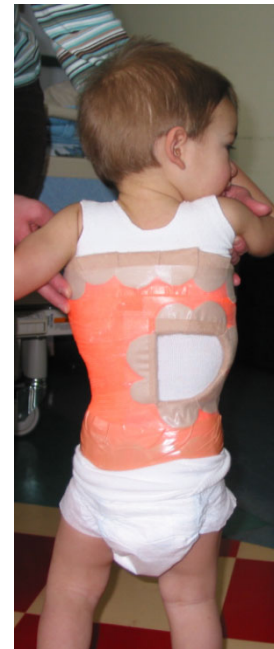
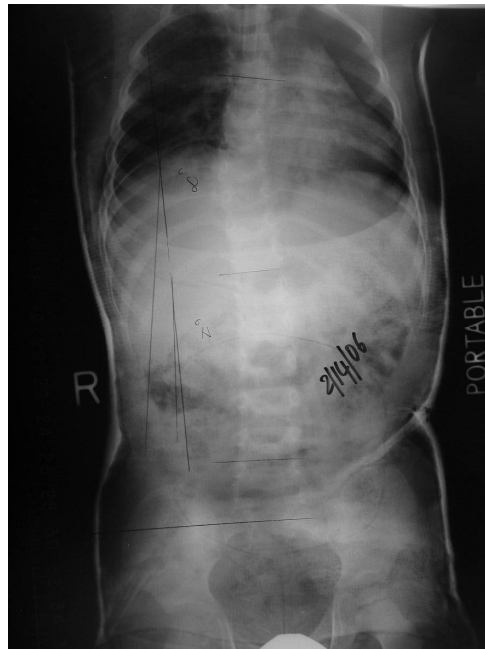


When to Start and Stop Cast Treatment for Early Onset Scoliosis



Jim Sanders, MD
University of Rochester Dept. of Orthopaedics
Golisano Children's Hospital



Why Not Brace Since it is Nice to Remove it?

- Bracing's benefit is also its deficit.
- Because it can be removed, it will be removed.
- Less correction is possible because flexibility is necessary for donning and doffing.



Why Cast?

- In some children, it can cure
- In most, it can markedly delay surgery.
- Diminishing returns
- Delay does not seem to harm later surgical results if casting is properly done.
- Children tolerate it well



Why Not Cast?

- Frequent anesthesia – but so do growing rods.
- Climate issues – Is it OK in Florida or Africa?
- Curve too large - what does that mean?
- Surgeon inexperience- it's not hard, but you have to do it correctly.

Our Casting Results:

- 27% resolved
- 56% improved but not resolved
- 14% stable
- 3% progressing
 - Hard to compare to the natural history.
- To date, 10% surgery
 - But 28% of curves 50 degrees or more at the start.

Factors to Consider:

- “Growth Friendly” instrumentation is not all that “friendly” – unless your friends like beat you up.
- The law of diminishing returns is very real –
 - You get 3-4 years of effective lengthening.
- The longer implants are in, the higher the complication rate.
- Proper casting does not seem to harm surgical results.

