

A Skeptic's View Of Minimally Invasive Spinal Surgery

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**Minimal Access Spinal
Surgery:
A better term?**

Why MASS?

- Treat pathologies with less collateral damage
- Decrease hospital stay
- Decrease pt recovery
- Marketing
- Challenge
- Most Importantly to improve outcomes!

MASS

- Does not change the indications for surgery
- Does not change the goals of surgery
- Does not make anyone a candidate for surgery who was not a candidate for an open procedure

Iatrogenic Muscle Injury

- Histologic / Histochemical
- Enzymatic (CPK-MM)
- Electrophysiologic
- Clinical

- Strength
- ↓ Endurance
- ↓ Pain (?)



Kawaguchi Y. et. al. Spine, 1998; 23(21): 2282 -2288

Styf J.R. et. al. Spine, 1998; 23(3): 354-358

Weber B.R. et. al. Spine 1997; 22(15): 1765 - 1772

Kawaguchi Y. et. al. Spine, 1996; 21(22): 2683 - 2688

Kawaguchi Y. et. al. Spine, 1996; 21(8): 941 - 944

Kawaguchi Y. et. al. Spine, 1994; 19(22): 2590 - 2602

Rantanen J. et. al. Spine, 1993; 18(5): 568 - 574

Sihvonen T. et. al. Spine, 1993; 18(5): 575 - 581

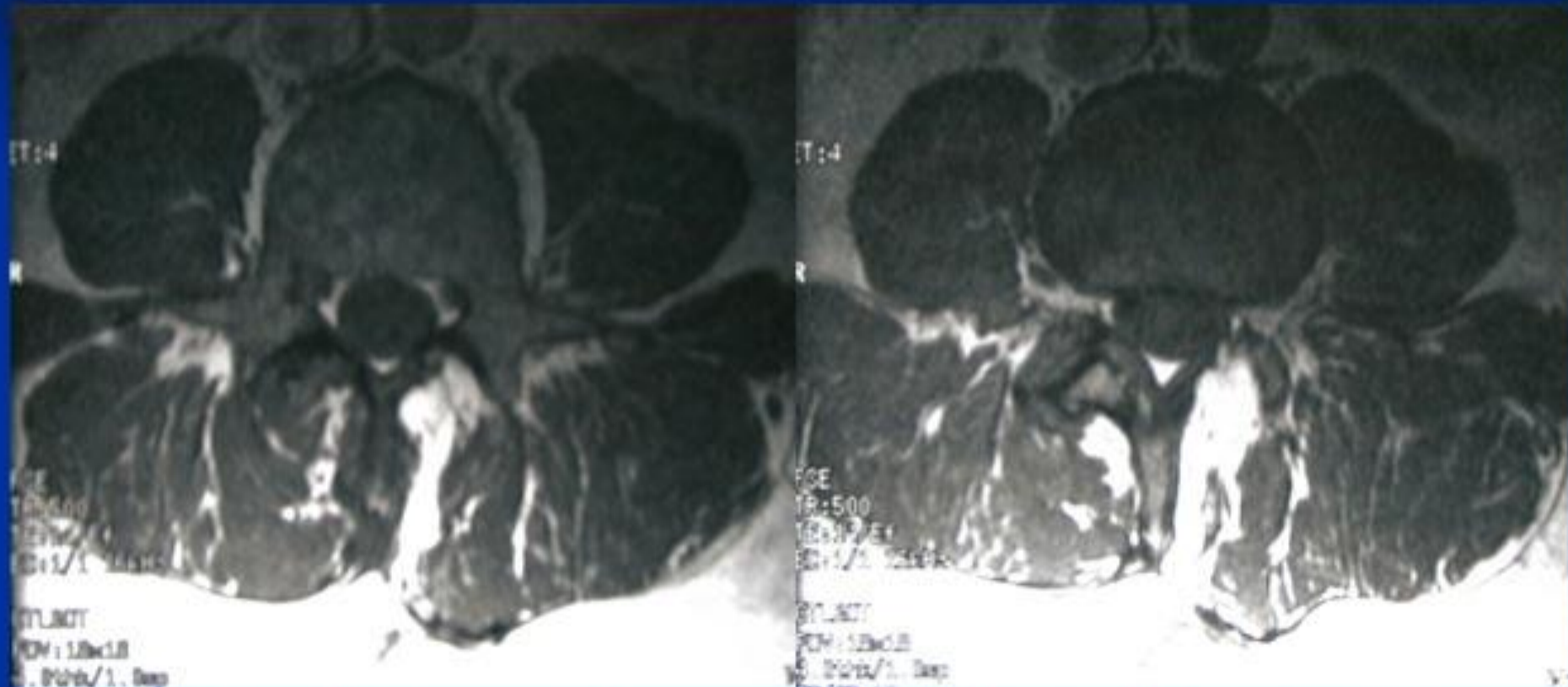
Mayer T.G. et. al. Spine, 1989; 12(1): 33 - 36

