



# Treatment Outcomes in Early Onset Scoliosis

## *Did We Help This Child?*

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Associate Chief, Division of Pediatric Orthopaedic Surgery  
Ana Lucia Associate Professor of Orthopaedic Surgery  
Childrens Hospital Of New York  
Columbia University Medical Center



Morgan Stanley  
**Children's Hospital of New York-Presbyterian**  
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Columbia Orthopaedics  
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# Case Presentations: Questions for Panelists

- What would you do ?
- What evidence (if any) supports your decision?
- Did we help this child ?
  - Natural hx
  - Life expectancy
  - Pulmonary
  - Quality of Life
  - Other

# Case One

18 mo Jehova's witness with HGPPS  
(horizontal gaze palsy with progressive scoliosis)



Failed brace/ cast

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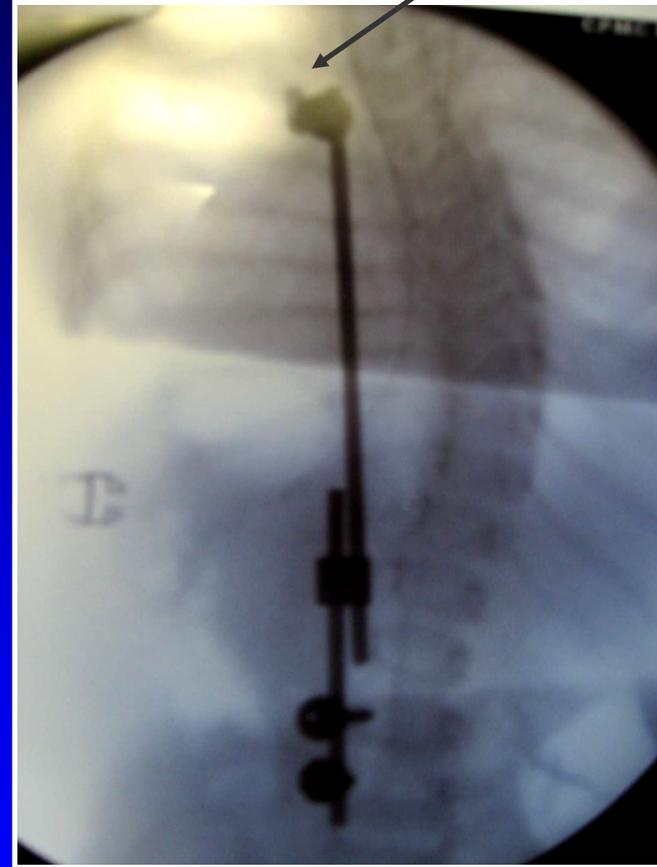
18 mo with progressive scoliosis



Pedicle Screws- L3 and L4

# Intra Op Correction with rib/pedicle hybrid

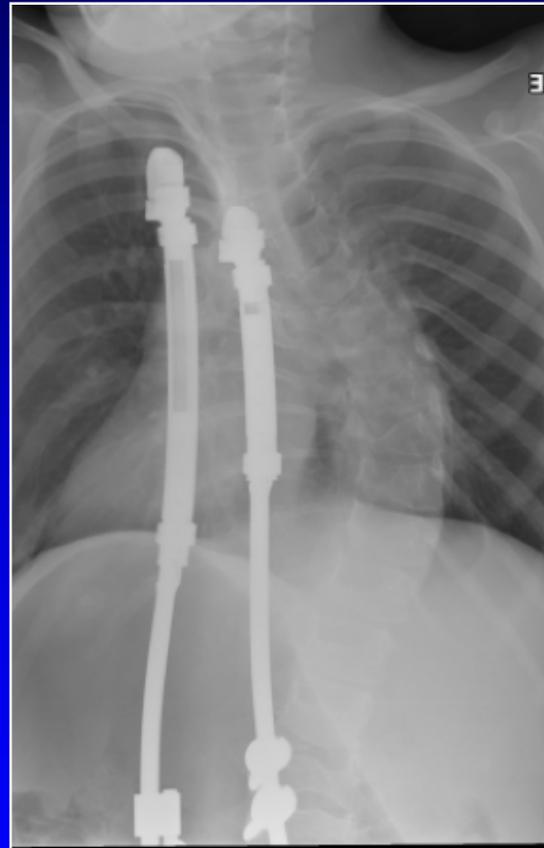
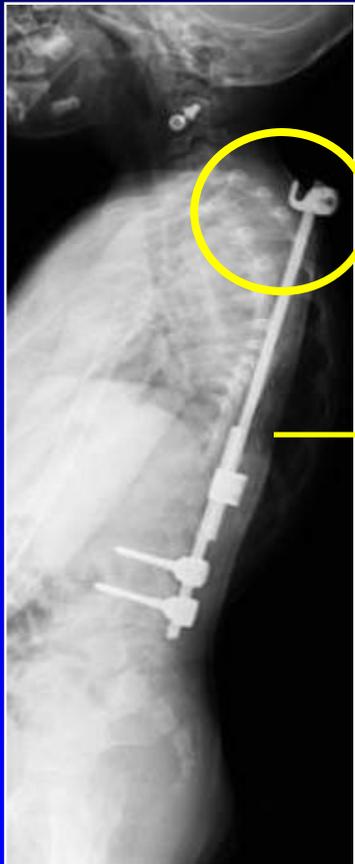
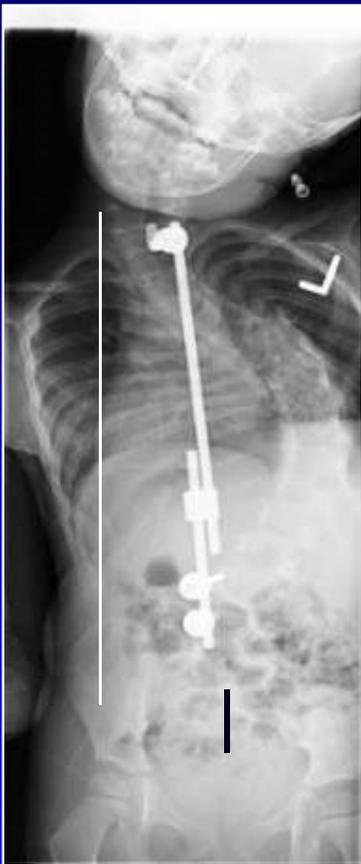
Avoid Spine  
When Possible



# One Week Post OP



# 2.5 years post op: Conversion to VEPTR Now 4 years post op



Next Case



46 deg

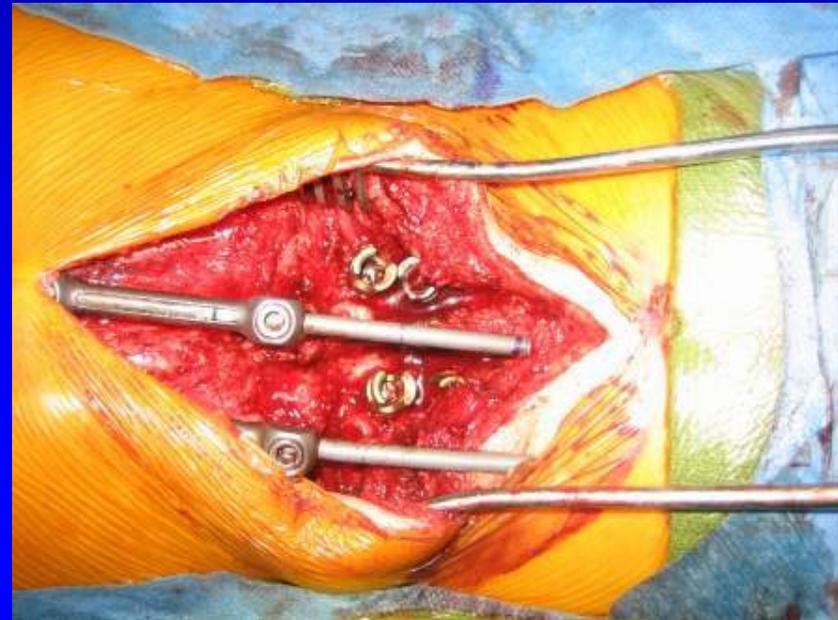
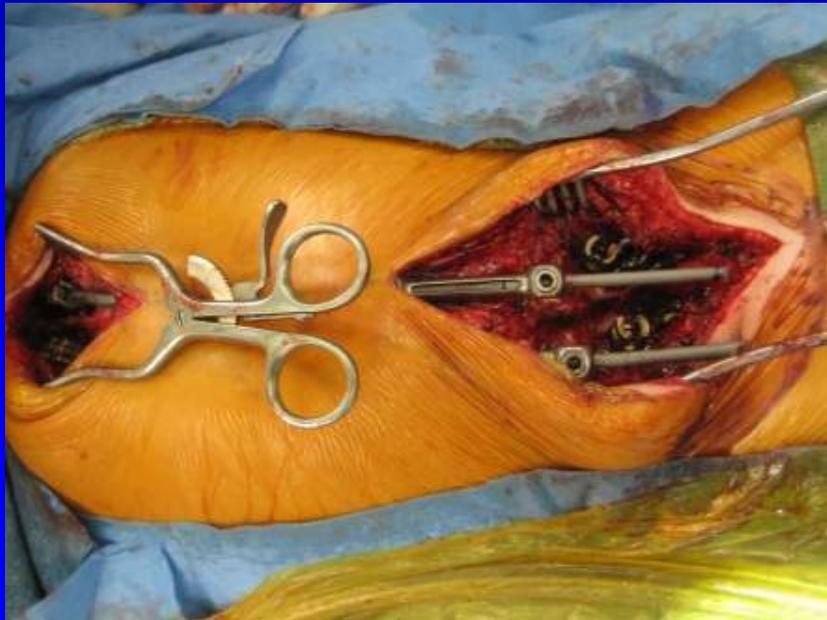
96 deg

**FC: 2 yo; CMD; Failed Brace  
Significant Kyphoscoliosis**

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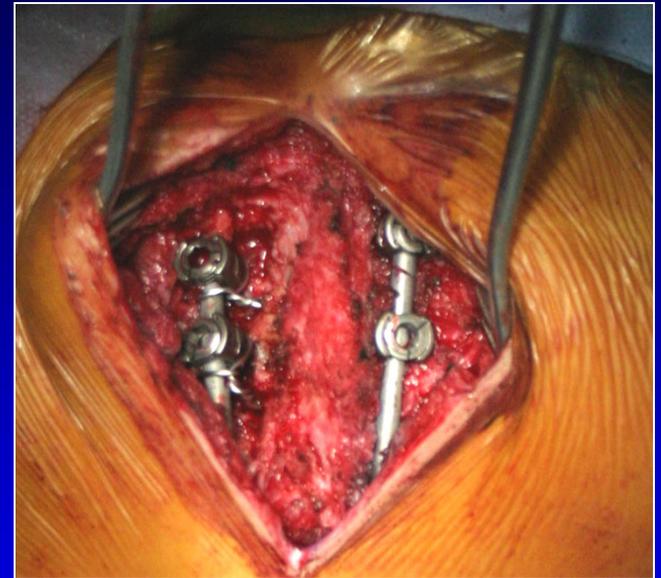
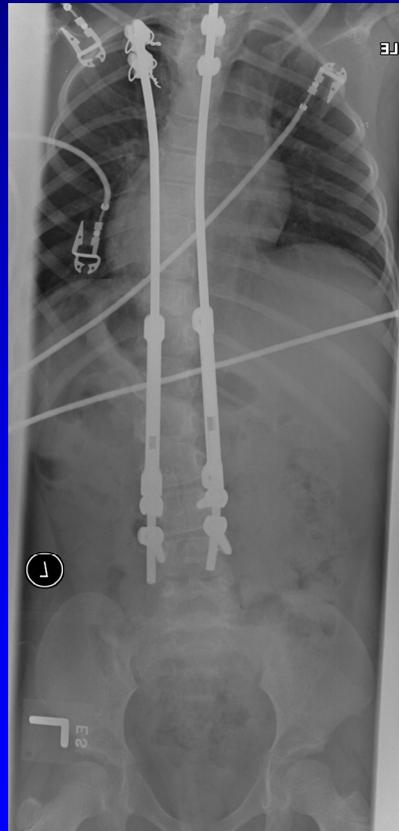
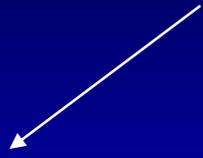
# Growth Rod After Halo



# Growing Rods for Kyphoscoliosis

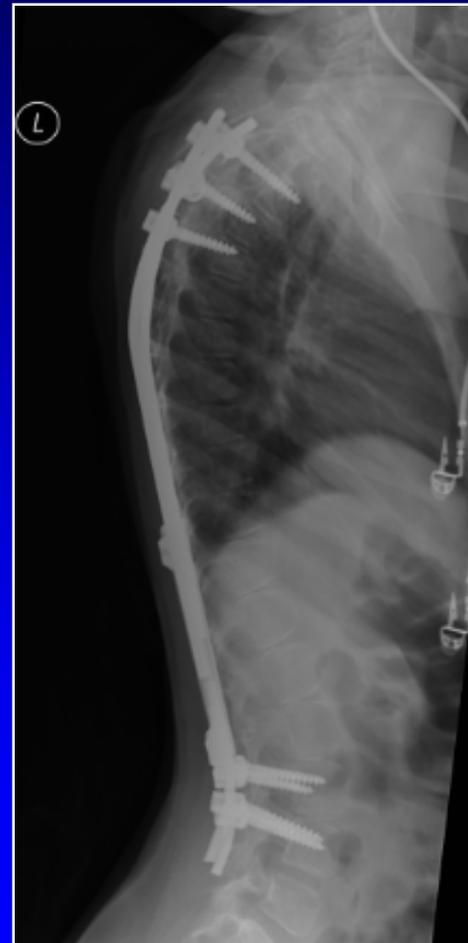
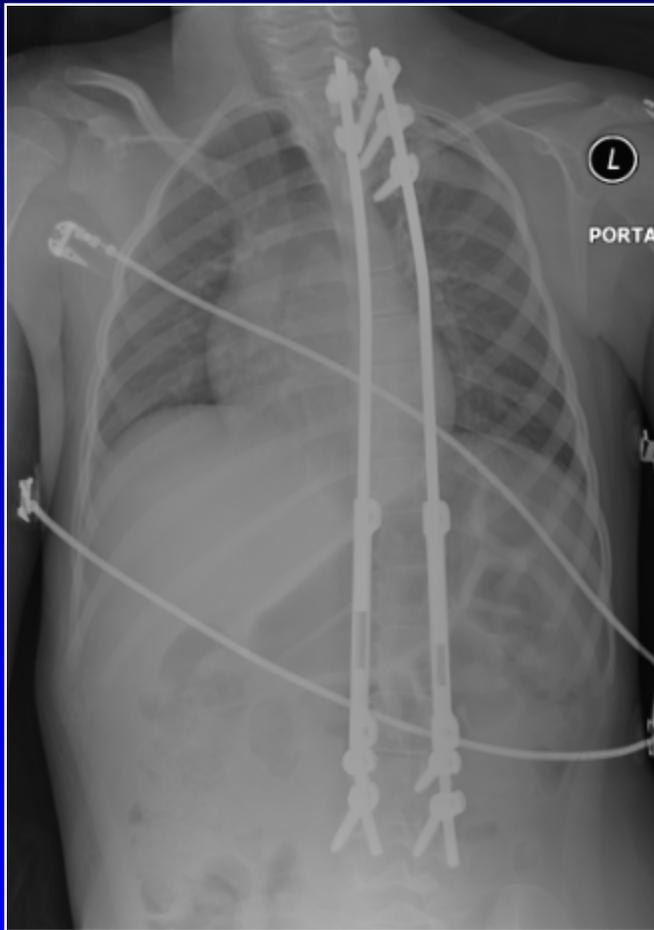


