

Is Post Expandable Technology Worth It When You Can Just Do An MIS ALIF? PRO

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Disclosures

- Consultant - DePuy Synthes Spine, Zimmer Biomet, Amendia, Stryker
- Stock - Vivex
- Royalties - Zimmer Biomet

Spine
CLINICAL CASE SERIES

A Comparison of Anterior and Posterior Lumbar Interbody Fusions
Complications, Readmissions, Discharge Dispositions, and Costs

Khalid Quresh, BS,¹ Varun Ponnuruajah, MD,² Anil Jain, MD,³ Adam L. Shires, MD,⁴ Francis H. Shen, MD,⁵ and Harish Hanumanthiah, MD⁶

- Retrospective database review.
- Dural tear were significantly decreased in the ALIF patients.
- At both 30 and 90 days **post-op odds of ileus, wound infection, and lower extremity deep venous thrombosis were significantly INCREASED in the ALIF.**
- **Odds of 30-day readmission were 4 X higher in ALIF patients.**
- 30 and 90-day total costs of care in **ALIF patients were significantly INCREASED COST by approximately \$4800 and \$5800 respectively, as compared with patients undergoing TLIF/PLIF.**
 - Readmissions and costs of post-op care were significantly increased in ALIF procedures.
- Best long-term outcomes and may not be cost-effective compared with a TLIF/PLIF.
- In light of our data, it is important to assess the risks and benefits of the varying approaches, and the necessity to access the anterior column, when deciding on surgical technique to treat lumbar degenerative pathology.

NEUROSPINE FOCUS
 Neurology Focus 40 (11): 2018

Assessment of radiographic and clinical outcomes of an articulating expandable interbody cage in minimally invasive transforaminal lumbar interbody fusion for spondylolisthesis



Lara W. Masain, MD,¹ Hasham Mostafa Zakaria, MD,¹ Lonni R. Schultz, PhD,² Azam Basheer, MD,¹ Morenikeji Ayodele Buraimoh, MD,¹ and Victor Chang, MD¹

- Retrospective review of 39 patients who underwent single-level MIS-TLIF, and 5 who underwent 2-level MIS TLIF.
- Spondylolisthesis was corrected by mean 4.3 mm** (preoperative = 6.69 mm, postoperative = 2.39 mm, $p < 0.001$).
- Segmental angle was improved by 4.94°** (preoperative = 5.63°, postoperative = 10.58°, $p < 0.001$).
- Segmental height increased by 3.1 mm** (preoperative = 5.09 mm, postoperative = 8.19 mm, $p < 0.001$).
- 90 days post-op a smaller post-op SVA was associated with larger changes in back pain at 90 days ($r = -0.558$, $p = 0.013$).
- Larger decrease in spondylolisthesis → greater improvements in ODI and back pain scores ($r = -0.425$, $p = 0.043$, and $r = -0.43$, $p = 0.031$, respectively).
- Overall 95% fusion rate.**
- Overall subsidence rate of 6% (3 of 49) visible on postoperative CT.**
- This expandable, articulating, lordotic interbody cage for MIS-TLIF provides a significant restoration of segmental height and segmental lordosis, with associated improvements in sagittal balance parameters.**



NEUROSPINE FOCUS
 Neurology Focus 11(12): 2018

Minimally invasive transforaminal lumbar interbody fusion with expandable versus static interbody devices: radiographic assessment of sagittal segmental and pelvic parameters

Aminur R. Hossain, MD, PhD,¹ David B. Khoshdel, BS,¹ Ajay Chaturvedi, BS,¹ Chester K. Yarbrough, MD,¹ and Wilson Z. Ray, MD²

- Retrospective review of 48 MIS-TLIFs (91.6% at L4-L5) performed between 2014 and 2016.
- Expandable cage led to a greater and more sustained increase in disc height when compared with static interbody devices.
- Foraminal height increased after MIS-TLIF with expandable but not with static interbody devices.
- Expandable cage increased index-level segmental lordosis > static cage.
- Segmental lordosis was sustained with expandable cages but not in patients with static cages.
- Expandable cages improved ODI scores > static cages, & both disc height & segmental lordosis correlated with improved clinical outcome.
- CONCLUSIONS Performing MIS-TLIF with an expandable cage led to a greater and longer-lasting restoration of disc height, foraminal height, and index-level segmental lordosis than with a static cage.**

