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A New Surgical Technique For Salvage Of Post-Operative Proximal Junctional Failure In Pediatric Patients–A Case Series

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A New Surgical Technique for Salvage of Post-Operative Proximal Junctional Failure in Pediatric Patients–A Case Series

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Background

- Proximal junctional failure (PJF) is a known complication that can occur following posterior spinal fusion and is associated with pain, decreased neurologic function, and increased morbidity
- Very little literature exists regarding PJF in pediatric populations and there are currently no surgical techniques described in the literature for revision of PJF

Methods

- The surgical technique involves proximal extension of spine instrumentation and anchoring via paired sets of sublaminar bands
- The bands are sequentially tightened to bring the spine into sagittal alignment
- Patients who received this procedure at CMH and had at least one year of follow-up time were identified
- Demographic and clinical data, including radiographic and CT spine parameters, were gathered both pre and post-operatively

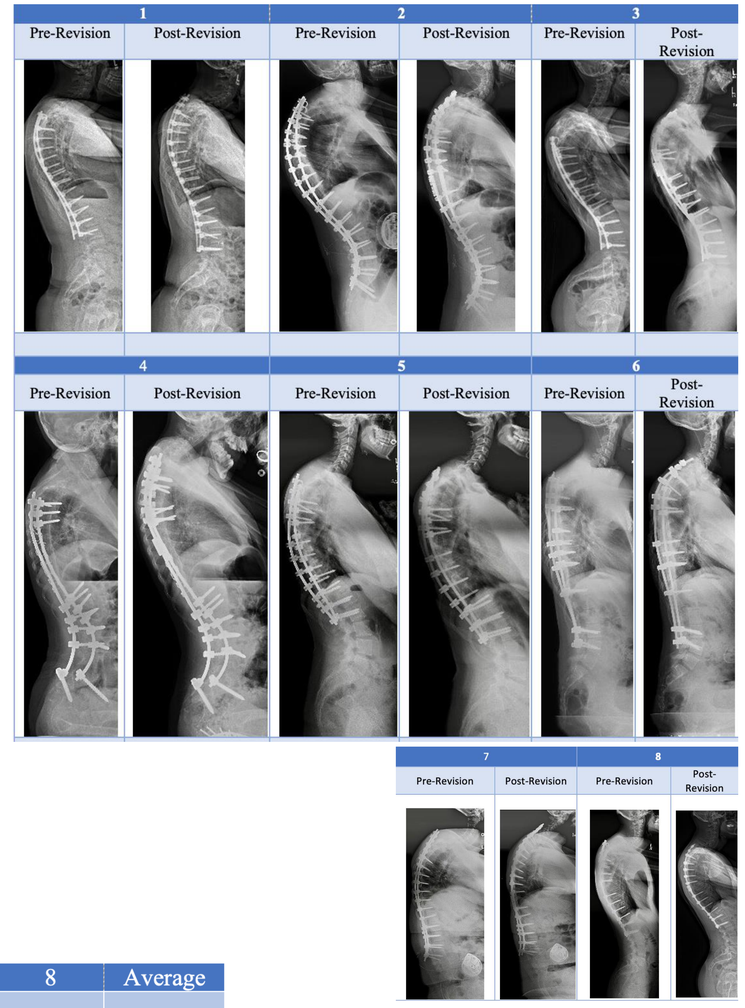
Results

Demographics

- Eight patients with an average age of 14 years, 10 months were included in the study
- Surgical revision was performed approximately 3 years after the initial procedure
- Patients were followed for an average of 31 months after revision
- Original patient diagnoses consisted of adolescent/juvenile idiopathic scoliosis, neuromuscular scoliosis, kyphoscoliosis, and Scheuermann thoracic kyphosis

Clinical Findings

- Reduced pain and rod prominence
- Reports of increased satisfaction with appearance and improved horizontal gaze



Patient	1	2	3	4	5	6	7	8	Average
T1-T12 Kyphosis	19°	-43°	1°	-35°	5°	-2°	27°	-2°	-4°
PJF Angle	18°	-36°	-10°	-46°	1°	-39°	-22°	-27°	-20°
Lumbar Lordosis	2°	-3°	14°	-17°	-1°	-17°	-27°	16°	-4°
Cervical Lordosis	24°	-16°	-7°	-78°	8°	-1°	-52°	-6°	-16°
C2 SVA	0.4cm	4.1cm	-1.4cm	2.6cm	0.7cm	2.2cm	3.8cm	0.7cm	1.6cm
C2 Slope	-3°	0°	-11°	19°	-1°	-10°	22°	3°	19°
Pelvic Incidence	-4°	-4°	-1°	-1°	0°	-5°	13°	-3°	-5°
Pelvic Tilt	-7°	-17°	15°	30°	-3°	-7°	35°	4°	6°
Sacral Slope	1°	11°	-11°	19°	5°	0°	-22°	-2°	1°
Proximal Extension	2 vertebra	3 vertebra	3 vertebra	4 vertebra	2 vertebra	4 vertebra	3 vertebra	1 vertebra	3 vertebra
Bands Used	7 bands	8 bands	6 bands	6 bands	4 bands	4 bands	6 bands	4 bands	6 bands

Conclusion

Patients with PJF who received this surgical technique experienced resolution of pain and upper rod prominence and improved cervical spine radiographic parameters that was maintained at 2 years after revision surgery