

# E-PRESENTATION #81

RADIOGRAPHIC RESULTS FOLLOWING LATERAL LUMBAR INTERBODY FUSION (LLIF) AND  
INDIRECT DECOMPRESSION OF SEVERE SPINAL STENOSIS

MICHAEL MURRAY MD

MAIN LINE HEALTHCARE

PHILADELPHIA, PENNSYLVANIA

# INTRODUCTION

- PRIOR STUDIES HAVE DEMONSTRATED THE EXTENT OF INDIRECT DECOMPRESSION THAT OCCURS FOLLOWING LATERAL LUMBAR INTERBODY FUSION (LLIF) WITHIN THE IMMEDIATE POST-OPERATIVE PERIOD.
- THERE HAVE BEEN CONFLICTING REPORTS ON THE ABILITY OF LLIF TO ADEQUATELY DECOMPRESS SEVERE CENTRAL CANAL STENOSIS.
- THIS STUDY PROVIDES DATA REGARDING THE EXTENT OF INDIRECT DECOMPRESSION THAT OCCURS WITH LONG TERM FOLLOW UP (>6 MONTHS), IN THE SETTING OF SEVERE PRE-OPERATIVE SPINAL STENOSIS.

# OBJECTIVES

- THE OBJECTIVE OF THIS STUDY WAS TO DETERMINE THE EFFICACY OF LLIF TO INDIRECTLY DECOMPRESS SEVERE SPINAL STENOSIS. AN ADDITIONAL OBJECTIVE WAS TO DETERMINE IF INDIRECT DECOMPRESSION WAS A STATIC EVENT, OR IF DECOMPRESSION CONTINUED TO OCCUR FOLLOWING THE IMMEDIATE POST-OPERATIVE PERIOD.

# METHODS

- THE RETROSPECTIVE CASE SERIES REVIEWED 10 CONSECUTIVE PATIENTS (11 SPINAL LEVELS, LIMITED TO L3-L4 AND L4-L5 SEGMENTS) WITH SEVERE (SCHIZAS C OR D) SPINAL STENOSIS THAT UNDERWENT LLIF WITH POSTERIOR INSTRUMENTATION BUT WITHOUT DIRECT DECOMPRESSION.
- EACH PATIENT HAD AN INCIDENTAL POST-OPERATIVE MRI OF THE LUMBAR SPINE AT LEAST 6 MONTHS FROM THE INDEX PROCEDURE.
- PRE- AND POST-OPERATIVE AXIAL T2 MRI IMAGES WERE REVIEWED AND THE QUALITATIVE (SCHIZAS) AND QUANTI-TATIVE (DSCA) DEGREE OF SPINAL STENOSIS WERE ANALYZED.

