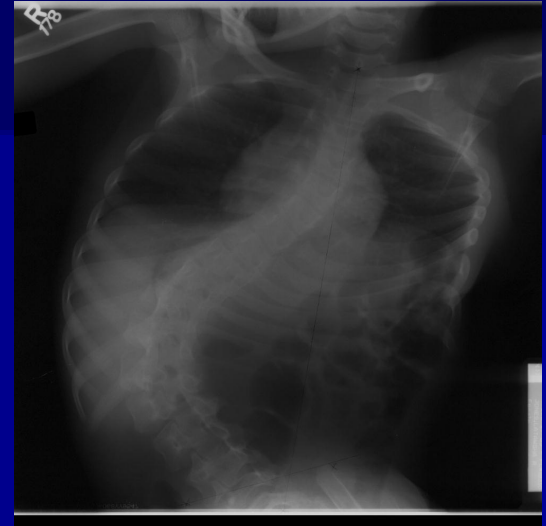


Growing Rods in Cerebral Palsy

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Disclosures

- Justin Yang- None
- Co-Authors: (a,b) DePuy Spine

- a. Grants/Research Support
- b. Consultant
- c. Stock/Shareholder
- d. Speakers' Bureau
- e. Other Financial Support

Background Information

- Severe scoliosis often develops at an early age in Cerebral Palsy and is not well-controlled by orthoses
- This project examines the deformities, techniques, surgical outcomes and complications of GR in CP.

Hypothesis

- Growing rods can successfully improve scoliosis and pelvic obliquity in patients with cerebral palsy

Methods

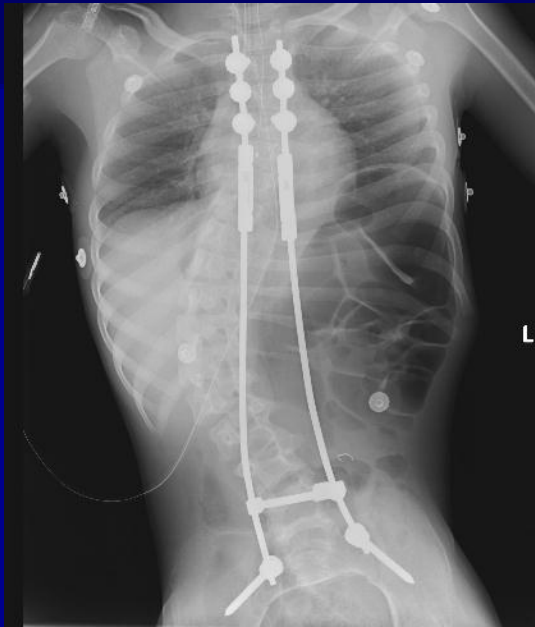
- 20 CP patients with from 6 centers
- Variables:
 - Age
 - Balance
 - Major Cobb
 - Construct type
 - Gain in T1-S1
 - Complication rate.

Methods

- Mean age at initial insertion 7.5 ± 2.7 years (range 4.25-11)
 - Average follow-up: 26 months
- Mean pre-operative Cobb $83 \pm 19^\circ$
 - Average Pre-Op Cobb for other GSSG diagnoses: $72^\circ \pm 18$
 - $P=0.01$
- Pre-operative coronal imbalance 7cm
- Pre-operative pelvic obliquity was $31 \pm 10^\circ$

Results: Constructs

- Proximal anchors:
 - 12 hooks, 8 screws
- Distal foundation:
 - 3 hooks, 17 screws
 - Pelvic fixation in 6 patients
- Dual rods were used in 14 patients



Results

- Patients underwent mean 2.8 lengthenings at an average intervals of 9 months
- 3 patients have had posterior fusion at an average 4.3 years after initial insertion

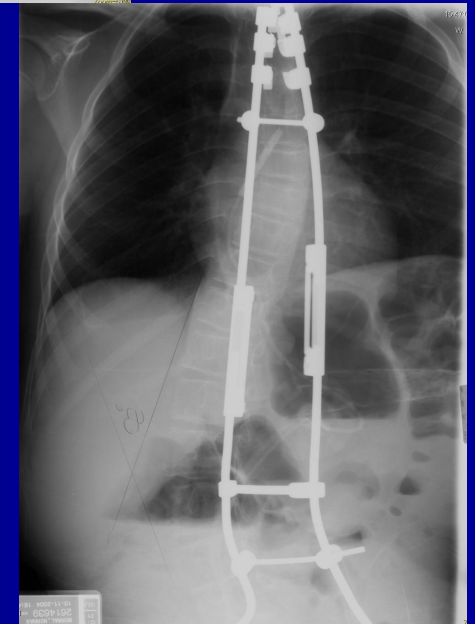
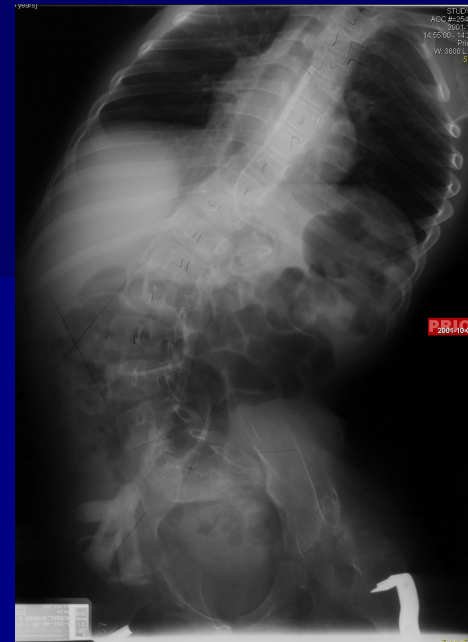


Results: Latest Follow-up

- Major curve improved from 83° to 51±18°
 - All other diagnoses: 72° to 43±16°
 - Avg % correction: 38% vs. 43%, P=0.84
- Coronal imbalance improved from 7cm to 4.7cm

Results

- Pelvic obliquity improved from $31 \pm 10^\circ$ to $15 \pm 6^\circ$
- The patients have gained an average 9 cm in T1-S1 height during growing rod treatment
 - Average 5 cm post-index surgery



Results: Complications

- There were six deep wound infections in four patients (20%)
 - All required operative drainage
 - Similar to general population of GSSG database (16%, 23/143 patients¹)
 - 20% vs. 16%, $P=0.78$
 - Three required implant removal
- Four patients had pneumonia in the perioperative period
- Implant complications
 - 1 proximal hook dislodgement
 - 1 rod fracture



Conclusions

- Growing rods can be used for correction of severe scoliosis curve in cerebral palsy
 - Present with larger curves
 - Pelvic obliquity not completely corrected
- Due to medical complexity of patients with CP, treatment burden greater
- Costs and benefits must be weighed to maximize quality of life

Future Directions

- Longitudinal function/outcome assessments
- Pulmonary questionnaires

Thank You