# Failed Claw: Revision to Proximal Rib Construct



4.5 y/o

# Failed Rib: Change to Proximal Screws @ 6 yo

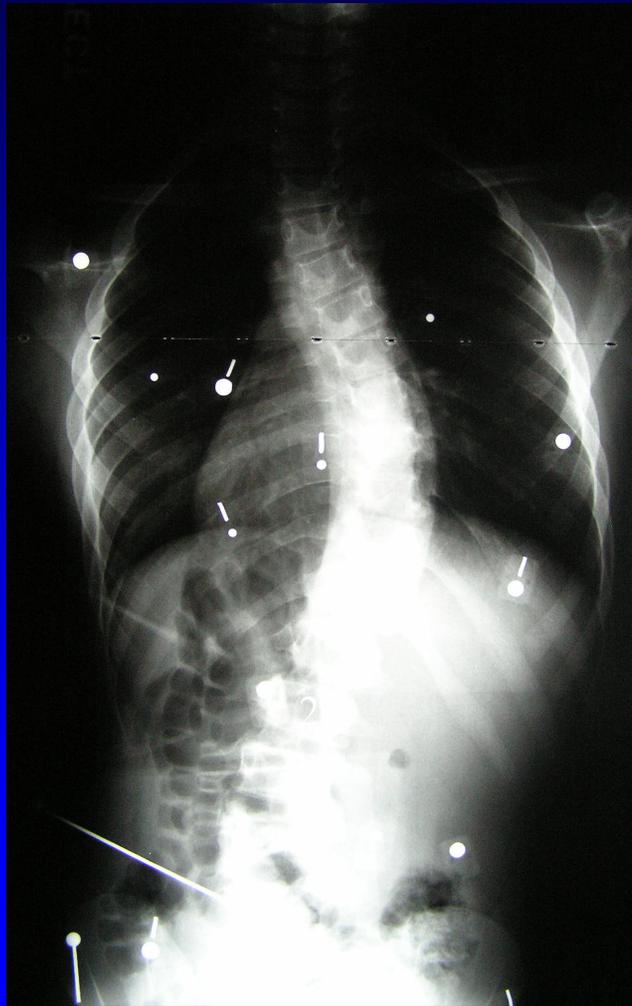


PJK

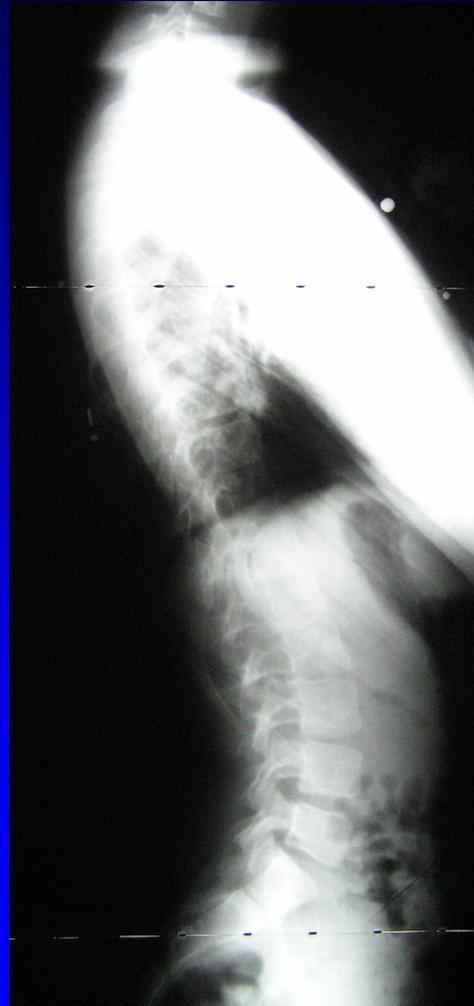
Next Case

# 9+8 years G

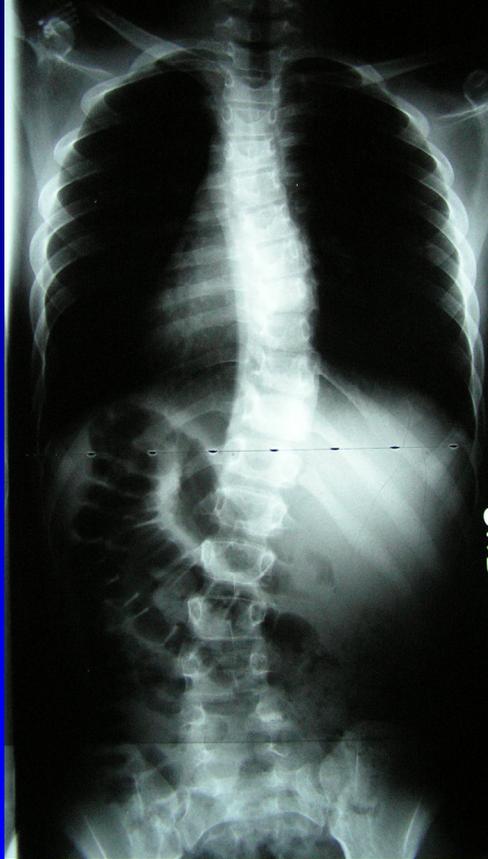
55°



24°



Supine



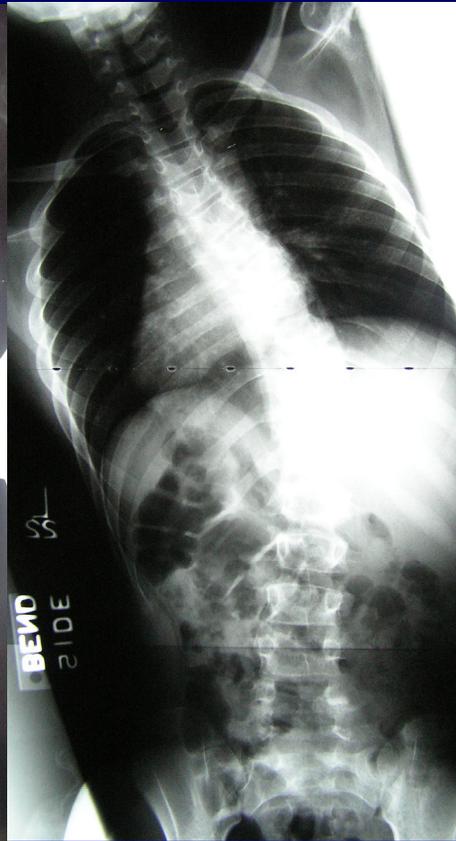
34°

Push prone

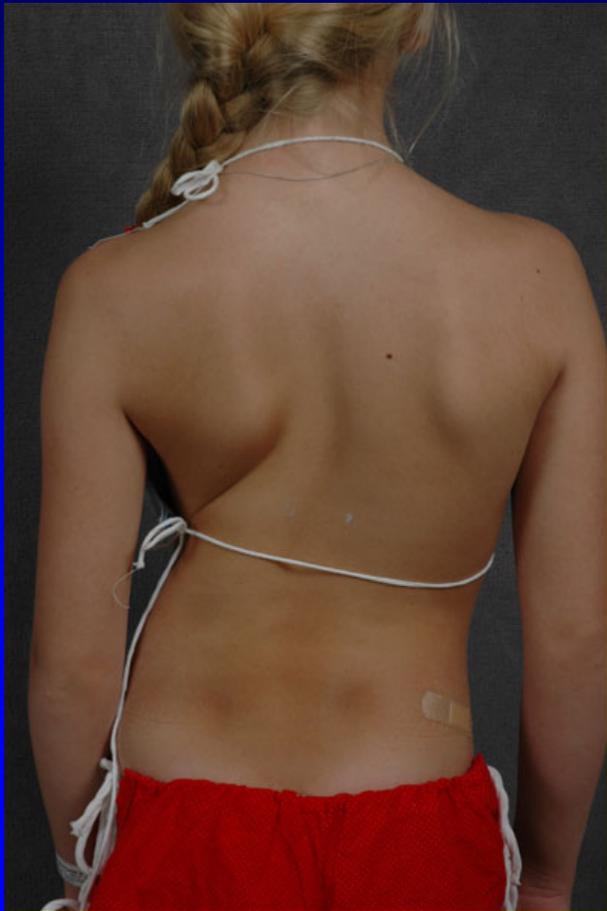


10°

Sidebenders



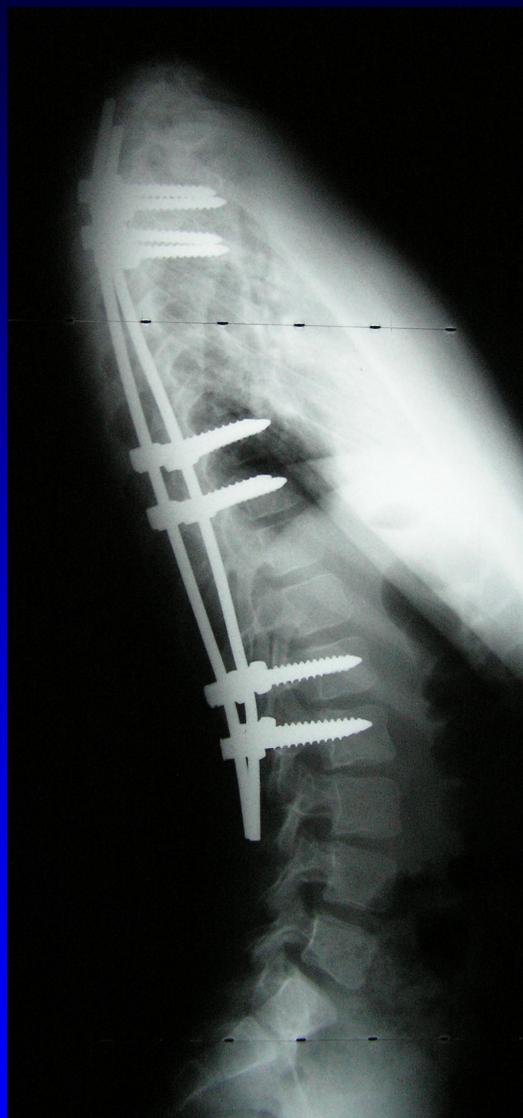
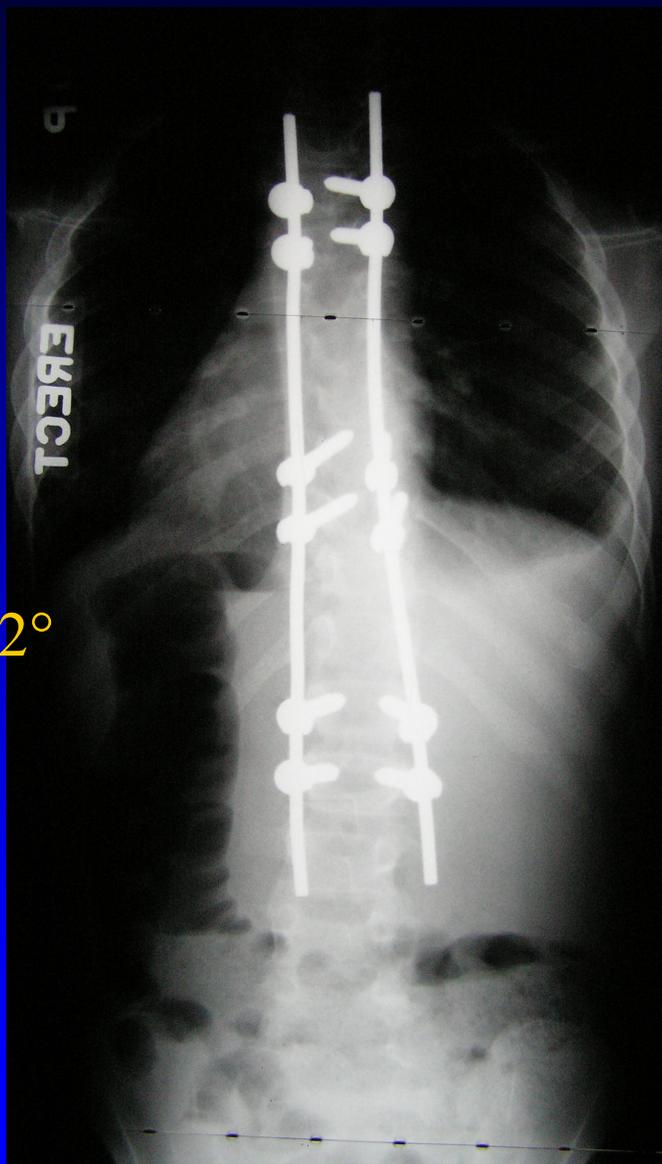
17°



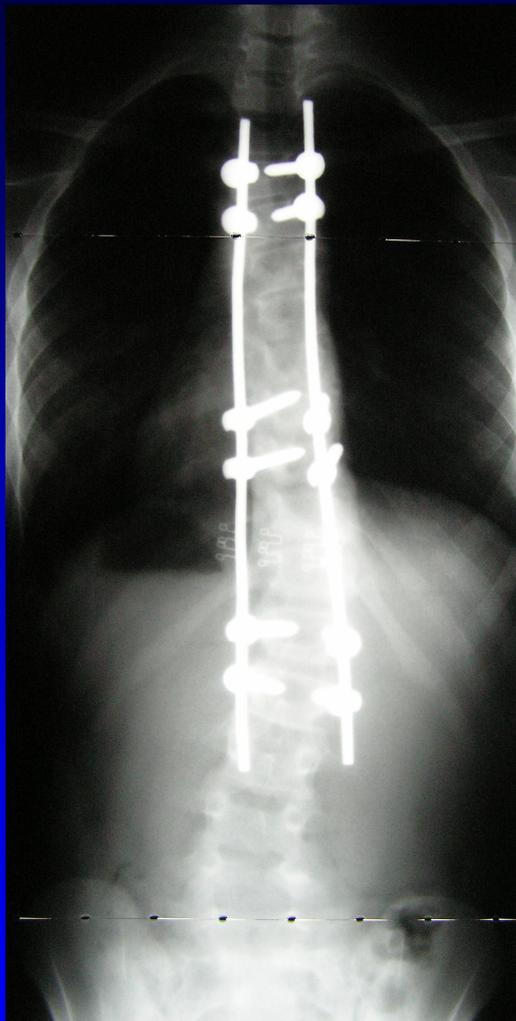
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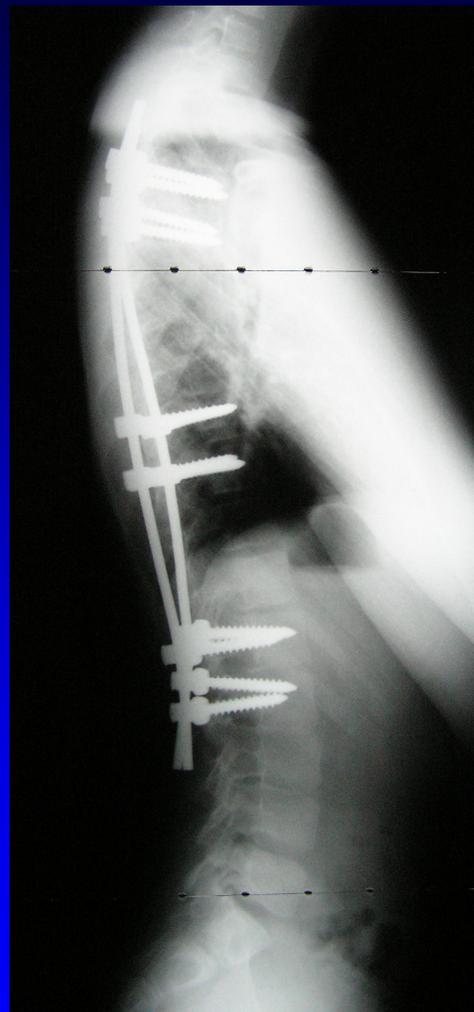
# SHILLA



