

# Minimally Invasive Robotic Assisted Lumbar Fusion

Patient evaluation and surgical planning

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## Disclosures

- Shareholder: Apple Therapy Services



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## Objectives

At the completion of this presentation the audience will be familiar with:

- Comprehensive evaluation and work up of the spine patient.
- Indications and expectations of Minimally Invasive Transforaminal Lumbar Interbody Fusion (MIS TLIF) surgery.
- Application and advantages of Globus excelsius GPS robot



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### Case presentation

- 63 year old male with low back pain with radiation into the left lower extremity.
- Presents as a second opinion after having undergone 1 year of conservative therapy including epidural steroid injection (temporary relief), physical therapy, NSAID therapy.
- Slight Anterior Tibialis weakness, decreased sensation in the L4 dermatome.
- Reflexes normal.




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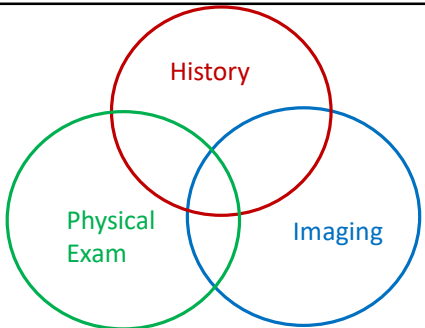
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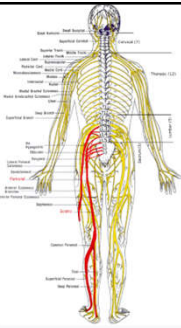
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### “Pinched Nerve”

- Spinal nerve roots convey sensation from a specific section of skin known as a **DERMATOME**.
- Spinal nerve roots preferentially supply motor information to specific muscle groups known as **MYOTOMES**.
- Irritation of spinal nerve roots resulting in neurologic deficit is called **RADICULOPATHY**.




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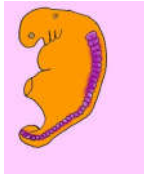
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Radiculopathy starts in the womb!




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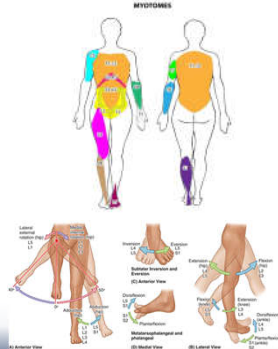
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Patient Name: \_\_\_\_\_ Date/Time of Exam: \_\_\_\_\_

Examiner Name: \_\_\_\_\_

**ASIA** **STANDARD NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY** **ISCS**

**MOTOR**

LEVEL	RIGHT SIDE	LEFT SIDE
C2		
C3		
C4		
C5		
C6		
C7		
C8		
T1		
T2		
T3		
T4		
T5		
T6		
T7		
T8		
T9		
T10		
T11		
T12		
L1		
L2		
L3		
L4		
L5		
S1		
S2		
S3		
S4		
S5		
S6		
S7		
S8		
S9		
S10		
S11		
S12		

**SENSORY**

LEVEL	RIGHT SIDE	LEFT SIDE
C2		
C3		
C4		
C5		
C6		
C7		
C8		
T1		
T2		
T3		
T4		
T5		
T6		
T7		
T8		
T9		
T10		
T11		
T12		
L1		
L2		
L3		
L4		
L5		
S1		
S2		
S3		
S4		
S5		
S6		
S7		
S8		
S9		
S10		
S11		
S12		

**NEUROLOGICAL LEVEL** \_\_\_\_\_

**COMPLETE OR INCOMPLETE** \_\_\_\_\_

**ASIA IMPAIRMENT SCALE** \_\_\_\_\_

**SEVERITY** \_\_\_\_\_

**KEY** \_\_\_\_\_

**SCORING** \_\_\_\_\_

**NOTES** \_\_\_\_\_

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### History and physical exam

- Pain radiating in a dermatomal pattern?
  - **L4 dermatomal pattern of pain**
- Numbness in a dermatomal pattern?
  - **L4 dermatomal pattern of numbness**
- Weakness in a myotomal pattern?
  - **L4 myotomal pattern of weakness**
- Abnormal reflexes? **No**



