Superior Extension of Upper Instrumented Level in Distraction Based Surgery: A Surrogate for Clinically Significant PJK

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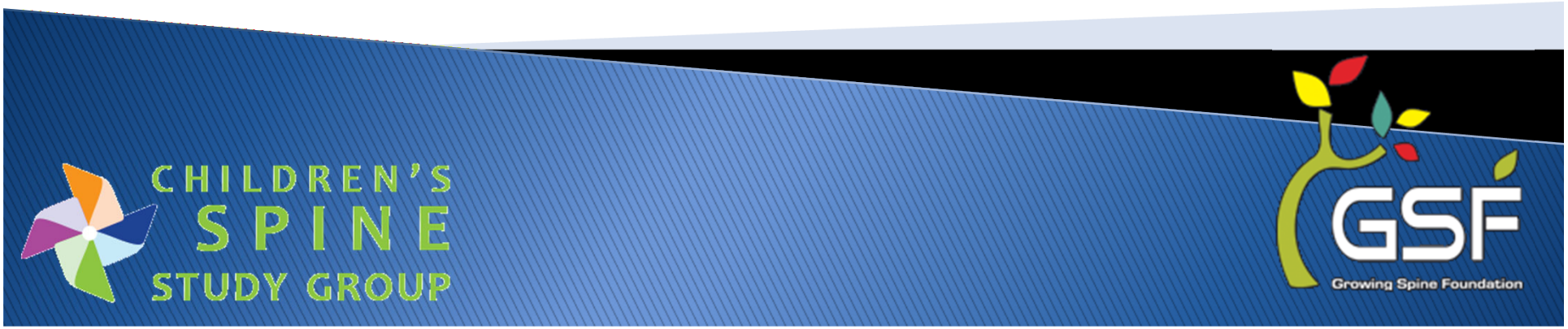

Disclosures

- Grants / Research Support
  - Depuy-Synthes Spine
  - Medtronic Canada
  - EOS Imaging

- Consultant
  - Depuy-Synthes Spine
  - Medtronic Canada
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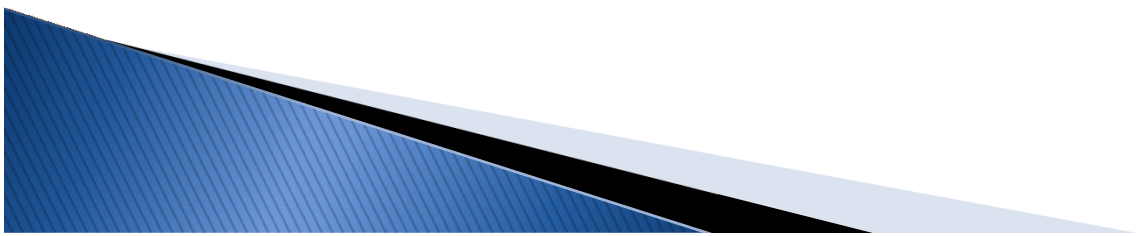
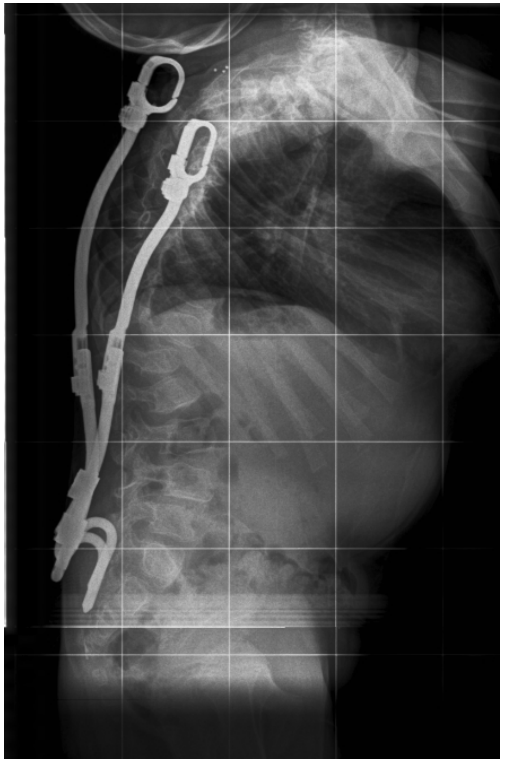


Proximal Junctional Kyphosis

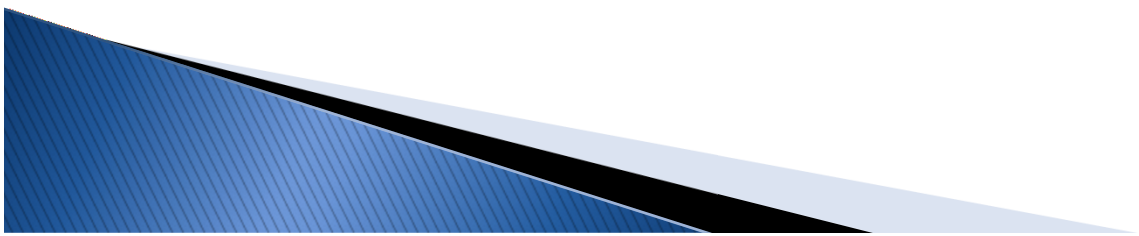


Proximal Junctional Kyphosis

- Revision surgery with superior extension of the upper instrument level (UIL).

Purpose

- To determine the **rate of clinically significant** proximal junctional kyphosis (PJK) during distraction based growth friendly surgery.



