Minimally invasive transforaminal lumbar interbody fusion

Minimally invasive transforaminal lumbar interbody fusion was first described in the literature by Foley et al [1] in 2003, has become popular since its introduction because of concerns that open TLIF may result in significant soft tissue injury [2] [3]

MIS-TLIF is associated with radiologic decompression of lumbar foraminal stenosis and central spinal canal stenosis. The mechanism for neural foraminal and central canal decompression is likely driven by a combination of direct and indirect corrective techniques [4].

MIS TLIF and conventional TLIF showed similar clinical and radiological outcomes. MIS TLIF may be a better choice for two- or three-segment lumbar fusion in perioperative outcomes [5].

The medial-lateral expandable TLIF cage (MLX-TLIF) with unilateral pedicle screw fixation provided comparable stability to conventional TLIF with bilateral PS fixation and ALIF with anterior plate treatments. The large footprint of the expandable cage may reduce the TLIF supplemental fixation demands and facilitate minimally invasive single-position surgery. If needed, additional stability may be achieved by using bilateral PS [6].

Outcome

Minimally invasive transforaminal lumbar interbody fusion (MITLIF or MIS-TLIF…) is a well-described procedure with excellent reported outcomes. A modification of interbody graft placement can potentially improve the ease and safety of this procedure.

Minimally invasive transforaminal lumbar interbody fusion (MIS TLIF) is a common surgical option for degenerative spondylolisthesis (DS), with similar clinical outcomes when used to treat both isthmic spondylolisthesis and degenerative spondylolisthesis. Although disc height restoration was more effective for IS than DS, other radiologic parameters including fusion rate were no different between groups. For both isthmic and degenerative spondylolisthesis, MIS TLIF can be a safe and effective surgical option [7].

Videos

<html><iframe width="560" height="315" src="https://www.youtube.com/embed/bhEeafKJ370" title="YouTube video player" frameborder="0" allow="accelerometer; autoplay; clipboard-write; encrypted-media; gyroscope; picture-in-picture" allowfullscreen></iframe></html>

Case series

Minimally invasive transforaminal lumbar interbody fusion case series.

Case reports

Minimally invasive transforaminal lumbar interbody fusion case reports.

1)

Foley KT, Holly LT, Schwender JD. Minimally invasive lumbar fusion. Spine (Phila Pa 1976) 2003; 28:S26–35

2)

Kawaguchi Y, Matsui H, Tsuji H. Back muscle injury after posterior lumbar spine surgery. A histologic and enzymatic analysis. Spine (Phila Pa 1976) 1996; 21:941–944.

3)

Styf JR, Willen J. The effects of external compression by three different retractors on pressure in the erector spine muscles during and after posterior lumbar spine surgery in humans. Spine (Phila Pa 1976) 1998; 23:354–358.

4)

Khalifeh JM, Massie LW, Dibble CF, Dorward IG, Macki M, Khandpur U, Alshohatee K, Jain D, Chang V, Ray WZ. Decompression of Lumbar Central Spinal Canal Stenosis Following Minimally Invasive Transforaminal Lumbar Interbody Fusion. Clin Spine Surg. 2021 May 12. doi: 10.1097/BSD.0000000000001192. Epub ahead of print. PMID: 33979102.

5)

Lee WC, Park JY, Kim KH, Kuh SU, Chin DK, Kim KS, Cho YE. Minimally invasive transforaminal lumbar interbody fusion in multilevel; comparison with conventional transforaminal interbody fusion. World Neurosurg. 2015 Sep 16. pii: S1878-8750(15)01172-9. doi: 10.1016/j.wneu.2015.09.009. [Epub ahead of print] PubMed PMID: 26386459.

6)

Cannestra AF, Peterson MD, Parker SR, Roush TF, Bundy JV, Turner AW. MIS Expandable Interbody Spacers: A Literature Review and Biomechanical Comparison of an Expandable MIS TLIF with Conventional TLIF and ALIF. Spine (Phila Pa 1976). 2016 Jan 22. [Epub ahead of print] PubMed PMID: 26825792.

7)

Kim JY, Park JY, Kim KH, Kuh SU, Chin DK, Kim KS, Cho YE. Minimally invasive transforaminal lumbar interbody fusion for spondylolisthesis: Comparison between isthmic and degenerative spondylolisthesis. World Neurosurg. 2015 Jun 10. pii: S1878-8750(15)00710-X. doi: 10.1016/j.wneu.2015.06.003. [Epub ahead of print] PubMed PMID: 26072461.

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