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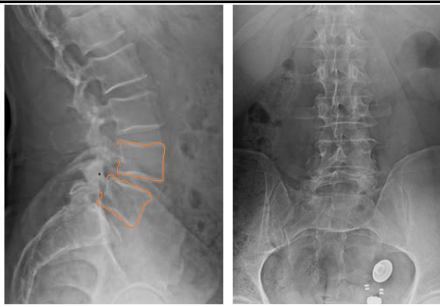
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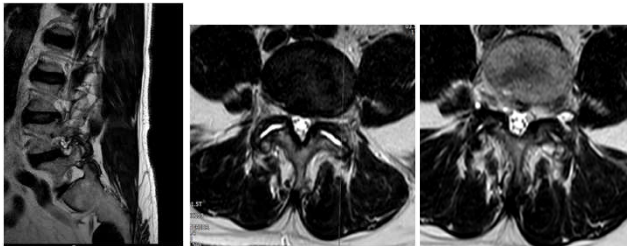
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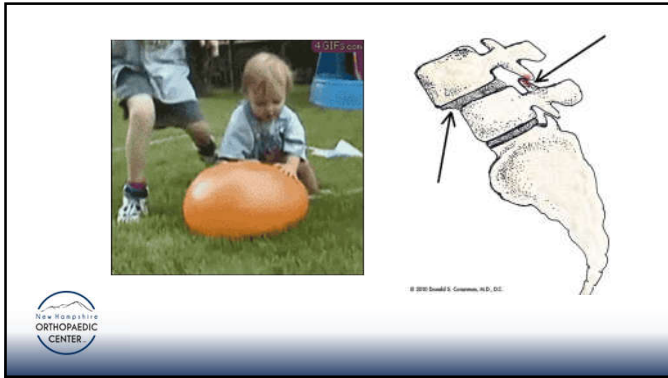
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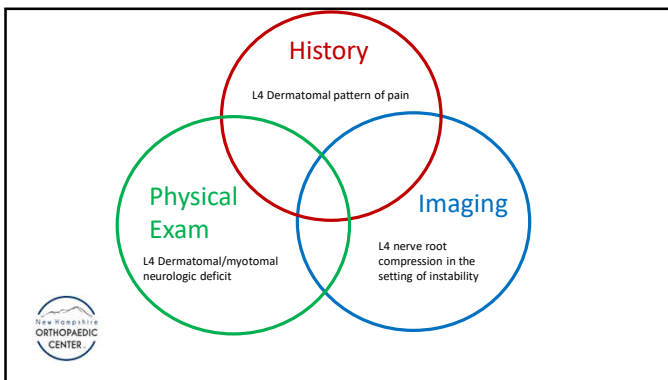
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Conservative treatment options

- Physical therapy
- NSAID therapy
- Medial branch block
- Epidural steroid injection.

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### Surgical treatment options:

- Cystectomy/partial facetectomy vs cystectomy/facetectomy and fusion
  - Facet cysts have high recurrence rate after resection alone.
  - Partial facetectomy in the setting of spondylolisthesis has high rate of revision to fusion.
- Fusion is indicated if decompression is performed in the setting of spondylolisthesis/instability.



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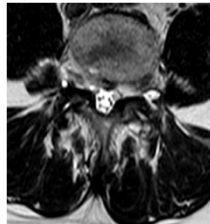
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### MIS TLIF at L4-5

• Indications for MIS TLIF: Unilateral Radiculopathy in the setting of instability

- Instability indicated by facet cyst and facet effusion.
- Radicular pathology clearly caused by compressive facet cyst at the level of spondylolisthesis/instability.
- Complete facetectomy required for thorough decompression of nerve/resection of cyst



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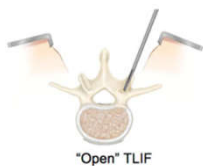
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"Open" TLIF



Minimally Invasive TLIF



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Supplemental fixation required

**Advantages of MIS TLIF:**

- Direct decompression of radicular pathology.
- Cage/graft inserted through the same incision used for pedicle screws with aid of microscope.
- Less blood loss, less exposure, faster discharge, faster return to work.



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**Advantages of Globus Excelsius GPS robot:**

- Smaller incisions for percutaneous screws.
- Proven accuracy in screw placement.
- Faster surgical times.
- Decreased blood loss.



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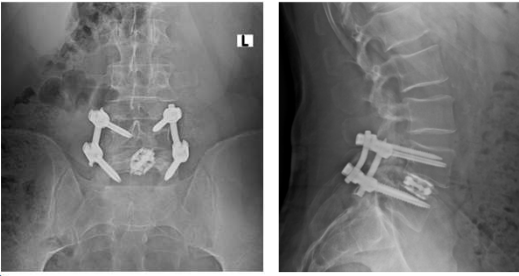
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### Post op course

- Immediate pain improvement.
- Discharged home in <24 hours.
- Early physical therapy.
- Return to work at 8 weeks, limited duty.
- Full duty at 3 months?



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