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Stability of the Sacral Table Angle in Pediatric Patients with Spinal Pathology

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INTRODUCTION | Pelvic incidence, lumbar lordosis, and pelvisacral angle are common radiographic measures used to evaluate sagittal alignment of the spine and pelvis to assist in clinical decision making. However, the natural history of the sacral table angle (STA) is not well characterized, and there remains uncertainty regarding STA progression over time. Previous studies have established that the STA is stable over time in adult patients, however this question has not been answered for younger patients who have not reached skeletal maturity. In this study, we aim to determine sacral table angle stability over time in a younger patient population.

METHODS | We performed a retrospective cohort study of predominantly pediatric patients cared for at a single institution, 90% of whom had not yet reached skeletal maturity. Patients seen in the study institution's spine clinic with complete medical records and lateral radiographs were included in the study. The electronic spine database consisted of patient demographic information, spine pathology characteristics, and common spine radiographic measures. Relevant data was extracted, and analysis of association of demographic and radiographic measures with STA progression were assessed with generalized linear regression modeling.

RESULTS | We assessed the STA of 77 patients with a median age 13.1 years. The most common pathology was adolescent idiopathic scoliosis (AIS) (27.3%). Mean STA was 96.30 ± 10.51, and there was no change of STA over time with an average of 5-year follow-up. There was no significant association between STA and visit age, gender, lumbar lordosis, presence of vertebral anomalies, or skeletal maturity. When controlling for spinal pathology, there was lower variability of STA. Patients with AIS had a SD of 7.65 and juvenile idiopathic scoliosis an SD of 4.49, which is similar to the variability seen in previously published data on adult STA measurements.

CONCLUSIONS | The STA is stable over time in a largely pediatric population without spondylolysis or spondylolisthesis. There appears to be no association between STA and skeletal maturity. The STA may be a clinically useful marker of sagittal balance and lumbosacral stability in part due to its stability in pediatric and adult populations.

LEVEL OF EVIDENCE | Level IV, prognostic