1 year postoperative



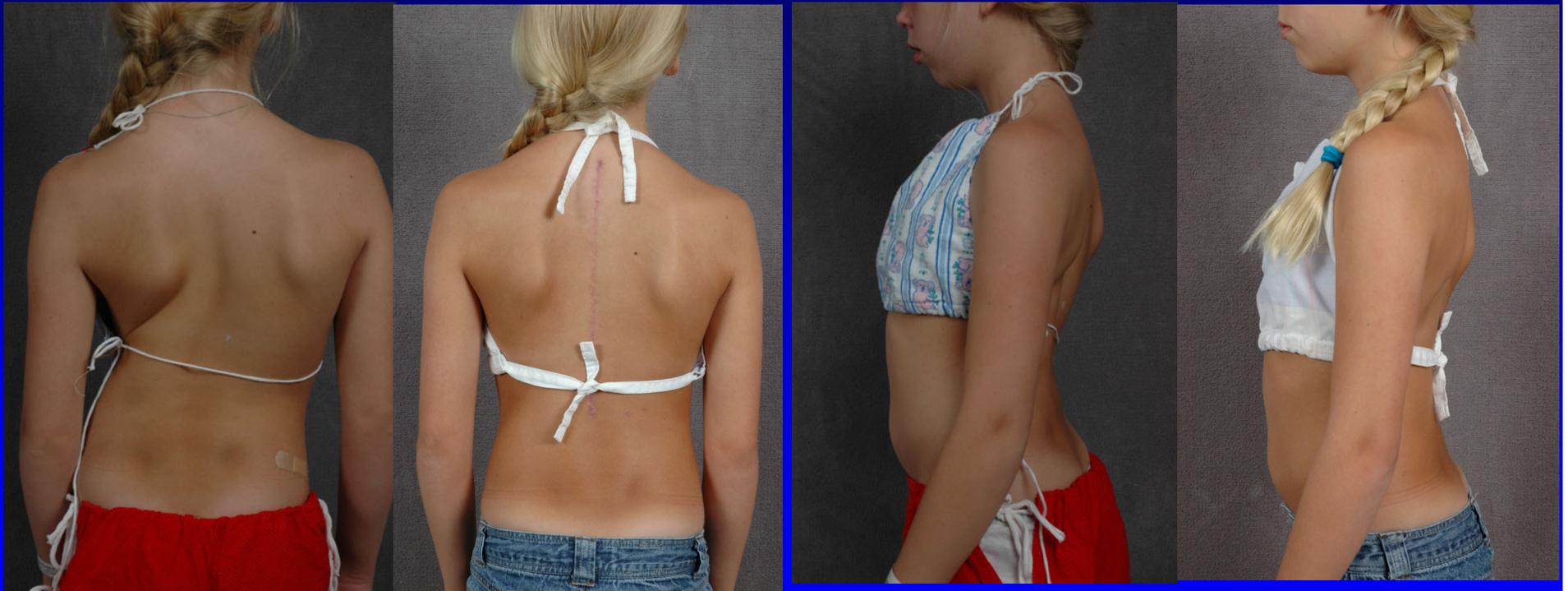
16°



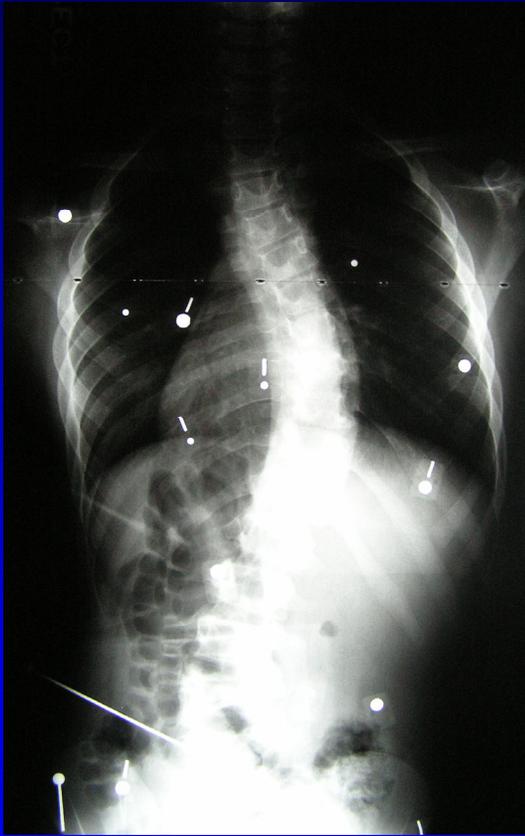
25°

2 months  
postop

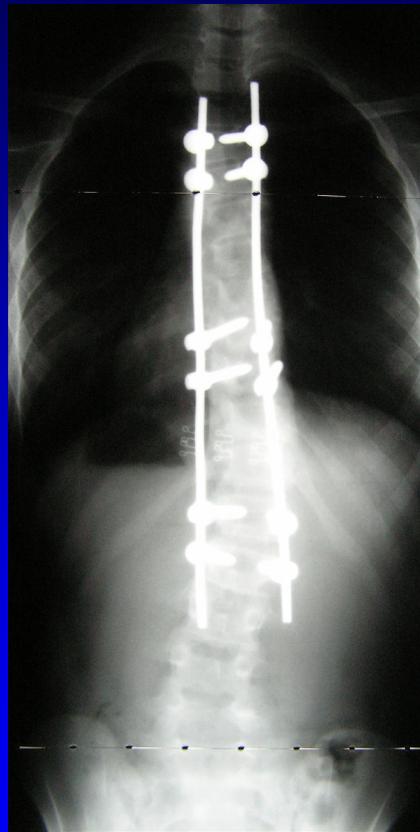
2 months  
postop



# 1 year postoperative



55°



16°



24°



25°

# 1 year postoperative

- Standing height

- Preop 148.0 cm

- 4 month f/u 152.0 cm

- 1 year f/u 156.8 cm

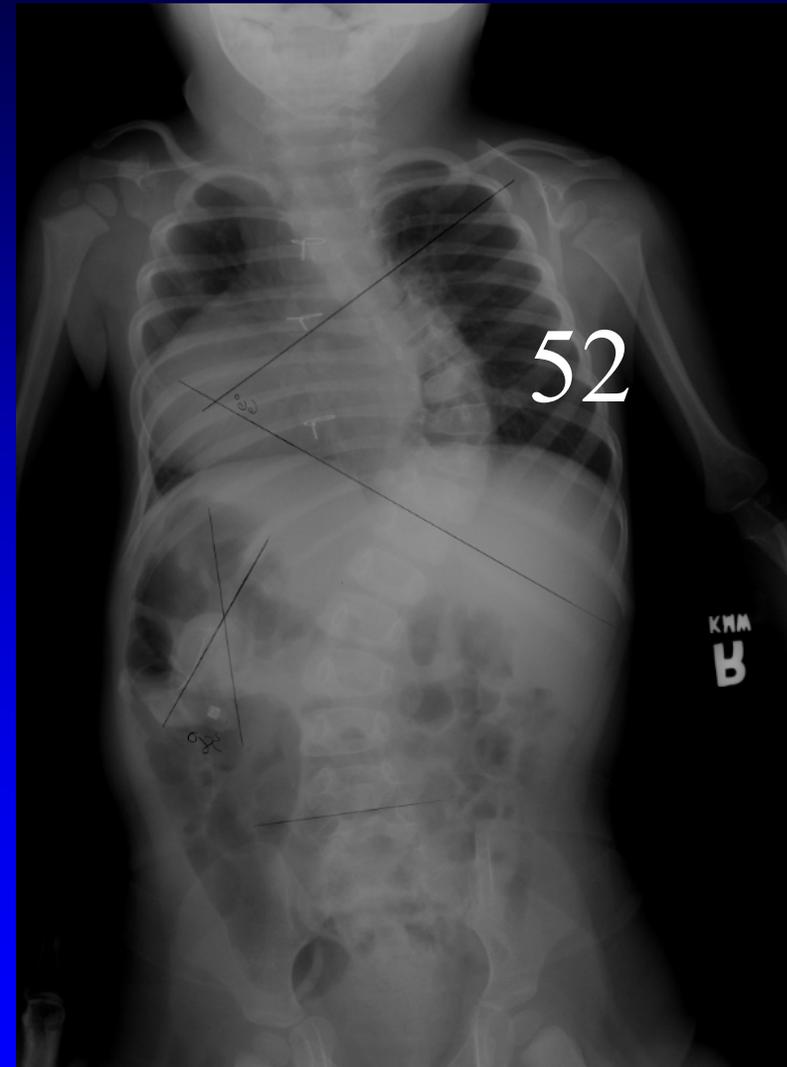
} 8.8 cm increase  
postoperative

Next Case

April 2005

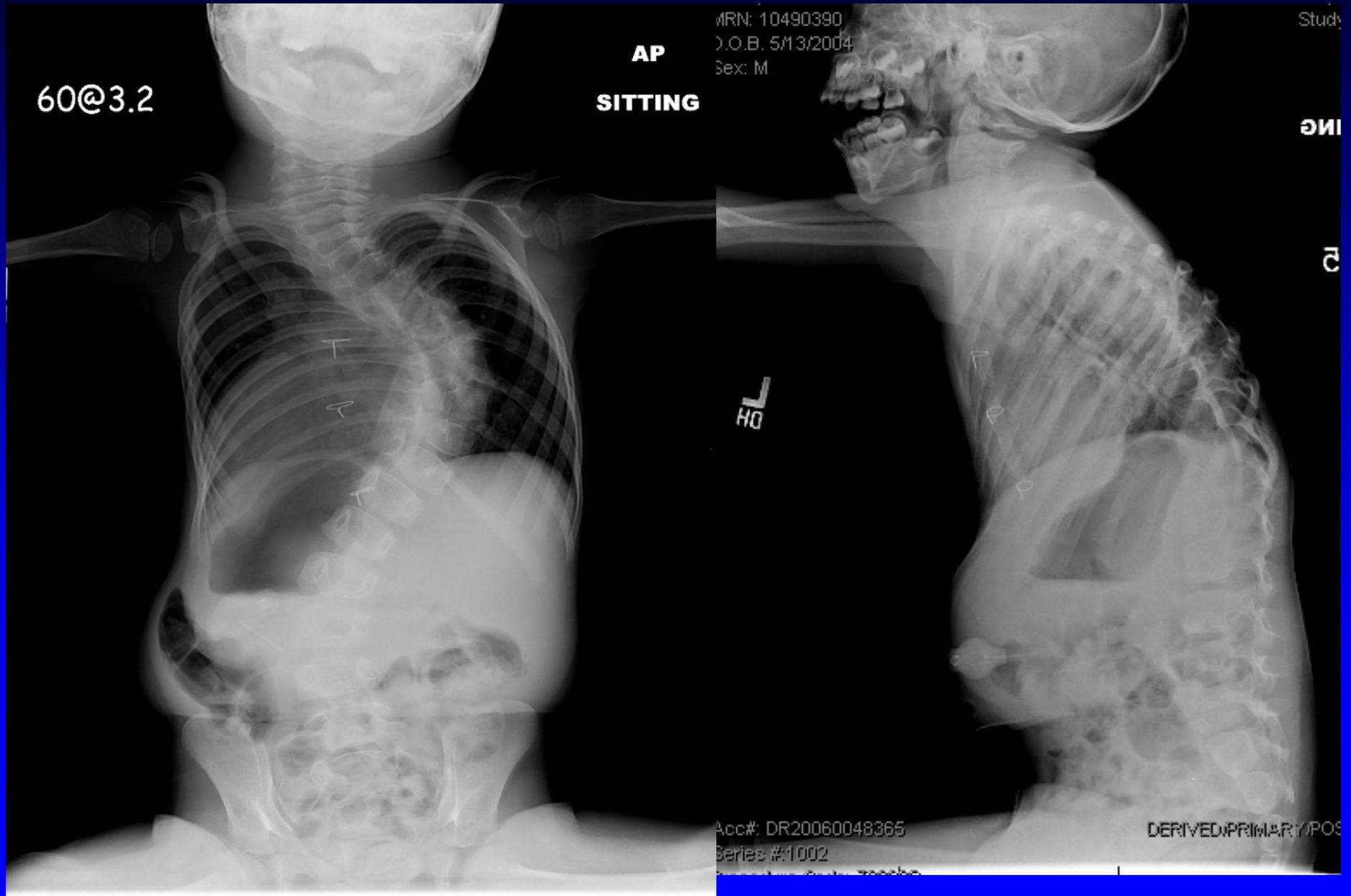


October 2005



2yo, thoracogenic scoliosis

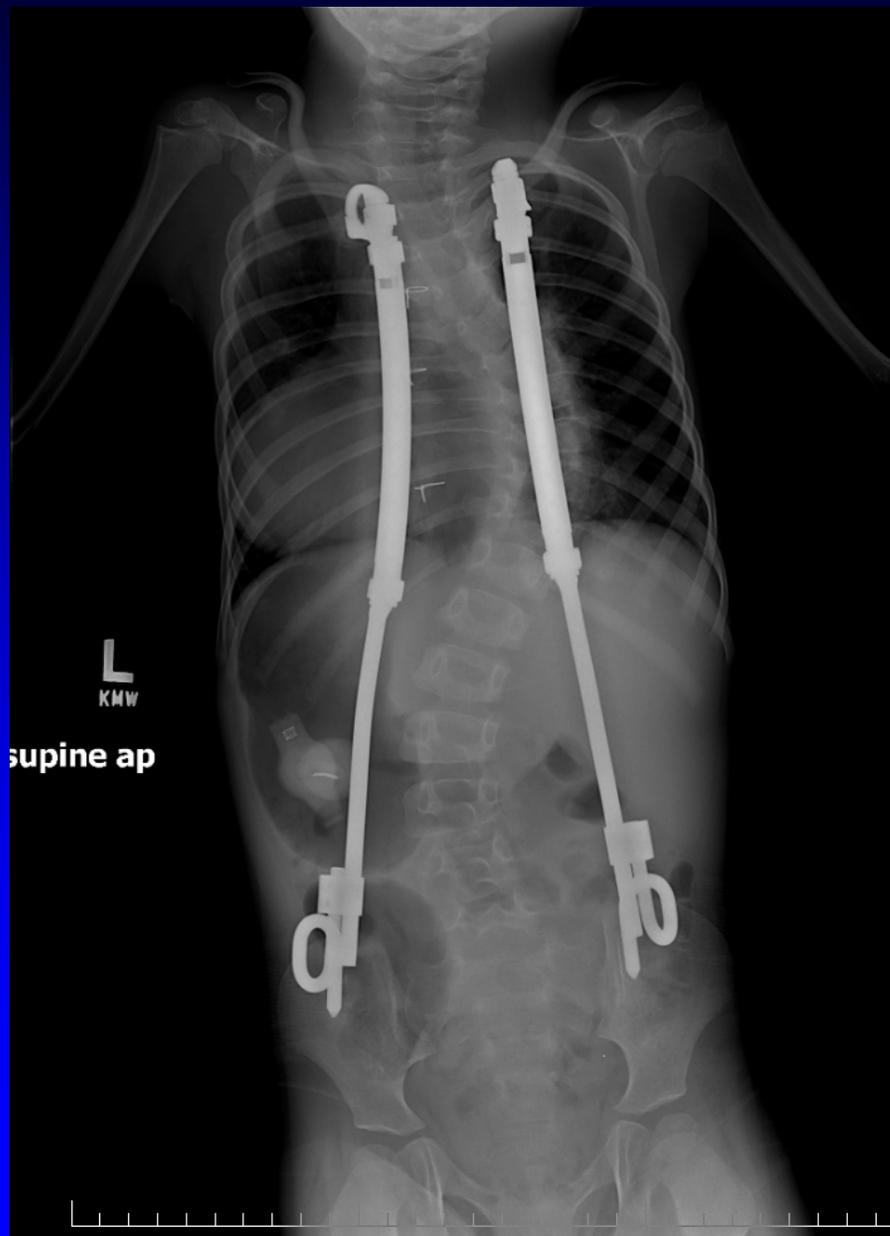
November 2006



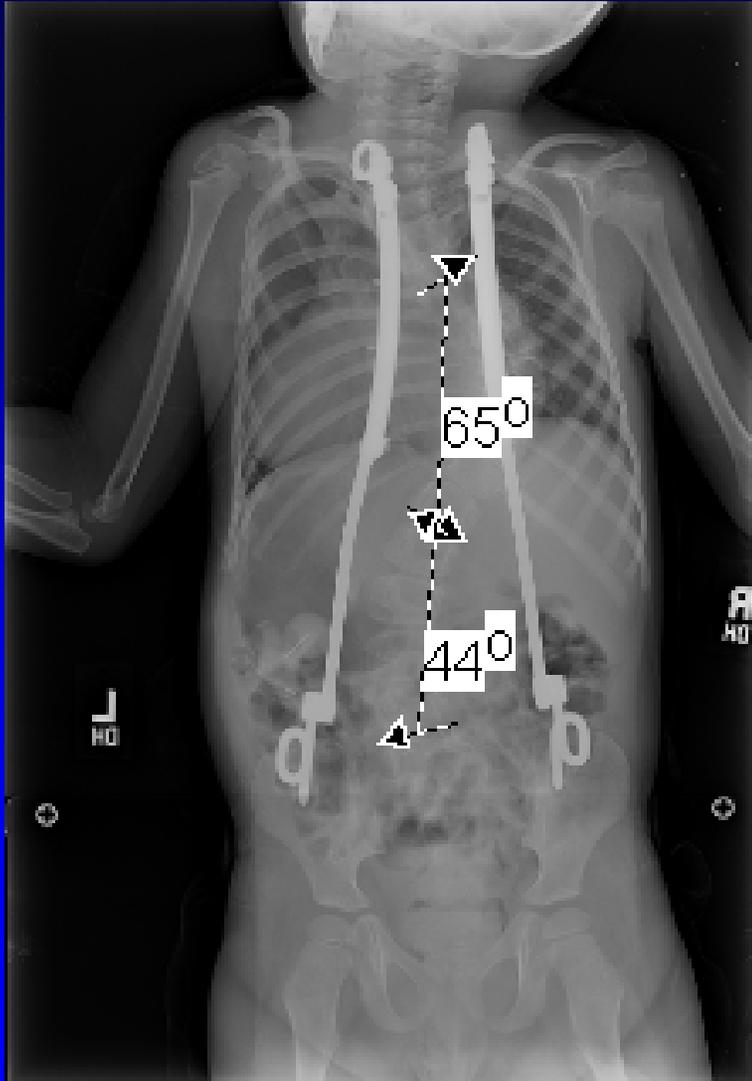
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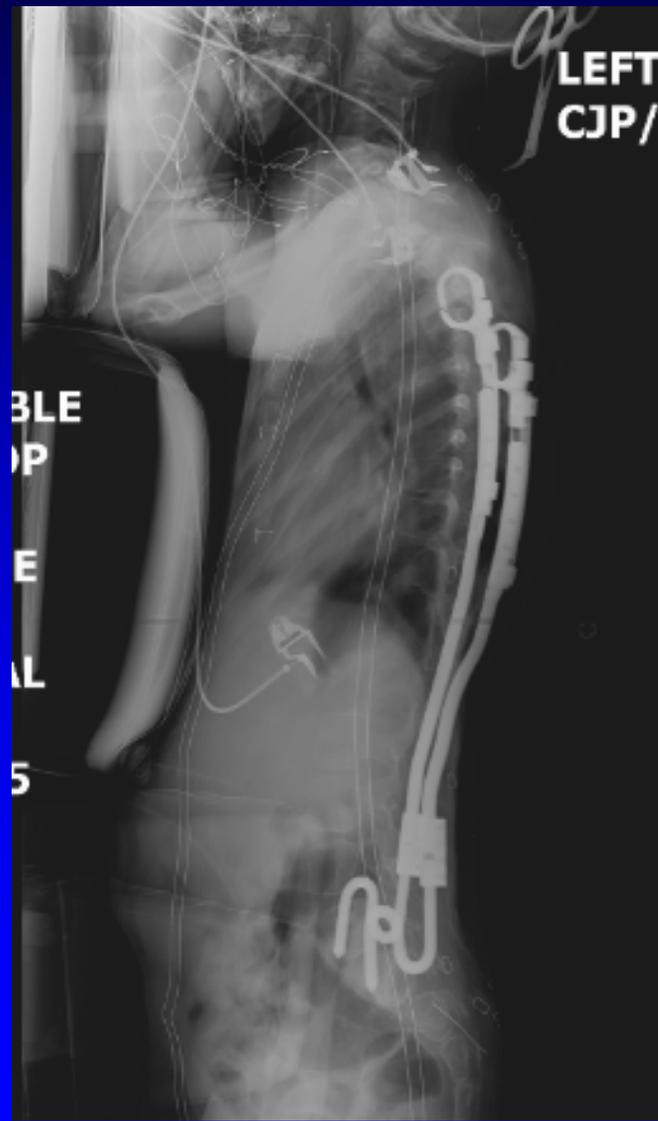
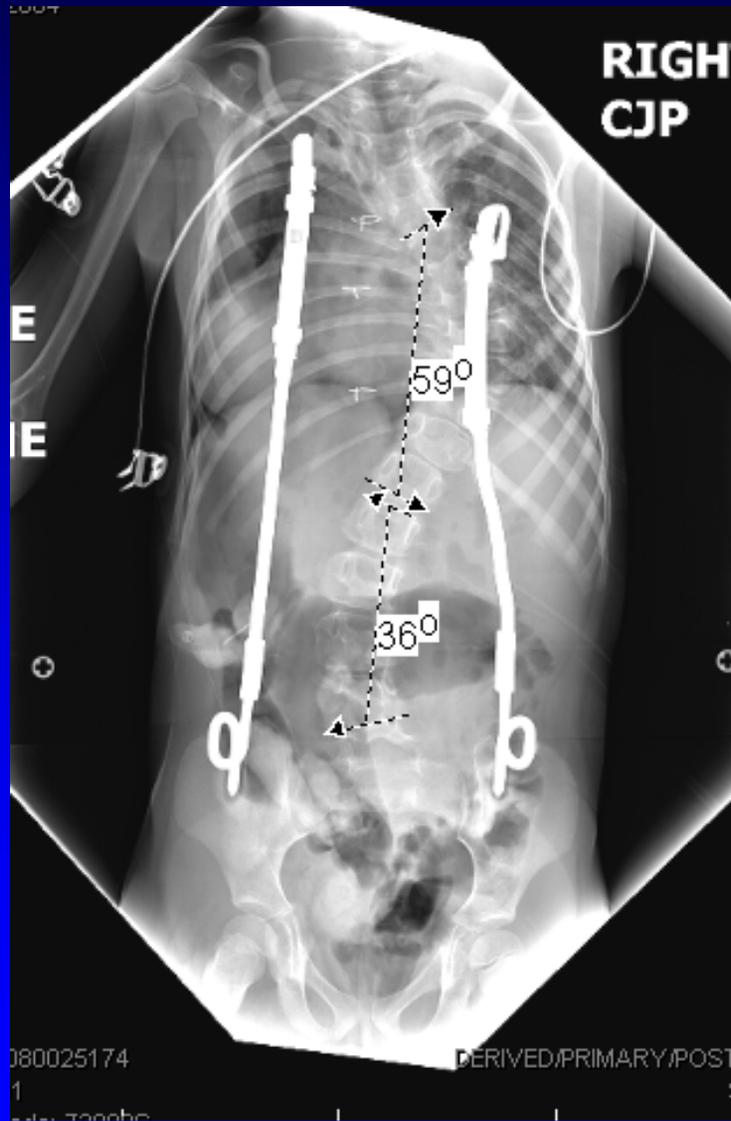
December 2006



