

Minimally Invasive External Transforaminal Lumbar Interbody Fusion with Minimal Bone Resection of the Facet Joint

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Introduction

Description of the surgical technique and a prospective case series 18 months follow-up study.

Methods

From July 2008 to April 2011, 67 patients were treated with lumbar spinal fusion using the minimally invasive Extraforaminal Lumbar Interbody Fusion Technique, with posterior pedicular screw fixation supplementation. Diagnoses included degenerative disc disease, degenerative spondylolisthesis and facet cysts. 3 cm paramedian incisions, 5 cms from the midline where used. Using fluoroscopic guidance, a non – traumatic dissection was used to separate the lumbar musculature and through the use of tubular and self-fixating separators, the corresponding facet joint was exposed; a selective inferior facet osteotomy was performed (Fig 1, Fig 2).

Results

Over 90% of patients showed an improvement in the evaluated parameters after their first post-operative month. The improvement rates remained close to 95% at six, twelve, and eighteen months (Fig 3). There were no major complications or serious neurologic injuries (Fig 4). The average surgical time was less than that reported for the traditional minimally invasive TLIF, and in hospital stay was less than 24 hours in all cases.

The medial border of the medial intertransverse muscle was laterally dissected along with the intertransverse membrane protecting the dorsal root ganglion and the exiting root. We gained access to the Kambin´s safety triangle with sufficient space to perform the discectomy and placement of the intervertebral cage (Video). The manipulation of the exiting nerve root was minimal and there was no need to visualize the traversing root. All cases were supplemented by using pedicular screw fixations by way of minimally invasive techniques. Evaluation was performed by using the Oswestry Disability Index and the Visual Analog Scale before surgery and one and six months after the procedure. Patient satisfaction was measured by using the Odom Scale.



Figure 3. A. Lateral X-ray with spondylo II. B. Patient's MRI with severe Modic II changes in L4L5 and listhesis. C. Post-op PA and LAT X-ray films with an interbody L4L5 bullet cage and mini-open positioned screws. D. Pre-op and post-op X-ray. There is a striking realignment of the lumbar spine and recovery of the interbody space height.

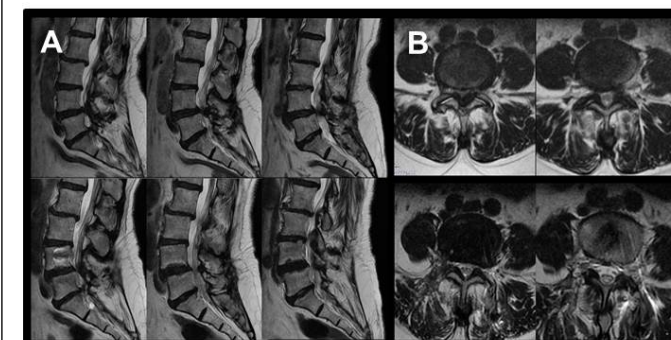


Figure 4. A. MRI sagittal view pre-op (top) and one year post-op (bottom). B. MRI axial views at the surgical level showing evidence of indirect decompression with luxation facets realignment (top: pre-op, bottom: post-op)

Conclusions

The minimally invasive ETLIF technique allows us to perform a safe and effective interbody fusion, with minimal and less bone removal, low morbidity, and short in – hospital stay and similar clinical outcomes when compared to the conventional minimally invasive TLIF technique

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the utility of minimally invasive surgical technique in the transforaminal modified approach to lumbar interbody fusion

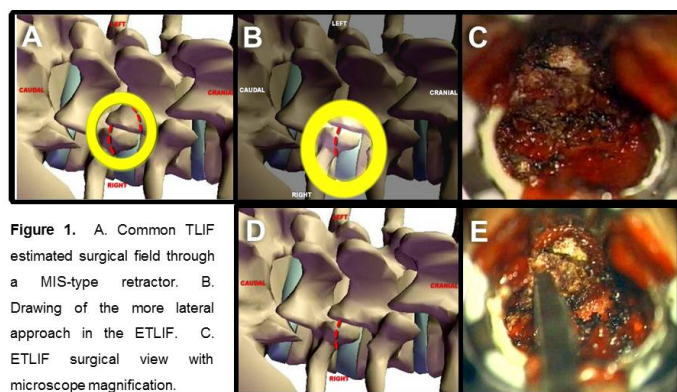


Figure 1. A. Common TLIF estimated surgical field through a MIS-type retractor. B. Drawing of the more lateral approach in the ETLIF. C. ETLIF surgical view with microscope magnification. D. Drawing depicting the facet cutting landmark. E. Surgical view of the facet cutting.

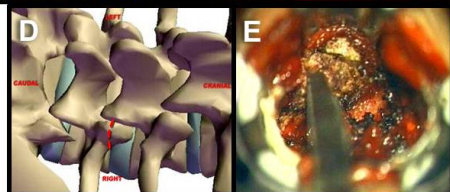


Figure 2. A. Detaching the inner edge of the intertransverse muscle. A pad fat is protecting the exiting root. B. Drawing of the Kambin's triangle in the ETLIF approach. C. Surgical view of the Kambin's triangle in the ETLIF approach. D. Cutting the annulus with a surgical blade No. 11. There is no retractor requirement for the exiting root.

