Proximal Junctional Kyphosis Measurement Variability in Patients with Growing Rods

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Disclosures

Kody K. Barrett, BA-None

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Background – PJK in AIS

- PJK is a known risk after spinal fusion
- Incidence of 9.2-46%
- Rare cause for re-operation

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Background – PJK in Growing Rods

- Incidence of 56% in one study
- Limited number of studies
- No data on need for reoperation or complications

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Criteria For PJK in Past Studies

- Lee et al.
  - >5° greater than normally expected
- Denis et al.
  - >10°
  - And >10° from pre-op
- Kim et al.
  - >10°

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Study Question

What is the variability in measuring PJK in patients with distraction based growing rods?

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Methods

- 10 patients with growing rod Instrumentation were selected at random
- The most recent lateral view radiograph was used
- Four pediatric orthopaedic spine surgeons made measurements using two different methods
- These measurements were repeated on the same radiographs one week later

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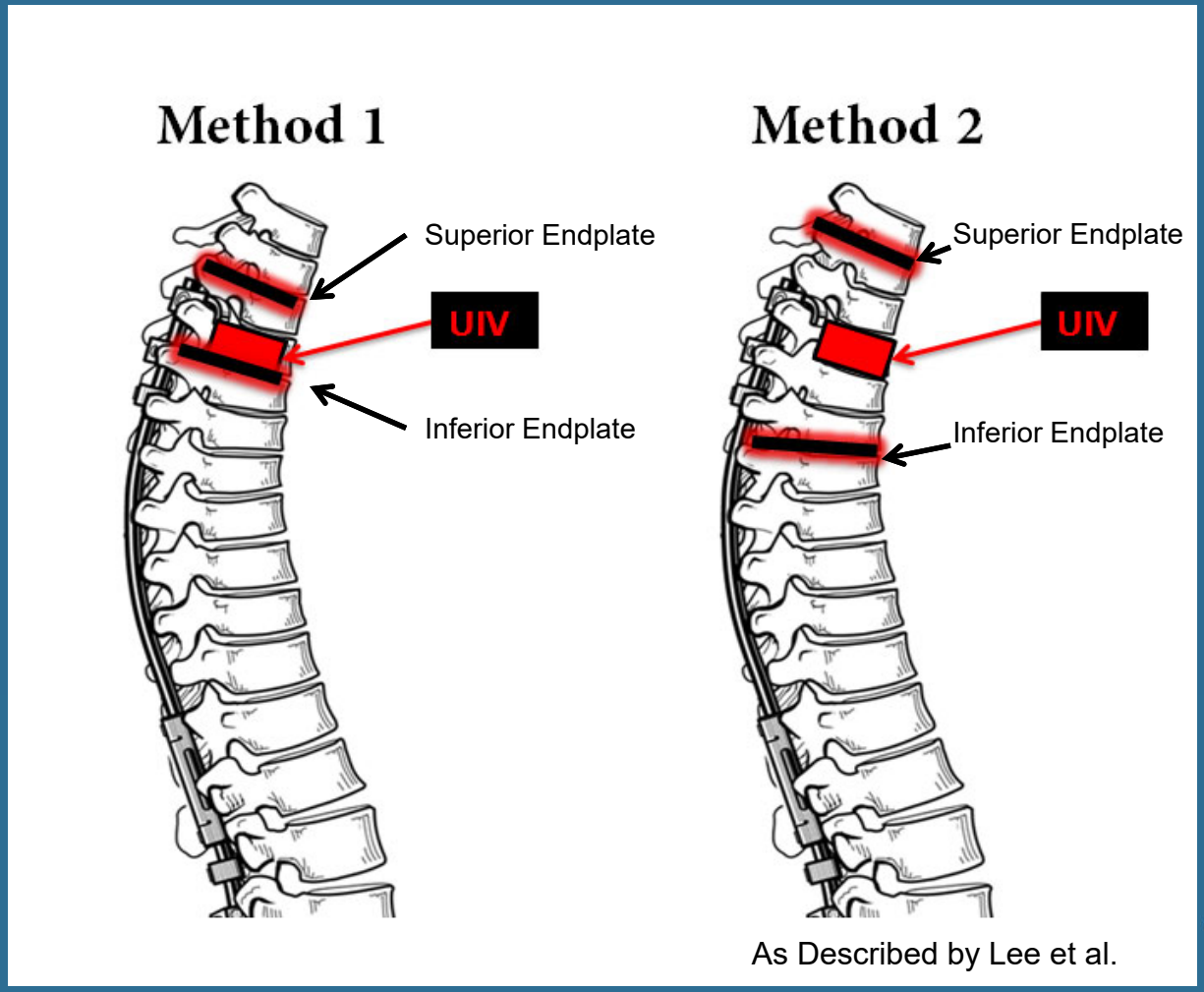
Measurement Methods



As Described by Lee et al.