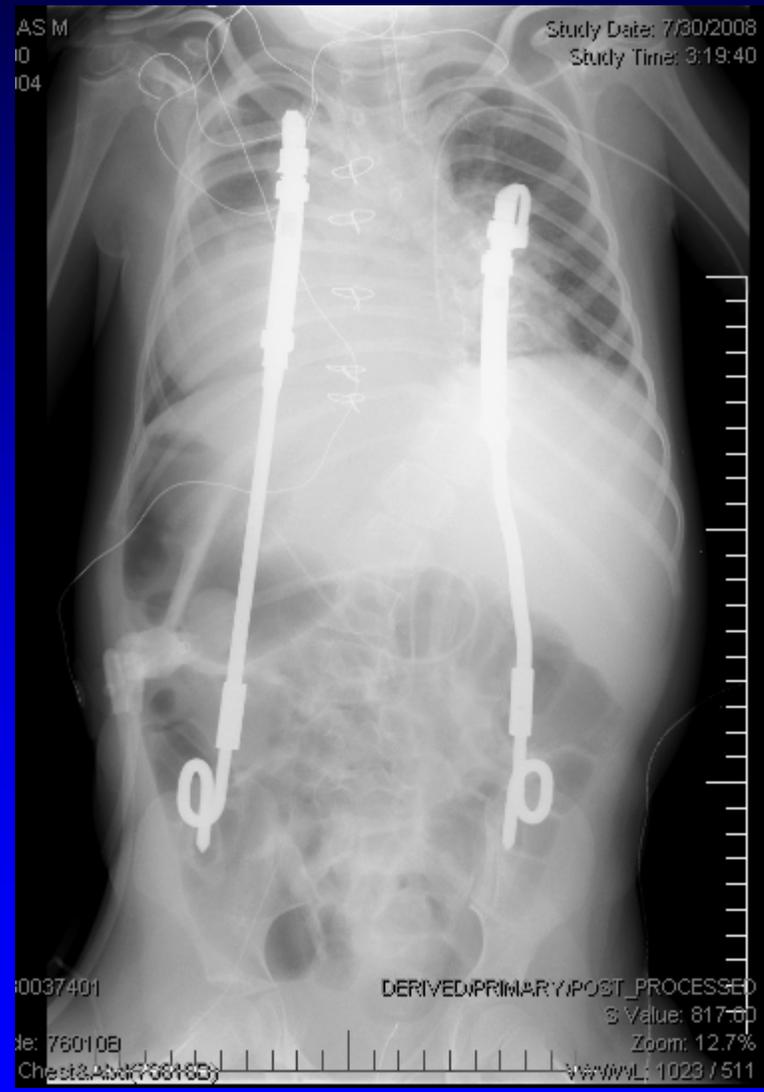
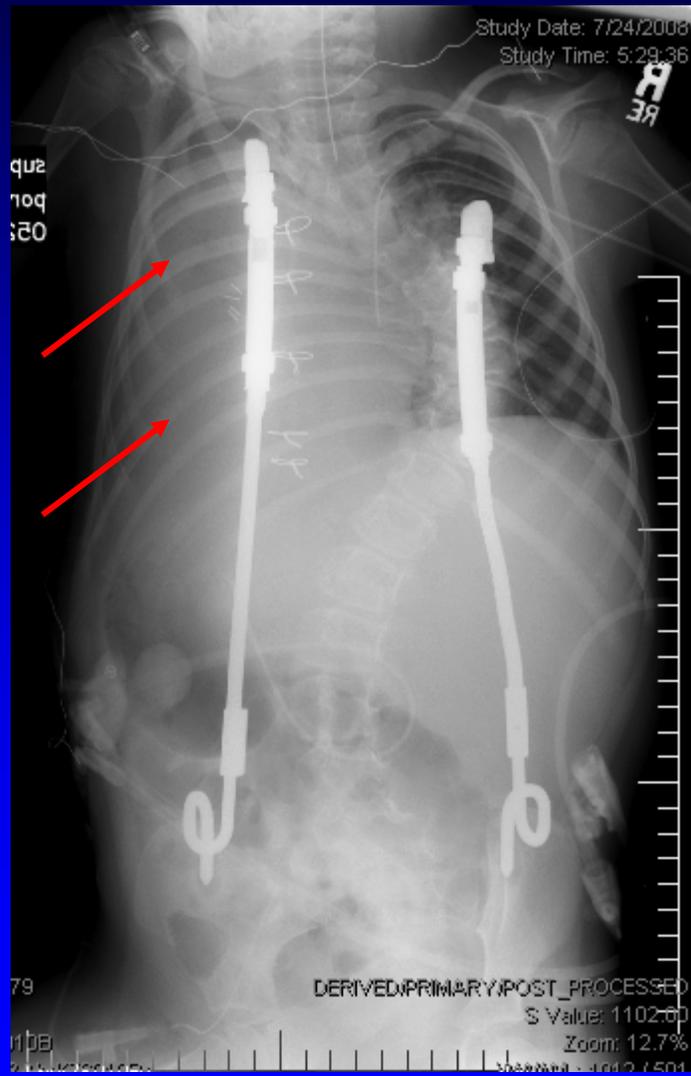
April 2008



May 2008

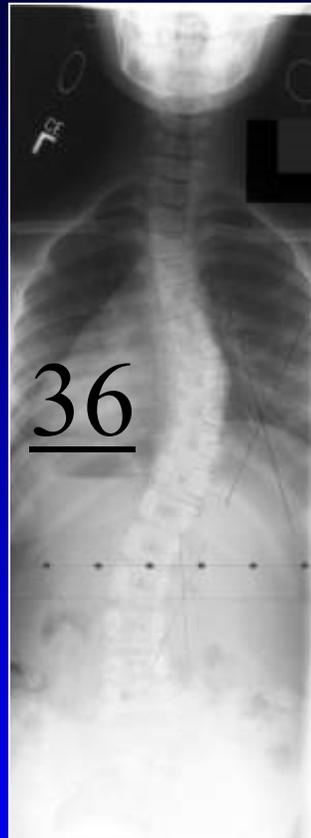


# July/August 2008



Next Case

## Caitlin – 8 yo



Despite bracing,  $26^{\circ} \rightarrow 36^{\circ}$  in only 6 months

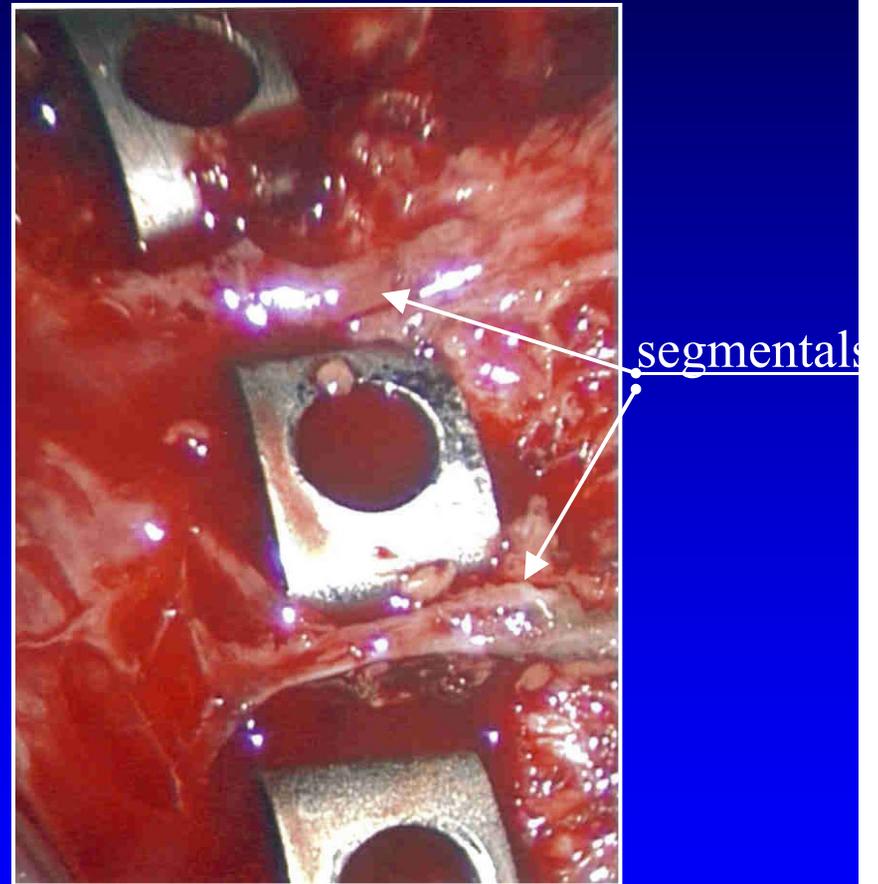
Progressive juvenile-onset scoliosis

Seizure disorder, mild speech delays

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# Intraop Stapling



Correction on table

# Anterior vertebral stapling, T6-T12

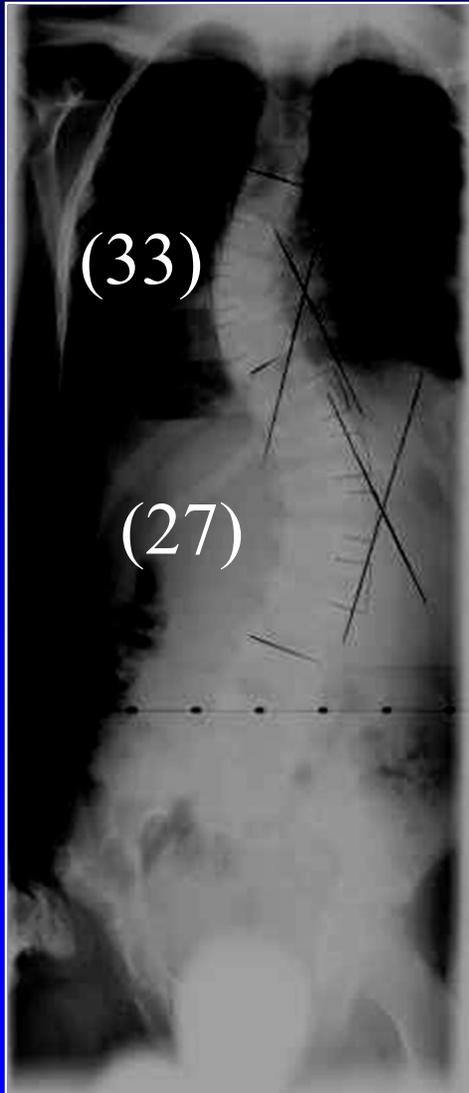


Nine days post op

Next Case

JR- 7 yo s/p troch arthroplasty

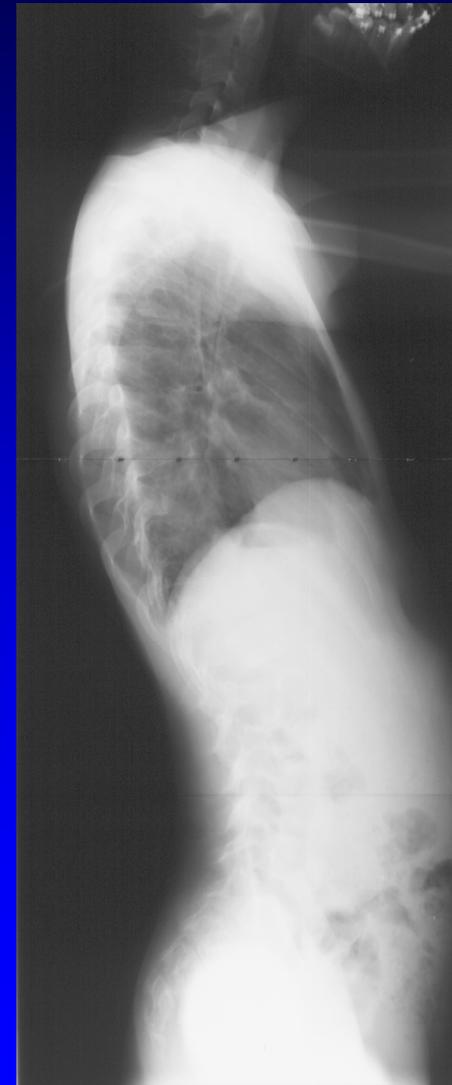
Trendelenberg gait relies on spine;  
will not tolerate brace; ? fusion



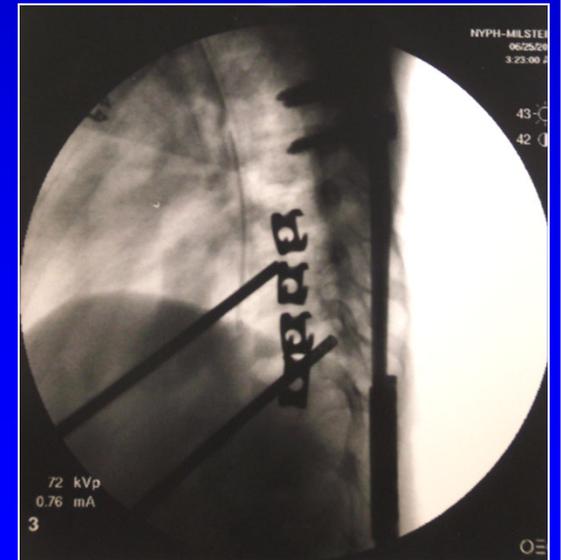
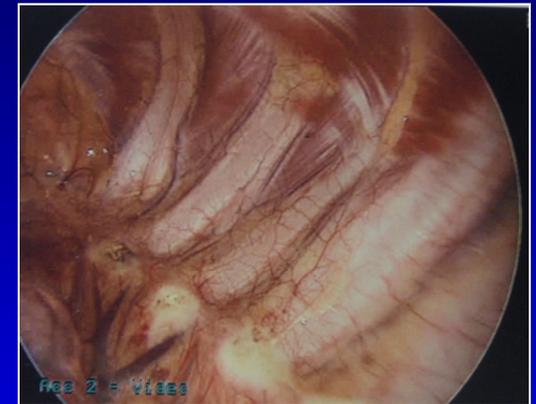
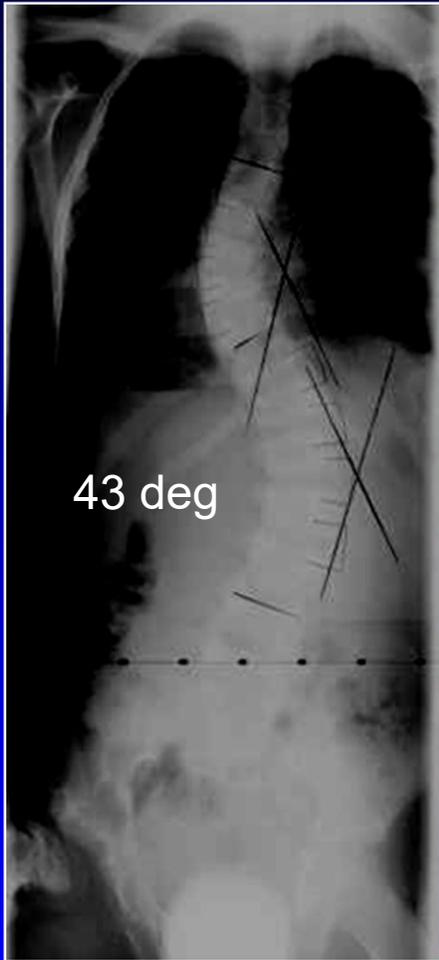
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# JR- 7 yo s/p troch arthroplasty

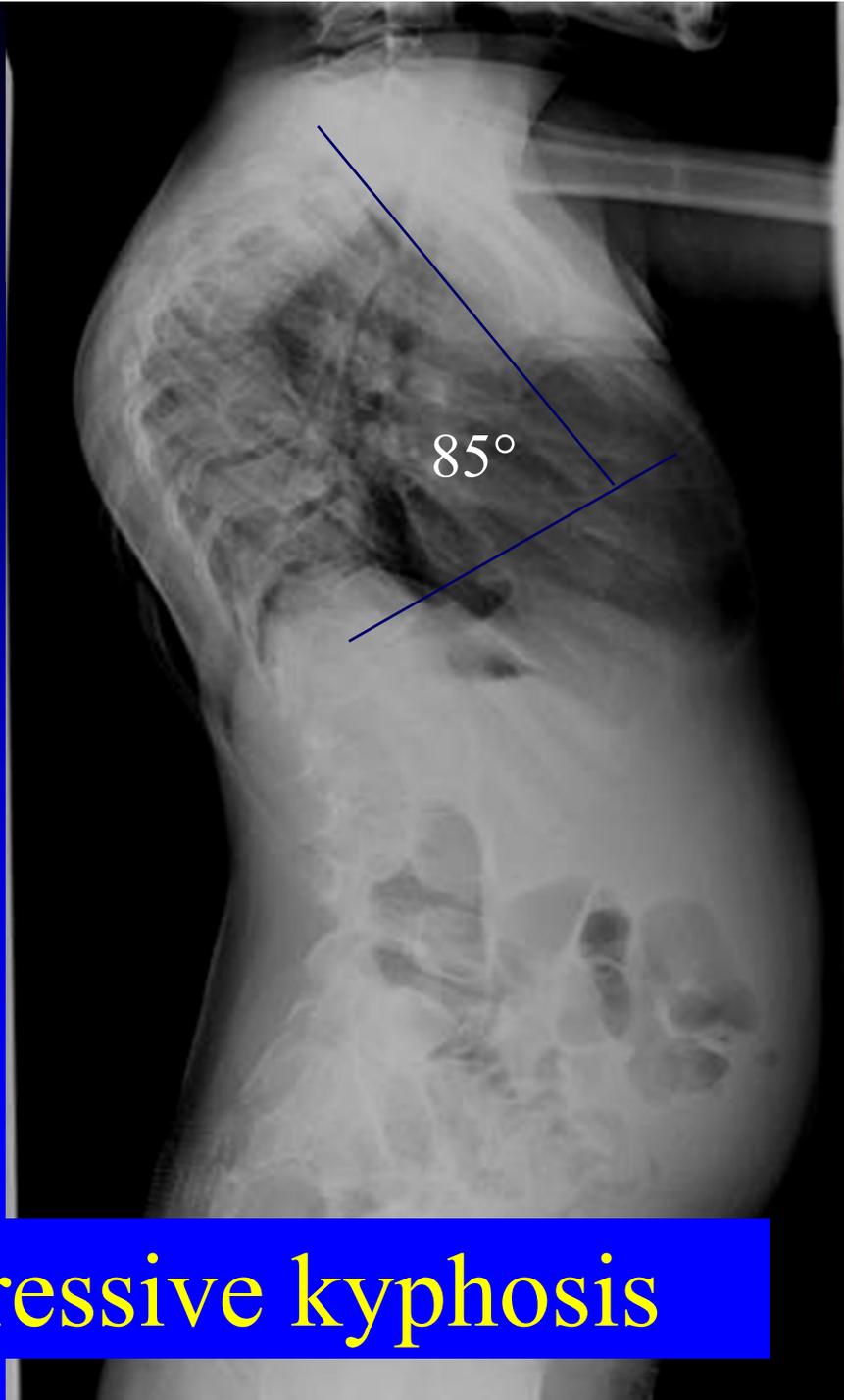
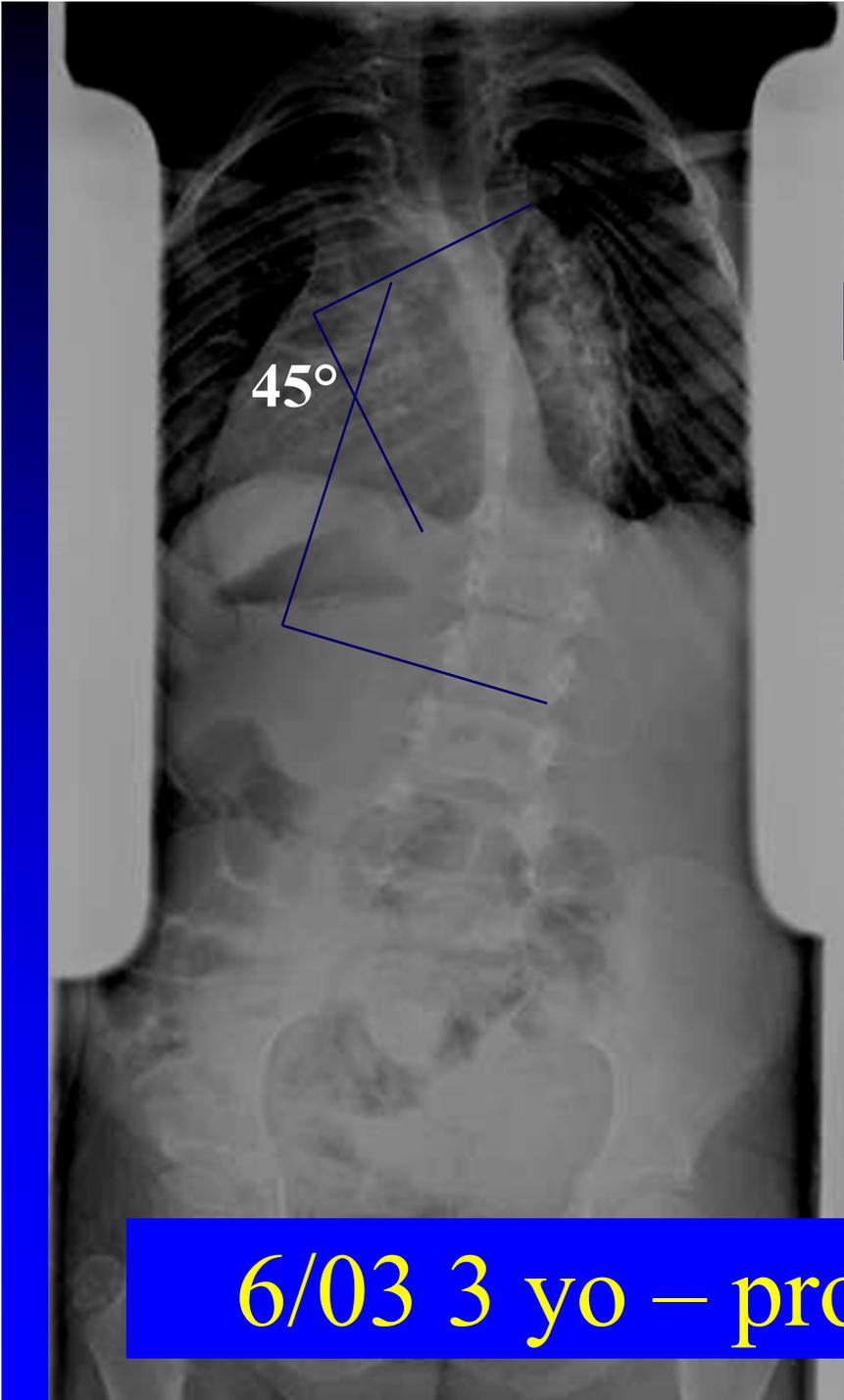


