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FACET JOINT TROPISM AND DEGENERATIVE SPONDYLolisthesis – A STUDY FROM THE AOSAP RESEARCH COLLABORATION


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INTRODUCTION: Orientation of lumbar facet joints (FJ) may be associated with the pathogenesis of degenerative spondylolisthesis (dSpl). However, the role of FJ tropism (i.e. asymmetry between facet joint orientations at the same level) in dSpl is undetermined. This study addresses the role of FJ tropism in relation to dSpl.

METHODS: A multi-national, cross-sectional study was performed in 34 institutions in the Asia Pacific region. Lateral standing radiographs and axial MRIs and/or CT scans were obtained for subjects with single level lumbar dSpl. Imaging was analyzed to assess lumbar levels with L4-5 dSpl (Group A) or without dSpl (Group B). FJ tropism was defined as a ≥ 7 degree angulation difference and also assessed on ROC curve analysis to identify critical values. Subject demographics were also noted.

RESULTS: The study included 351 patients (36.9% males, 63.1% females) with a mean age of 61.8 years. There were 267 patients (76.1%) in Group A and 84 individuals (23.9%) in Group B (control). A significant difference was noted in FJ angulations between Group A (mean right: 57.5 degrees; left: 55.4 degrees) and Group B (mean right: 48.4 degrees; left: 46.5 degrees) (p<0.001). Based on FJ tropism of 7 degrees, there was no statistically significant difference between Groups. ROC analysis identified FJ angulation difference of 15 degrees or greater associated with dSpl. Based on age and FJ angulation-adjusted multivariate analysis, FJ tropism of a critical value of ≥15 degrees noted an odds ratio of 2.43 (95% CI: 1.20 - 4.91; p=0.014) associated with dSpl. Slippage was noted with increased FJ tropism, but the effects could not be discerned.

DISCUSSION: Greater sagittal FJ orientation was associated with dSpl, as was joint tropism. A critical value of 15 degrees FJ angle difference produced a two-fold increased likelihood of dSpl. Our study broadens the understanding of FJ morphology and its role in degenerative sagittal plane instability.

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HIP FLEXION CONTRACTURE AND OUTCOME OF CORRECTIVE SURGERY FOR ADULT SPINAL DEFORMITY WITH SAGITTAL IMBALANCE
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INTRODUCTION: Hip flexion contracture might be a potential risk for fixation failure and loss of correction in surgical treatment of sagittal imbalance. This study aimed to evaluate preoperative hip flexion contracture and to investigate the effect of perioperative physical therapy on the outcomes of corrective surgery sagittal imbalance.

METHODS: Fourteen patients who underwent corrective surgery for adult spinal deformity with sagittal imbalance were included in this study. The mean age was 68 years (54-78 years). Surgical procedures were posterior or transforaminal lumbar interbody fusion (PLIF/TLIF) in eight patients, pedicle subtraction osteotomy (PSO) in five patients, and posterior vertebral column resection (PVCR) in one patient. Hip range of motion (ROM) was measured preoperatively in all patients. Improvement of ROM was also assessed in patients with physical therapy intervention for hip contracture. “Remaining sagittal imbalance” was defined as more than 10 cm deviation of C7 plumb line even after surgery.

RESULTS: Ten patients achieved improvement of sagittal balance (successful correction group), but sagittal imbalance remained in four patients (poor correction group).