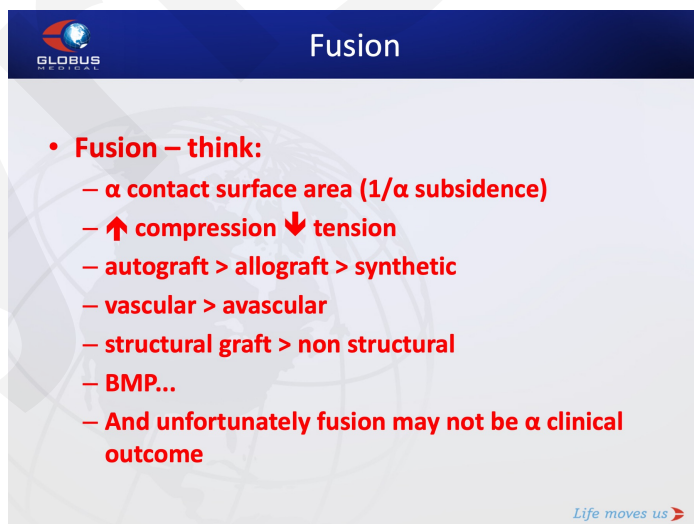
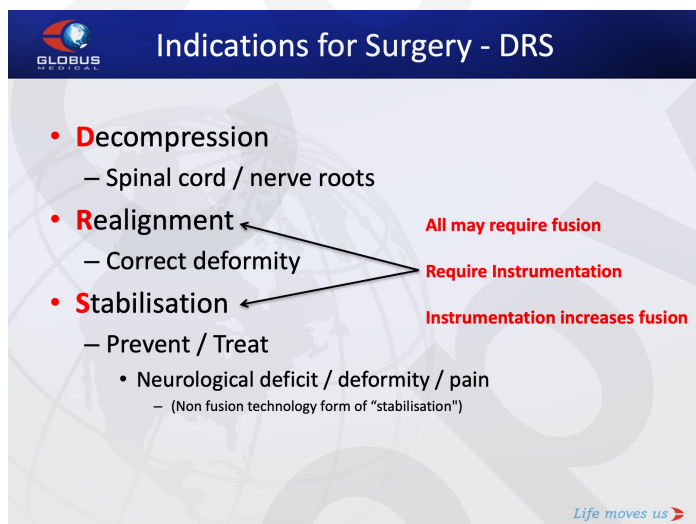
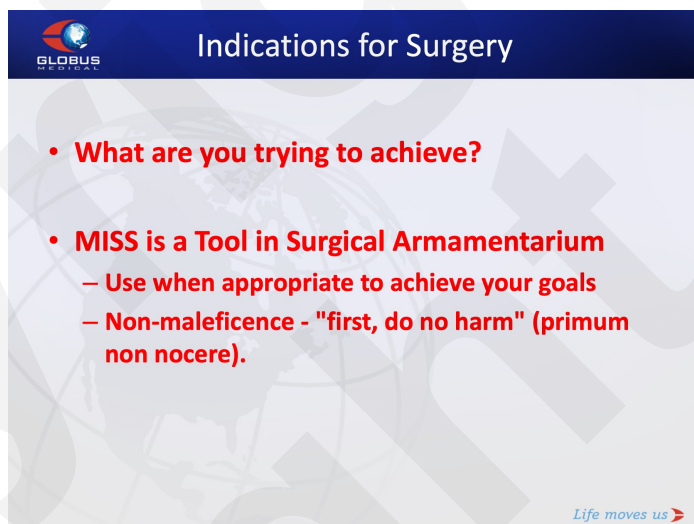
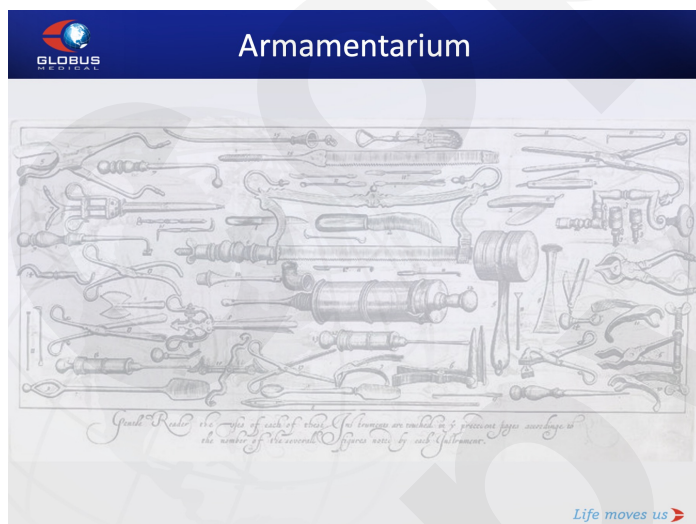
