



JOHNS HOPKINS
M E D I C I N E

Is There an Optimal Interval to Distract Growing Rods?

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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 ± 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 ≥ 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



Δ Cobb Angle: $p = .52$

- <9 months: -8° (23°)
- ≥ 9 months: -4° (19°)

Δ Instrumented Segment Height: $p = .60$

- <9 months: 59 mm
- ≥ 9 months: 52 mm

Δ Spinal Height: $p = .58$

- <9 months: 63 mm (78)
- ≥ 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 ≥ 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