# Hybrid Technique



Next Case

- K.H - DOB 6/9/00
  - split cord/ lipomyelomeningocele
  - 9/00 (3 mo) extensive untethering/  
laminectomy C6-L2
  - 4/03 revision detherring /repair  
lipomyelomeningocele
  - Normal Exam !

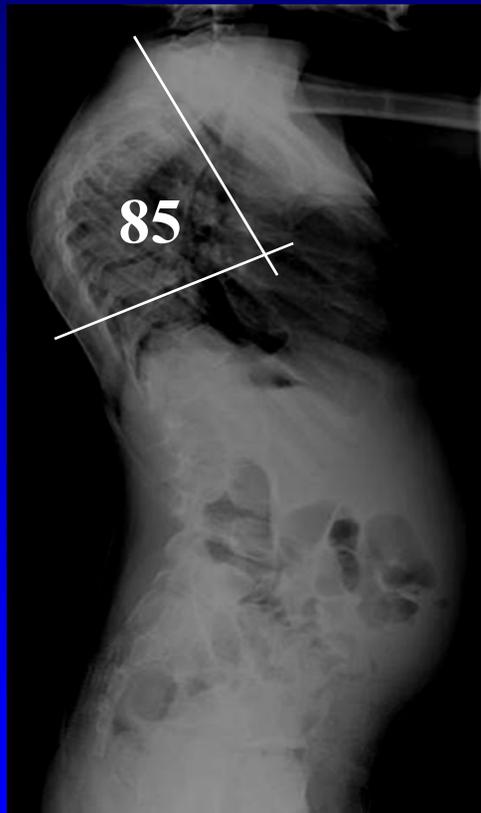


6/03 3 yo – progressive kyphosis

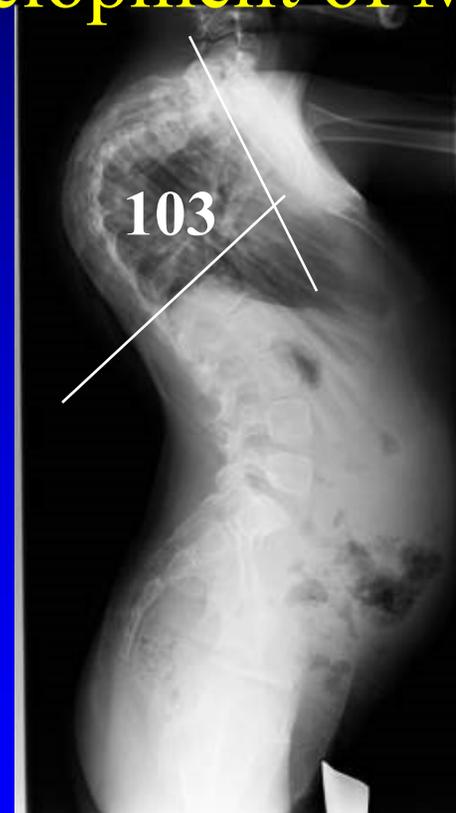
# 3 yo lipomeningocele with nl exam

Recurrent Kyphosis

Development of Myelopathy

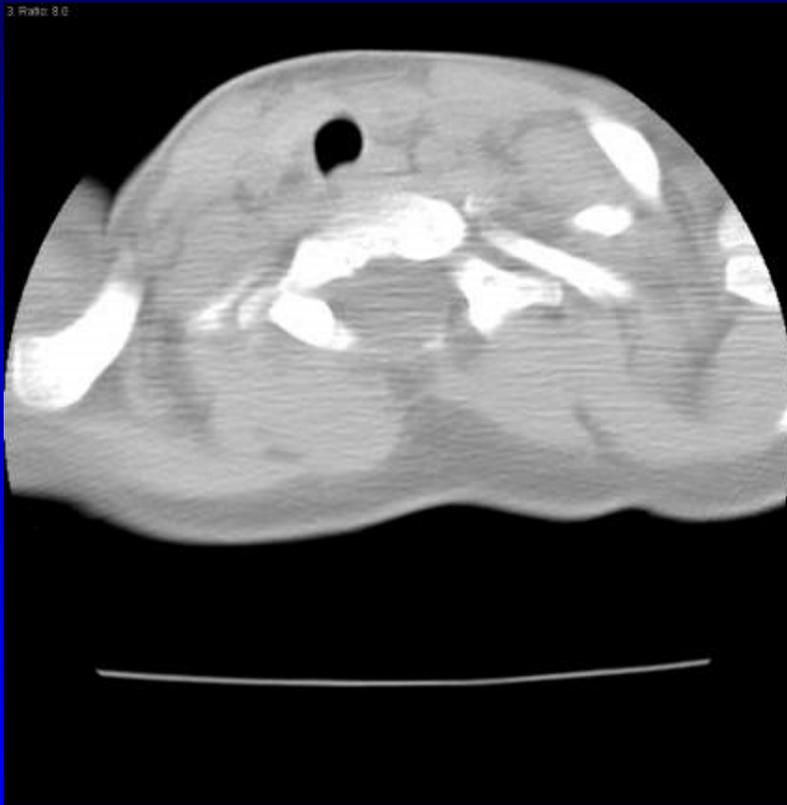


6/03 AP in situ fusion

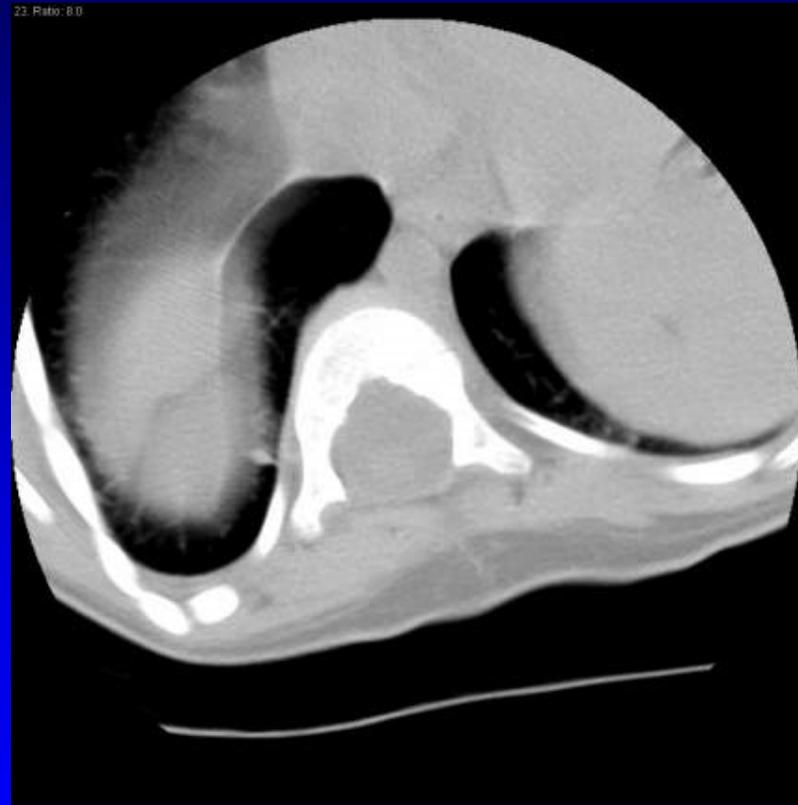


3/04

# No Posterior Bone

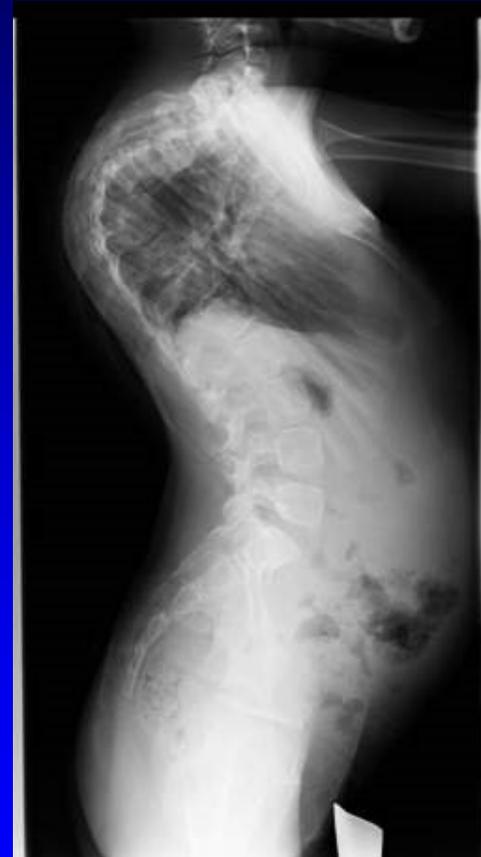


t1



L2

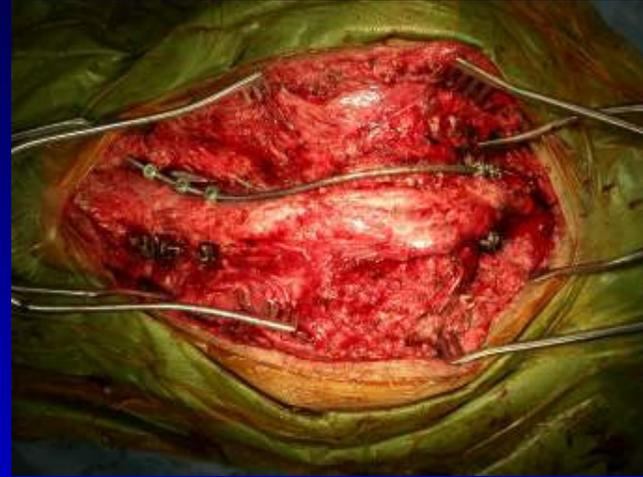
# 3/ 04 - ? Treatment Options 4 yo with myelopathy



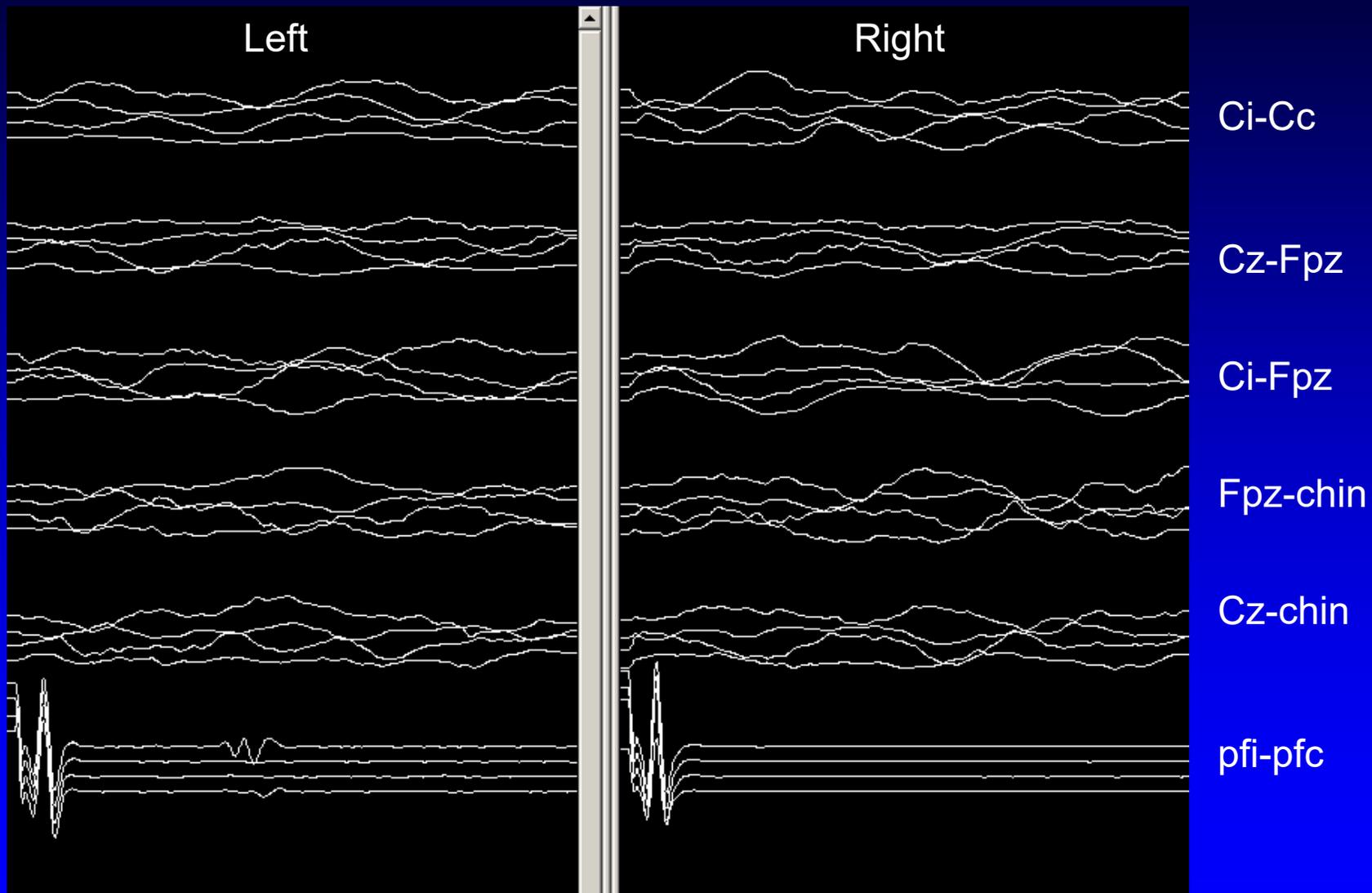
Any way to avoid fusion in 4 yo ?

