

often difficult to point out posterior element damage from a simple roentgen image alone, and special care must be taken not to overlook it. Computed tomography and magnetic resonance imaging were considered to be useful for definitive diagnosis and treatment decision making including early surgical intervention.

PS-FP-5-1

Optimizing the Brace-Wearing Criteria in Adolescent Idiopathic Scoliosis: The Role of Utilizing the New Sanders 7b Staging

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Purpose: There is no recommended guideline for brace weaning in adolescent idiopathic scoliosis (AIS). Curve progression after weaning may reach 46%. The Sanders staging (SS) method is widely used internationally but has yet to be acknowledged as an indicator for brace weaning. The addition of the ulna physis may further refine SS for optimizing brace weaning outcomes. The study aimed to investigate whether including the stages of ulnar physal closure in SS7 aids in a more accurate assessment for brace weaning for patients with AIS.

Methods: This was a retrospective analysis of patients who weaned brace-wear and consulted from June 2016 to December 2018. Patients who weaned brace-wear at Risser stage ≥ 4 , static standing body height, and arm span for at least 6 months and ≥ 2 -years post-menarche were included. Skeletal maturity at weaning was assessed using Sanders staging with SS7 subclassified into SS7a (all phalangeal physes are fused and only distal radial physes are open, with narrowing of medial physal plate of the distal ulna) and SS7b (those with $>50\%$ fusion of the medial growth plate of distal ulna). Weaning maturity grading and any curve progression were analyzed using Fisher's exact test, with Cramer's V and Goodman and Kruskal's tau.

Results: A total of 179 AIS patients (83.2% females) were studied with a mean age of 14.8 ± 1.1 years and Cobb angle of $34.6^\circ \pm 7.7^\circ$ at weaning. The follow-up period was 3.4 ± 1.8 years. At post-weaning 6-months, curve progression rates for patients weaning at SS7a versus SS7b were 11.4% and 0%, respectively for $<40^\circ$ curves. The use of SS6, SS7a/ b,

SS8 for maturity assessment at weaning strongly associated (Cramer's V, 0.326; $p=0.016$) with whether the curve progressed at post-weaning 6-months. Weaning with SS7 subclassification allowed a 10.6% reduction of error in predicting curve progression.

Conclusions: The use of SS7a and SS7b allows accurate maturity assessment for guiding brace weaning. Weaning at SS7b is more appropriate without any curve progression cases immediately post-weaning for small curves ($<40^\circ$). This makes reaching full fusion of both distal radius and ulna physis (SS8) not necessary and brace weaning can be initiated approximately 9.0 months earlier.

PS-FP-5-2

Computed Tomography Analysis of Sacropelvic Parameters in Patients with and without L5 Spondylolysis

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Purpose: An association of increased pelvic incidence (PI) and decreased sacral table angle (STA) with spondylolysis has been reported but no study has simultaneously analyzed multiple sacropelvic variables to compare their association. Via a retrospective analysis of computed tomography scans, we aimed to determine the association of sagittal sacropelvic parameters with L5 spondylolysis.

Methods: CT scans obtained for assessment for major trauma in patients aged >16 years were analyzed. Scans were excluded if there was abnormal anatomy, previous spine or hip/pelvis surgery, or spinal pathology including deformity, infection, tumor, or trauma. Sacral anatomic orientation (SAO), PI, pelvic thickness (PTH), femoro-sacral posterior angle (FSPA), STA, and sacral kyphosis (SK) were measured.

Results: A total of 202 scans were analyzed: 25 with L5 spondylolysis and 177 normal. SAO (43.3° vs. 51.6°), PI (61.7° vs. 49.8°), STA (95.4° vs. 101.8°), and SK (31.0° vs. 23.7°) were all significantly different between groups. After logistic regression analysis, only PI (odds ratio [OR], 1.074; 95% confidence interval [CI], 1.026–1.124) and STA (OR, 0.822; 95% CI, 0.734–0.920) remained signifi-