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Myth vs. Truth: Distraction Should Be Done Every 6 Months With Distraction-based Methods

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Disclosures

- Unpaid Consultant – OrthoPediatrics
- Co-Editor – Journal of Pediatric Orthopaedics (JPO)
- Department receives support from numerous companies

Question

In growing rods, what is the best time interval in distraction / lengthening with respect to:

- Deformity correction
- Spinal growth
- Complications

Presumptive GSSG Evidence

Thompson GH, Akbarnia BA, et al. Spine 2005;30, 2039 – 2044

Yang J, et al. Paper # 4, 3rd ICEOS 2009

Wudbhav S, et al. Paper #15, 3rd ICEOS 2009

Bess S, et al. Submitted JBJS 2009

Study Centers

RBCH 1992 – 2004

- **53 young patients**

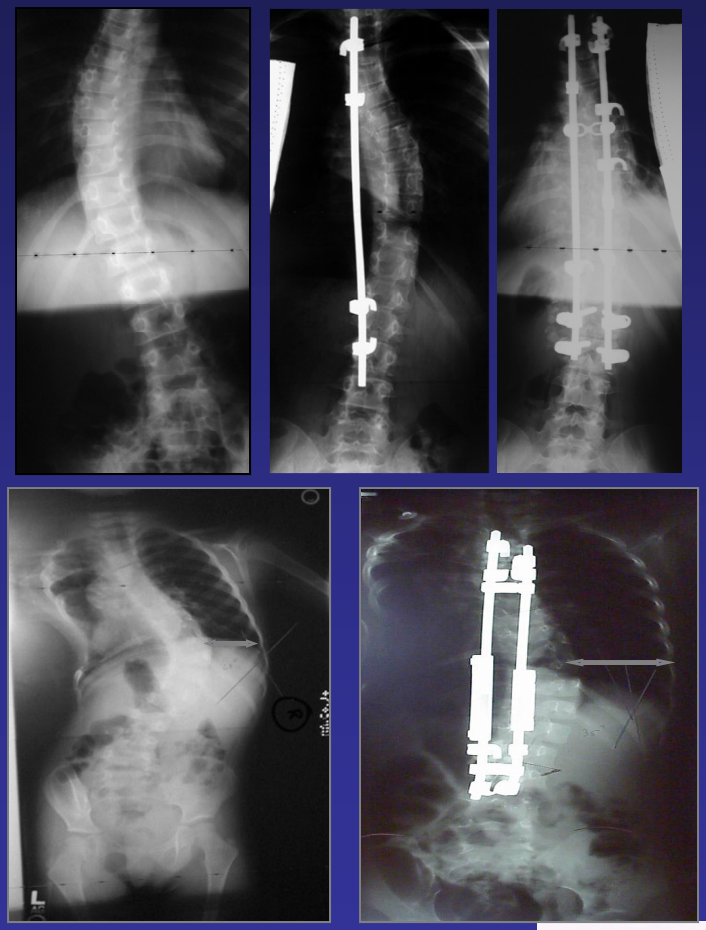
  Single Isola rod

SDCSD 1993 – 2002

- **45 young patients**

  Dual Isola rods

- **3 different centers**



Patients

Study Criteria

- Single or dual growing rod
- Definitive spinal fusion
- Minimum 2 years follow-up after final fusion

Patients – 28 patients

- 21 RBCH
- 7 SDCSD data base

Study Groups

Group 1 – 5 patients

- Single Isola growing rod
- Short anterior & posterior apical fusion

Group 2 – 16 patients

- Single Isola growing rod
- No apical fusion

Group 3 – 7 patients

- Dual Isola growing rods
- No apical fusion

Clinical Results

Group	1	2	3
Gender (M:F)	2:3	6:10	1:6
Age (yrs)	7.0±2.9	8.7±1.9	6.9±3.9
> 10	0	7	1
5 – 9	4	9	4
< 5	1	0	2
Lengthenings	3.4±1.8	2.8±1.3	*6.1±2.8*

Radiographic Results

Group	1	2	3
Scoliosis (º)			
• Preop initial	85±23	61±13	92±21
• Postop initial	44±21	36±7	39±15
• Preop final	77±20	55±15	33±16
• Postop final	65±20	39±15	*26±18*