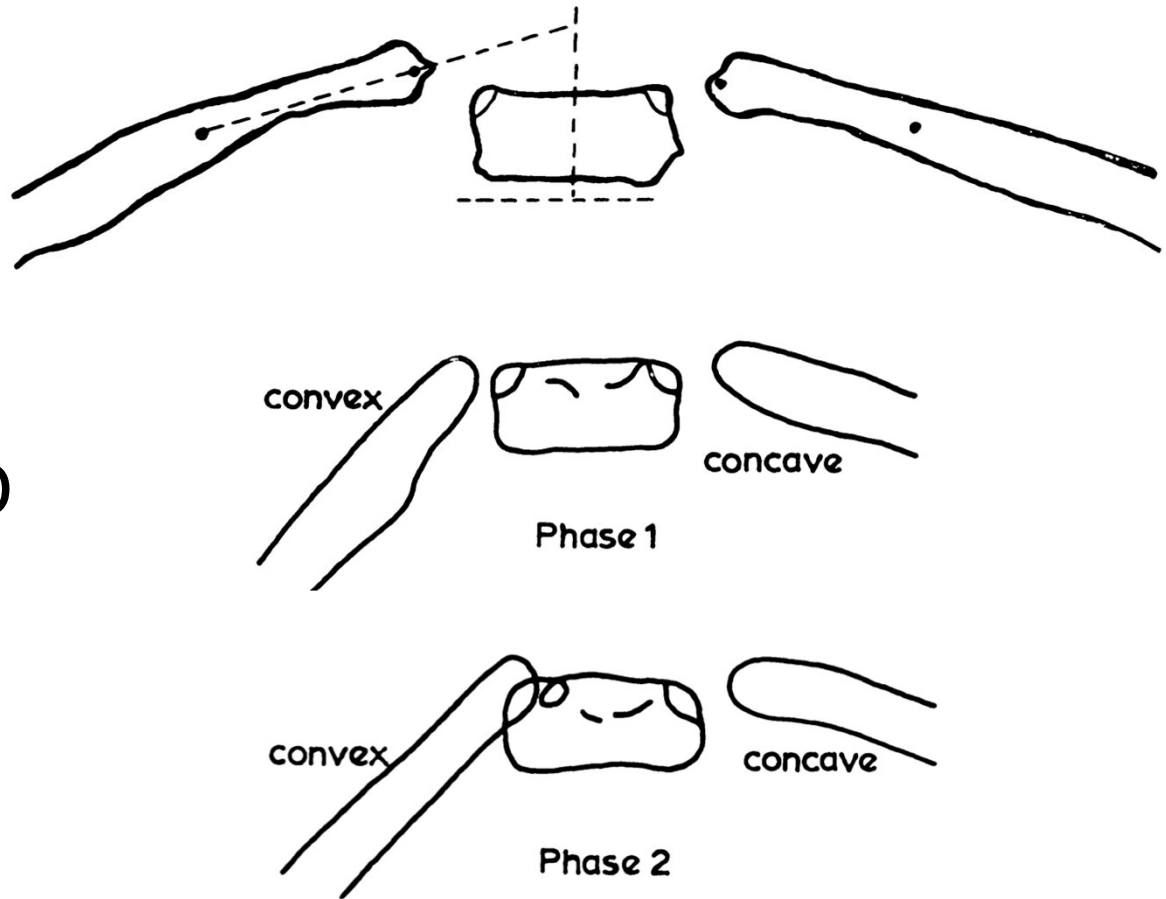


Who and When?

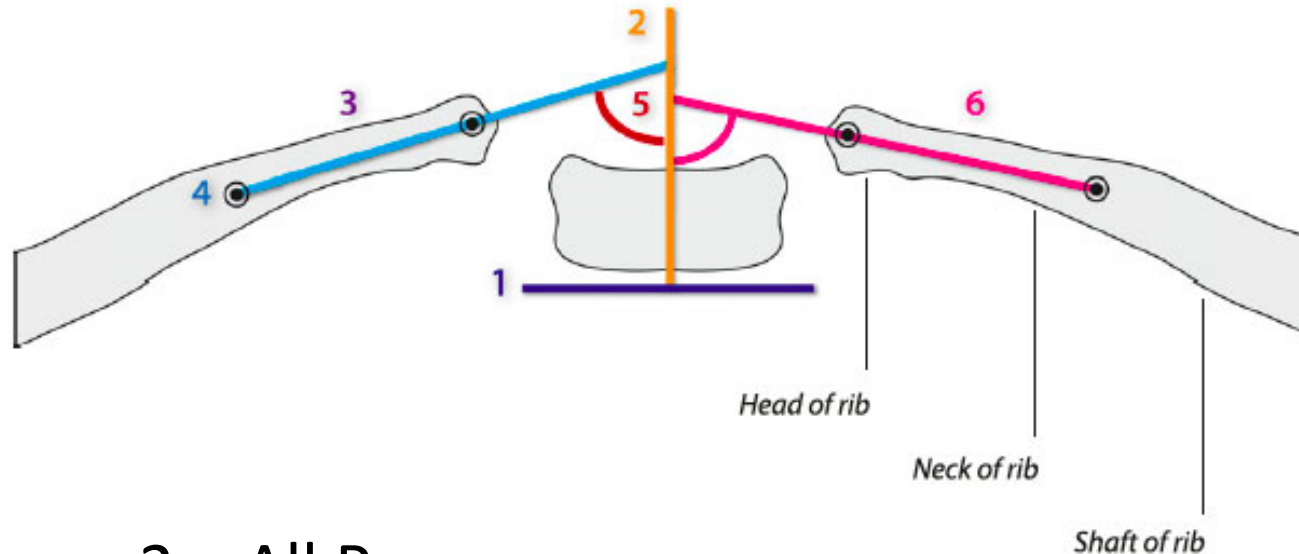
- Ideally, delay surgery until age 6 or 7.
- Casting works best in younger patients with idiopathic smaller curves
- But, can still help in:
 - older patients
 - larger curves
 - syndromic curves.
- Be wary of neuromuscular and congenital curves.