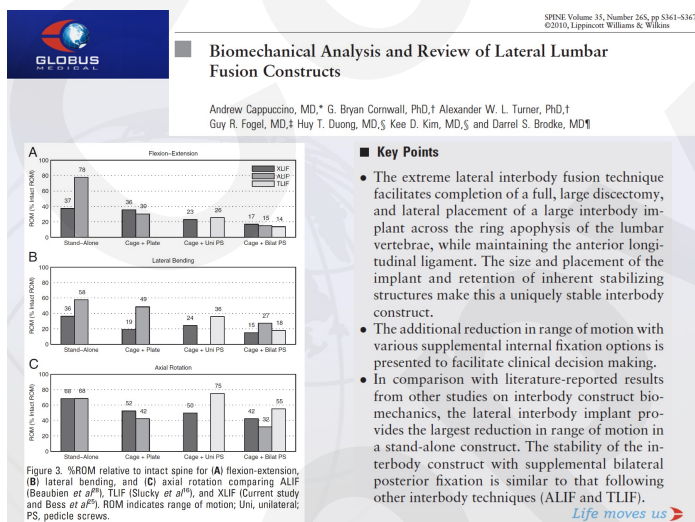
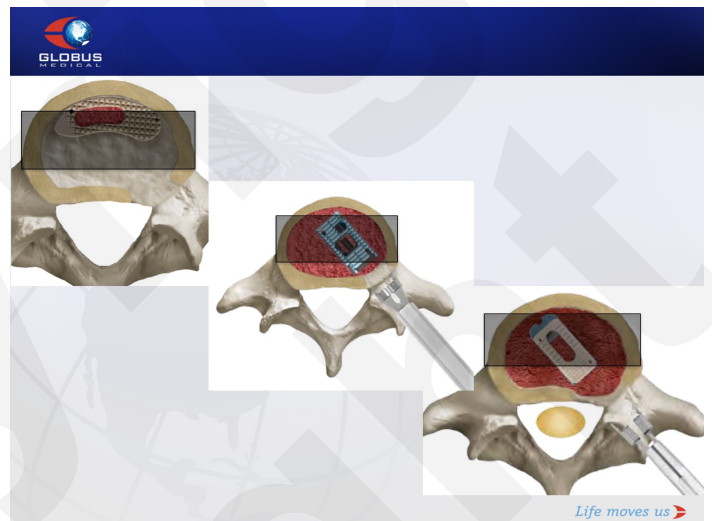
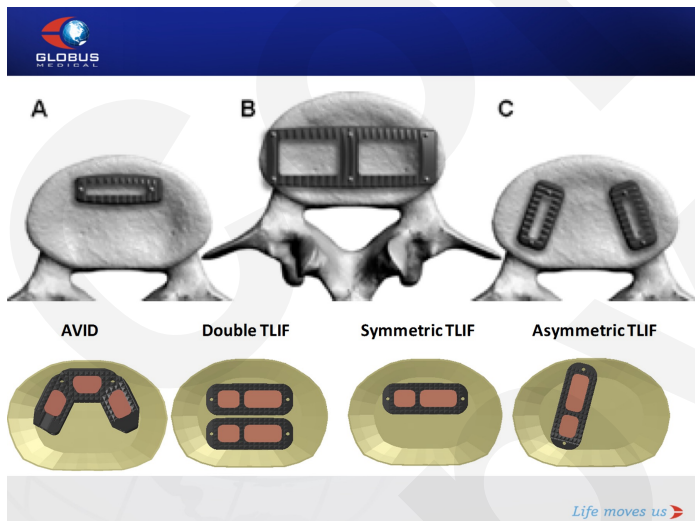
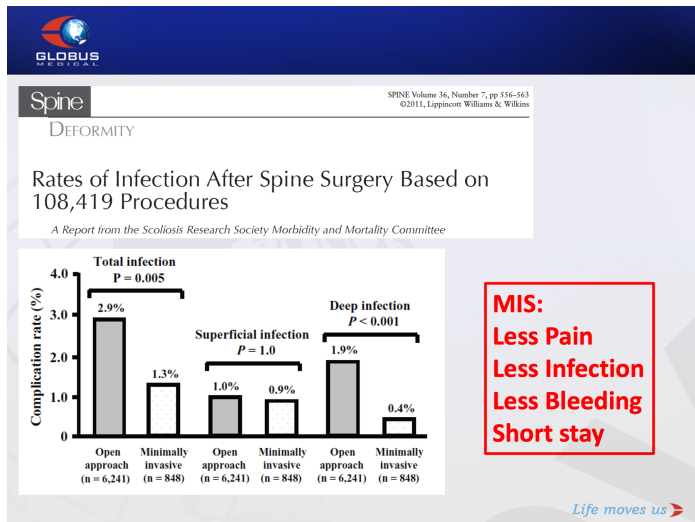






