Oblique Lateral Lumbar Interbody Fusion (OLLIF): A Comparative Study of Perioperative and Clinical Outcomes

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Introduction

Open lumbar fusions such as PLIF and TLIF expose the patient to a high level of surgical morbidity due to detachment and denervation of the muscle during approach. Minimally invasive TLIF and PLIF procedures have resulted in lower tissue damage and blood loss but surgery times are similar to their open equivalents and the approach is often difficult. We present a new technique for Oblique Lateral Lumbar Interbody Fusion (OLLIF) that allows for faster surgery times and minimal blood loss with easy approach through Kambin's triangle.

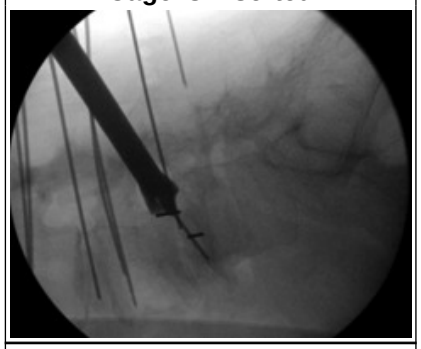
Study Design

This is a retrospective study including 303 OLLIF patients and 42 TLIF controls all done by the same surgeon as single surgeon procedures. To ensure selection for OLLIF does not bias the results, all TLIF controls were performed before the surgeon started doing OLLIFs.

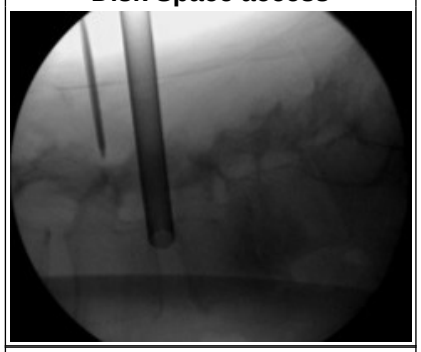
The OLLIF procedure

The disk is approached through Kambin's triangle aided by bilateral fluoroscopy and electrophysiological probe. Instrumentation is fed through access portal to remove disk material and insert the graft and cage. The interbody fusion is accompanied by posterior fixation. Posterolateral minimaly invasive fusion additional to instrumentation is possible through minimally invasive roughening of the facets and placement of biologics. Decompression is achieved through placement of large interbody cage which increases disk space and neural foraminal size. Disk space is accessed Locating the incision point Cage is inserted Completed 2 level OLLIF with posterior fixation.

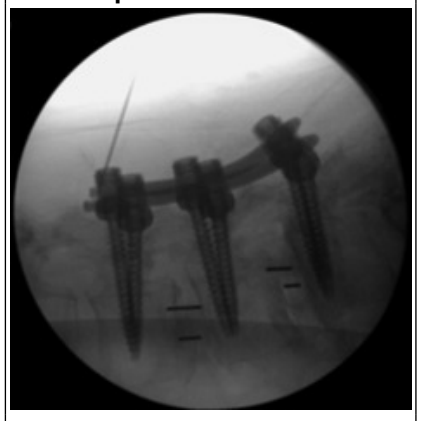
Cage is inserted



Disk Space access



Completed 2 level OLLIF



Radiographic outcome is equivalent to TLIF

Results

OLLIF and TLIF study populations are not significantly different from each other in Age, Gender and BMI. However for OLLIF cases surgery times are significantly faster and blood loss is reduced by almost 90%. Hospital stay was reduced by 2 days. At follow up at least 9 months post surgery, pain on a 10 point pain scale was reduced from 8.5±1.2 to 3.9±2.9 ($p<0.001$) and disability on the oswestry disability index was reduced from 55%±17% to 36%±21% ($p<0.001$). There was one superficial infection in the OLLIF group that resolved with antibiotics. Fusion was determined by 2 independent radiologists. At the 1 year follow up, interbody fusion occurred in 98% of patients (n=164/303, collection ongoing).

Conclusions

OLLIF is a MI fusion of the lumbar spine that is safe, effective and technically less demanding than comparable procedures. OLLIF has the potential to improve clinical outcomes relative to the current standard of care.

Perioperative outcomes of OLLIF relative to TLIF