Macnab I. et. al. Spine, 1977; 2(4): 294 - 298

Naylor A. JBJS, 1974; 56-B(1): 17 - 29

Jackson R.K. JBJS, 1971; 53-B(4): 609 - 616

Iatrogenic Muscle Injury



MRI – 18 months post Microdiscectomy

Evolution of MIS

- Most procedures have evolved to decrease collateral damage
- Progression from laminectomy to laminotomy to use of microscope in discectomy
- Young and McCullough Microdecompression
- Less extensive exposures for fusion
- Acknowledgement of “Fusion Disease”

Results of MIS Surgeries

- Schwender 2005
- Results of prospective trial on MAST TLIF
- Used Medtronic Capstone MetRx and INFUSE
- Oswestry at 1 year averages 14% down from 53%

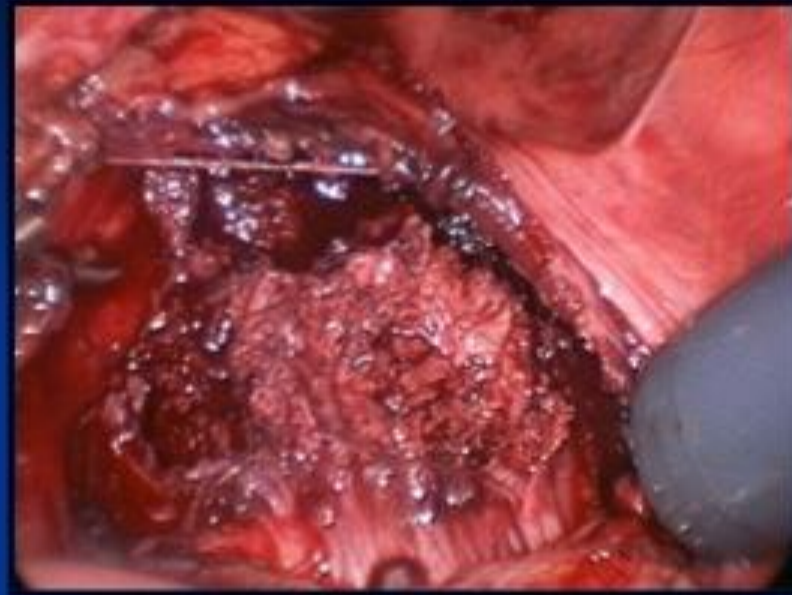
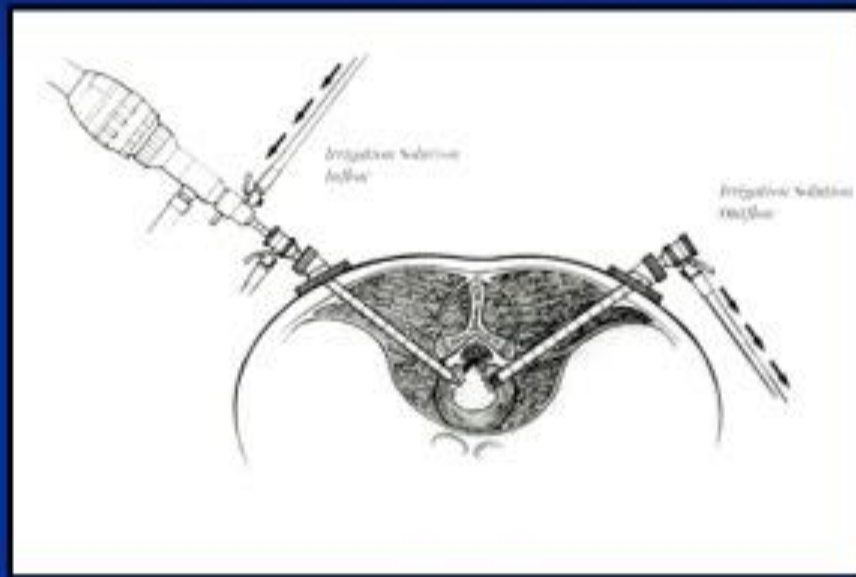
Outcomes