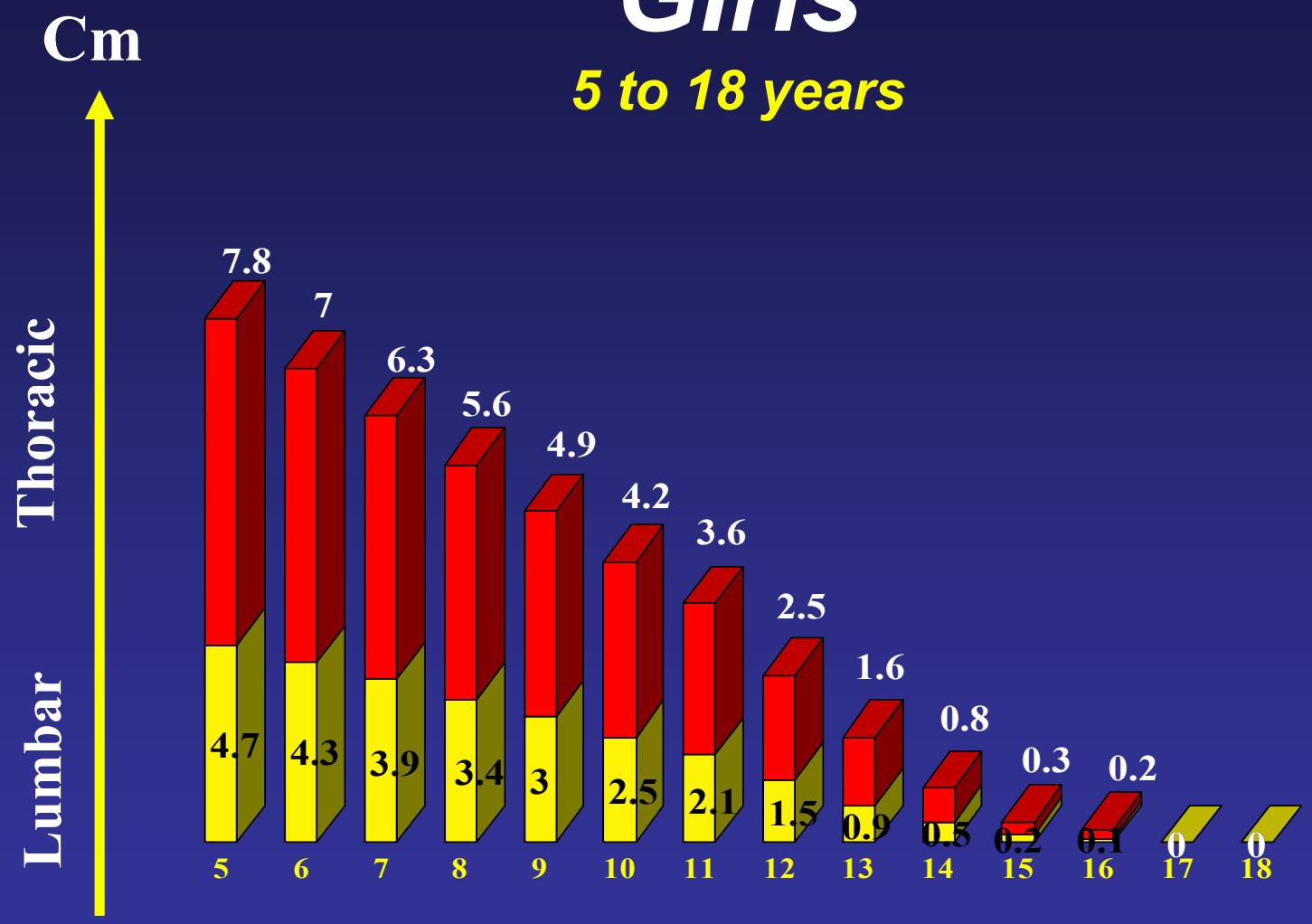
Group	1	2	3
Correction (%)			
• Preop to postop initial	48±21	41±14	57±17
• Postop initial to postop final	-47±11	-8±14	34±10
• Preop initial to postop final	23±19	37±15	*72±24*

Radiographic Results

Group	1	2	3
Length / Growth (cm)			
• Elongation	3.8±2.8	3.9±4.9	*5.9±1.5*
• T1 – S1 / yr	-0.2±1.2	0.5±.95	*1.04±.65*
(Postop initial to preop final)			
• T1 – S1 / yr	0.3±1.02	1.04±.09	*1.51±.58*
(Postop initial to postop final)			
Percent expected	25%	*80%*	*130%*
• Total (cm)	6.4±1.4	7.6±4.7	*11.8±4.0*

