

*4th Annual ICEOS Meeting 2010
Toronto, ON
19-20 Nov 2010*

Early Onset Scoliosis: The Value of Serial Risser Casts

**George H. Thompson, MD, Sean Waldren,
MD, Jochen Son-Hing, MD, FRCS(C),
Connie Poe-Kochert, RN, CNP
Rainbow Babies and Children's Hospital
Case Western Reserve University
Cleveland, Ohio, USA**





***University Hospitals Case Medical Center
Cleveland, OH***



Author Disclosure Information

Presenter: George H. Thompson, MD
Unpaid Consultant
OrthoPediatrics
SpineForm

Co-Authors: Sean Waldren, MD,
Connie Poe-Kochert, RN
Jochen P. Son-Hing, MD } None



Early Onset Scoliosis

**Spinal deformity occurring in children
5 years of age or less**

Management is challenging

- **Bracing – usually ineffective**
- **Fusion – inappropriate**
- **Growing rods – high complication rate**



Serial Risser Casts

Possible “bridge” treatment option in EOS

- Deformity control in young children
- Delay need for growing rods and their associated complications



Protocol

RBCH Pediatric Orthopaedic Spine Database Indications for Risser casting (1999-2010)

- Very young children
2 – 5 years of age
- Progressive deformity
 $\geq 25^\circ$ with $\geq 10^\circ$ documented progression
- Failed orthotic management



Technique

- Cast applied under general anesthesia (outpatient)
- Pediatric spica cast table
- Traction – head and ankles
- Well molded Risser cast
- Large abdominal window