- GLOBUS MEDICAL**
- **LLIF**
 - Tension intact ALL / PLL
 - Indirect decompression
 - Large surface area for fusion across strongest area of bone
 - Good for laterolisthesis > rotated spine
 - Multiple levels same incision
- Life moves us ➤

LLIF Algorithm First Question

- **Contraindications:**
 - L5/S1
 - Low seated L4/5 (look at crests)
 - High grade slip
 - Retroperitoneal scarring / pathology
 - Medical comorbidities / contraindications to surgery
- Yes – then use other technique

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LLIF Algorithm Second Question

- Is direct decompression of spinal canal needed?
 - Yes
 - Consider single procedure / approach with TLIF / PLIF
 - Surgical philosophy / ability – 2 stages with LLIF may give better deformity correction / fusion

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Surgical Options

	Advantages	Disadvantages
PLIF	Bilateral access to canal, restores lordosis	Painful, infection, neural / dural injury scarring, limited higher up
Mini Open and MIS PLIF	Less painful, low infection, less blood loss, faster recovery	Fusion?, neural / dural injury scarring, limited higher up
Open TLIF	Access, fusion	Painful, infection, neural / dural injury scarring, endplate damage / subsidence
Mini Open TLIF	Less painful, low infection, fusion, less blood loss	Neural / dural injury scarring, disc preparation, endplate damage / subsidence
MIS TLIF	Even less pain, low infection, avoids paraspinal muscle damage, less blood loss, faster recovery	Fusion?, neural / dural injury scarring, disc preparation, endplate damage / subsidence
LLIF + Perc Post	Good fusion, less painful, low infection, T5-L5, avoids canal, less visceral vessel injury then ALIF, avoids paraspinal muscle damage, less blood loss, faster recovery	L4/5??, L5/S1 – No, endplate damage / subsidence, plexus injury, diaphragm injury, pneumothorax
ALIF + Perc Post	Best fusion, best restoration lordosis, less painful, low infection, avoids canal, avoids paraspinal muscle damage, mostly less blood loss than a TLIF	Access Surgeon, ilio lumbar vein, visceral vessel injury, ileus, not above L3

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More Comparisons

MIS Technique	Direct Decompression	Interbody Fusion	Screw Stabilization	Spondy Reduction (Low Grade)	Postero-Lateral Fusion
MOTLIF	✓	✓	✓	✓	✓
pTLIF*	✓	✓	✓	✓	✓
PPS**	✓	✓	✓	✓	✓
pTLIF + PPS	✓	✓	✓	✓	✓
XLIF	✓	✓	✓	✓	✓
XLIF + PPS	✓	✓	✓	✓	✓
Mini-ALIF	✓	✓	✓	✓	✓
Mini-ALIF + PPS or Plate	✓	✓	✓	✓	✓

*pTLIF: percutaneous TLIF through non expandable tubes; **PPS: percutaneous pedicle screws

?

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A Radiological Comparison of Anterior Fusion Rates in Anterior Lumbar Interbody Fusion

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Global Spine J 2012;22:195–206.

