blood loss ($p<0.05$). Although TLIF was associated with better postoperative VAS, ODI and JOA than PLIF, there was no statistical difference regarding these results.

Conclusions: The available evidence suggests that both TLIF and PLIF could achieve similar clinical satisfaction and fusion rate in the management of degenerative lumbar diseases. However, TLIF was superior to PLIF with shorter operation time, less blood loss, and lower incidence of nerve root injury and dural tear. There is no significant difference between both groups regarding wound infection and graft malposition.

Keywords: posterior lumbar interbody fusion (PLIF); transforaminal lumbar interbody fusion (TLIF); lumbar disease; Meta-analysis

Introduction

Lumbar fusion is an effective surgical intervention for various lumbar pathologies, including lumbar stenosis, instability and discogenic pain. The objective of spinal fusion surgery is to achieve a solid arthrodesis of spinal segments while restoring disk height, immobilizing the unstable segment,

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