

Degenerative Spondylolisthesis

Minimally Invasive Surgery is the way to go

Wellington K. Hsu, MD

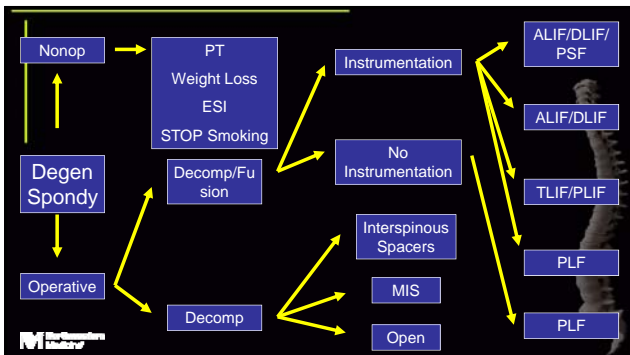
Clifford C. Raisbeck Distinguished Professor of Orthopaedic Surgery
 Director of Research, NMH Musculoskeletal Institute
 Department of Orthopaedic Surgery
 Northwestern University Feinberg School of Medicine

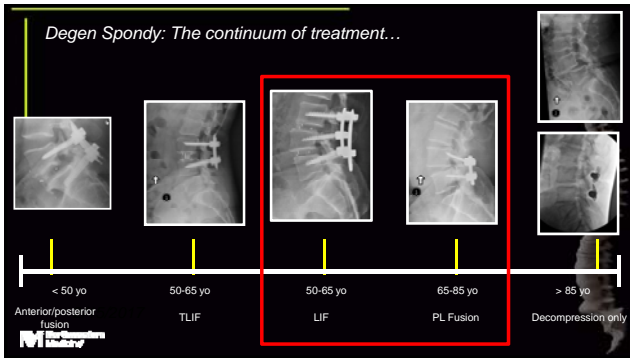
2/15/2017 Park City, UT

Entity	Consulting	Advisory Board	Royalties	Research Grant
Medtronic	X			
Stryker	X		X	
Xtant	X			
Lifenet		X		
Globus		X		
CeramTec		X		
Bioventus		X		
Mirus		X		
Graftys	X			
RTI	X			
LSRS		X		X
CSRS		X		X
OREF				X

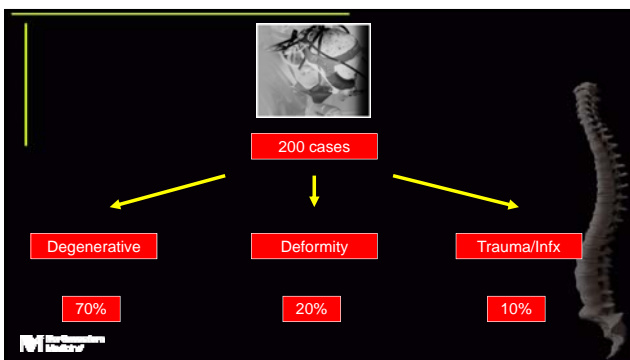
DISCLOSURES

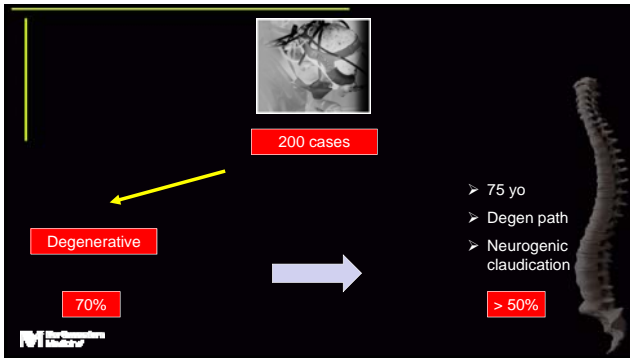
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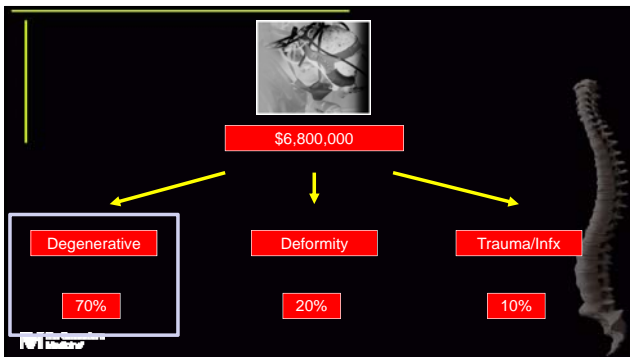












Variations in Degen Spondy

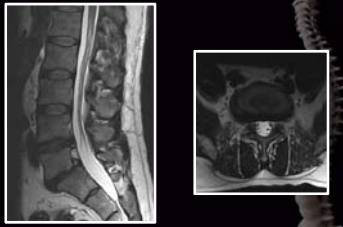
- Disc height
- Fluid in facet joint
- Dynamic instability
- Positive sagittal balance
- Obesity
- Activity level
- Back vs. leg pain



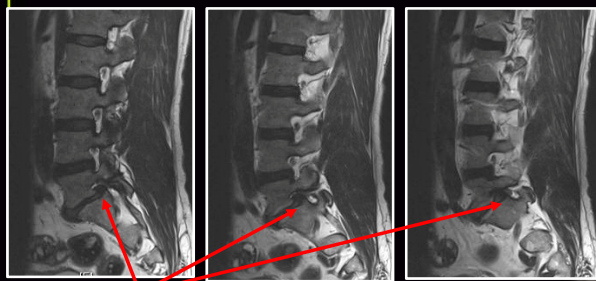
MI International
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Degenerative Spondylolisthesis