- Jang et al 2005 23 pts degen spondy ODI 33 to 8
- Park 2007 Compared open PLIF to mPLIF no diff at 1 yr faster recovery
- Scheufler 2007 oTLIF vs mTLIF no diff at 16 months faster recovery

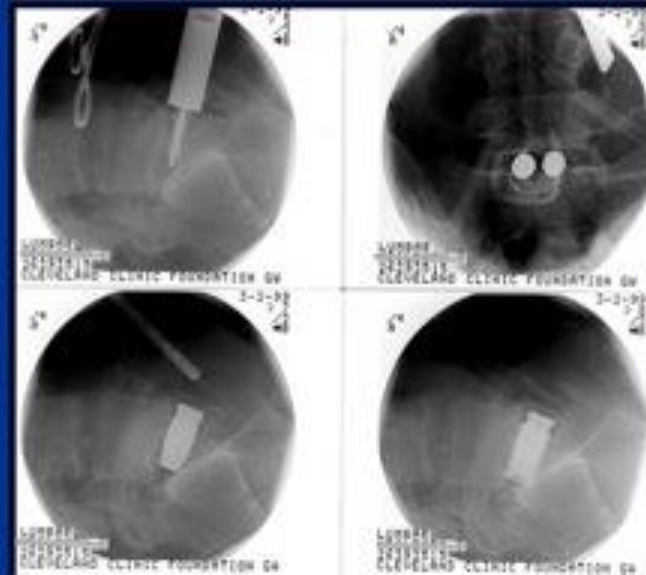
What's Wrong with MIS?

- Recovery is faster
- Shorter hospital stays
- Are the results better at 1 yr?
- Are the complication rates equivalent?
- Are the techniques generalizable?

MIS Techniques that have fallen out of favour



The results didn't justify the technique



The Basics of any Spine Operation

- Must Adequately decompress
- Must provide stability
- Must Attain fusion
- Must do so safely
- Must have similar or better outcomes

**If MIS does not have
equivalent or better
outcomes**

It doesn't matter how small
your incision is

You must look at your own outcomes

- Studies usually done by developers of the technique
- Often conflicted
- Almost always high volume surgeons
- Selected pts
- Their results may not be the same as yours

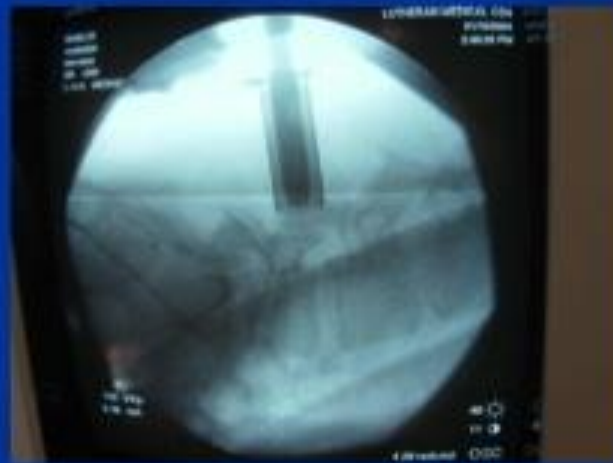
Comparison of Surgical Approach for Anterior L4/L5 fusion

Zdeblick et al, Spine Vol 25, No 20, pp2682-2687, 2000

- 50 patients, 25 laparoscopic, 25 mini-open
- single & two level fusions
- beyond learning curve,,,,
- complications higher in laparoscopic group
- for single level cases no difference between techniques
- for two level cases laparoscopic operative time longer
- conclusion “no significant advantage at the L4/L5 to a laparoscopic approach”

MIS Discectomy

- Shorter Hospital Stay?
- Shorter Recovery?
- Initially higher dural injury rate
- Higher recurrence rate



AxiaLIF

- Very Small incision
- Short OR time
- Out-patient procedure
- 3 of 5 pts did not fuse



Complications

- Early in learning curve complications are higher
- MIS techniques have less flexibility
- Overall rates seem equal in longer experience



Are the results Generalizable

- MIS techniques are often more demanding
- Can the average surgeon do it as well as the originators



MIS in my practice

- About 15% of cases
- MIS TLIF
- ALIF for axial back pain
- ALIF and percutaneous screws
- MIS lateral and perc screws in deformity
- MIS screws for “damage control” in trauma

Conclusions

- MIS is a tool for accomplishing the goals of surgery
- It does not change the indications for surgery
- It must be as effective in your hands as the open techniques
- You must critically analyze your own results when you adopt new techniques

A fool with a tool

Is still a fool