Patients with High Pelvic Tilt Achieve the Same Clinical Success as Those with Low Pelvic Tilt After Minimally Invasive Deformity Surgery

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Introduction

Pelvic tilt (PT) has been shown to correlate with HRQOL. The effect of PT in minimally invasive spine surgery for adult spinal deformity (ASD) has not been well studied. We present a comparison of clinical outcomes among ASD patients with high and low PT.

Methods

Retrospective review of a multicenter MIS ASD database was performed. The inclusion criteria for the database were: age>18, and one of the following: coronal Cobb angle (CCA)>20, SVA>5 cm, PI-LL>10 or PT>20. Patients undergoing circumferential minimally invasive (cMIS: lateral interbody fusion with MIS screw placement) correction with a minimum 2-year follow-up were included, and stratified into two groups based on the Schwab classification of PT: High PT (>30) and Low PT (<20).

Results

Among 420 patients in the database, 165 had complete 2-year data. Of the 165 eligible, 43 patients met criteria of the present study for analysis (25 Low, 18 High PT). The High PT group had higher pre-op PI-LL mismatch (32.1 vs. 4.7; $p<0.001$) (Table 1). At last follow-up, 77% (14) of patients in High PT Group had continued PI-LL mismatch compared to 40% (10) in the Low PT Group ($p<0.006$). There was a difference in the High and Low PT groups in terms of postop changes of PT (-3.9 v 1.9), LL (8.7 v 0.5) and PI-LL (-9.5 v 0.1). HRQOL were similar preoperatively with the patients in the High PT group having more back and leg pain. Postoperatively, HRQOL (ODI and VAS back/leg) were significantly improved in both groups ($p<0.05$).

Conclusions

The degrees of PT seems to be correlated with PI, SVA and PI-LL mismatch. The higher PT, the lower LL, and higher PI and PI-LL mismatch. However, patients with high preoperative PT treated with cMIS techniques had less radiographic success without compromising the clinical outcomes. Further investigation is required to explain the role of PT when treating ASD patients using MIS techniques.

Learning Objectives

1. Patients with High PT were significantly more malaligned post operatively in the sagittal plane than the Low PT group. 2. Despite not achieving the same amount of correction, the High PT group still saw a significant improvement in HRQOLs.

References