How Do You Determine When A Curve Is Progressive?

- We have 3 Criteria:
- Curve Progression
- RVAD or RVAD Progression
- Rib Phase

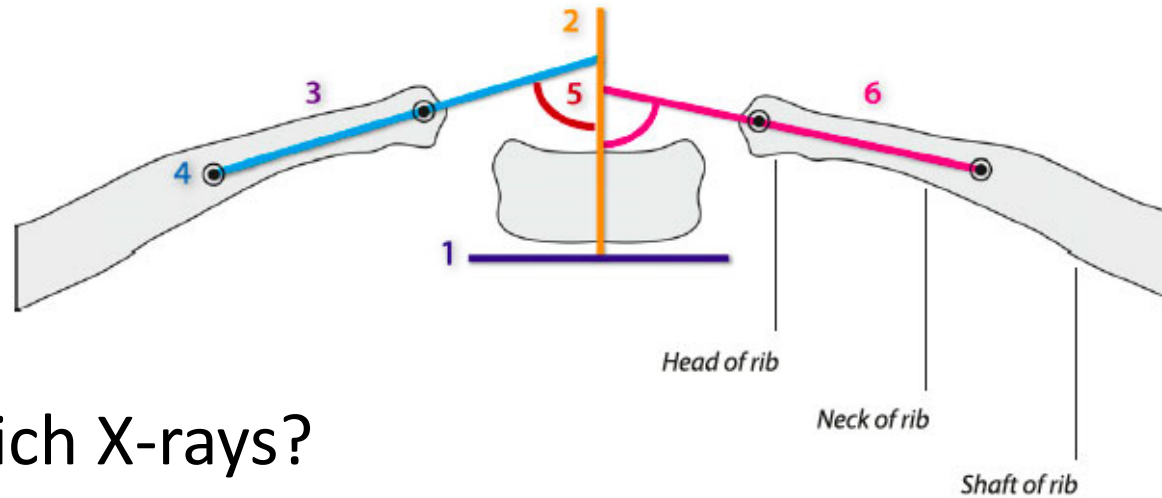


Mehta's Criteria



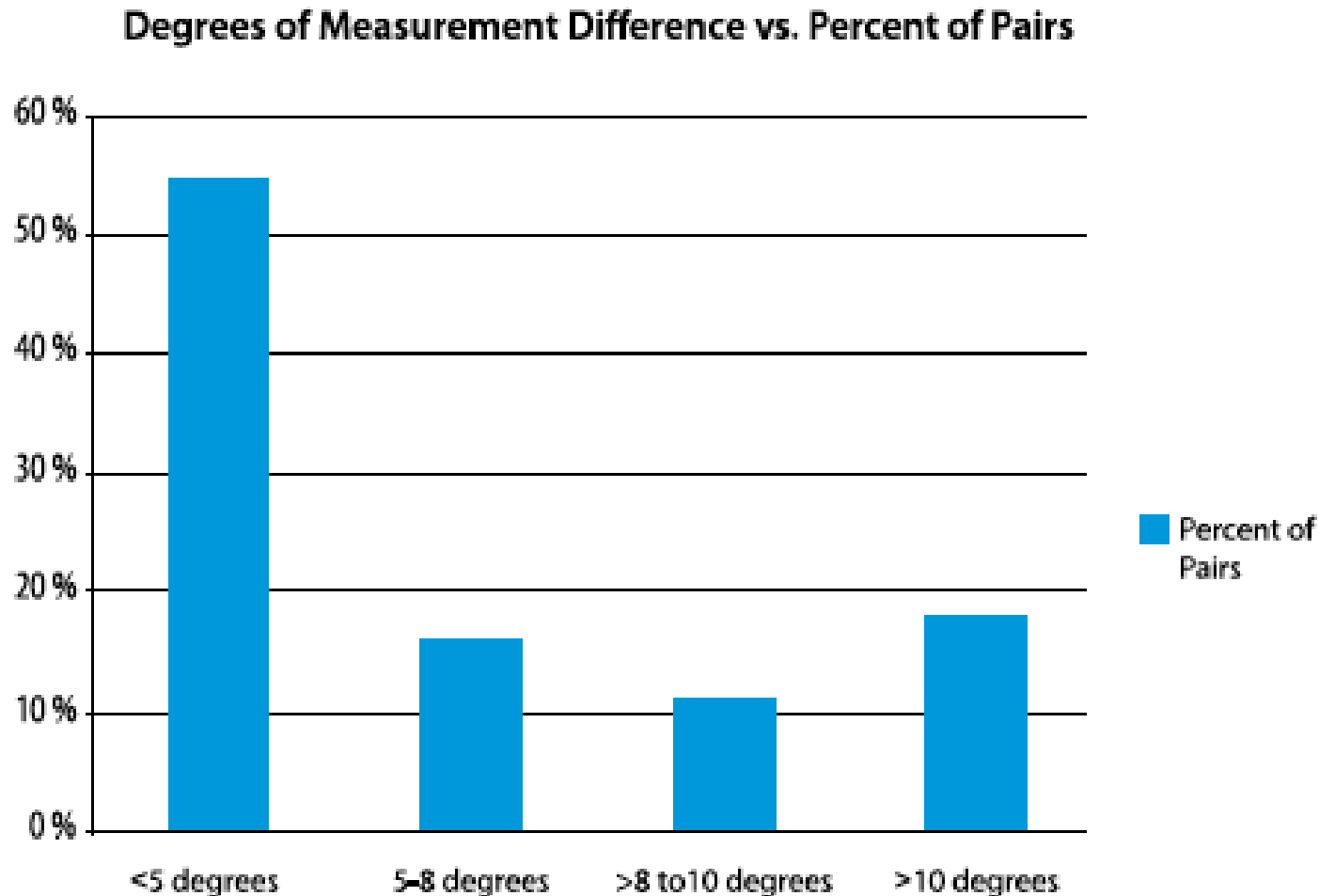
- Phase 2 – All Progress
- Thoracic Resolving – 83% RVAD <20
- Thoracic Progressive – 83% RVAD >20
- If unclear, repeat x-ray to see if RVAD increased at 3 months
- Double Curves – all progress. May appear just thoracic but have marked 12th rib asymmetry with thoracic concave downward dropping rib

Unfortunately, The Natural History is Still Murky



- Which X-rays?
 - Not Clear if Mehta's X-rays were Supine, Sitting or Standing
- Reliability:
 - Apical Vertebra: 47.1% interobserver 69.4% intraobserver
 - Phase : Substantial agreement ($\kappa = 0.67$),
 - RVAD : ICC 0.92 ICC inter and 0.86 intra

RVAD



18% of the RVAD showed $>10^\circ$ variation

This can be a real problem determining progressive vs. resolving with RVAD's 15-25 or even broader.

