

# **Serial Casting for Infantile Idiopathic Scoliosis: When Can a Cure be Achieved?**



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# Background

- The goal of casting in IIS is to grow the spine straight and delay taptic
- Current lack of empirical studies on predictors of success of casting



# Objective

To determine the incidence and predictors of success of Mehta casting in infantile idiopathic scoliosis





# Methods

- **Consecutive series of IIS treated with Mehta casting**
- **Single institution**
- **Study period: 2001 – 2011**
- **Patient criteria**
  - Treatment before 3 years of age
  - Minimum 2 year follow-up after last cast
- **Radiographic review**
  - Major Cobb
  - RVAD
  - Rib phase
- **Medical records review**
  - MRI



# Methods: Group Classification

## Classification at 2 years after last cast

### 1. Radiographically cured

- Major Cobb  $< 10^\circ$

### 2. Clinically cured

- Major Cobb  $10 - 15^\circ$  without clinical deformity
- No active treatment (i.e. brace)

### 3. No cure

- Residual radiographic and clinical scoliosis
- Active or planned treatment



# Results: Patients

- 34 patients (19F/15M)
- 20.5 months at first cast
- 11.6 months in cast
- 5 casts for each patient
- **MRI**
  - No MRI – 1
  - Normal MRI – 29
  - Abnormal MRI – 4
    - Neurosurgical intervention: 1 – tethered cord
    - Observation : 3 – mild dilatation of the spinal cord in lower thoracic/conus level; syrinx at T2 level; and Chiari without syrinx



