

# Lateral Lumbar Interbody Fusion with Lateral Modular Plate Fixation and Interspinous Process Fixation: 2-Year Outcomes

Lead Investigators

Ryan DenHaese, MD, MS;

AXIS Neurosurgery and Spine, Williamsville, NY

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AANS/CNS Spine Summit<sup>2</sup>

The Congress of Neurological Surgeons (CNS) Annual Meeting<sup>3</sup>

**Lateral lumbar interbody fusion (LLIF) with supplemental lateral plating and interspinous process fixation (ISPF) can be an advantageous intervention when treating the degenerative spine. Cage and plate placement through a single lateral incision preserves anterior vessel, visceral, and ligamentous structures, while also providing immediate stabilization of the index level. Posterior fixation via ISPF avoids dissection down to the pedicles while still affording significant sagittal stability and lordotic correction.**

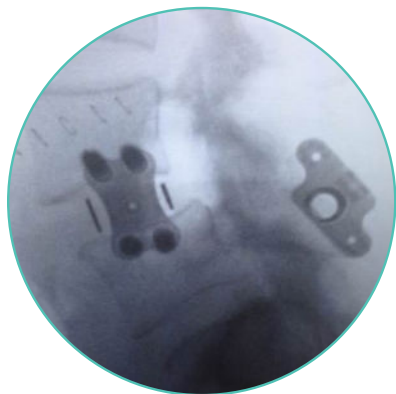
The introduction of a next generation LLIF cage (Timberline MPF Lateral Modular Plate Fixation System; Fig. 1) possessing integrated modular plate fixation (MPF) has helped consolidate cage placement and plate fixation into a singular event while further enhancing segmental stability. To date, no clinical accounts of the novel lateral MPF technology with adjunctive ISPF (Aspen<sup>®</sup> MIS Fusion System) have been reported in the literature.



**Fig. 1** Timberline<sup>®</sup> MPF Lateral Modular Plate Fixation System

## Study Objective

The objective of this analysis was to characterize follow-up experience with the circumferential LLIF+MPF+ISPF (Figure 2) technique as compared to traditional LLIF+PSF (pedicle screw fixation).



**Fig. 2** Timberline® MPF System with Aspen MIS Fusion System

## Study Method

- Data retrospectively analyzed from a prospective, randomized, multi-center study
- All subjects received single-level arthrodesis for the treatment of symptomatic spondylolisthesis ( $\leq$ Grade II) and/or degenerative disc disease
- Study cohorts:
  - LLIF+MPF+ISPF (n=8)
  - LLIF+ISPF (n=15)
- PSF approach and technique was per surgeon preference (MIS/Percutaneous or open; unilateral or bilateral)
- Intraoperative metrics: blood loss, operative time, fluoroscopy time
- Follow-up metrics: ODI change from baseline, complication profiles

	LLIF + MPF + ISPF	LLIF + PSF
Number of Subjects	8	15
Mean Age (years)	52.7	57.4
Sex: Female	37.50%	66.70%
BMI (kg/m <sup>2</sup> )	31.6	32.1
Surgical Level (N): L2/3	2v	0
L3/4	1	3
L4/5	4	12
L5/L6	1	0
L5/S1	0	0
BMP (Interbody Only): Yes	25%	33.30%

### Inoperative Outcomes

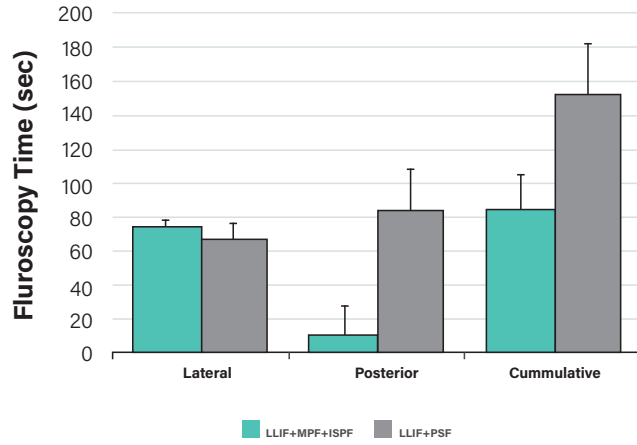


Fig. 3 Intraoperative fluoroscopy time (sec)

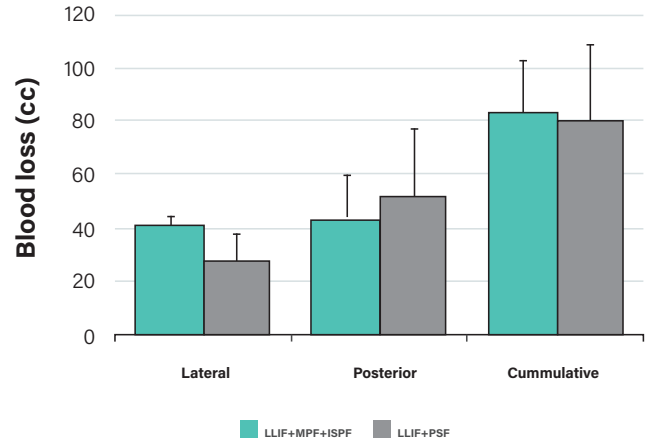


Fig. 4 Intraoperative blood loss (cc)

