Single Position Surgery For Pre-psoas (Oblique) Lumbar Interbody Fusion And Pedicle Screw Fixation Using Neuronavigation- Clinical Outcomes And Screw Accuracy Assessment

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Introduction

• Minimally invasive spinal surgeries aids in reducing the surgical time, blood loss and radiation exposure

• Pre-psoas lumbar interbody fusion surgery is performed in lateral decubitus position and repositioning to prone position is required for pedicle screw and rod fixation, which adds to the operative time.

• Single position surgery not only reduces the operative time but also eliminate the hassle of repositioning.
Objectives

1. To analyze clinical outcomes and complication rates following minimally invasive pre-psoas lumbar fusion and pedicle screw fixation in single position surgery.

2. To assess the screw accuracy of pedicle screws following the single position surgery
Methods

• We included all the patients who underwent single position surgery for pre-psoas lumbar interbody fusion and pedicle screw fixation, performed by senior author, from January 2018 to April 2019.

• Data for demographic characteristics, intra-operative details, post-operative course, screw accuracy, and radiological and clinical follow-up was collected, retrospectively.

• Gertzbein Robbins classification was used for the assessment of screw accuracy.

• Grade: A= no breach; B <2mm; C <4mm; D< 6mm; E >6mm. Grade A and B were considered clinically acceptable.
Results

• 11 study participants; 29 pedicle screws
• 9 (82%) patients had single-level fusion. 2 (18%) had two-level fusion.
• Average operative time 4.7 hours (SD 1.4 hours).
• No intra-operative psoas hematoma, ureter injury or vascular injury were reported
• Average length of hospital stay: 3.4 days (SD 1.4 days).
• No hardware failure on follow-up imaging
Clinical Outcomes- average follow-up of 6 months

- Mean pre-operative visual analogue score was recorded as 6.25 which was improved to 3.17 post-operatively
- Hip flexor weakness: 1 transient (resolved in 28 days); 1 permanent
- Hip numbness: 1 transient (resolved in 27 days)
- **NO** hip dysesthesia, new-onset radiculopathy, and wound infection were identified
Gertzbein-Robbins Classification for pedicle screw accuracy, 21 pedicle screws

- L5/S1 (6, 28.6%)
- L4/L5 (7, 33.3%)
- L3/L4 (5, 23.8%)
- L2/L3 (3, 14.3%)

14 (66.7%)
2 (9.5%)
4 (19%)
1 (4.8%)
Axial CT scan showing accuracy of pedicle screws for the level L5. Gertzbein Robbin grade A bilaterally.

Axial CT scan showing accuracy of pedicle screws for the level L4. A lateral breach can be seen on the right side. Gerstzbein Robbin classification C (3.69 mm) on the right.
Conclusion

We present the clinical outcomes of 11 patients who underwent single position surgery for anterior to psoas interbody fusion and pedicle screw fixation.

This approach is safe as no intraoperative or immediate postoperative complication was identified.

We report a high level of accuracy where 16/21 screws were Gertzbein-Robbin grade A (14) and B (2)
References