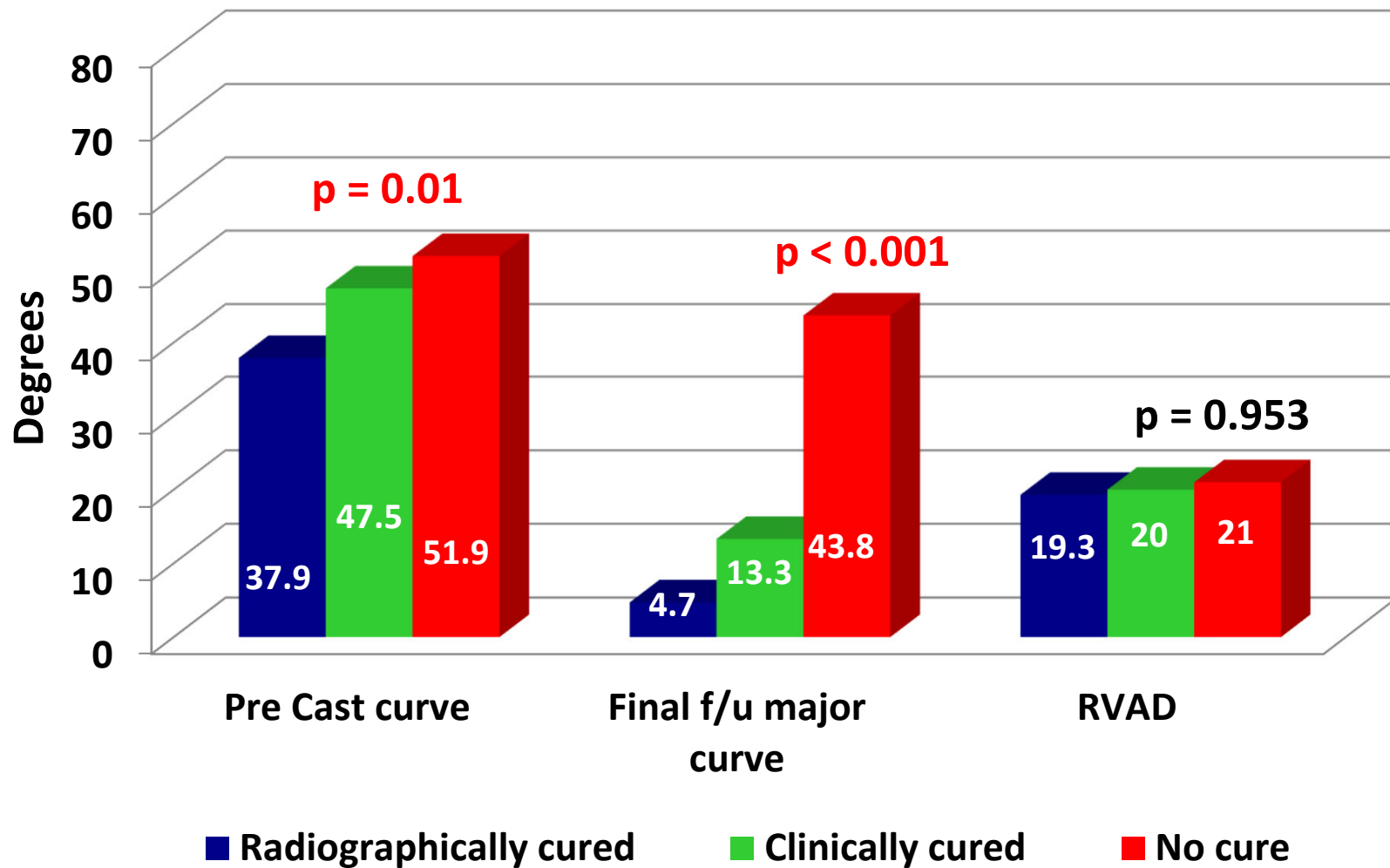
# Results: Outcome at 2 years



- **Radiographically cured – 9/34 – 26.5%**
  - Major Cobb  $< 10^\circ$
- **Clinically cured – 4/34 – 11.8%**
  - Major Cobb 10 to  $15^\circ$  without clinical deformity