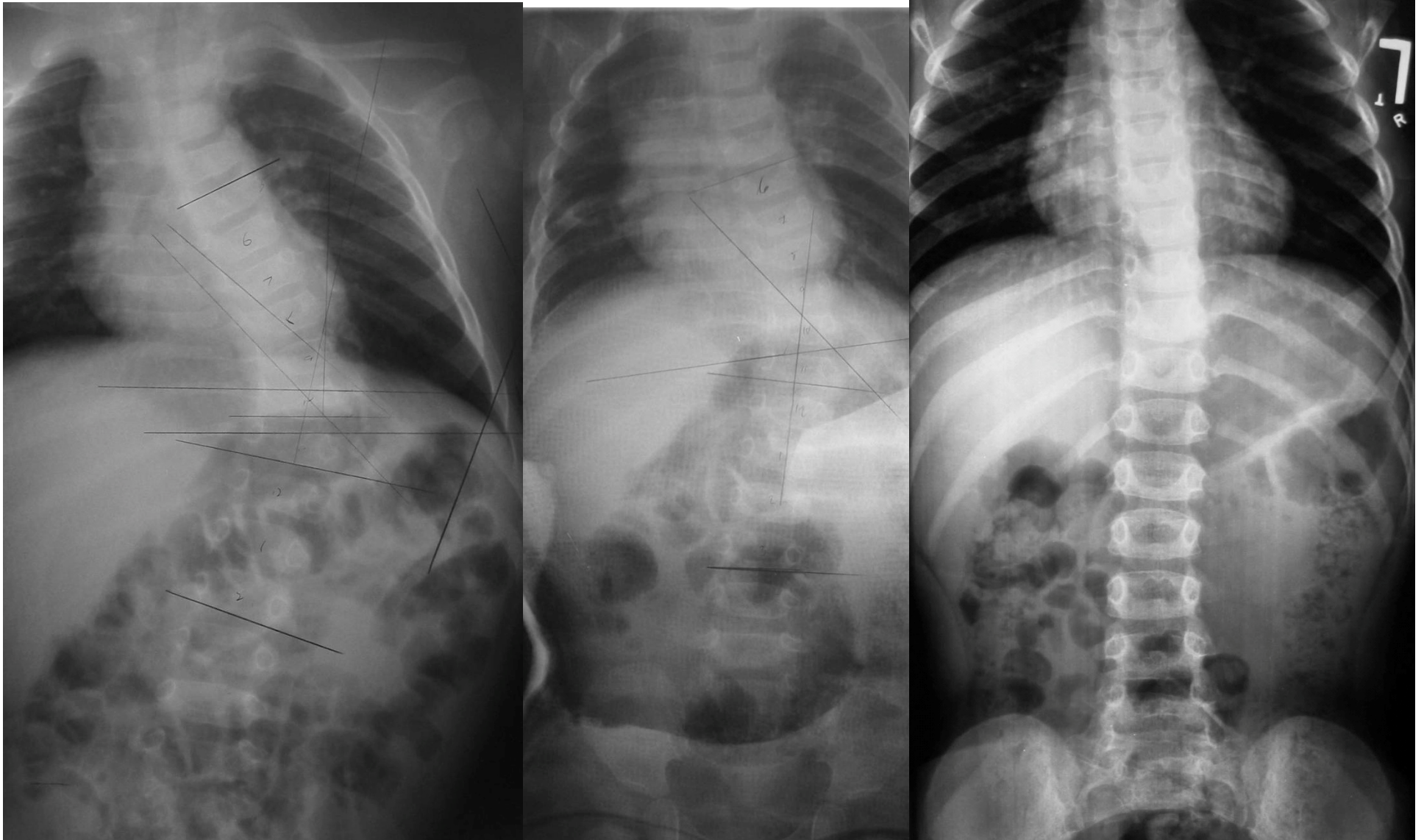
Negotiating the Start

- Family must agree to 1 year of casting – minimum
- Explain that even if the curve is not cured, delay for surgery has a purpose.
- Repeat growing rod or VEPTR lengthenings are NOT easier than casting.