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# Intraoperative Tibial EPs Not measurable in 204





Costotransversectomy/  
Decompression



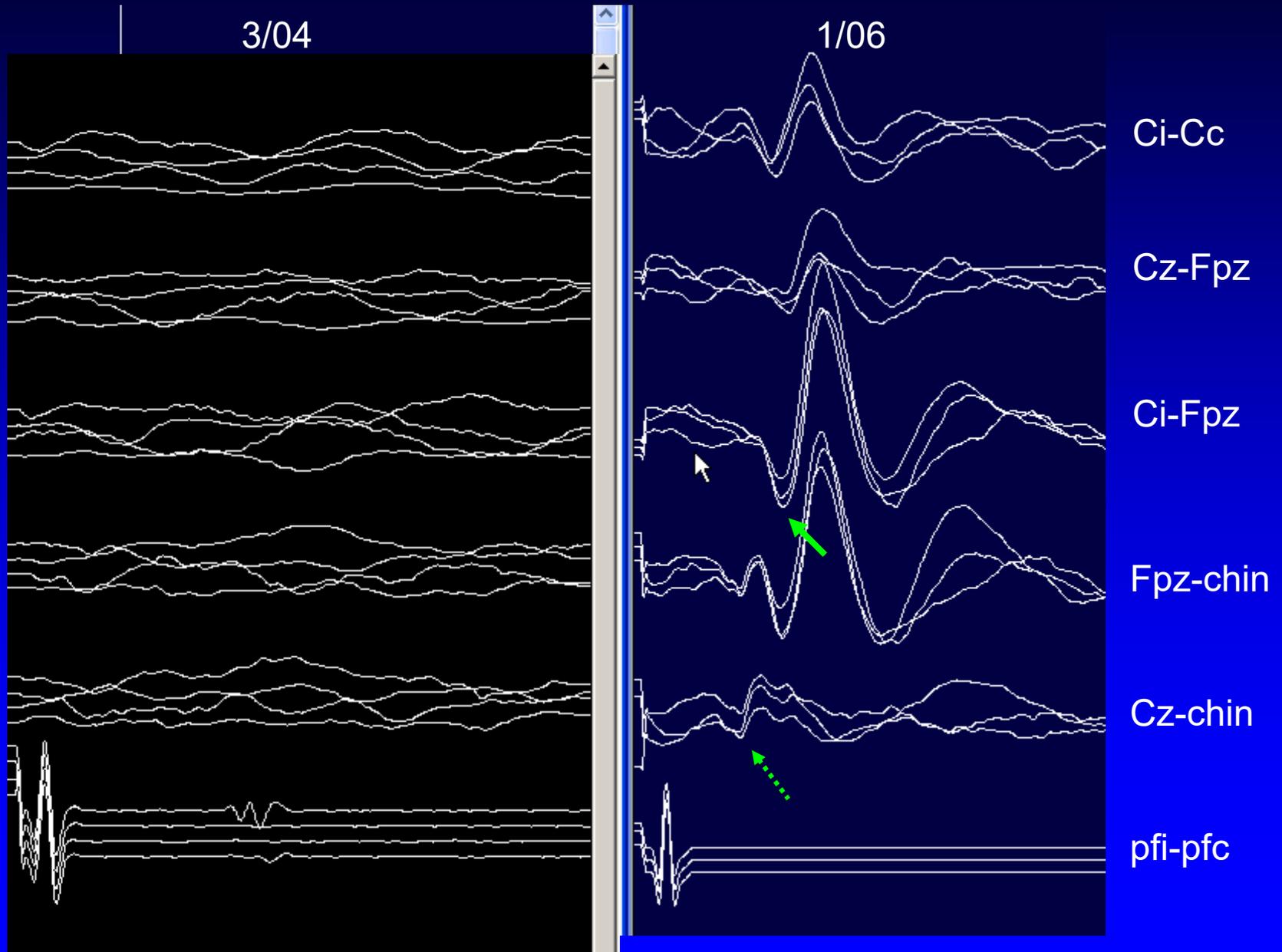
Anterior Thoracotomy,  
Decompression and Fibula Strut

# Jan 2006: Improve Fusion With OP1

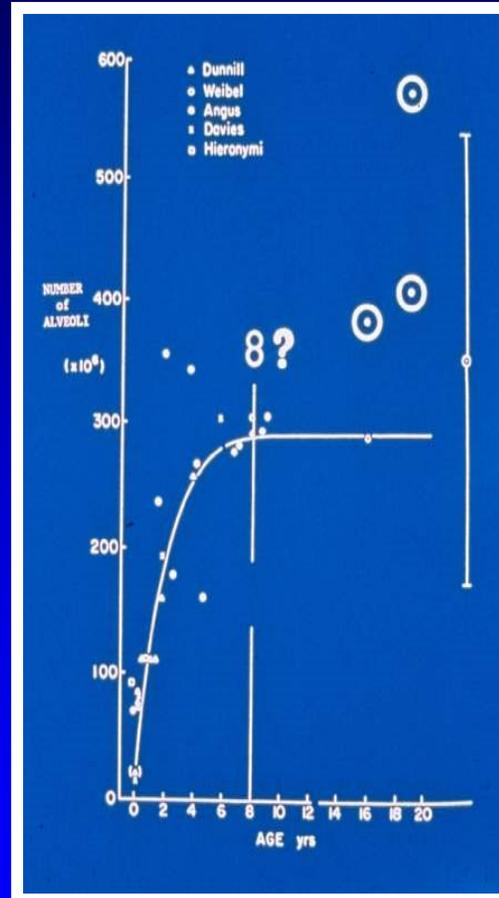
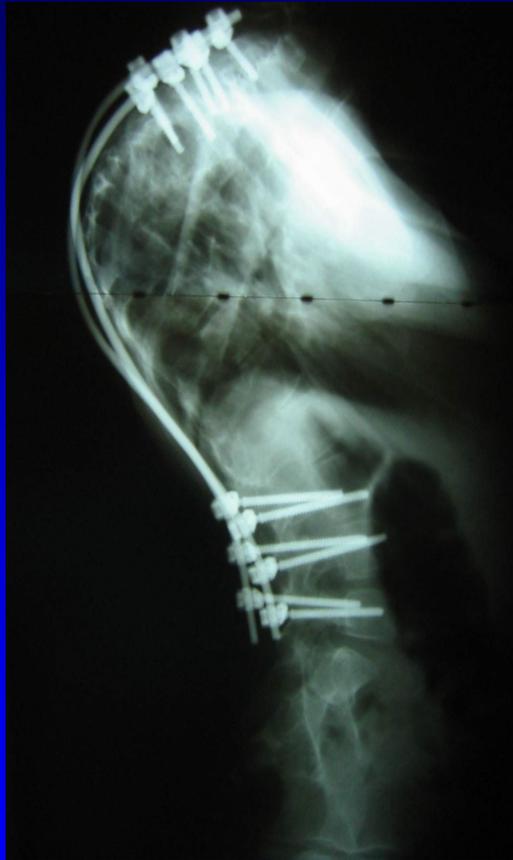


Oasis

# SSEP and MEPs Normalized



# Complete resolution of myelopathy moderate correction



? 4 yo

# Thank You



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Morgan Stanley  
**Children's Hospital of New York-Presbyterian**  
Columbia University Medical Center



Columbia Orthopaedics  
Pediatric Orthopaedic Surgery

# Case Number 3

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José Herrera-Soto, MD  
Arnold Palmer Hospital for Children

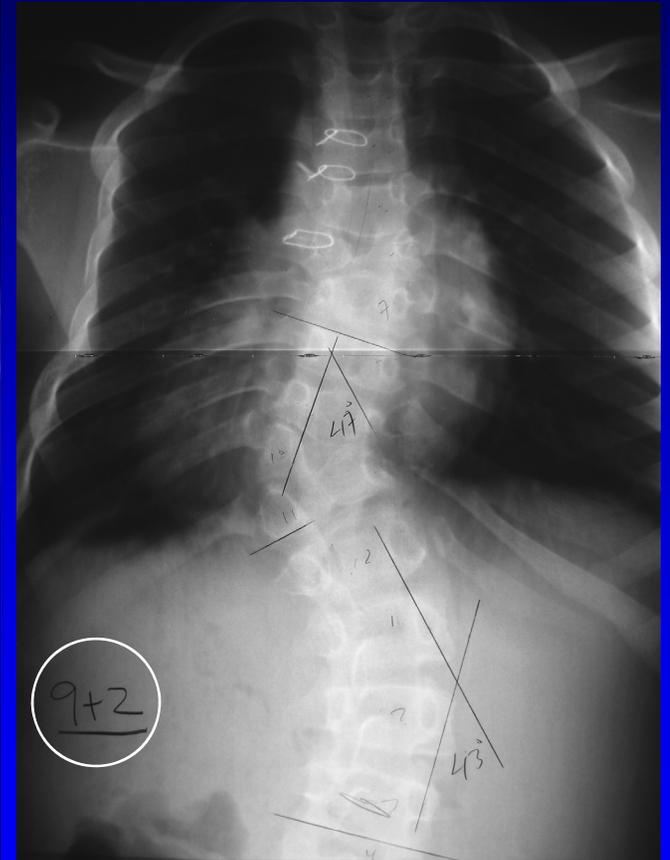
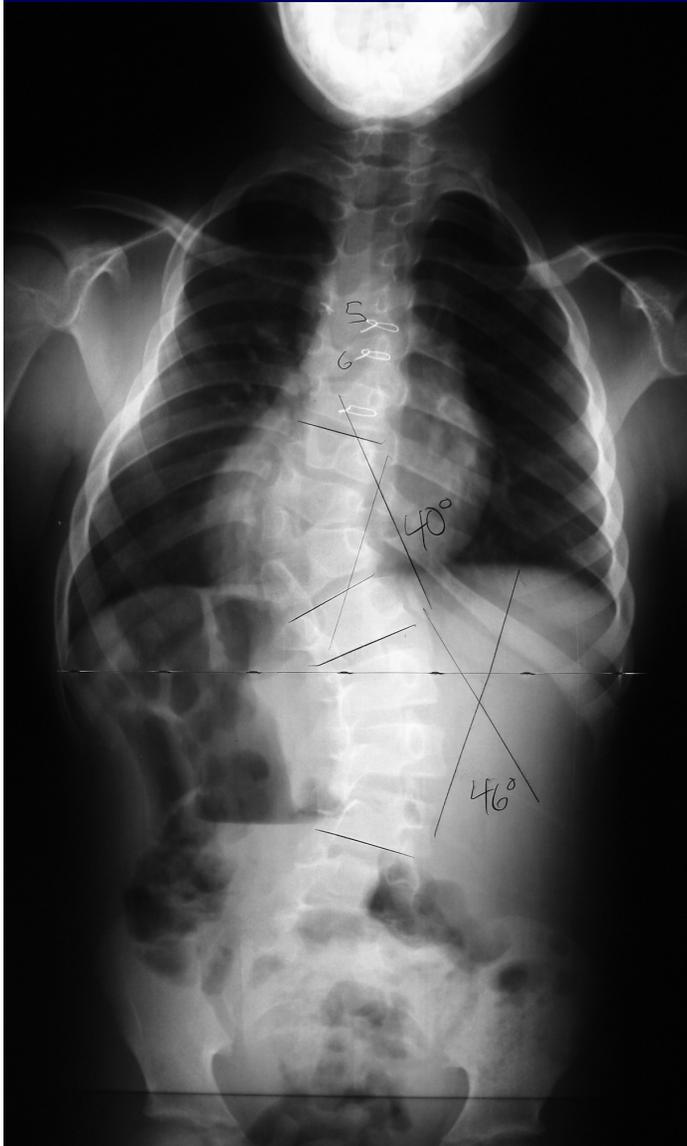
# 9+2mo w/ Hemi and bars



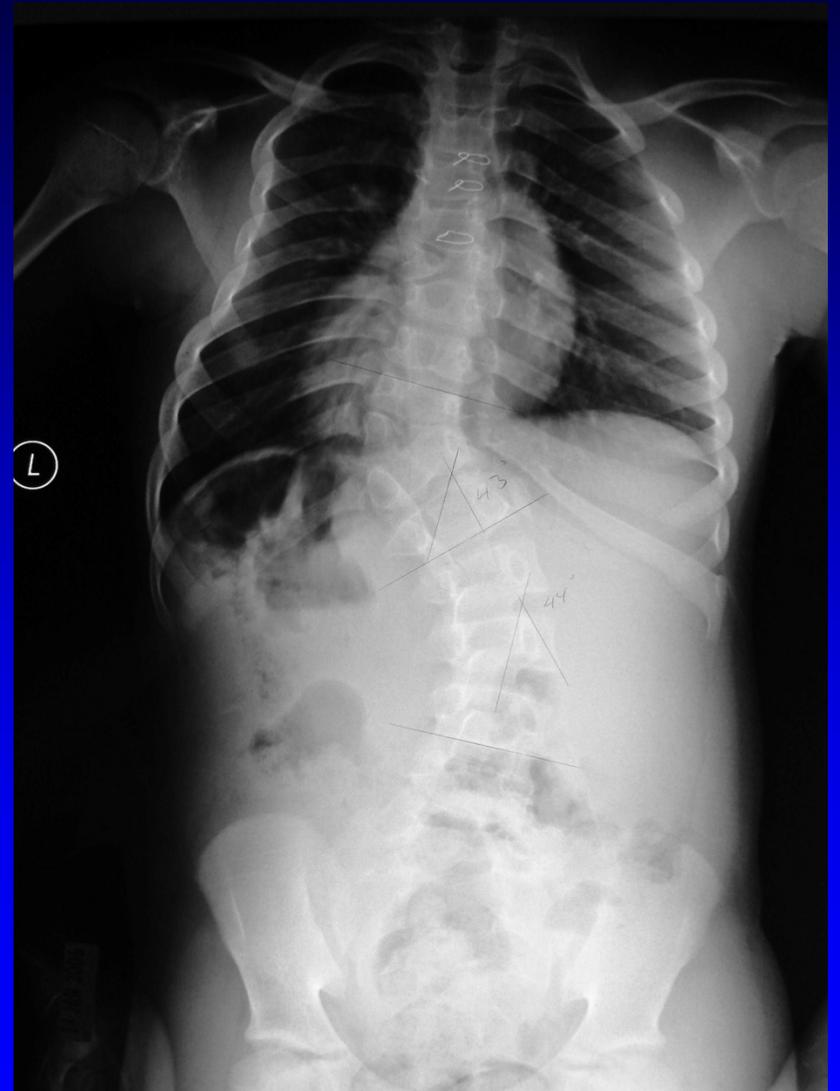
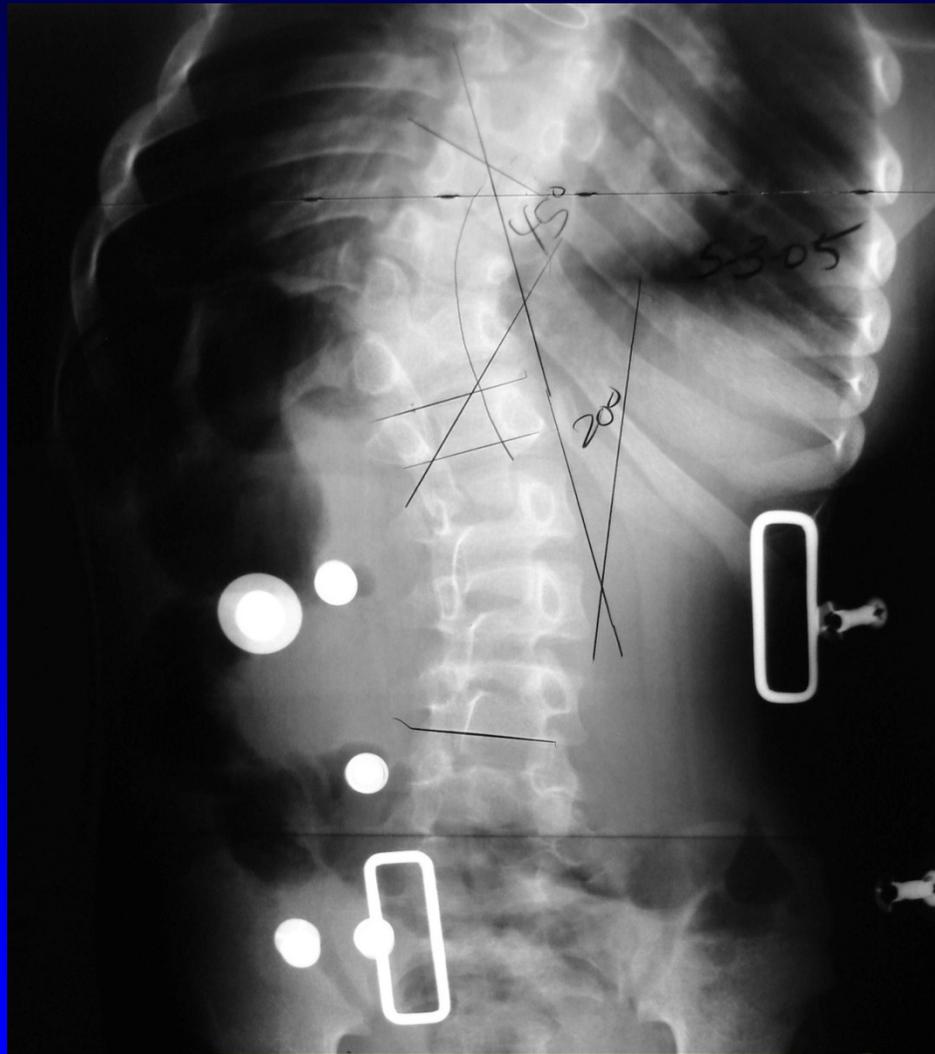
# What is the treatment?

- Observation?
- Resection
  - Front and back
  - Posterior only?
  - What levels?
    - Do they vary with the age of the patient?

# 9+7 on preop day



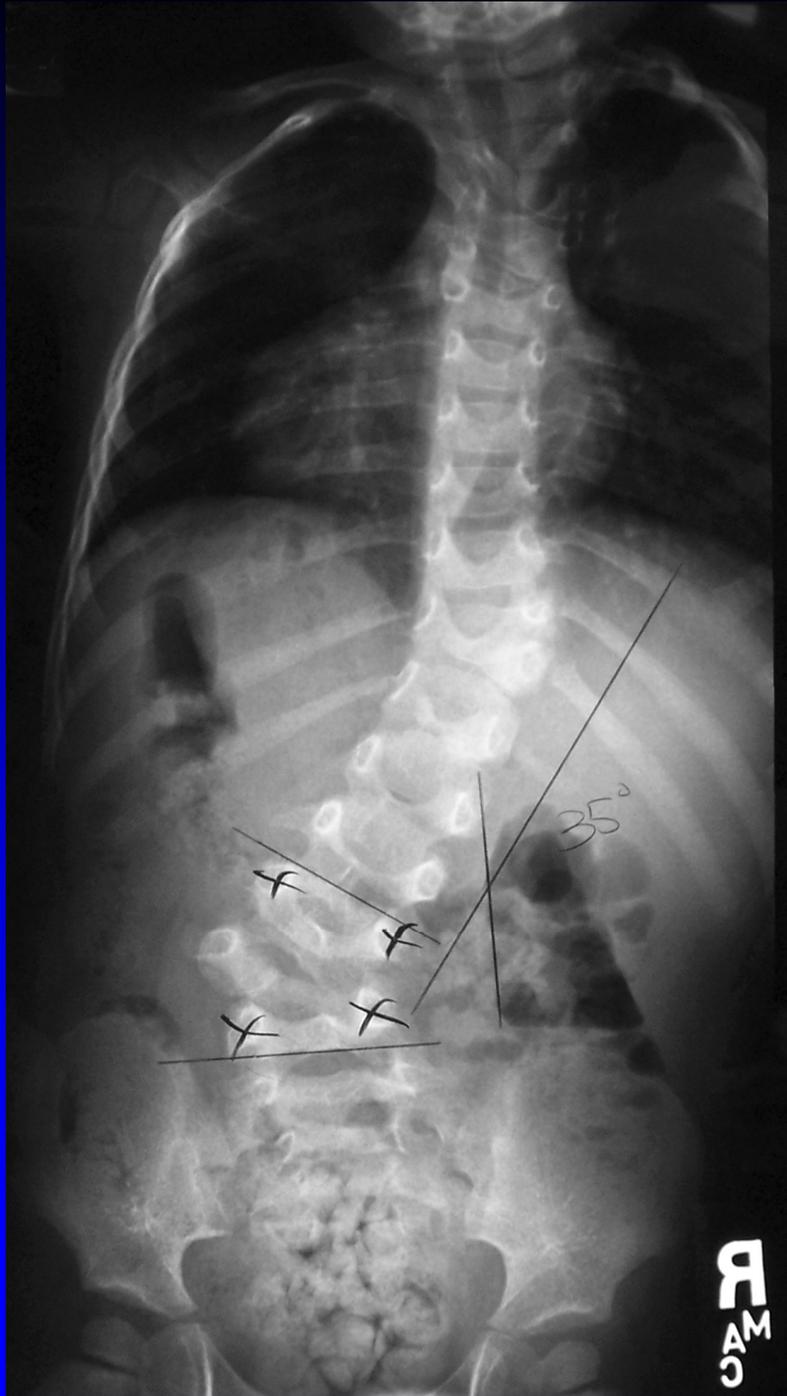
# Braced for 2½ years?...