Post – cast protocol

- Cast change at 3 – 4 month interval for 2 – 3 years



Risser Cast Application in EOS





Longitudenal traction





Iliac mold





Trimming





Infantile idiopathic scoliosis - Risser cast



Patients

Pediatric Orthopaedic Spine Database

- 19 patients – serial Risser casts
- 16 females; 3 males
- Diagnoses

Idiopathic infantile / juvenile 9

Syndromic 5

Neuromuscular 5

Congenital 0



Results

**Mean age at initial cast 3.7 ± 2.3 years
(range, 1 – 8 years)**

**Major curve at initial cast $74 \pm 18^\circ$
(range, 40 – 118 °)**

**Months in cast 15.8 ± 8.9 months
(range, 4 – 35 months)**

**Major curve at treatment change $49 \pm 27^\circ$
(range, 13 – 112°) – 15 patients**



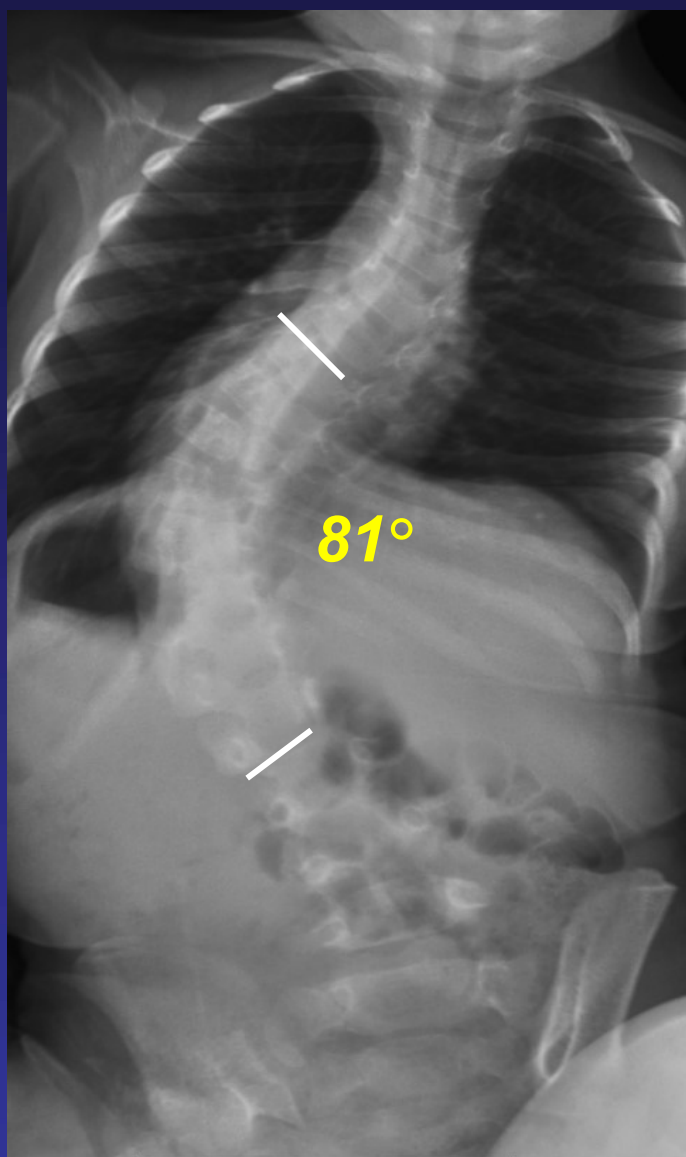
Current results

- Still in casts 4
- Growing rods 6
- Orthosis 5
- Lost to follow-up 2
- Fusion 2

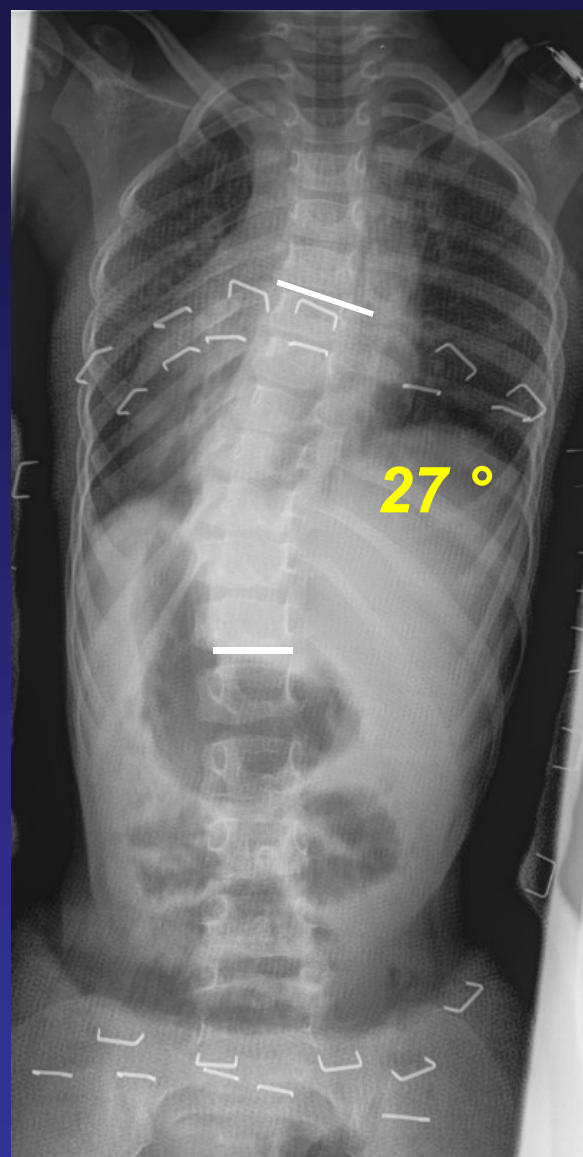
Complications

- Skin irritation (minor) 2
- Intolerable 1





Pre-cast 2+1 yrs 5-08



4+5 yrs 9-10

KL IIS DOB 4-06



Conclusions

Serial Risser casts are an effective intermediate step in EOS treatment

- **Orthotic failure**

Delays need for growing rod surgery

May allow return to orthotic management at a later juvenile age group

Well tolerated by patients and families

Minimal complications







Pre-cast 2+1 yrs 5-08



4+5 yrs 9-10

KL IIS DOB 4-06





Risser cast application

