scoliosis before age of 5 years, at midterm. However, a new curve may develop in long term. Beginning of adolescence growth spurt may be a factor.

Introduction: Previous studies evaluated midterm outcomes of post hemivertebra resection and short-segment fusion technique in patients under age 5 years, however there are few studies with long term outcomes.This study evaluates long term outcomes of 13patients with congenital scoliosis who underwent this technique under 5 years and had min. 10 years of f/up.

Methods: 13 (8F/5M)patients under age of 5 years during surgery and had min 10 years f/up were included. All patients underwent post hemivertebrectomy and short-segment fusion with pedicle screw fixation. Mean age was 3,5(1-5) years during surgery. Main and compensatory curves and sagittal parameters were measured on pre, post and f/up x-rays. F/up x-rays were reviewed for occurrence of new curve development. SRS22 score was evaluated at f/up.

Results: Mean f/up was 11.5 (10-17) years. 8 patients had pure scoliosis and 5 patients had kyphoscoliosis. The location of hemivertebra was 10 thoracic, 2 thoracolumbar and 5 lumbar. Main curve of 32.2° was corrected to 3.8° and 9.6° at f/up (70.2%). Compensatory curve of 13.8° was corrected to 2.1° and 6.2° at f/up. Local kyphosis improved from 31.2° to 5.3° (83.1%). Sagittal alignment was restored and maintained(mean SVA:+21mm). There were no pseudoarthrosis or neurovascular complications. A new C-shaped, long, flexible curve with the apex at the level of the resected hemivertebra developed in 5patients (38%).Mean age at new curve diagnosis was 11.2 (6-14) years. Mean new C-shaped curve was 21°(16-30). No additional surgery was performed. 1patient was treated with brace. Mean SRS22 score was 4.5 at f/up.

Conclusion: Post hemivertebra resection and short-segment fusion technique under 5 years provided satisfactory correction on both planes. However, a new C-shaped, long, flexible curve with its apex at the level of the resected hemivertebra was observed at long term f/up in 38% patients. This study suggests that patients with congenital scoliosis who undergo post hemivertebra resection and short-segment fusion under 5 years should be followed up closely till the end of adolescence growth spurt.

Author Affiliations and Disclosures: Meric Enercan, Istanbul Spine Center; Sinan Kahraman, Istanbul Spine Center; Tunay Sanli, Istanbul Spine Center; Yesim Erol, Istanbul Spine Center; Cem Sever, Istanbul Spine Center; Emel Kaya, Istanbul Spine Center; Yunus Emre Akman, Istanbul Spine Center; Azmi Hamzaoglu, Istanbul Spine Center, Medtronic; Isik Karalok Istanbul Spine Center

Paper #12

Avoid Maximal Correction in Lower Lumbar Hemivertebra Resection –Taking Sacrum Morphology into Consideration

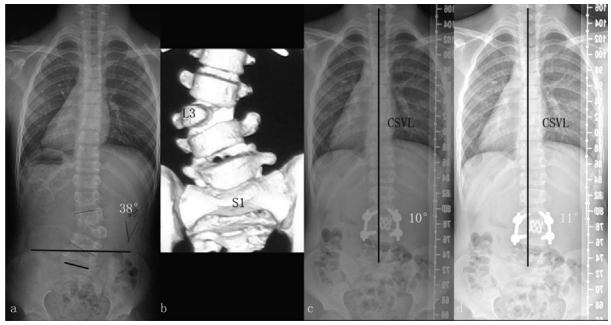
Yanbin Zhang, Jianguo Zhang

Summary: We found that if the sacral slanted angle was more than 10 °, surgeons need to avoid maximal correction for better coronal balance.

Hypothesis: Avoiding maximal correction and a more neutral and level UIV were benefitial to coronal balance after lower lumbar hemivertebra resection.IntroductionMethodsResultsConclusionAttentions must be paid to sacral morphology in lower lumbar hemivertebra resection because of the high incidence of Sacral Slanting. Avoiding maximal correction and a more neutral and level UIV were important to congenital EOS with severe Sacral Slanting.

Introduction: The influence of sacral morphology has never been reported in lower lumbar hemivertebra resection in early-onset scoliosis. Great challenge remains in restoring coronal balance after hemivertebra resection with short fusion in cases with severe Sacral Slanting. To clarify influence of sacral morphology in restoring coronal balance after hemivertebra resection and surgical strategy for Sacral Slanting.

Methods: From July 2004 to December 2014, clinical charts and radiographic data of patients with early-onset congenital scoliosis were reviewed. Posterior hemivertebra resection with short fusion was performed in all cases that met our critieria. Coronal and sagittal parameters, as well as sacral slanted angle and UIV Tilt, were measured. Sacral Slanting was defined as the sacral slanted angle of more than 5° and severe Sacral Slanting was thought to be more than 10°. Statistical analyses were performed.



Results: 42 consecutive patients were included. The mean age was 4.0 years old with an average follow-up of 51.7 months. The mean segmental curve was 34.9° before surgery, 4.7° immediately postoperatively, and 8.7° at final follow-up. Trunk shift was 15.4mm preoperatively, 16.9mm immediately after surgery and 12.1mm at final follow-up. Sacral slanted angle was measured as 7.2° before surgery. Sacral Slanting could be noticed in 26 patients with an incidence of 61.9%. Patients with hemivertebrae at or below L3 had higher incidence of Sacral Slanting than that with hemivertebrae above L3. Severe Sacral Slanting was noted in 11 patients with an incidence of 26.2%. Postoperative UIVT was correlated positively with postoperative TS. Postoperative UIV Tilt was correlated negatively with final TS.

Conclusion: Attentions must be paid to sacral morphology in lower lumbar hemivertebra resection because of the high incidence of Sacral Slanting. Avoiding maximal correction and a more neutral and level UIV were important to congenital EOS with severe Sacral Slanting.

Author Affiliations and Disclosures: Yanbin Zhang, Peking Union Medical College Hospital; Jianguo Zhang, Peking Union Medical College Hospital

Paper #13

Comparison of Growth-friendly Surgery with Rib-based Device Between Congenital Scoliosis and Non-congenital scoliosis: Five-Year Follow-Up Study

Noriaki Kawakami, Toshiki Saito, Ryoji Tauchi, Kazuki Kawakami, Hiroko Matsumoto, Tetsuya Ohara

Summary: Clinical outcomes of growth-friendly surgery (GFS) with rib-based device (RBD) was investigated by dividing 68 patients with Early onset scoliosis (EOS) into congenital scoliosis (CS) and others (Non-CS) with five-year follow-up in all patients. While no differences of scoliosis magnitude, SAL, and thoracic height were recognized between the two groups postoperatively, the Non-CS group had significantly higher rate of device-related complications (DRC) and unplanned surgeries during the five years postoperatively.

Hypothesis: CS demonstrates better clinical course with lower postoperative DRC than Non-CS.

Introduction: In GFS, RBDs that employ distraction as its correcting force is considered as one of standard surgical Methods for patients with EOS. Despite this, the ideal indication of RBD is still uncertain due to its higher rates of DRC. The purpose of this study was to compare clinical outcomes of RBD between CS and Non-CS in order to develop a more precise indication for RBD in EOS.

Methods: 72 patients with EOS were surgically treated using RBD at an age younger than 10 years from 2005 to 2012 at a single institution. One