- 65 yo M
- High-level executive
- Severe right radicular pain
- Mild LBP
- Failed conservative management
- Normal physical exam



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Medicine

Goals of surgical treatment

- Degenerative Spondylolisthesis
 - Foraminal/canal decompression
 - Stabilize lumbar instability
 - Achieve solid fusion
 - Quicken recovery time
 - Improve clinical outcomes
 - Avoid reoperations
- Sustainable solutions



MI International Institute

National Trends in the Use of Fusion Techniques to Treat Degenerative Spondylolisthesis

Christopher K. Kepler, MD, MBA, Alexander R. Vaccaro, MD, PhD, Alan S. Hillbrand, MD, D. Greg Anderson, MD, Jeffrey A. Rhin, MD, Todd J. Albert, MD, and Kristen E. Radcliff, MD

- ABOS database
- 1999-2011
- 96% of degen spondy cases with fusion
- Increase in interbody fusion %
 - 1999-2001 13.6%
 - 2009-2011 32%



MI International Institute

Costs of surgery

Perioperative Postoperative Indirect

- Hospital procedure
 - OR time
 - Blood transfusions
 - Implant costs
 - Physical supplies



NON-INVASIVE CARDIO	3689.00
	1259.00
	340.00
	1795.35
	2779.00
	253.00
	2714.00
	6963.00
TOTAL CHARGE	6027.35

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Costs of surgery

Perioperative
Postoperative
Indirect

- **Complications**
 - Infection
 - Durotomy
 - Neuro deficit
 - Medical
 - Anesthetic related
- **Reoperations**
- Rehab
- Narcotic use

Cost-effectiveness of transforaminal lumbar interbody fusion for Grade I degenerative spondylolisthesis

Clinical article

ORRINIO ARONOW, M.P.H.,^{1,2} SCOTT L. PRAKER, B.S.,^{1,2} BRADSON J. DAVIS, M.D., Ph.D.,^{1,2} OLAN AARONSON, M.D.,^{1,2} CLAYTON DEVIN, M.D.,^{1,2} JOSEPH S. CHENG, M.D.,^{1,2} AND MATTHEW J. MCGIRT, M.D.^{1,2}

- TLIF for degen spondy
- 2-year gain of 0.86 QALYs
- 45 pt, single institution
- Mean cost \$36,836
- 2-year outcomes
- Total cost per QALY gained
- VAS
- \$42,854
- Leg pain VAS
- Below the \$50k threshold
- ODI
- Medical resource utilization
- Missed work
- EQ-5D
- Medicare fee scheduling
- Workday losses (self-reported wage rates)

2/15/2017

Costs of surgery

Perioperative
Postoperative
Indirect

Hospital costs for 1-level fusion

Study	MIS	Open
Wang et al	\$70,159	\$78,444
McGirt et al	\$29,187	\$29,947
Singh et al	\$33,276	\$37,328

VOLUME 17 ■ NUMBER 1 ■ JANUARY 2016

Lumbar Pedicle Cortical Bone Trajectory Screw: Indications and Surgical Technique

Sean M. Mitchell, BS, and Wellington K. Hsu, MD

- Novel pedicle screw trajectory
- Starting point
 - 3 mm medial to the lateral pars at the inferior border of TP
- Short screw
 - 25-30 mm
 - Cortical pitch
- Trajectory is found with a burr
 - 10° lateral
 - 30° cephalad
- 5.0-mm diameter screw

Northwestern Medicine

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ELSEVIER

The Spine Journal ■■■ (2017) ■■■■

THE SPINE JOURNAL

Clinical Study

Differences in bone mineral density of fixation points between lumbar cortical and traditional pedicle screws

Harry T. Mai, BS*, Sean M. Mitchell, BS, Sohaib Z. Hashmi, MD, Tyler J. Jenkins, MD, Alpesh A. Patel, Wellington K. Hsu, MD

- BMD measured using HU on CT scan
- 180 patients
 - Evenly distributed by decade of life, gender
 - HU measured at end fixation point for cortical and traditional pedicle screw
- Patients with osteoporosis identified

2/15/2017

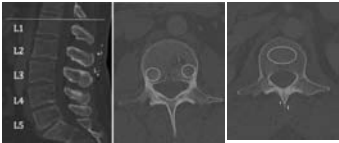
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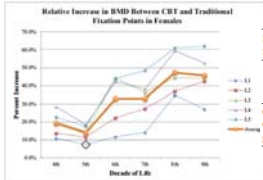
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	L1	L2	L3	L4	L5	Average increase in BMD
Osteoporotic	54.6%	74.5%	68.1%	73.6%	96.4%	73.4%
Control	4.6%	14.2%	24.7%	27.3%	33.3%	20.8%
p-Value	.011*	.048*	.011*	.006*	<.001*	.008*

2/15/2017



	DLIF	TLIF	Cortical screws
OR time	156 minutes	118 minutes	96 minutes
EBL	75 cc	95 cc	130 cc
LOS	2 days	2 days	1 days
Costs	\$81,145	\$70,133	\$63,290

Degen Spondy: The continuum of treatment...

< 50 yo 50-65 yo 50-65 yo 65-85 yo > 85 yo

Anterior/posterior fusion TLIF LIF PL Fusion Decompression only

M *Northwestern University*

Wellington K. Hsu, MD

Clifford C. Raisbeck Distinguished Professor
 Director of Research
 Department of Orthopaedic Surgery
 Northwestern University Feinberg School of Medicine
<http://www.nwspine.org>

M *Northwestern University*
