Session 1 | Award Nominated E-Point Presentations

157. Presence of Compensatory Curve Predicts Postoperative Curve Progression in Congenital Scoliosis After Thoracolumbar Hemivertebra Resection and Short Fusion §

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Hypothesis
Presence of the compensatory curve was associated with a higher incidence of postoperative curve progression in patients with CS who underwent thoracolumbar HV resection and short fusion.

Design
A retrospective study.

Introduction
Postoperative curve progression is a type of unexpected scoliosis emerging from the initial fusion segments after surgery. Previous studies hypothesized that the occurrence of progression may originate from the preoperative compensatory curve. Currently, it remains unclear whether the presence of compensatory curves affects the emergence of postoperative curve complication and whether the current surgical approach is still applicable to these CS patients.

Methods
This study retrospectively reviewed a consecutive cohort of patients with CS who underwent thoracolumbar HV resection and short fusion with a minimum of 2 years follow-up. According to the preoperative curve pattern, patients were divided into compensatory curve group non-compensatory curve group. Based on the postoperative coronal curve evolution, patients were further divided into the progressed group (Group P, with curve decompensation ≥ 20°) and the non-progressed group (Group NP, characterized by well-compensated curves).

Results
A total of 127 patients were included in this study, with 31 patients in the compensatory curve group and 96 patients in the non-compensatory curve group. The incidence of postoperative coronal curve progression was significantly higher in the compensatory curve group than that in non-compensatory curve group (35.5% vs. 13.5%, p=0.007). In the compensatory curve group, patients who experienced postoperative curve progression showed fewer fusion segments (p=0.002), greater preoperative UIV translation (p=0.006), greater preoperative LIV tilt (p=0.017), and larger postoperative UIV tilt (p<0.001) compared with patients in group NP. Multiple logistic regression demonstrated that the shorter fusion segments and greater postoperative UIV tilt were two independent risk factors for postoperative curve progression.

Conclusion
The presence of the compensatory curve was associated with a higher incidence of postoperative curve progression in patients with CS who underwent thoracolumbar HV resection and short fusion. Shorter fusion segments and greater postoperative UIV tilt were found to be the risk factors for postoperative curve progression.

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