Girls

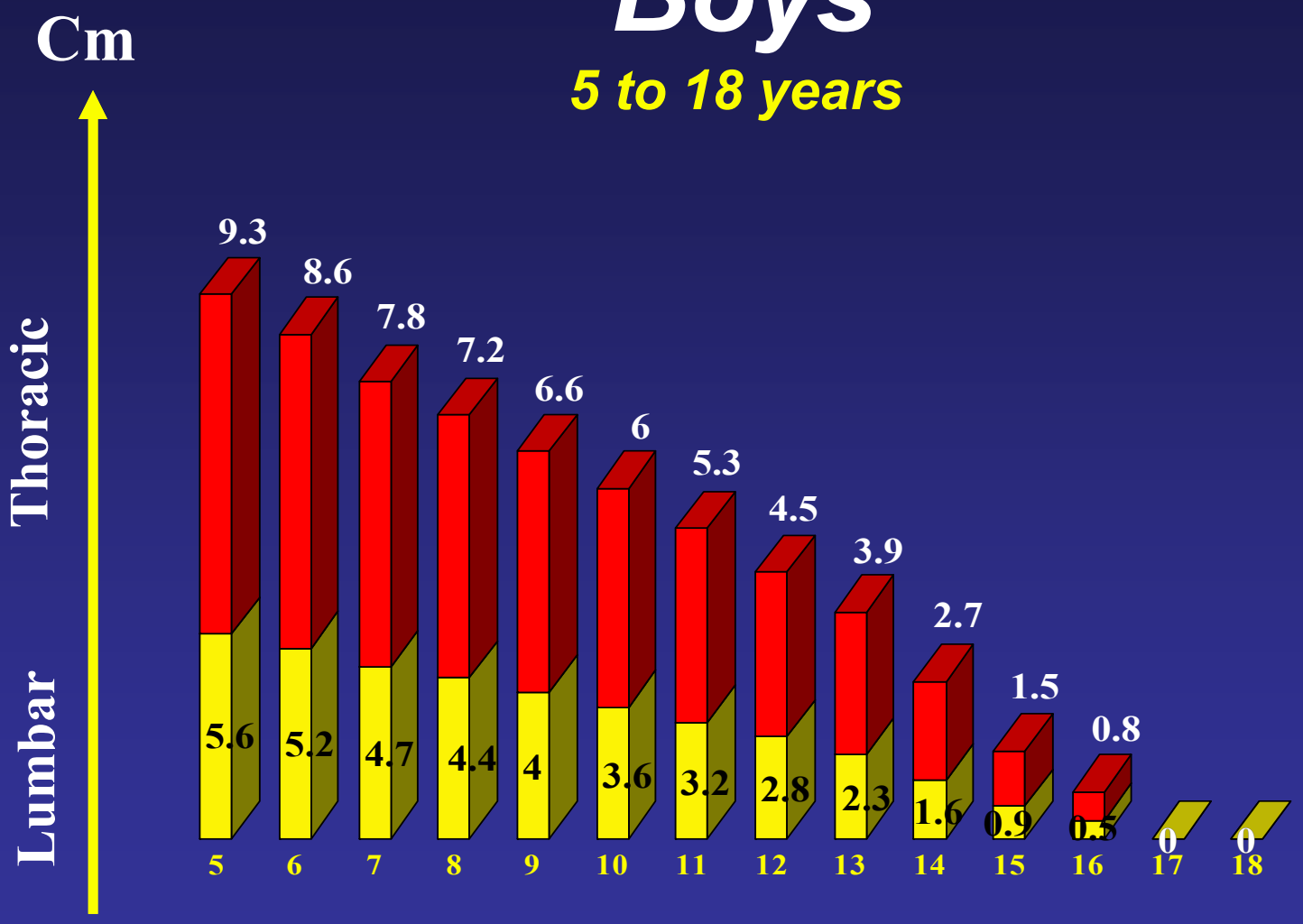
5 to 18 years



Dimeglio A, Bonnel F 1990, Remaining Spinal Growth in Children

Boys

5 to 18 years



Dimeglio A, Bonnel F 1990, Remaining Spinal Growth in Children

Conclusions

No definite evidence (myth) that distraction at 6 month intervals is ideal but frequent distractions (truth) appears to give best results with respect to:

- Spinal deformity correction
- Spinal growth (“driving the spine”)
- Increased complications


Thank You