  - No active treatment (i.e. brace)
- **No cure – 21/34 – 61.8%**
  - Residual radiographic and clinical scoliosis
  - Active or planned treatment

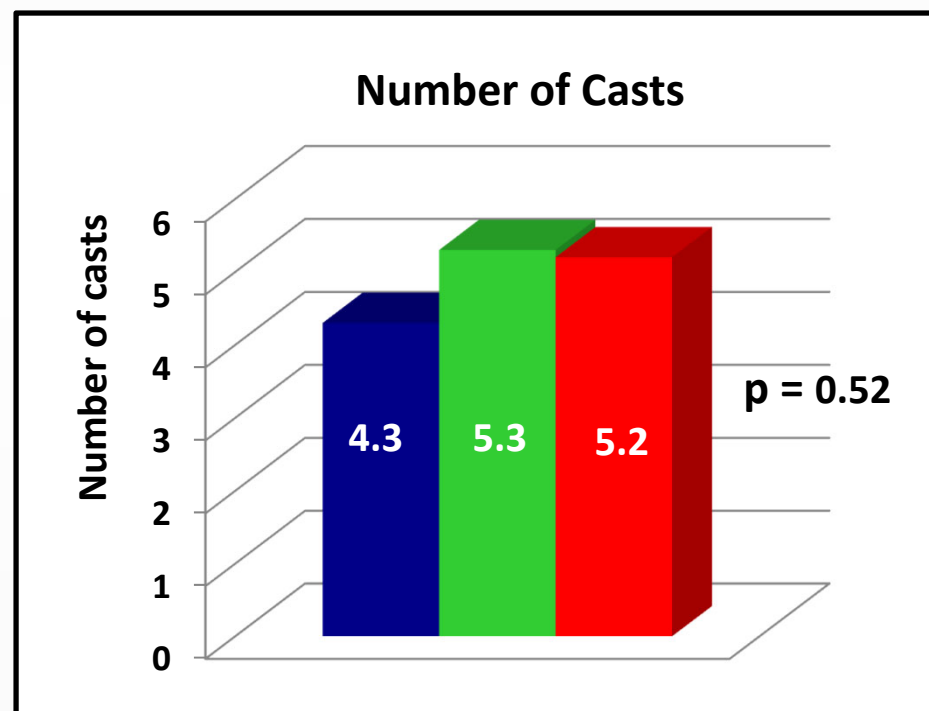
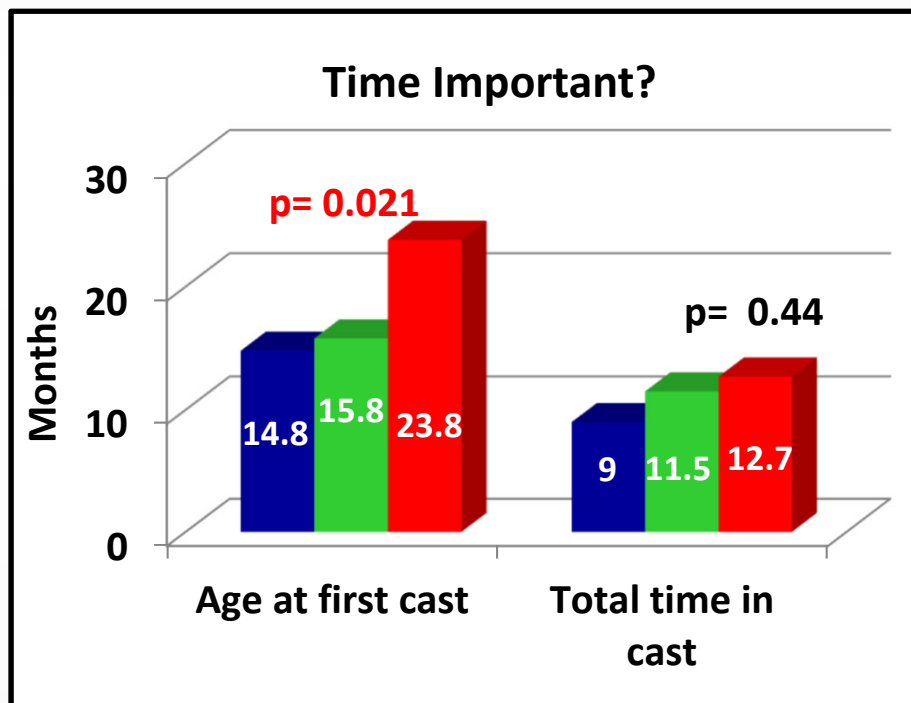