TABLE 2. Radiographic and clinical outcomes

Variable	Preop†		Postop†		p Value*			
	Static	Expandable	Static	Expandable	Preop Static vs Expandable	Postop Static vs Expandable	Preop vs Postop w/ Static	Preop vs Postop w/ Expandable
Disc height, cm	0.89 ± 0.36	0.79 ± 0.25	1.15 ± 0.25	1.8 ± 0.32	0.35	<0.001	0.1	<0.001
Foraminal height, cm	2.09 ± 0.02	2.12 ± 0.07	2.13 ± 0.07	2.26 ± 0.48	0.85	<0.01	0.9	0.3
Segmental lordosis, degree	5.8 ± 3.0	5.8 ± 4.2	8.1 ± 3.6	11.0 ± 4.1	0.99	<0.01	0.2	<0.001
Overall lordosis, degree	54.3 ± 16.8	52.2 ± 12.2	58.7 ± 8.6	56.9 ± 11.4	0.6	0.09	0.1	0.2
ODI score	26.7 ± 6.9	32.2 ± 7.97	13.1 ± 10.1	10.9 ± 10.5	0.002	0.8	<0.001	<0.001
Pseudarthrosis rate, %			5.30	6.90				

* Determined using paired or unpaired multicomparison corrected t-tests.
 † Means are presented ± SE, except for ODI scores, which is presented mean ± SD.

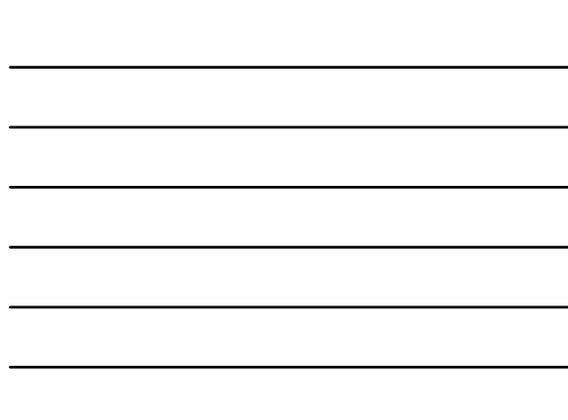


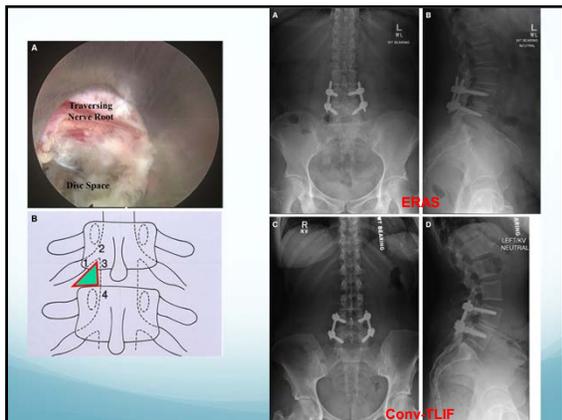
CONCEPTS, INNOVATIONS AND TECHNIQUES

Reduced Acute Care Costs With the ERAS[®] Minimally Invasive Transforaminal Lumbar Interbody Fusion Compared With Conventional Minimally Invasive Transforaminal Lumbar Interbody Fusion

Michael Y. Wang, MD,¹ Hsuan-Kan Chang, MD,¹ Jay Grossman, MD²

- Reviewed an **Enhancing Recovery After Surgery (ERAS) program** in spinal surgery to determine if a "fast track" surgery methodology for lumbar fusion results in acute care cost savings.
- 38 consecutive ERAS patients were compared with patients undergoing conventional MIS-TLIF fusion.
- Differences between these groups included the use of endoscopic decompression, injections of liposomal bupivacaine, and performing the surgery under sedation in the ERAS group.
- Patients had similar medical comorbidities (2.02 vs 2 for ERAS and comparator groups, respectively; $P = .458$).
- Body mass index was similar (26.5 vs 27.0; $P = .329$).
- ERAS patients were older (65 vs 59 yr, $P = .031$).
- Both groups had excellent clinical results with an improvement of 23% and 24%, respectively.**
- Intraoperative blood loss was less (68 ± 31 cc vs 231 ± 73, $P < 0.001$).**
- Length of stay was also less with ERAS surgery, at a mean of 1.23 ± 0.8 d vs 3.9 ± 1.1 d ($P = 0.009$).**
- When comparing ERAS surgery to standard MIS-TLIF fusion, the total cost for the acute care hospitalization was \$19,212 vs \$22,656, respectively ($P < 0.001$).** This reflected an average of \$3444 in savings, which was a 15.2% reduction.
- ERAS programs for spinal fusion surgery have the potential to reduce the costs of acute care.
- Made possible by leveraging less invasive interventions to minimize soft tissue damage.





Is Post Expandable Technology Worth It When You Can Just Do An MIS ALIF?

	Expandable TLIF	ALIF
Fusion	=	=
Stability	=	=
OR Time	↓	
Blood Loss		
Cost	↓	5 - 15K ↑
Complications	Dural tear Nerve injury	Sympathetic dysfunction 6% Vessel injury 4% Retrograde Ejaculation 3% Bowel injury DVT / PE
30-Day Readmission		4 X ↑
ODI Score	Better	
Lordosis Disc height		
Anesthesia	Local + sedation	General
Access Surgeon	No	Yes

