EOSQ-24 and SRS-22 domain	Comparison based on individual completing the questionnaire		Comparison based on age			Developmentally delayed patients (caregiver completed questionnaire)
	Patient	Caregiver	0-5 years (n = 26)	6-9 years (n = 28)	10-18 years (n = 44)	
Function	0.70	0.78	0.87	0.78	0.67	0.63
Pain	0.80	0.83	0.76	0.78	0.86	0.81
Mental Health	0.82	0.74	0.83	0.67	0.59	0.63
Satisfaction	0.49	0.39	0.34	0.27	0.57	0.29

Values are shown as correlation coefficients (r), with r ⩾ 0.70 indicating a strong relationship.

Results: The final group included 98 patients (98 EOSQ-24 and 98 SRS-22). Average age at completion of the questionnaires was 9.5 years (0-18 years). The relationship between domain scores is shown in the Table.
A strong correlation was found for all domains except Satisfaction when the patient or caregiver completed both questionnaires.
Sub-analysis demonstrated the strongest relationship between domains in the 0-5 year age group. A poor correlation was noted for all domains except Pain in the developmentally delayed. There was a strong correlation for Pain and poor correlation for Satisfaction across all subgroups.
Conclusion: SRS-22 may be appropriate for cognitively normal children with EOS due to CS. It is unclear which questionnaire is more suitable for developmentally delayed patients.
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Paper #36

Multi-level Congenital Deformities in Early Onset Scoliosis: Radiographic and Clinical Outcomes in Growth Friendly Graduates

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Summary: Treatment of complex congenital scoliosis with growth friendly instrumentation led to only modest correction of major curves, residual imbalance, minimal gain in spine and thoracic height and a high incidence of complications. It is unknown whether this treatment improves upon the natural history or early fusion.
Hypothesis: Complex congenital early-onset scoliosis (EOS) treated with growth friendly instrumentation (GFI) has similar outcomes compared to other EOS etiologies.
Design: Multicenter retrospective review.
Introduction: A multilevel congenital curve is one of the most challenging deformities to treat in EOS patients. Published treatments include early fusion, three-column resections/reconstructions and GFI. The purpose of this study was to evaluate outcomes of congenital EOS at the completion of GFI.
Methods: A multicenter EOS database was queried for patients with multilevel congenital EOS. Patients who completed GFI treatment (traditional growing rod-TGR, prosthetic rib-based, growth-guided) including final fusion or retained GFI and cessation of lengthenings were included. Single level congenital deformities were excluded.
Results: 27 patients (18 M, 9 F) had mean age of 5.5 yrs at time of index surgery. Location of deformity: 17 thoracic, 5 thoracolumbar and 5 upper thoracic. Deformities included: 13 unilateral bars, 5 multiple hemivertebra and 9 combined anomalies. Congenital vertebral levels were less than 4 in 12 patients and greater than 4 in 15. 9 patients had concave fused ribs and 5 had spinal dysraphisms. GFI constructs included: 16 TGR, 8 prosthetic rib-based and 3 growth-guided. Mean number of lengthenings was 8. Final treatment occurred at mean age 10.7 years. Pre-op major coronal curve was 72 deg and 44 deg at final follow up (39% correction). At final follow-up, 6 patients had coronal imbalance >4 cm and 6 had sagittal imbalance >4 cm. Mean T1-S1 spine height increased 36% and mean T1-T12 thoracic height increased 24%. At final follow up, T1-T12 height was less than 18 cm in 7 patients (24%). At least one complication was present in 23 (85%) patients. There were a total of 73 complications: implant failure 58%, wound problems 19%, neurologic 6%, medical 7% and other 10%.
Conclusion: Surgical treatment of multi-level congenital EOS remains extremely challenging. Treatment with GFI demonstrates modest improvement curve correction and spinal growth and a moderately high complication rate.
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Radiographic Parameter	Pre-operative	Latest Follow Up	% Correction
Major Coronal Curve (°)	72 ± 5	44 ± 4	39% ± 0.5%
T1-S1 Height (mm)	243 ± 35	320 ± 42	36% ± 1.0%
T1-T12 Height (mm)	152 ± 16	195 ± 31	28% ± 10%