Posterior instrumentation without posterior fusion increases anterior fusion rates

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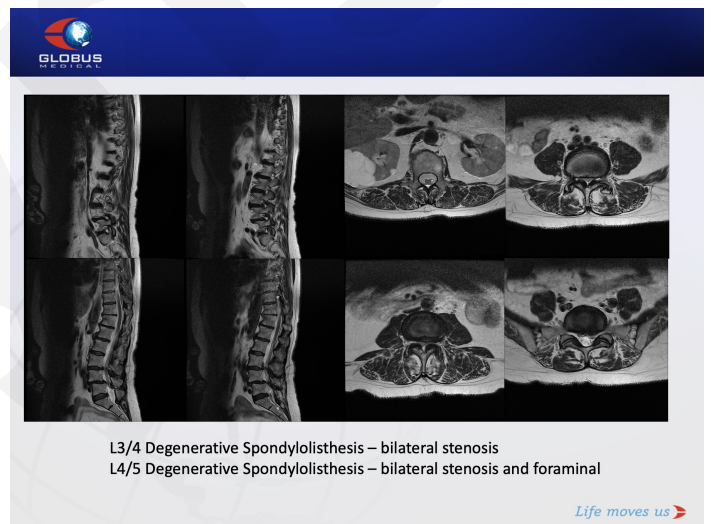
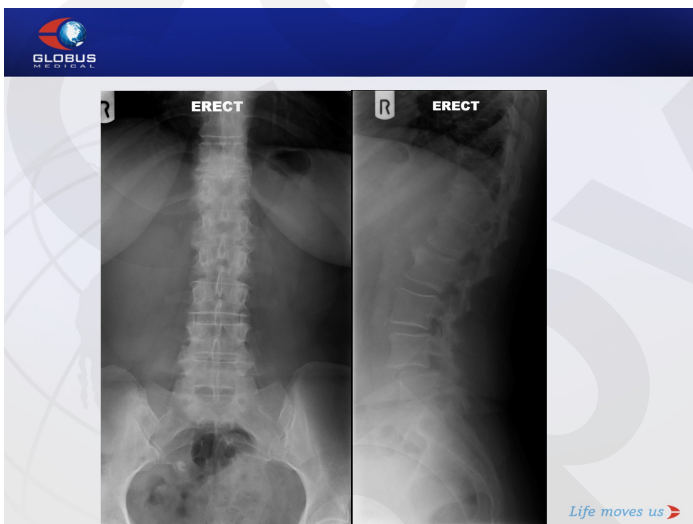
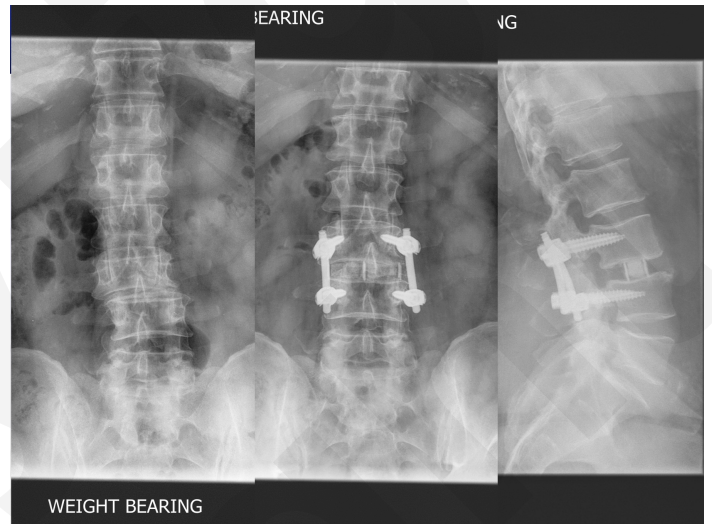