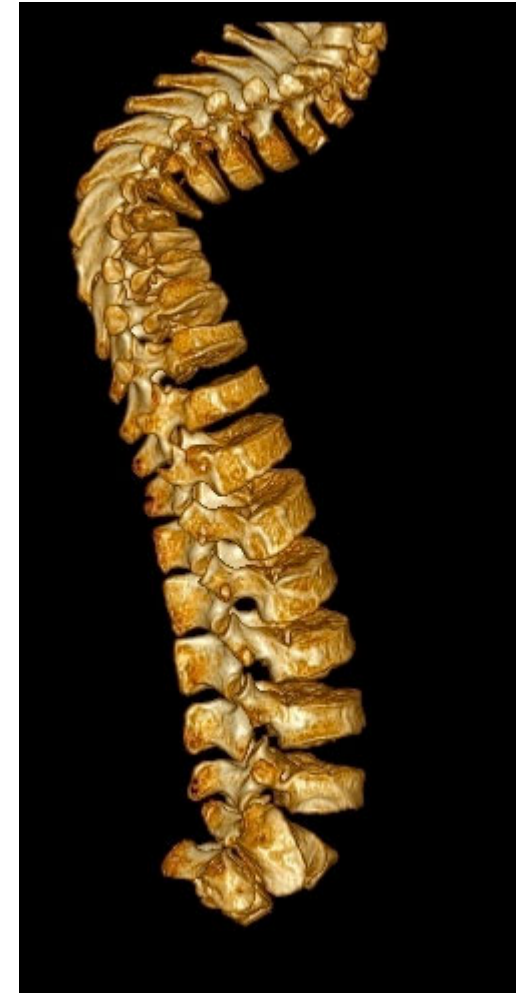
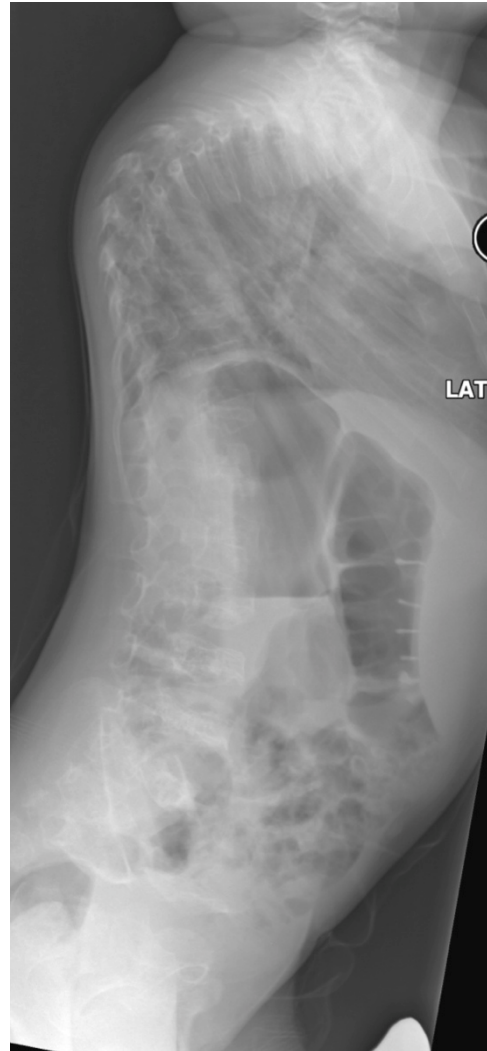
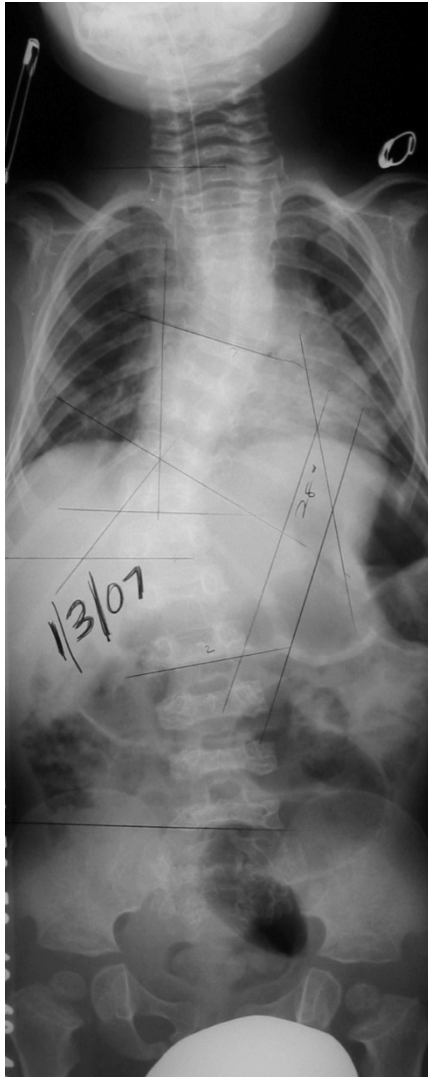
When to Stop?