# Curve Size Difference





# In-Cast Time & Number of Casts



■ Radiographically cured ■ Clinically cured ■ No cure



# Results



	Radiographically cured	Clinically cured	No cure	p-Value
<b>N</b>	26.5% (9/34)	11.8% (4/34)	61.8% (21/34)	
<b>Pre cast curve (°)</b>	37.9 (30- 51)	47.5 (35- 56)	51.9 (33- 79)	<b>0.01</b>
<b>Final f/u curve (°)</b>	4.1 (1- 9)	9.5 (5- 16)	36.5 (15- 76)	<b>0.00</b>
<b>First cast age (mos)</b>	14.8 (7- 28)	15.8 (7- 27)	23.8 (9- 35)	<b>0.02</b>
<b>Time in cast (mos)</b>	9 (5- 14)	11.5 (6- 15)	12.7 (2- 34)	0.44
<b>Number of casts</b>	4.3 (3- 7)	5.3 (4- 7)	5.2 (2- 9)	0.54
<b>RVAD</b>	19.3 (14-31)	20 (16-28)	21 (6-61)	0.95
<b>Rib phase 1</b>	5(62.5%)	0	5(23.8%)	<b>0.04</b>



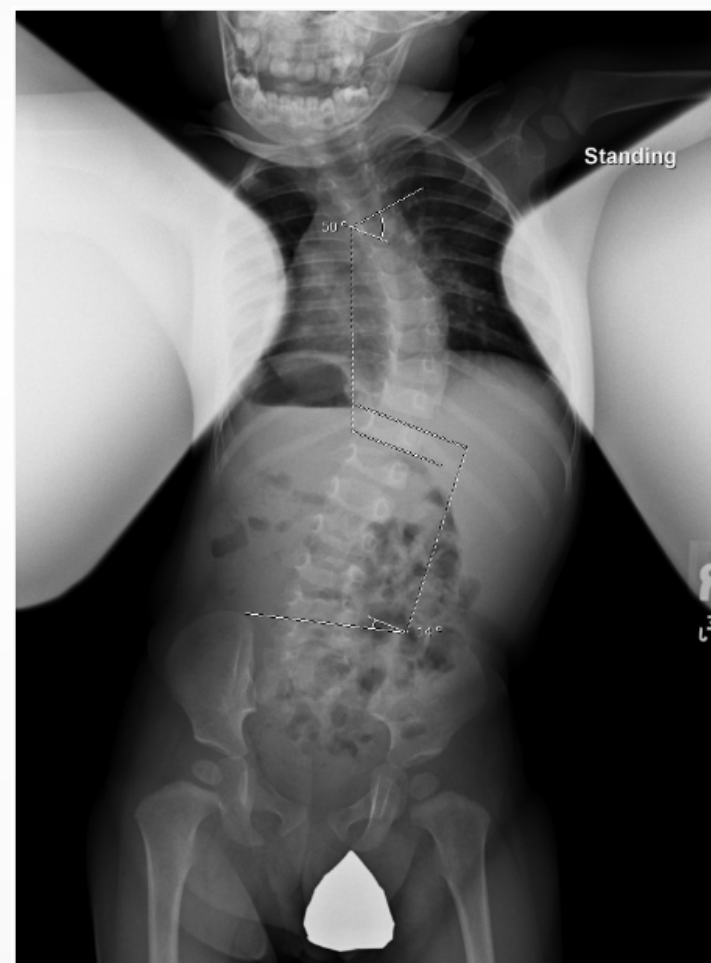
# Case Study: Radiographically Cured

## At presentation

- 13 months old male
- IIS
- Previous medical history: Chiari decompression
- Presented with 50° curvature
- No previous scoliosis treatment

## Treatment

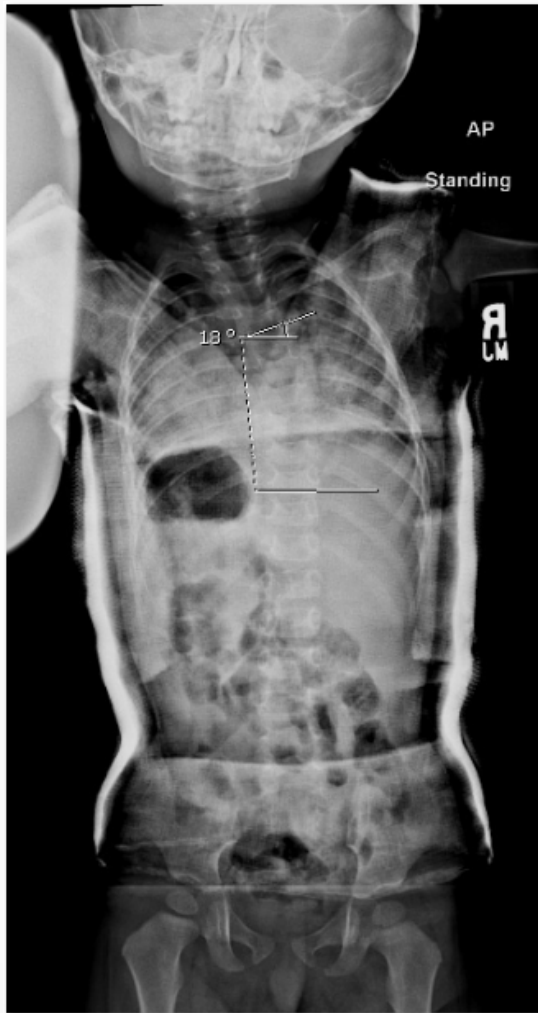
- 7 casts placed
- Total months in cast: 11
- No current active treatment



Precast – 13 months old



# Case Study: Radiographically Cured



**In cast – 17 months old**



**Immediate f/u after last cast – 28 months old**



**Most recent follow-up – 4 years old**



# Case Study: Clinically Cured

## At presentation

- 15 month old male
- Previous medical history: none
- MRI: no intraspinal abnormality
- Presented with 34° curvature
- No previous scoliosis treatment