# RESULTS

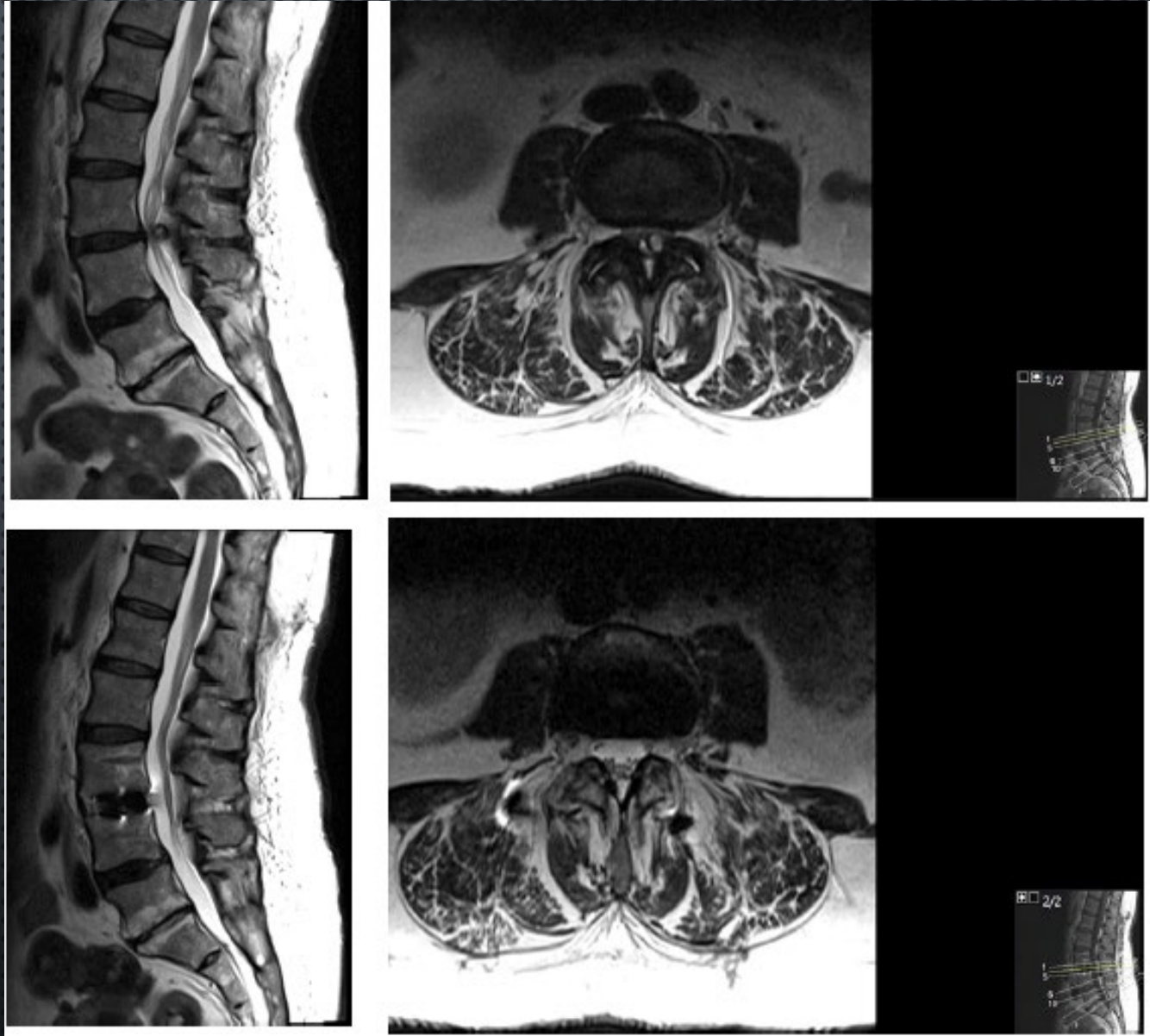
**Table 1:** Pre-operative and post-operative data following lateral lumbar interbody fusion with instrumentation, without direct decompression.

Spinal level analyzed	Pre-op Schizas	Post-op Schizas	Pre-op DSCA (mm <sup>2</sup> )	Post-op DSCA (mm <sup>2</sup> )	% increase DSCA	Months between surgery and post-op MRI
L4-L5	C	A	83.4	142.9	71.3	16.5
L4-L5	D	A	64.0	130.2	103.4	14.7
L3-L4	C	A	45.4	151.1	232.7	8.4
L4-L5	C	A	50.7	102.0	100.2	8.4
L3-L4	D	A	65.2	215.3	230.0	10.6
L4-L5	C	A	91.7	197.3	115.2	17.4
L4-L5	D	A	44.0	126.5	187.5	10.7
L3-L4	C	A	68.5	133.5	94.8	12.2
L3-L4	C	A	89.4	162.0	81.2	12.4
L4-L5	D	A	49.7	109.7	120.7	13.0
L3-L4	D	A	51.3	118.7	131.4	19.0
Average:			63.9	144.5	133.6	13.0
Standard Deviation:			16.8	33.7	54.5	3.5
Range:			(44.0 - 91.7)	(109.7 - 215.3)	(81.2 - 230.0)	(8.4-19)

