

Impact of Lower Thoracic vs. Upper Lumbar UIV in MIS Correction of Adult Spinal Deformity

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Introduction

Selecting the UIV in the region of the thoracolumbar junction when using MIS for ASD correction may allow for greater feasibility in choosing the upper lumbar (UL) region. The impact of choosing the upper lumbar vs. lower thoracic spine for the UIV when correcting ASD via MIS techniques has not been well-elucidated.

Methods

Multicenter retrospective review of an adult spinal deformity database. Inclusion criteria were age ≥18 years, and one of the following: coronal cobb>20°, SVA>5cm, PT>20°, pelvic incidence-lumbar lordosis >10°. Patients were treated with circumferential or hybrid minimally invasive techniques at ≥3 spinal levels, and had 2-year minimum follow-up. They were then divided by UIV location of L1-2 (UL) or T10-12 (LT).

Results

112 patients met inclusion criteria (68 LT and 46 UL). The UL group was older (67.5 vs. 62.3; p=0.015), but preoperative spinopelvic parameters were similar, except for sacral slope, which was higher in the UL group (30.5 vs. 26.5; p=<0.001). The percentage of patients with fixation crossing the lumbosacral junction was also similar (70.6% vs. 67.4%, p=0.717). Postop LL (41.4 vs. 37.3; p=0.01) and ? Cobb (-23.2 vs. -9.6; p<0.001) were greater in the LT group, but the remainder of postop spinopelvic parameters and changes, as well as HRQOLs were similar between groups. Reoperation rates were lower in the UL group (17.4% vs. 36.8%; p=0.025), largely as a result of less frequent radiographic failures (UL=10.9% vs. LT=26.5%; p=0.042); however, overall complication rates were not different (60.3% vs. 43.5%; p=0.077).

Conclusions

Choosing an upper lumbar vertebra for UIV when correcting ASD with MIS techniques results in lower reoperation rates than when extending fixation to the lower thoracic region. It was also associated with shorter operative times and less EBL. Extending fixation to the LT was associated with slightly higher LL and greater change in coronal Cobb, but this was not associated with better clinical outcomes compared to when the UIV was in the UL region.

Learning Objectives

By the conclusion of this session, participants should be able to describe the important of choosing the appropriate UIV. Participants can discuss their experience with crossing the thoracolumbar junction, and identify which patient population is best for certain UIV chosen.