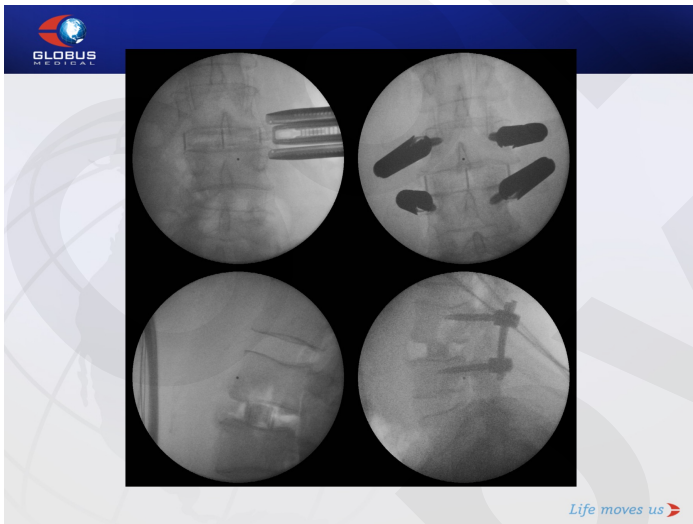
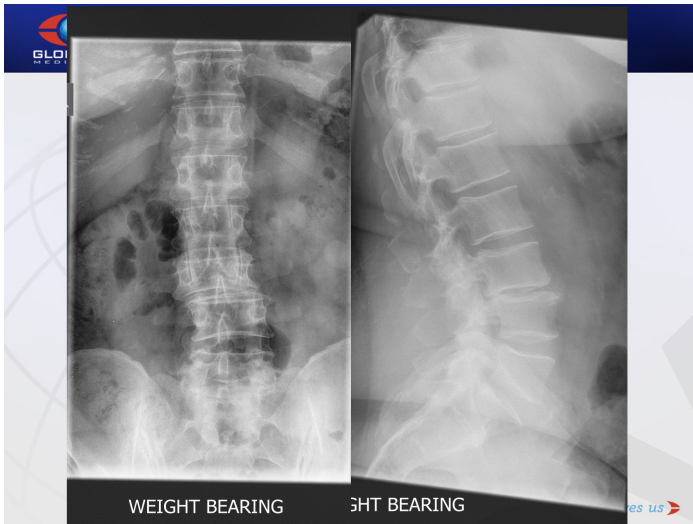
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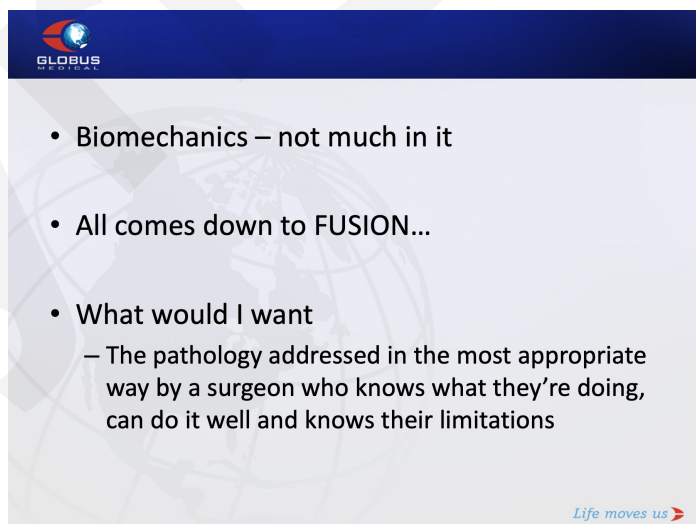
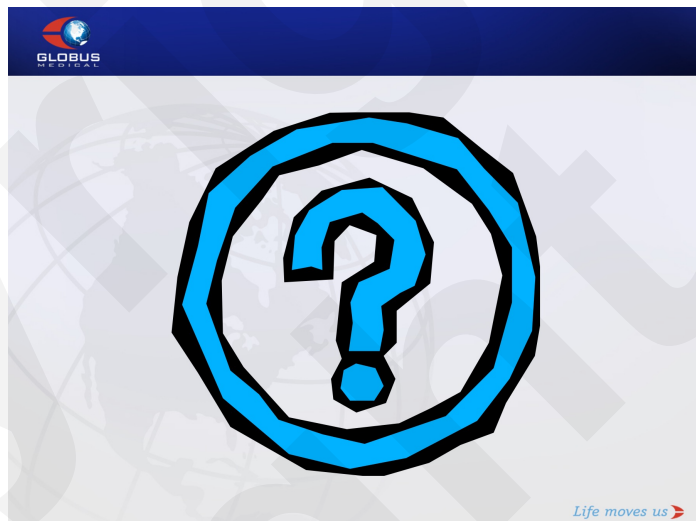
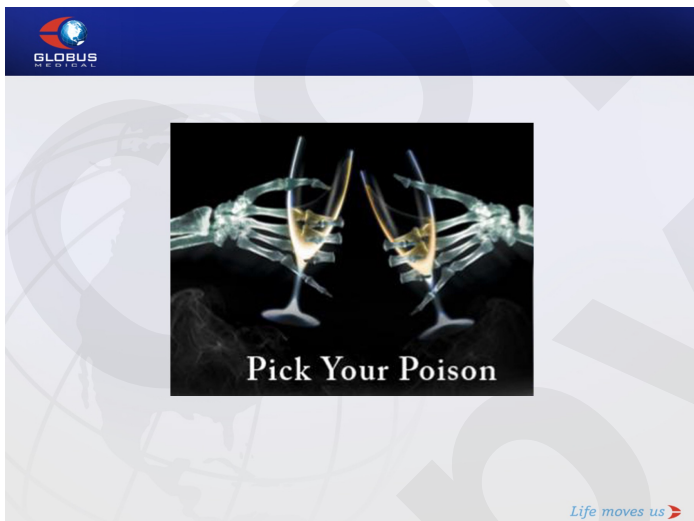
