IHH Healthcare

Minimally Invasive Transforaminal Lumbar Interbody Fusion (MIS TLIF)

KEY PROCEDURE HIGHLIGHTS

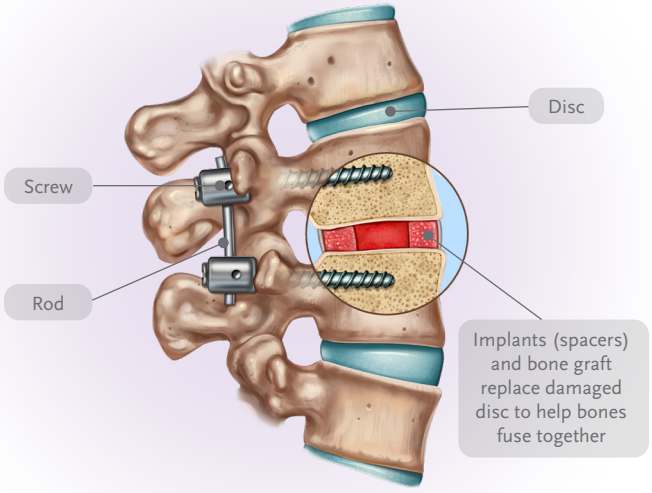
1. **Less initial postoperative pain and blood loss** compared with open TLIF surgery.[1]
2. **Faster recovery** that allows for earlier rehabilitation and shorter hospitalization.[1]
3. **Lower complication rate** compared with open TLIF surgery.[1]

MINIMALLY INVASIVE TRANSFORAMINAL LUMBAR INTERBODY FUSION (MIS TLIF)

Transforaminal Lumbar Interbody Fusion

TLIF is performed to stabilise the arthrodetic spinal segments with good disc height and vertebral alignment. This relieves the pressure on existing neural structures.

This procedure reduces chronic pain from motion, nerve root inflammation and any associated leg pain.



Transforaminal
The spine and intervertebral disc are accessed via a surgical approach from the side of the spinal canal through a midline incision in the patient's back.

Lumbar
One or more vertebrae (bones) of the lumbar spine are fused.

Interbody
Following removal of the intervertebral disc, fusion occurs between the two vertebral bodies and across disc space.

Fusion
Formation of bony bridge between segments of the spine is facilitated by the use of bone grafts.

Post-operative X-rays:

Anteroposterior view **Lateral view**

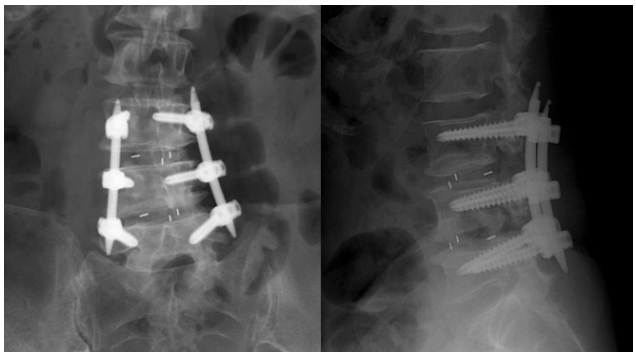


Image Credit: Dr Yue Wai Mun

Minimally Invasive Procedure

TLIF can be performed using a minimally invasive approach where the surgeon accesses the spine through small incisions for tissue preservation instead of an open cut.

The Technique

- This novel technique utilizes tubular retractors inserted under radiological guidance via a muscle-dilating approach, thus reducing the amount of iatrogenic muscle and soft tissue injuries.
- Fluoroscopy will be used to help the surgeon locate the diseased vertebral levels and perform the laminotomy, facetectomy, disectomy, interbody grafting and screw placement.
- When the retractors are removed at the end of the surgery, the surrounding soft tissues fall back into their normal place and only require a small amount of stitches to close the area.

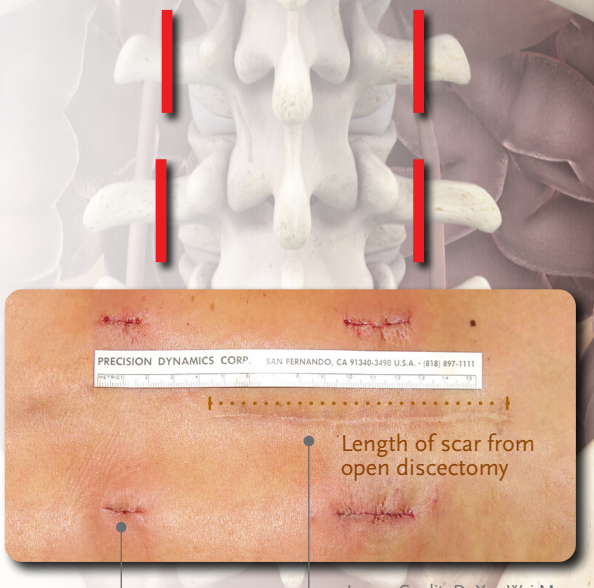


Image Credit: Dr Yue Wai Mun

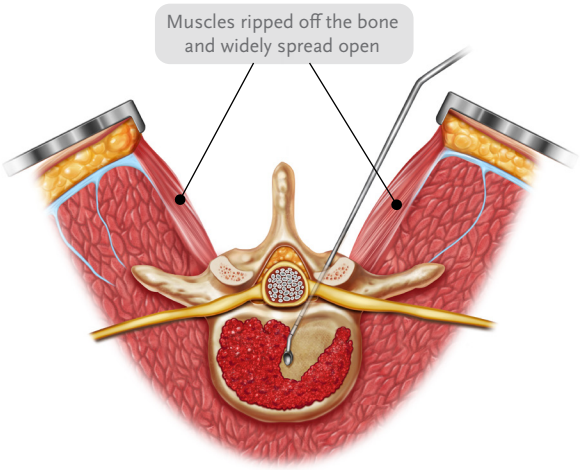
Four 3.5cm midline incisions from a MIS TLIF

Old scar from a previous open discectomy in a patient with recurrent disc prolapse.