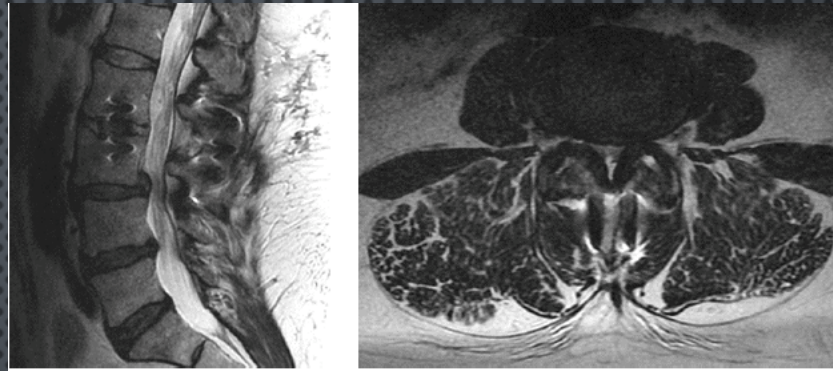
# POWER OF INDIRECT DECOMPRESSION

**Top image:** pre-op sagittal and axial T2 images of L3-L4 level

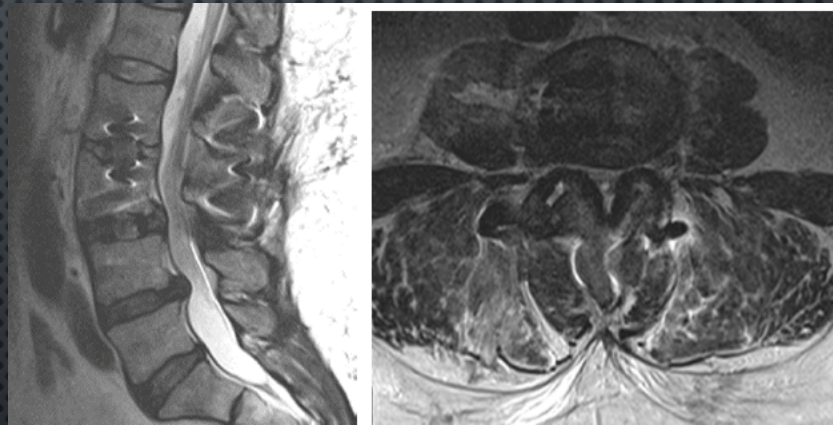
**Bottom image:** 10 month post-op sagittal and axial T2 images of L3-L4 following LLIF and indirect decompression- no direct decompression was performed



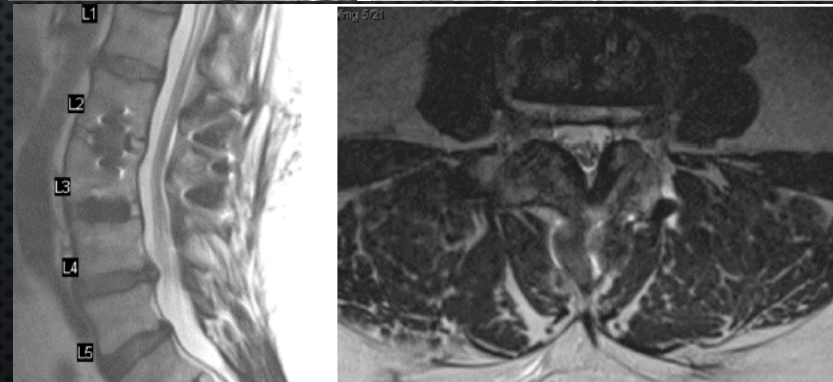
PROGRESSION OF  
INDIRECT  
DECOMPRESSION OVER  
TIME



Pre-op T2 MRI  
images of L3-  
L4 segment



POD #2 T2 MRI  
images of L3-L4  
segment



19 month  
post-op T2  
MRI images of  
L3-L4  
segment

# CONCLUSION

- EVIDENCE OF INDIRECT DECOMPRESSION OF THE NEURAL ELEMENTS FOLLOWING LLIF HAS BEEN DOCUMENTED IN THE ACUTE POST-OPERATIVE PERIOD.
- THE QUALITATIVE AND QUANTITATIVE RADIOGRAPHIC DATA IN THIS STUDY SUPPORT EVIDENCE THAT LLIF IS EFFECTIVE IN INDIRECTLY DECOMPRESSING SEVERE SPINAL STENOSIS.
- THERE IS DATA TO SUGGEST THAT THE PHENOMENON OF INDIRECT DECOMPRESSION WILL PROGRESS AS TIME PASSES FROM THE INDEX SURGERY