# PSF without resection at 12 y/o



2+ year old

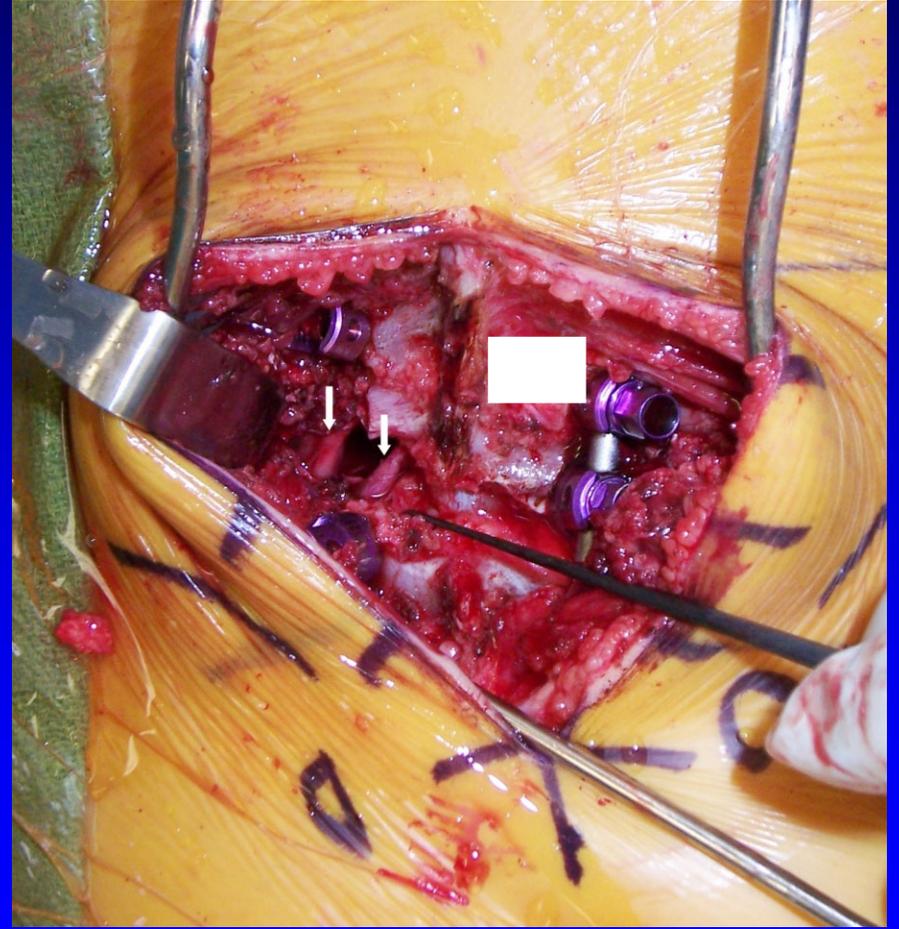
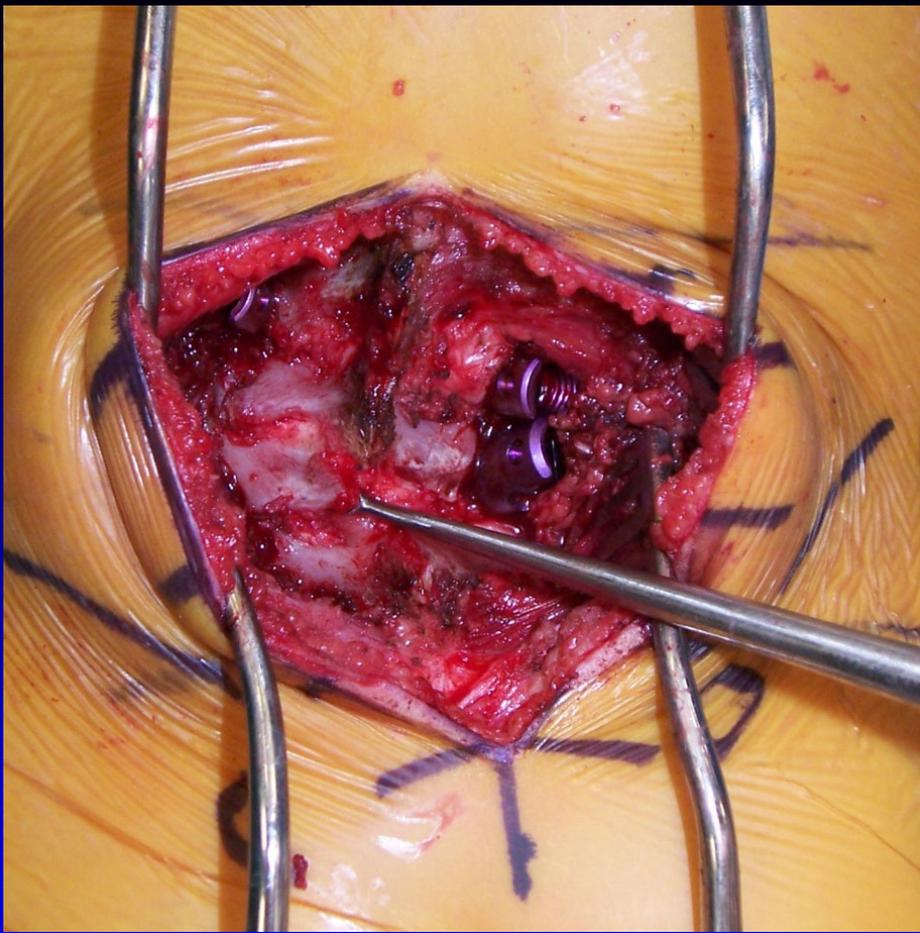




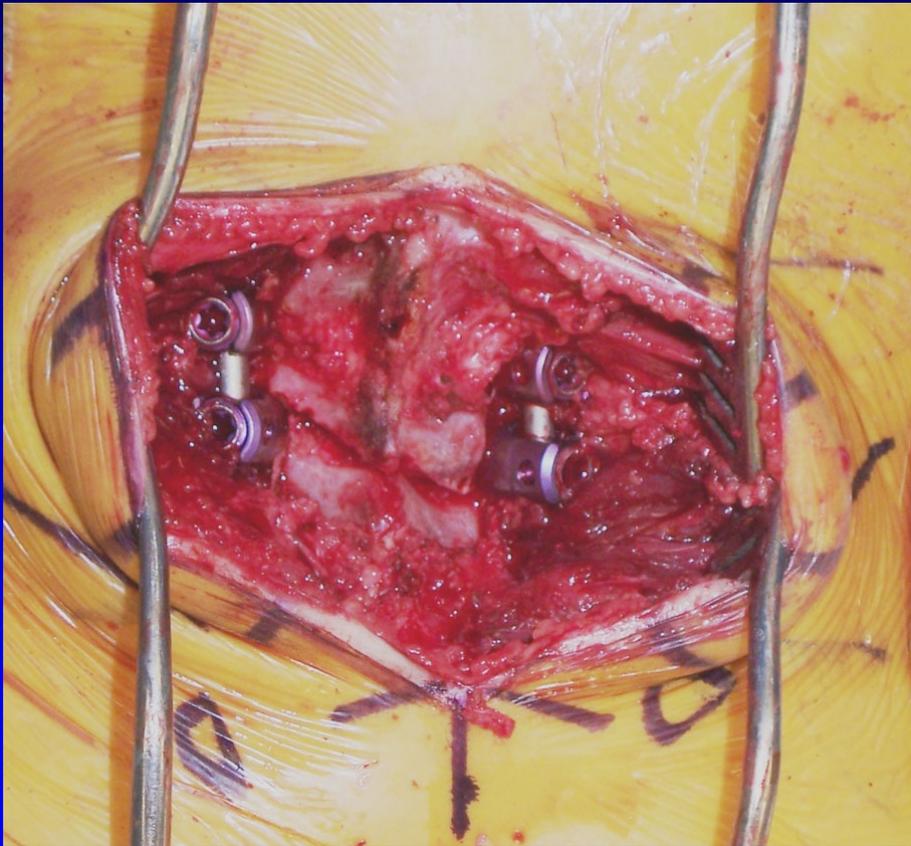
# What else is going on?



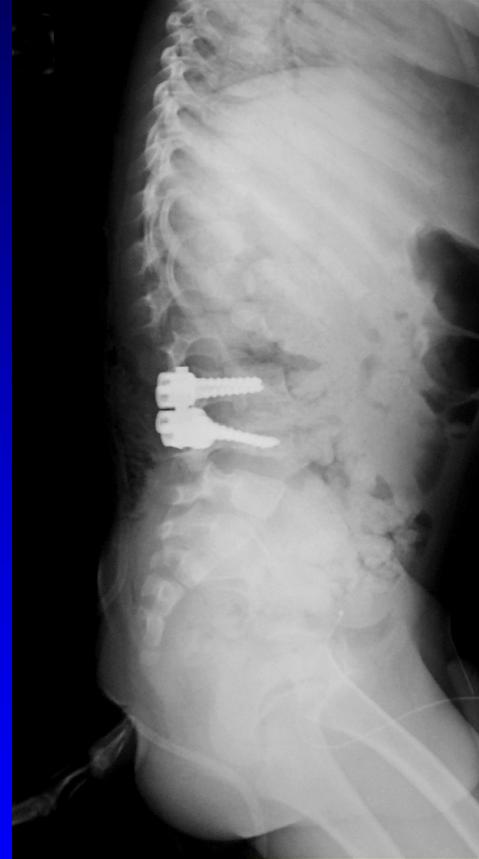
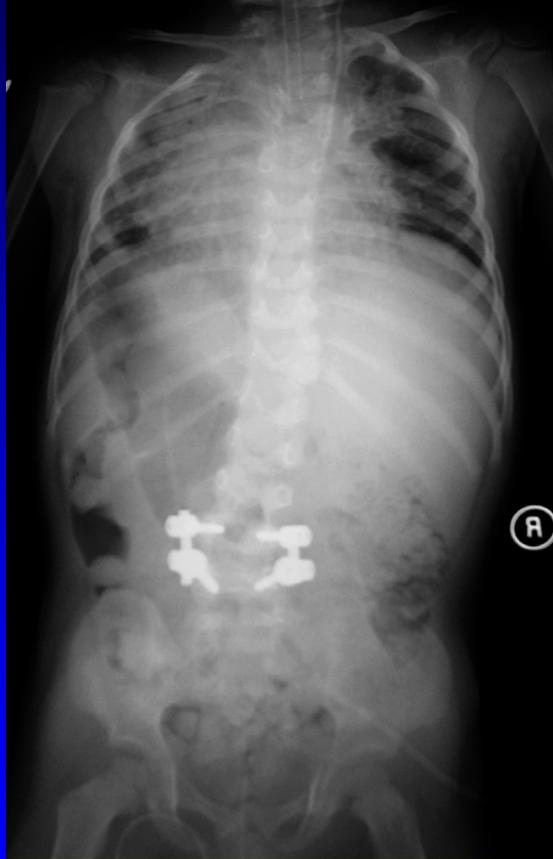




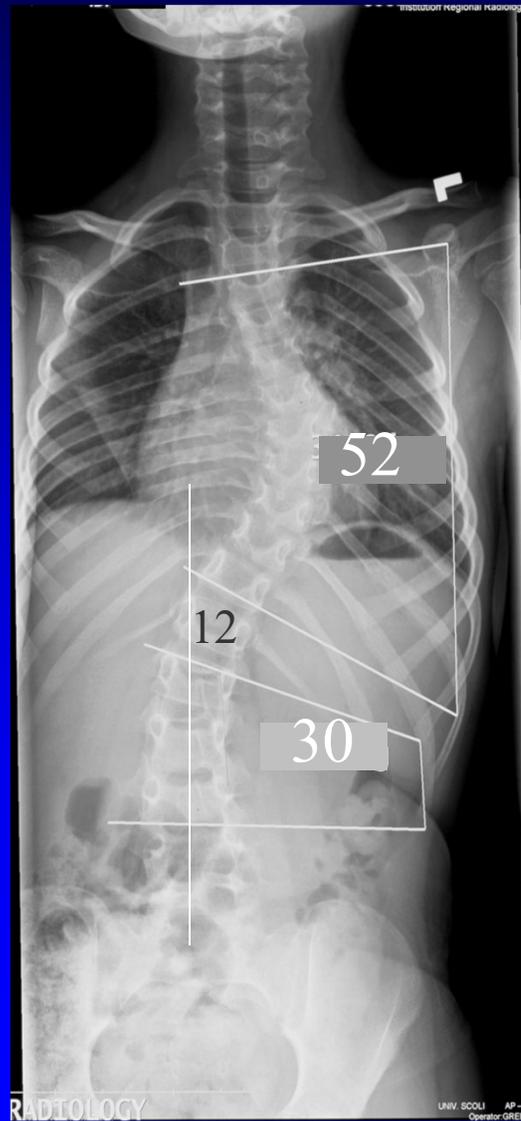
# What does this dimple mean?



# Immediate post op



# Nicholas A. – 9.5 yo

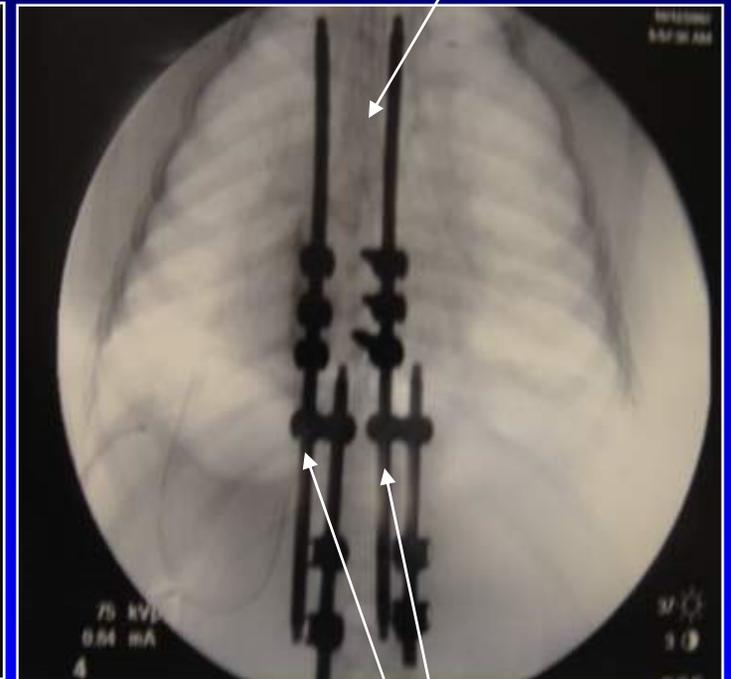
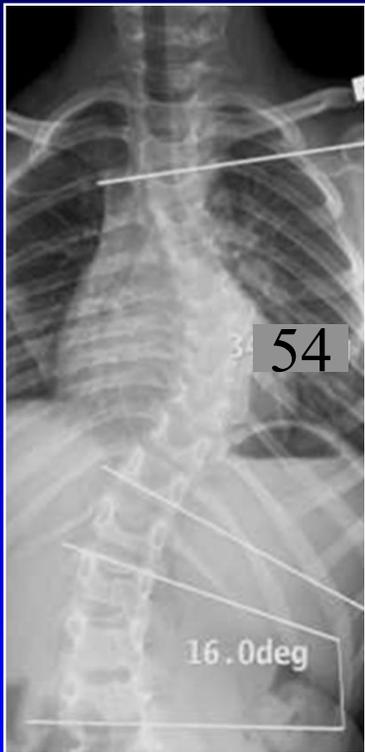


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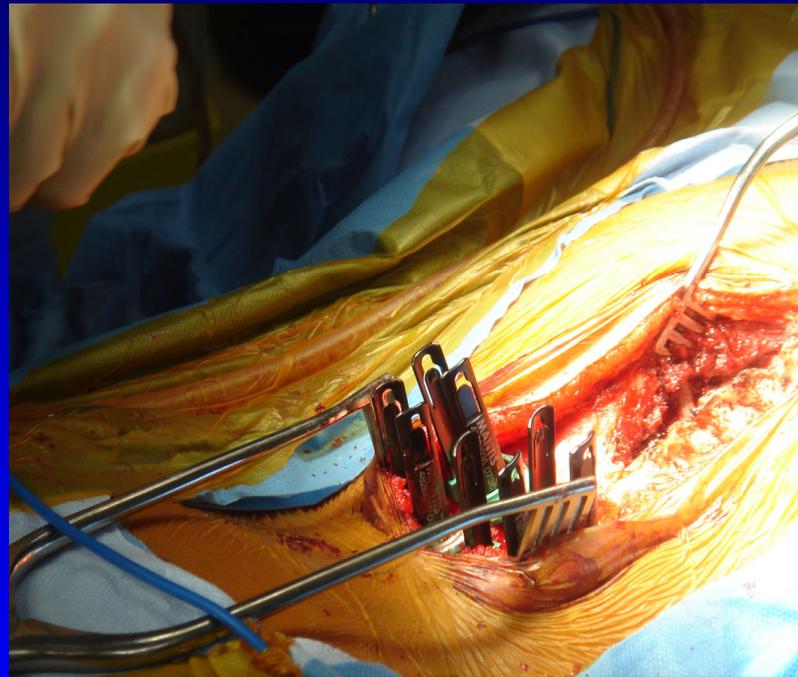
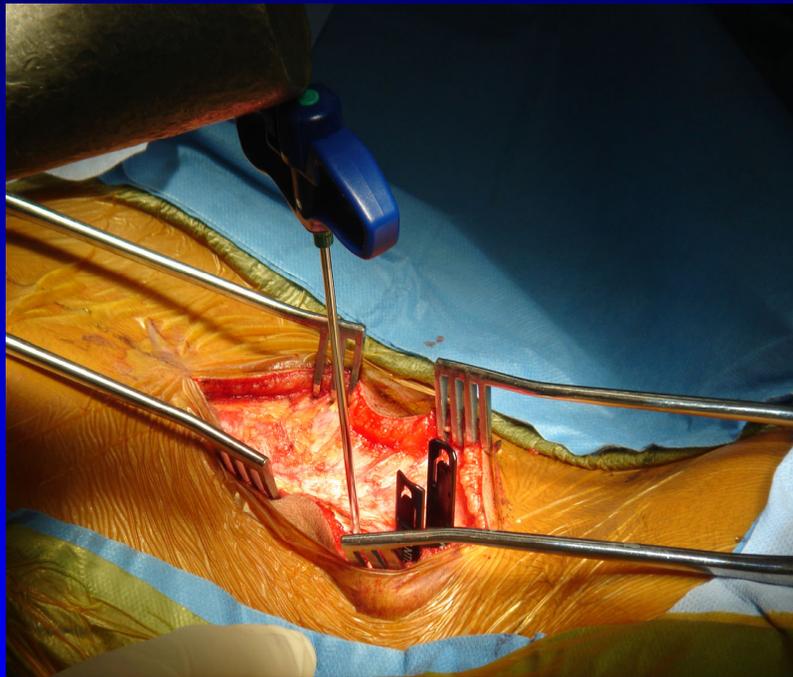
# “Non Shilla, Shilla”