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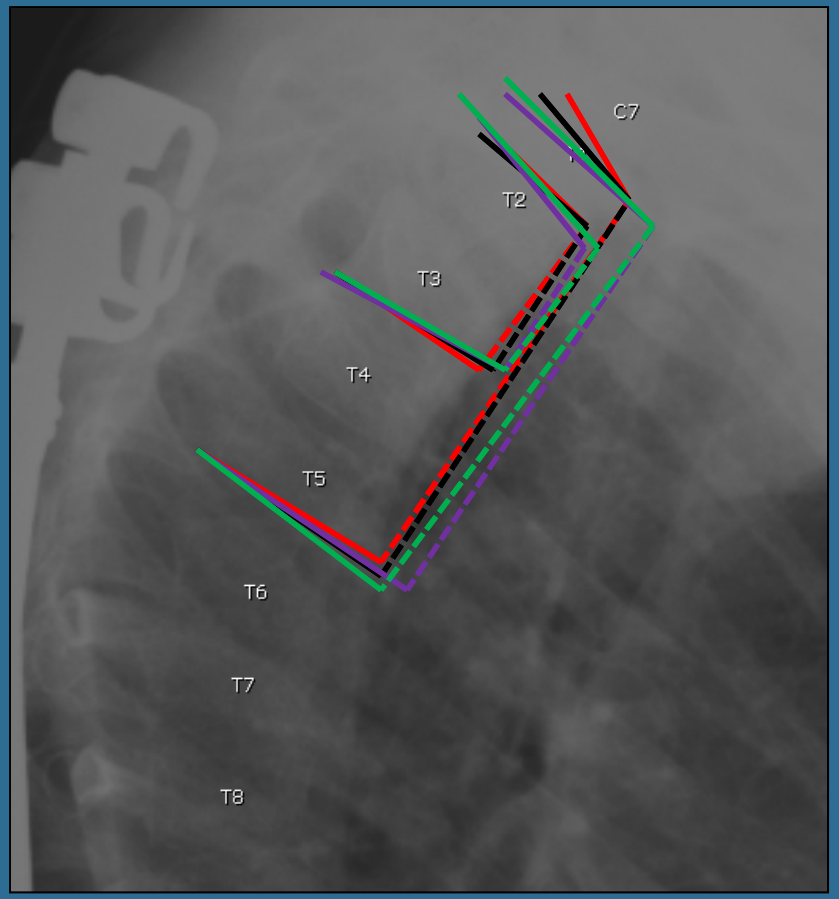
Example Measurements

	Method 1	Method 2
Doctor 1	3°	37°
Doctor 2	3°	32°
Doctor 3	15°	22°
Doctor 4	14°	27°



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Analysis

- Variability: Limits of Agreement
  - Likely range for the difference between two successive measurements
- Intraclass Correlation Coefficient
  - Scale from 0-1
  - Approximates strength of correlation
  - Unlike R, accounts for inherent correlation due to measuring same target
  - 0.4-0.75 is “good” and >0.75 is “excellent”

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Results

	Method 1	Method 2
Intraobserver Variability	±13.2°	±18.3°
Interobserver Variability	±21.6°	±20.7°

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Results

	Method 1	Method 2
Intraobserver ICC	0.728	0.840
Interobserver ICC	0.311	0.822

Scale 0-1, 0.4-0.75 is “good” and >0.75 is “excellent”

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Conclusions

- Both interobserver and intraobserver variability was high, with ±15° of error to be expected in each
- It is difficult to accurately evaluate PJK in the setting of growing rods
- These results call into question prior studies

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Discussion

- Rely on clinical signs and symptoms
- Look to different imaging modalities

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