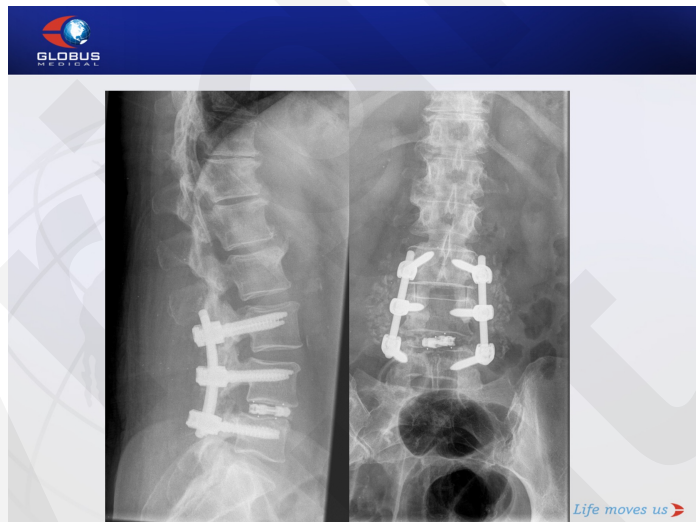
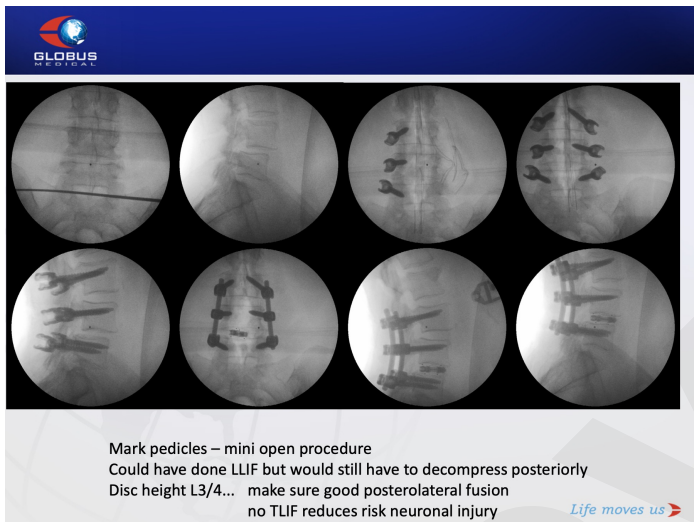
123. Clinical Benefit after Lumbar Interbody Fusion: A Prospective, Multi-Institutional Comparative Effectiveness Study of Outcomes after TLIF Versus XLIF