Mersilene



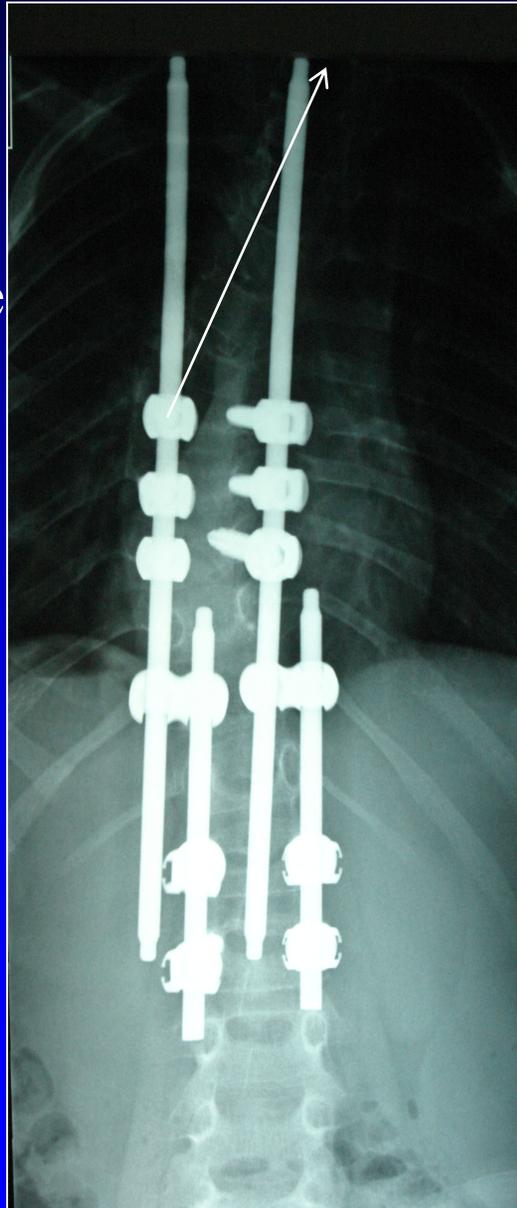
open connector

# MIS Screws

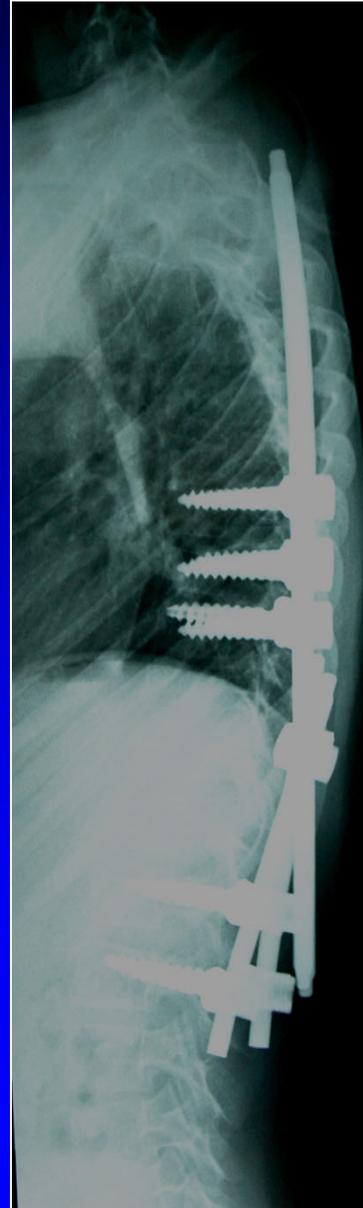


# NA 4 months later

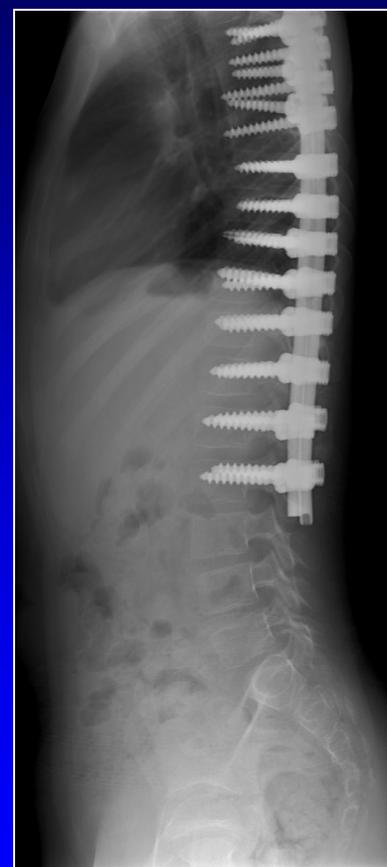
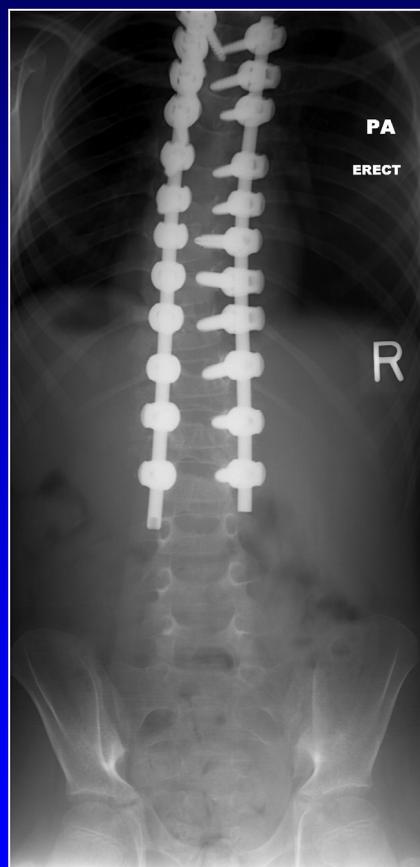
Loss of  
Proximal Curve



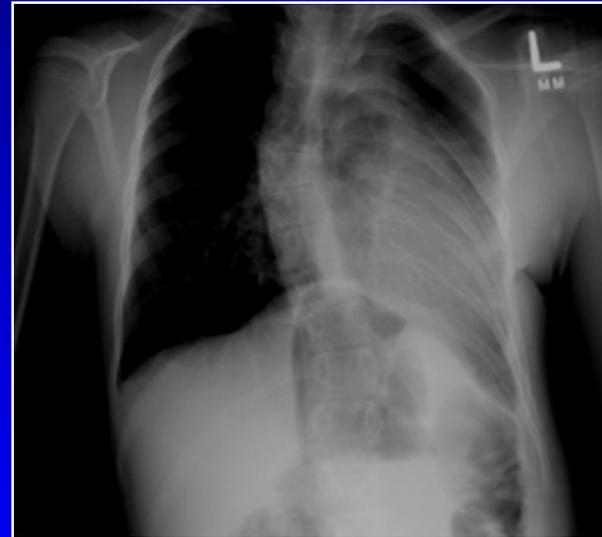
Kyphosis Through  
Connectors

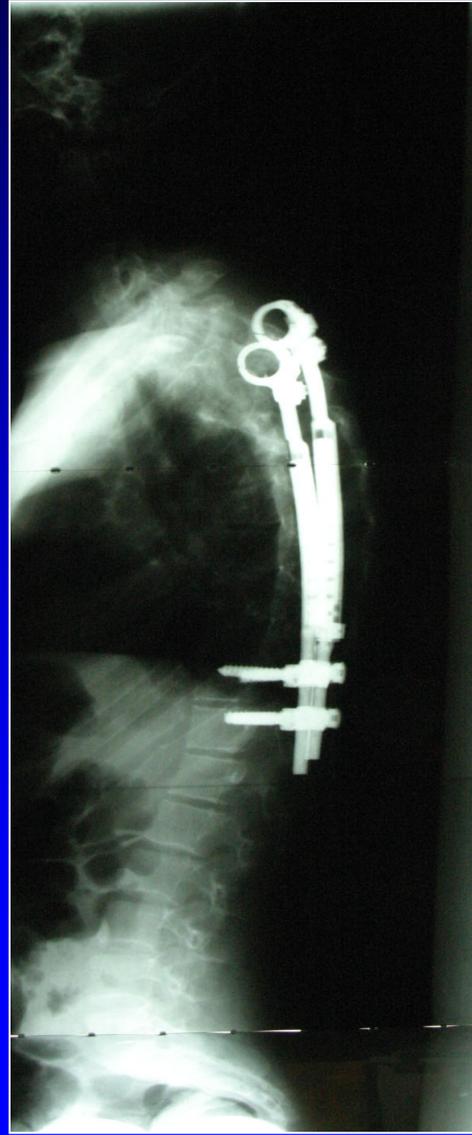
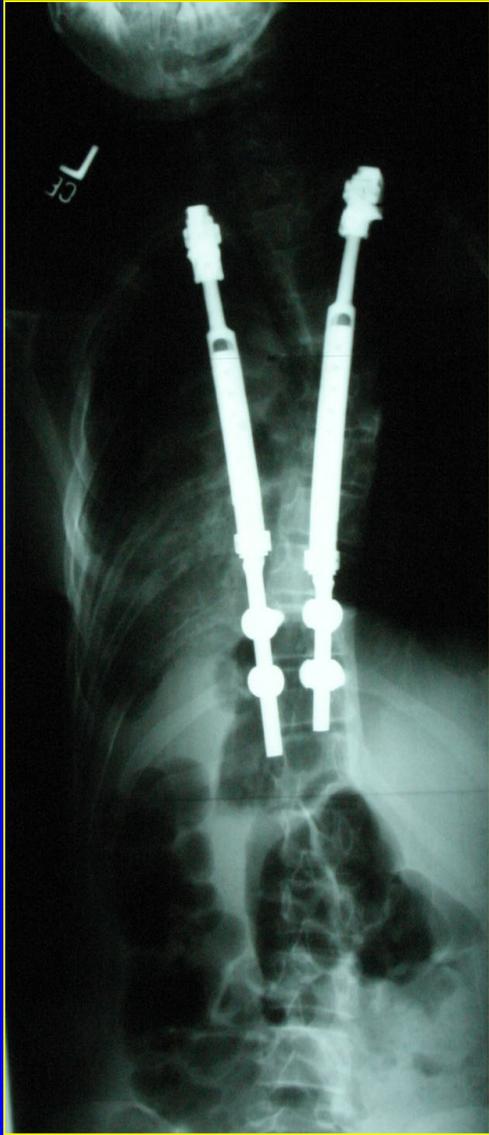


# NA Final Fusion- Age 10

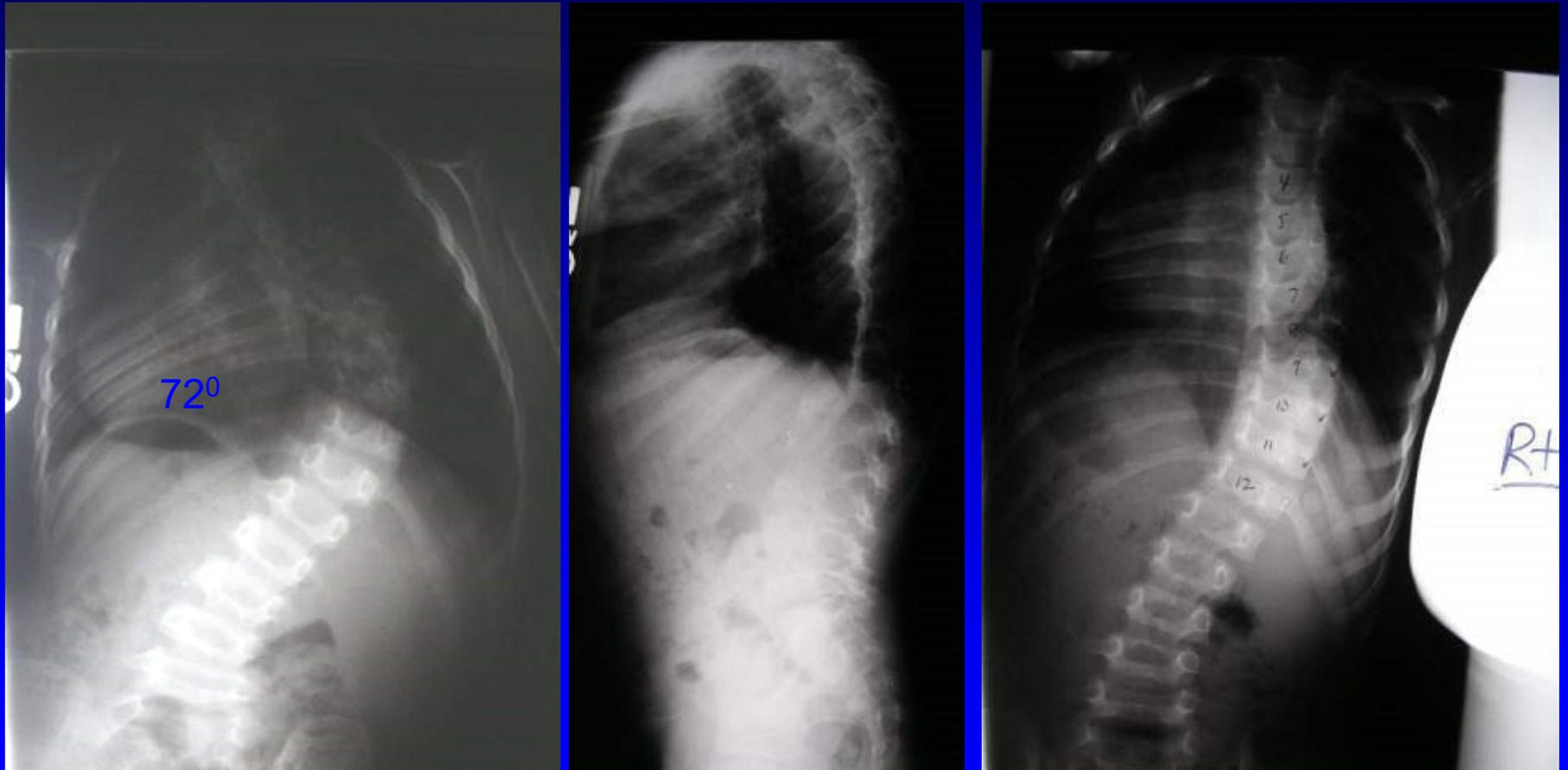


# MT - CDH 5 yo

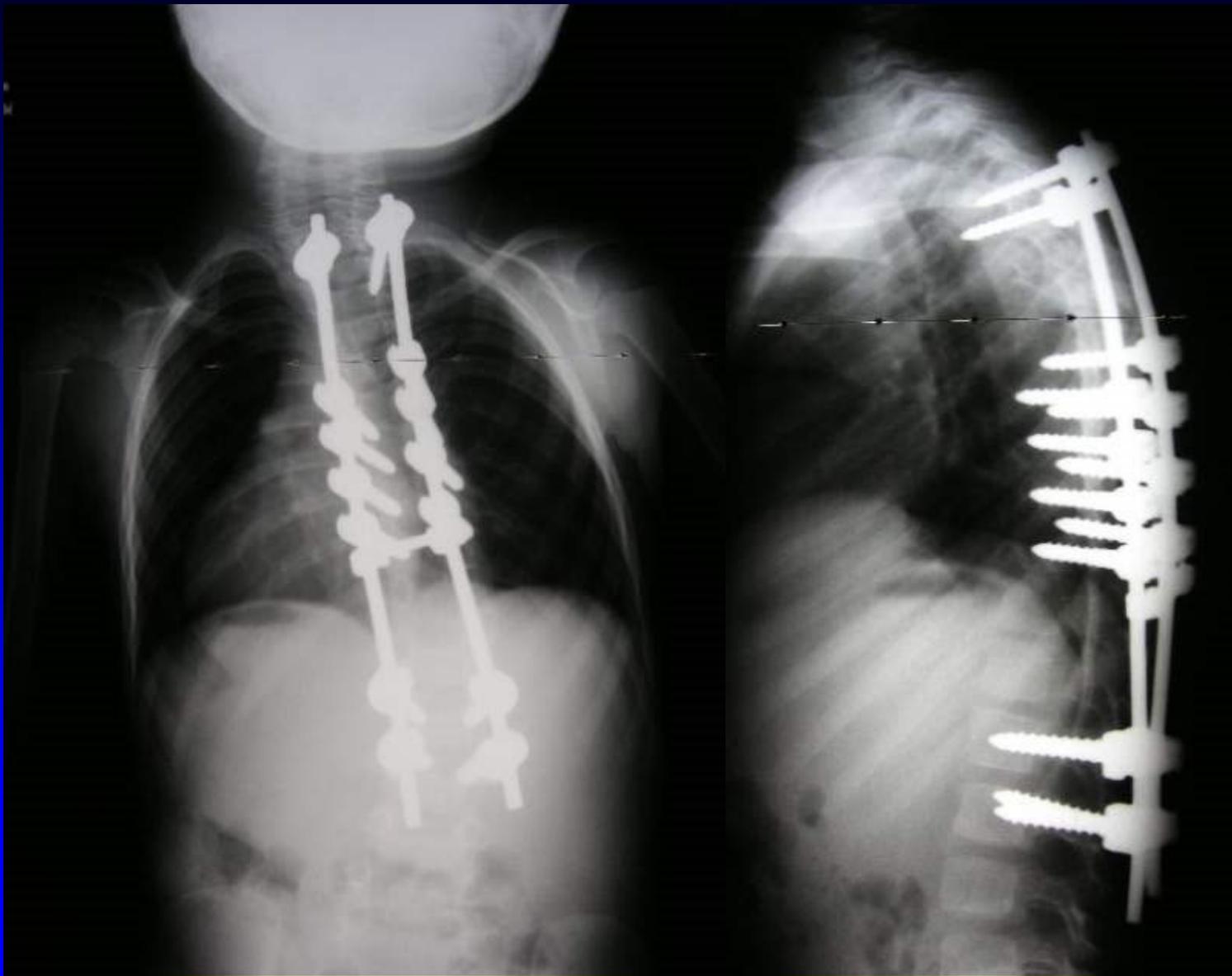




# 3 yo with infantile idiopathic scoliosis



Courtesy of Rick McCarthy



1 yr postop standing PA and Lateral radiographs