Study Design

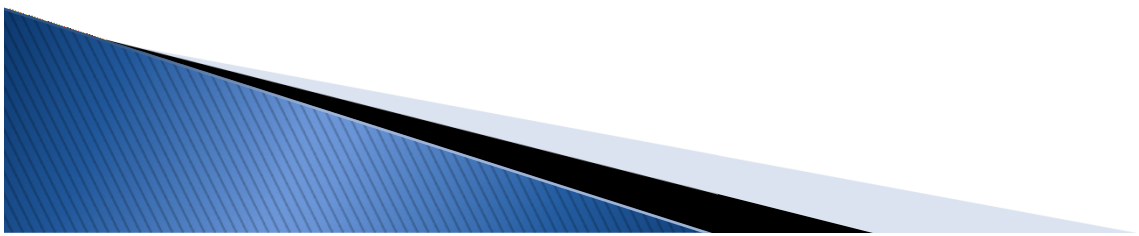
- Retrospective, clinical and radiographic review of the Children's Spine Study Group database.

CHILDREN'S SPINE STUDY GROUP

GSF Growing Spine Foundation

Inclusion Criteria

- Early Onset Scoliosis (<10 yrs)
- Treated with rib-based
- >/= 2 yr f/u
- >/= 3 lengthening procedures



Inclusion Criteria

- Superior extension of upper instrumented level during distraction phase or at graduation from distraction-based surgery.

- Radiographs available between each lengthening procedure.

Exclusion

- Superior extension of upper instrumented level secondary to progression or adding on of scoliosis.

Primary Outcome

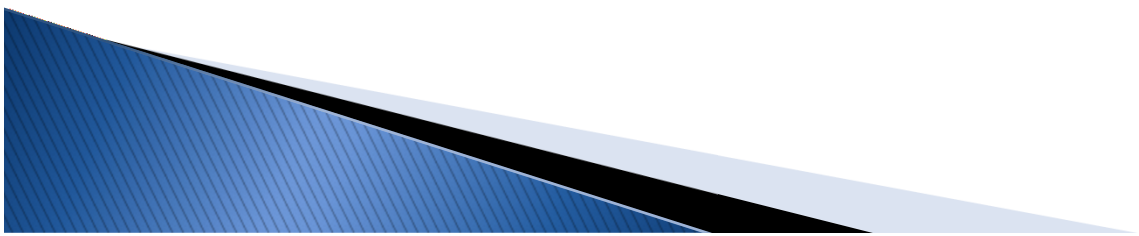
- Rate of patients treated with distraction based surgery who required superior extension of their upper instrumented level (UIL).

Results

- CSSG Registry
  - 397 patients (rib-based)
- 40 of 397 required a revision surgery that involved superior extension of the UIL
- **10% rate of clinically significant PJK**

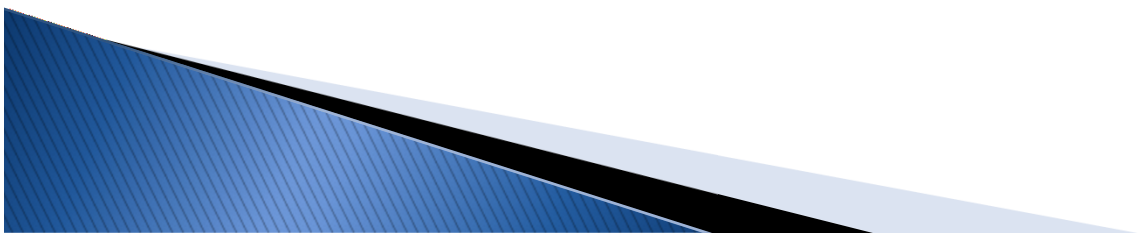
Results – At Implantation

- Revision Group was Younger
  - 4.9 vs. 5.5 yrs ($p<0.05$)
- Otherwise, the revision group was characteristic of the entire study population
  - Scoliosis 70^{o}
  - Kyphosis 50^{o}



Results – At Revision

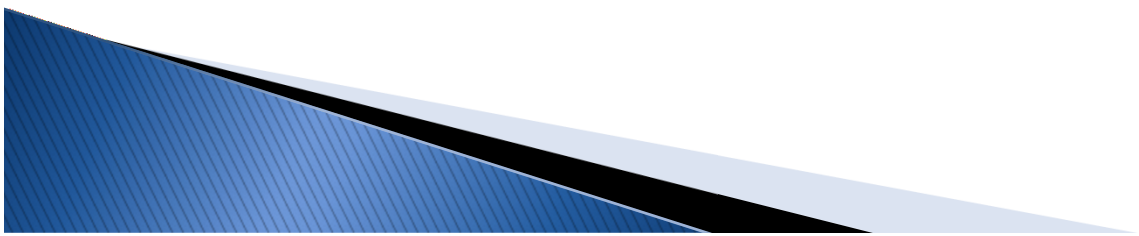
- Time to revision was 2.3 yrs
- Scoliosis 67°
- Kyphosis 55°



Future Work

- Review patients treated with spine-based distraction from Growing Spine Study Group Database.

- Evaluate radiographic measures (proximal junctional angle) on all patients.
  - Is PJA predictive of clinically significant PJK?



Conclusions

- A **10% rate of clinically significant PJK** was found within this group of children who were treated with rib-based distraction surgery.
- These patients were **younger** than the non-revision patients at time of implantation.
- Mean time to revision was **2.3 years**.

Thank You