Owoicho Adogwa, MD, MPH¹, Paul Thompson, BS², Kemp T. Knott, BS³, Kevin Huang, BA³, Ulysses Toche, BS³, Joseph S. Cheng, MD⁴, Robert E. Isaacs, MD²; ¹Vanderbilt University, Nashville, TN, US; ²Durham, NC, US; ³Duke University Medical Center, Durham, NC, US; ⁴Vanderbilt University Medical Center Department of Neurosurgery, Nashville, TN, US

CONCLUSIONS: A significant clinical improvement from baseline was noted in multiple-validated outcome measurements following both XLIF and TLIF procedures. No significant difference was observed in the extent of functional improvement between both cohorts. However, patients undergoing TLIF procedures were more likely to experience a postoperative complication.

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Biomechanical Comparison of Anterior Lumbar Interbody Fusion and Transforaminal Lumbar Interbody Fusion

Avraam Ploumis, MD, PhD,*† Chunhui Wu, PhD,* Gustav Fischer, BS,‡ Amir A. Mehdol, MD,*||
Wentien Wu, MD,*§ Antonio Faundez, MD,*¶ and Ensor E. Transfeldt, MD*||

Conclusions: Both ALIF and TLIF procedures combined with posterior instrumentation significantly improved construct stability of intact spinal motion segments. However, there was no statistical difference between these 2 fusion techniques. The 2 ALIF approaches (lateral and anterior) also had similar construct stability even though anterior longitudinal ligament severing significantly reduced stability.

Cadaveric

J Spinal Disord Tech • Volume 21, Number 2, April 2008 Life moves us ➤

Mini-Transforaminal Lumbar Interbody Fusion Versus Anterior Lumbar Interbody Fusion Augmented by Percutaneous Pedicle Screw Fixation

A Comparison of Surgical Outcomes in Adult Low-grade Isthmic Spondylolisthesis

Conclusions: The mini-ALIF group demonstrated key radiographic advantages compared with the mini-TLIF group for adult low-grade isthmic spondylolisthesis. However, clinical and functional outcomes did not demonstrate significant differences between groups.

J Spinal Disord Tech • Volume 22, Number 2, April 2009 Life moves us ➤

J Neurosurg Spine 7:379–386, 2007

Anterior lumbar interbody fusion in comparison with transforaminal lumbar interbody fusion: implications for the restoration of foraminal height, local disc angle, lumbar lordosis, and sagittal balance

Conclusions. The ALIF procedure is superior to TLIF in its capacity to restore foraminal height, local disc angle, and lumbar lordosis. The improved radiographic outcomes may be an indication of improved sagittal balance correction, which may lead to better long-term outcomes as shown by other studies. Our data, however, demonstrated no difference in clinical outcome between the two groups at the 2-year follow-up. (DOI: 10.3171/SP.07.10.379)

Fusion ?
Subsidence approx 20% in each

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Spine

CLINICAL CASE SERIES

SPINE Volume 36, Number 1, pp 26–31
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Intraoperative and Early Postoperative Complications in Extreme Lateral Interbody Fusion

An Analysis of 600 Cases

W. Blake Rodgers, MD, Edward J. Gerber, PA-C, and Jamie Patterson, BA

Conclusions. Compared with traditional open approaches, the MIS lateral approach to fusion by using the XLIF technique resulted in a lower incidence of infection, visceral and neurologic injury, and transfusion as well as markedly shorter hospitalization. Complications in MIS XLIF compare favorably with those from other MIS fusion procedures; duration of hospitalization is shorter than with any previously reported technique.

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Complication rates of minimally invasive spine surgery compared to open surgery: A systematic literature review

Justin Kane, MD^a, Andrew Kay, BS^b, Mitchell Maltenfort, PhD^c, Christopher Kepler, MD, MBA^d, Todd Albert, MD^d, Alexander Vaccaro, MD, PhD^d, and Kris Radcliff, MD^{d,*}

SEMIN SPINE SURG 25 (2013) 191–199

Applying our inclusion/exclusion criteria left 14 publications for review. Overall complication rates were not statistically significant between MIS and traditional groups. The incidence of dural tears was 1.1% (26/1339) in patients undergoing MIS versus 2.1% (20/939) for traditional surgery ($p = 0.57$). The incidence of infection was 1.1% (19/1682) in patients undergoing MIS versus 2.2% (29/1332) for traditional surgery ($p = 0.09$). The incidence of screw malposition was 2.8% (3/106) in patients undergoing MIS versus 1% (1/102) for traditional surgery ($p = 0.48$). The incidence of root injury was 2.9% (2/70) in patients undergoing MIS versus 0% (0/142) for traditional surgery ($p = 0.45$). The incidence of need for revision surgery was 3.8% (25/662) in patients undergoing MIS versus 3.2% (26/819) for traditional surgery ($p = 0.93$). MIS did not confer any statistically significant advantage over traditional surgery for any of the complications reviewed.

