Is There an Optimal Interval to Distract Growing Rods?

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Disclosures

• Medical Education Reviews
• JBJS
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• 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 $< @ 6$ 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