BENEFITS OF MINIMALLY INVASIVE OVER OPEN TLIF

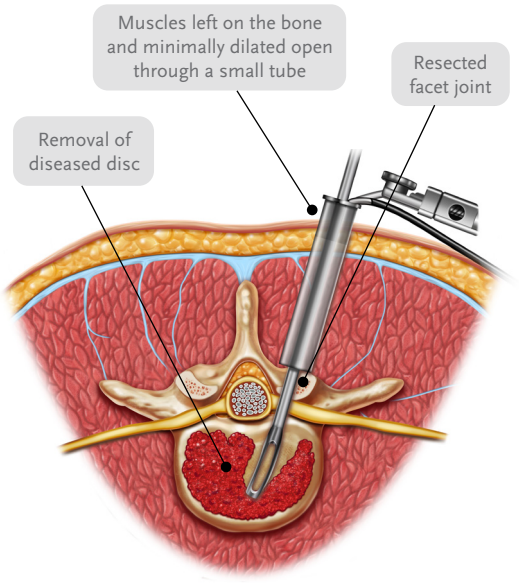
Open TLIF

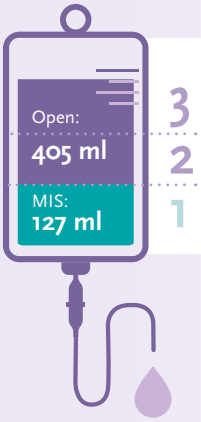
Open TLIF is usually associated with **significant morbidities** due to extensive muscle stripping and retraction, resulting in damaging effects of extensive and prolonged muscle ischemia, adversely affecting patient outcomes.[1]



Minimally Invasive TLIF

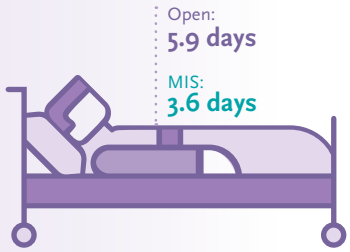
MIS TLIF aims to **significantly reduce the morbidities** associated with open TLIF, while preserving the good outcomes.





3 times less intra-operative blood loss

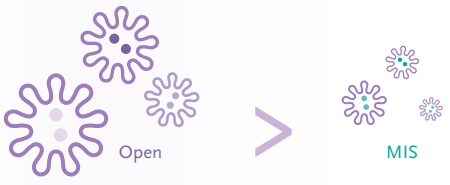
This is advantageous in patients who are more prone to complications from blood loss such as the elderly with multiple comorbidities.[1]



Faster postoperative recovery

- patient is able to ambulate the next day or in 1.5 days, compared to open TLIF in 3 days
- hospital stay is shorten by almost 50%[1]

Less postoperative pain resulting in 3 times less morphine usage from tissue preservation in MIS approach.



5.77 times less likely to develop surgical site infection with MIS approach compared to open surgery.

PATIENT SELECTION

MIS TLIF is suitable for patients with the following conditions at typically one or two levels.

- Grade I or II Spondylolisthesis
- Recurrent Disc Herniation
- Degenerative disc disease with mechanical back pain
- Vertical foraminal stenosis

However, the patient would still need to be evaluated by a spine surgeon who is an expert in MIS techniques to determine if their treatment options include MIS.

X-ray Imaging: Lateral listhesis and severe disc degeneration

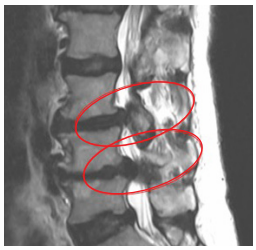


Image Credit: Dr Yue Wai Mun

MRI: 2-level severe stenosis

HIGHLY EXPERIENCED TEAM

At Parkway Hospitals Singapore, our multidisciplinary approach is key to providing comprehensive care for the full spectrum of spine conditions. Our spine surgeons are highly experienced and established to perform routine as well as complex spine surgeries.

Multidisciplinary Team

Orthopaedic surgery | Neurosurgery | Rehabilitation | Pain management

MIS Surgeries

MIS surgeries are complex. Specific training and experience are critical to ensure good surgical outcomes. Our team includes leading pioneers and recognised experts in minimally invasive spine surgery in the Asia Pacific region.

Our OR team are well-trained in assisting the surgeon in the use of MIS supporting technology such as navigation, intraoperative imaging, and distractible devices that needs to be implemented.

Together with our post-surgery care team, the patient will receive the best possible treatment outcome and care.

A surgeon achieves technical proficiency in MIS TLIF and is considered skilled after 44 surgeries.[3]

REFERENCES

1. Seng C, Siddiqui MA, Wong KPL, Zhang K, Yeo W, Tan SB, Yue W-M. Five-Year Outcomes of Minimally Invasive Versus Open Transforaminal Lumbar Interbody Fusion. Spine. 2013;38(23):2049-2055. doi:10.1097/brs.0b013e3182a8212d.

2. GWW Ee, WL Lau, W Yeo, Y Von Bing, WM Yue. Does Minimally Invasive Spine Surgery Have a Lower Risk of Surgical Site Infections Compared with Open Spinal Surgery. Clin Orthop Relat Res 2014; 472(6): 1718-24. doi: 10.1007/s11999-013-3158-5.

3. Lee KH, Yeo W, Soeharno H, Yue WM. Learning Curve of a Complex Surgical Technique. Journal of Spinal Disorders and Techniques. 2014;27(7). doi:10.1097/bsd.0000000000000089.

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