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The Spine Journal 6 (2006) 435–443

Technical Report

Extreme Lateral Interbody Fusion (XLIF): a novel surgical technique for anterior lumbar interbody fusion

Burak M. Ozgur, MD^{a,*}, Henry E. Aryan, MD^a, Luiz Pimenta, MD, PhD^c, William R. Taylor, MD^b

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Received 11 March 2005; accepted 25 August 2005

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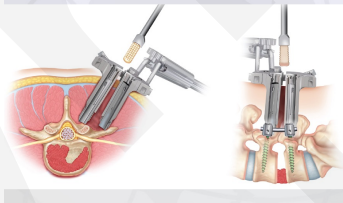
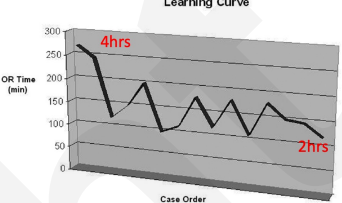
1829	Lumbar Laminectomy for Discectomy (Smith)	1969	Chymopain Chemoneurolysis (Smith)	1999	MIS-Cyline-Odontoid Screw Placement (Horgan)
1893	Lumbar Laminectomy for Stenosis (Lane)	1975	Percutaneous Nucleotomy (Hijikata)	2000	Intradiscal Electrothermy-IDET (Saut)
1911	Lumbar Fusion (Albee, Hibbs)	1982	Percutaneous Pedicle Screws (Magerl)	2000	MIS-Cervical Laminoforaminotomy (Roh)
1925	Cervical Laminectomy for Discectomy (Elsberg)	1984	Laser Percutaneous Discectomy-LPD (Aachert)	2000	Kyphoplasty (Wong)
1933	Anterior Lumbar Interbody Fusion - ALIF (Burns)	1985	Automated Percutaneous Lumbar Discectomy-APLD (Maroon, Onik)	2001	Seviant Percutaneous Pedicle Screw System (Foley)
1936	Internal Spine Fixation (Heda)	1987	Lumbar Arthroscopic Discectomy (Kambin)	2002	MIS-Lumbar Laminectomy for Stenosis (Gustot, Khoo, Palmer)
1952	Posterior Lumbar Interbody Fusion - PLIF (Cloward)	1987	Vertebroplasty (Galibert)	2002	MIS-PLIF (Khoo)
1955	ACDF (Robinson)	1991	Laparoscopic Anterior Lumbar Discectomy (Chenchaian)	2003	Tubular Discectomy using Microscope-METRX (Foley)
1958	ACDF (Cloward)	1993	Percutaneous Facet Fusion (Wang)	2004	Transaxial Approach (Cragg)
1966	Lumbar Artificial Disc Replacement - ADR (Fennstrom)	1994	MIS-Thoracic Discectomy (Horowitz)	2004	MIS-Cervical Laminoplasty (Perez-Cruet)
1967	Lumbar Microdiscectomy (Tasargil)	1995	MIS-ALIF (Mathews, Zucherman)	2006	Interspinous Device-XSTOP (Kondrashov)
1982	Transforaminal Interbody Fusion - TLIF (Harms)	1997	Microendoscopic Discectomy - MED (Foley)	2006	MIS-TLIF (Holly)
1983	Thoracic Discectomy (Benjamin)	1998	Lateral Transposas Approach-OLIF, XLIF (McAfee, Pimenta)	2008	MIS-ACDF (Ruetten)
				2008	MIS-Cervical Nucleoplasty (Li)

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GLOBUS MEDICAL J Neurosurg Spine 9:560-565, 2008

Clinical and radiographic comparison of mini-open transforaminal lumbar interbody fusion with open transforaminal lumbar interbody fusion in 42 patients with long-term follow-up

Conclusions. Mini-open TLIF is a viable alternative to traditional open TLIF with significantly reduced estimated blood loss and LOS. However, the authors found a higher incidence of hardware-associated complications with the mini-open TLIF. (DOI: 10.3171/SPI.2008.9.08142)

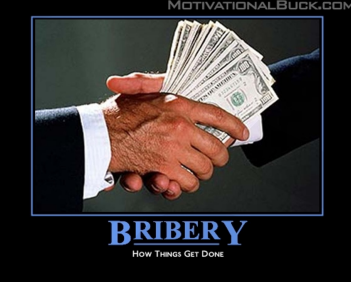



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GLOBUS MEDICAL **No Disclosures / Conflicts of Interest**



SAY HELLO, EVERYONE, TO BERT PHELPS. HE'LL BE TAKING THE JOB OF SECURITY MANAGER FOR OUR ENTIRE POULTRY PRODUCTS DIVISION!



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