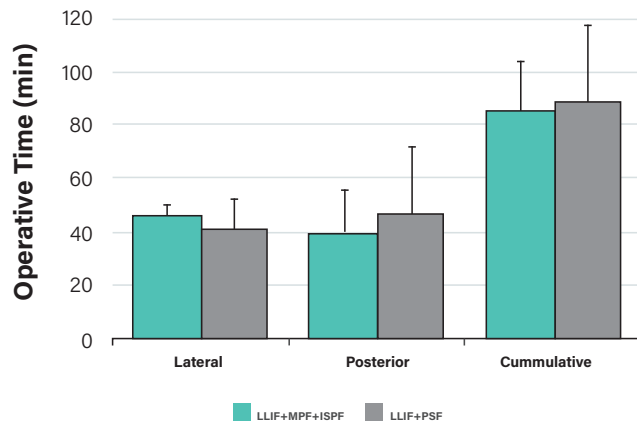


Fig. 5 Operative time (min)

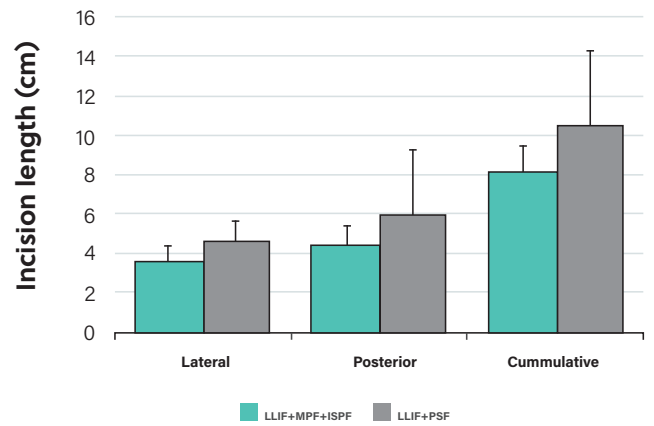


Fig. 6 Incision length (cm)

### Follow-Up Outcomes

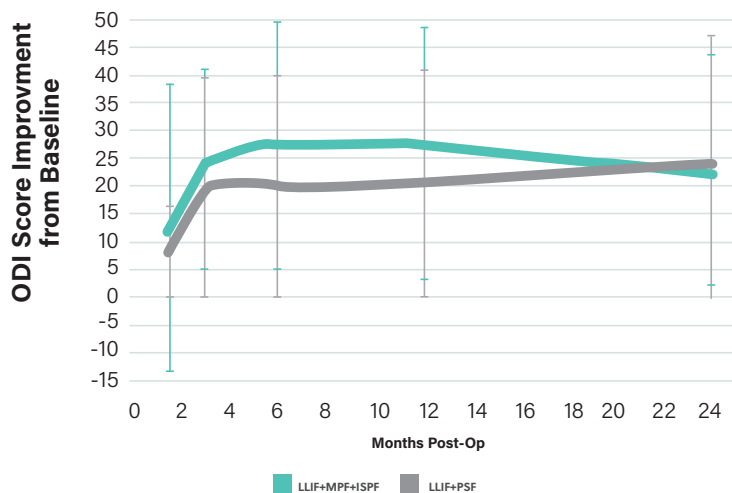


Fig. 7 ODI score improvement from baseline

## COMPLICATIONS

No intraoperative or perioperative procedural related complications were observed in the MPF+ISPF cohort. One pseudoarthrosis requiring revision and two reports of new post-op pain/radiculopathy were reported in the LLIF+PSF cohort.

## CONCLUSIONS

In comparison to LLIF+ISPF, the LLIF+MPF+ISPF technique demonstrated comparable or favorable intraoperative utility while supporting advantageous improvements in patient reported ODI scores out to 24 months.

### References

1. DenHaese et al. Lateral Lumbar Interbody Fusion with Lateral Modular Plate Fixation and Interspinous Process Fixation: 2-Year Outcomes. Society for Minimally Invasive Spine Surgery (SMISS) Global Forum, Oct 2016. Las Vegas, NV. ePoster Presentation.
2. DenHaese et al. Lateral Lumbar Interbody Fusion with Lateral Modular Plate Fixation and Interspinous Process Fixation: 2-Year Outcomes from a Prospective Multi-Center Study. 33rd Annual Meeting of the Section on Disorders of the Spine and Peripheral Nerves. March 2017. Las Vegas, NV. Podium Presentation.
3. DenHaese et al. Lateral Lumbar Interbody Fusion With Integrated Lateral Modular Plate Fixation: Intraoperative and Follow-Up Outcomes. Congress of Neurological Surgeons (CNS) Annual Meeting, Sept 2016. San Diego, CA. ePoster Presentation.

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