## Treatment

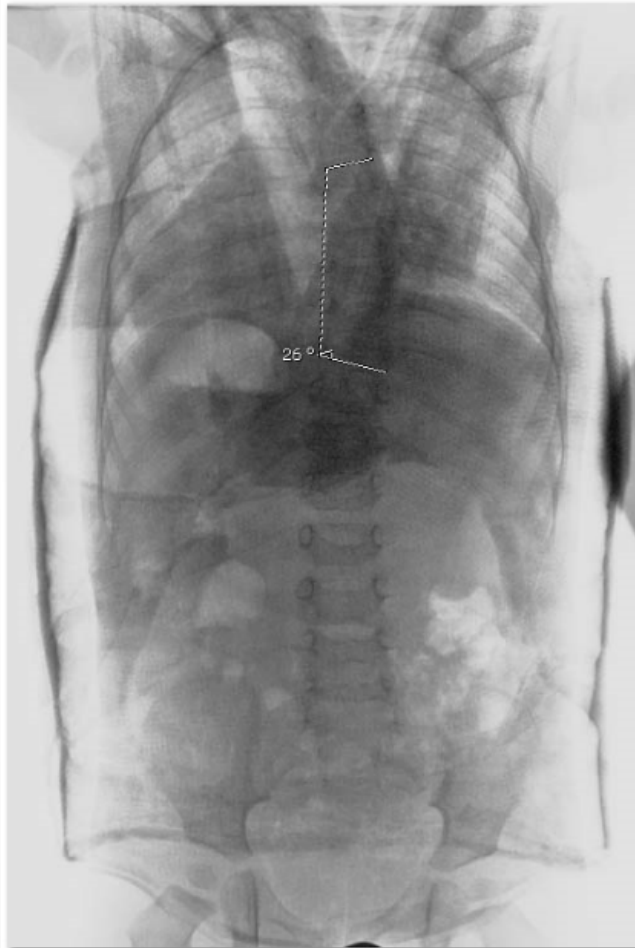
- 6 casts placed
- Total months in cast: 13
- Current treatment: observation only



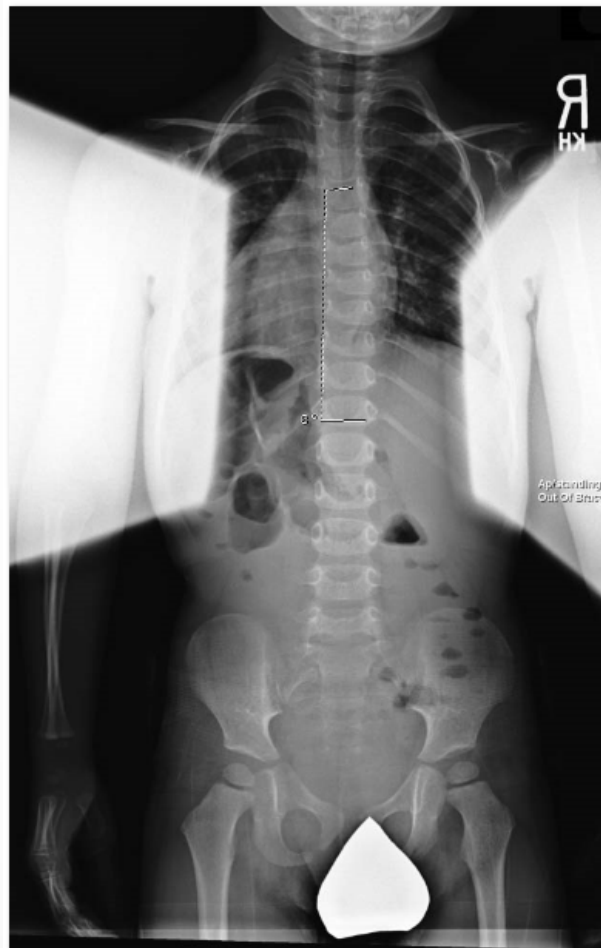
**Precast – 12 months**



# Case Study: Clinically Cured



**In cast – 19 months  
26°**



**Immediate f/u after  
last cast – 33 months  
0°**



**Most recent – 8 years old  
15°**



# Conclusion

- **Mehta casting is a viable technique to “grow the spine straight”**
  - 38.2% (13/34) avoided the need for further intervention
- **Success is correlated to**
  - Smaller preoperative major curve
  - Younger age at first cast
  - Phase 1 rib classification