



JOHNS HOPKINS  
M E D I C I N E

# Is There an Optimal Interval to Distract Growing Rods?

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Paper #13; Nov 21, 11:15-19 am



# Disclosures

- Medical Education Reviews
- JBJS
- Depuy Synthes Spine: Research, royalties
- Globus: Royalties

# Introduction



- Dual rods (Moe, Thompson/ Akbarnia):
  - Limited foundations, spanning rods
- These rods need to be serially distracted as separate surgical procedures.

# When to lengthen?

- Akbarnia:
  - distractions scheduled based on age, height, dx, progression.
- Thompson :
  - Distractions every 6 months
  - Frequent lengthenings “drive the spine”
  - 13 patients

# Actual lengthening intervals

- Yang: GSSG review
  - in actuality, average time between lengthening was  $8.6 \pm 5.1$  months
  - only 24% of distractions  $\leq$  @ 6 mo intervals

# Purpose



- To determine, with a larger series, if there is a significant difference in final spinal height, final Cobb angle, or final instrumented height related to the average time interval between distractions of dual growing rods

# Hypothesis



- Hypothesis:
  - increased time between distractions of dual growing rods in EOS does not result in a reduced overall spine height or instrumented segment height
  - does not result in a decreased ratio of final to initial Cobb angle.

# Methods



- Prospectively collected data from the Growing Spine Study Group
- Inclusion criteria: EOS
  - 4+ distraction procedures (including revisions)
  - >4 years of follow-up
- 2 groups
  - average lengthening interval <9 months
  - Average lengthening interval  $\geq$ 9 months
- Post-initial to post- final measurements

# Results



## Demographics of 46 patients

- ❖ Gender
  - Female: n = 23
  - Male: n = 23
- ❖ C-EOS Etiologies
  - ❖ Idiopathic: 12
  - ❖ Neuromuscular: 8
  - ❖ Congenital: 6
  - ❖ Syndromic: 15
  - ❖ Unknown: 5
- ❖ Average Age
  - Post Index Procedure: 5 yrs

# Results



$\Delta$  Cobb Angle:  $p = .52$

- <9 months:  $-8^\circ$  (23°)
- $\geq 9$  months:  $-4^\circ$  (19°)

$\Delta$  Instrumented Segment Height:  $p = .60$

- <9 months: 59 mm
- $\geq 9$  months: 52 mm

$\Delta$  Spinal Height:  $p = .58$

- <9 months: 63 mm (78)
- $\geq 9$  months: 53 (38)

(Measured from post-initial to post-final films)

# Conclusion



- No statistical difference in:
  - change in major Cobb angle
  - instrumented segment height
  - overall spinal height from the first procedure to final procedure
- in patients with mean lengthening intervals of  $<9$  months vs  $\geq 9$  months.

# Conclusion



- This study demonstrates that extending the lengthening interval to 9 months or more will not result in inferior outcomes in regards to curve correction, spinal height, or instrumented segment height
- More length (less often) may work
  - And provide fewer complications (Bess et al)

# Limitations



- Varying underlying diagnoses
- Study size
  - Absolute values all favored shorter intervals
    - Clinical significance?

# Thank You