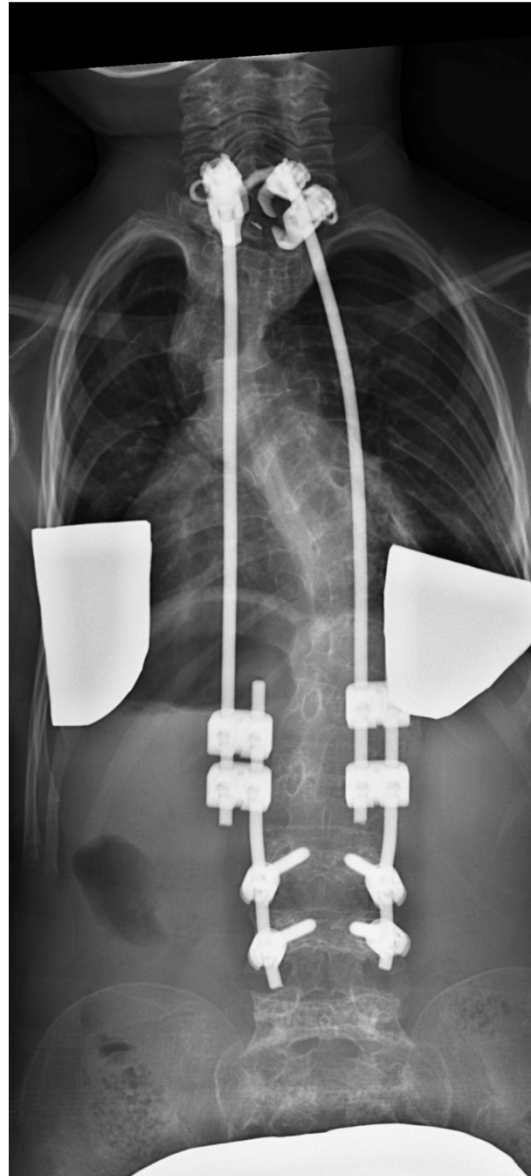
The patient doesn't need treatment



Your treatment either isn't working or is unlikely to work: spondylometaphyseal dysplasia with high thoracic kyphosis:



Halo Txn, growth rods

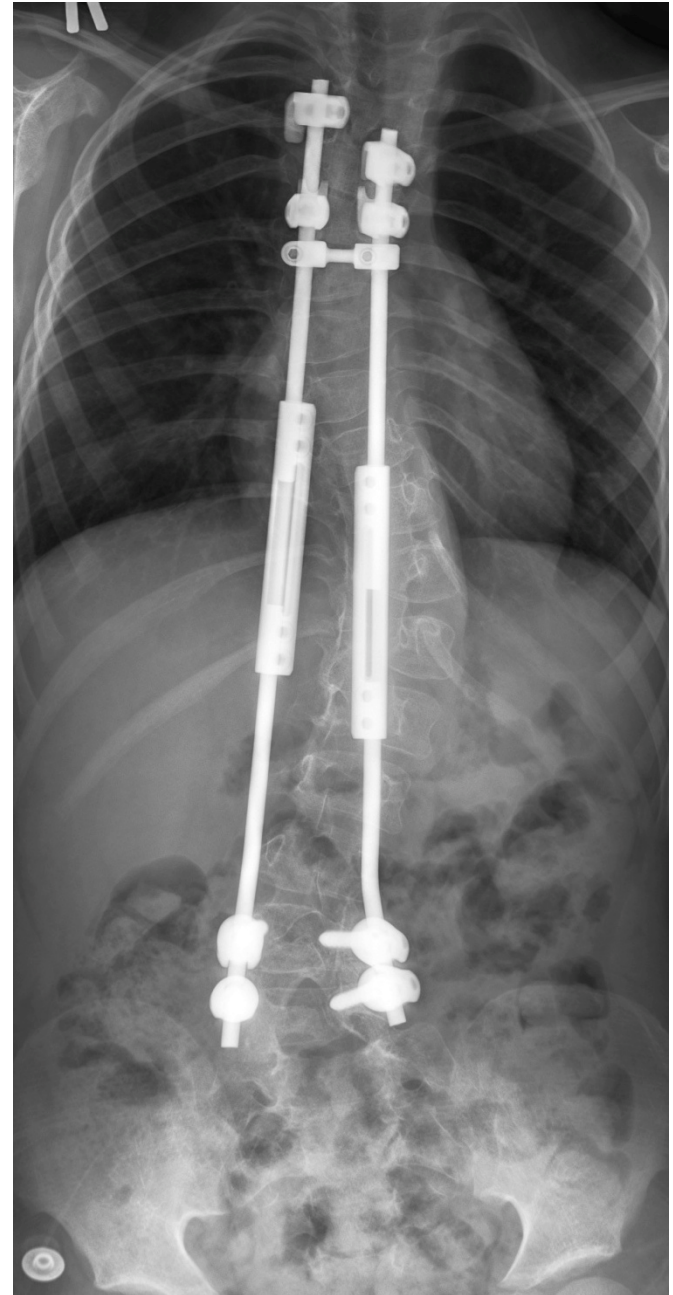


The problems of the current
treatment aren't worth it.
Ehler's Danlos – started casting age

3+7

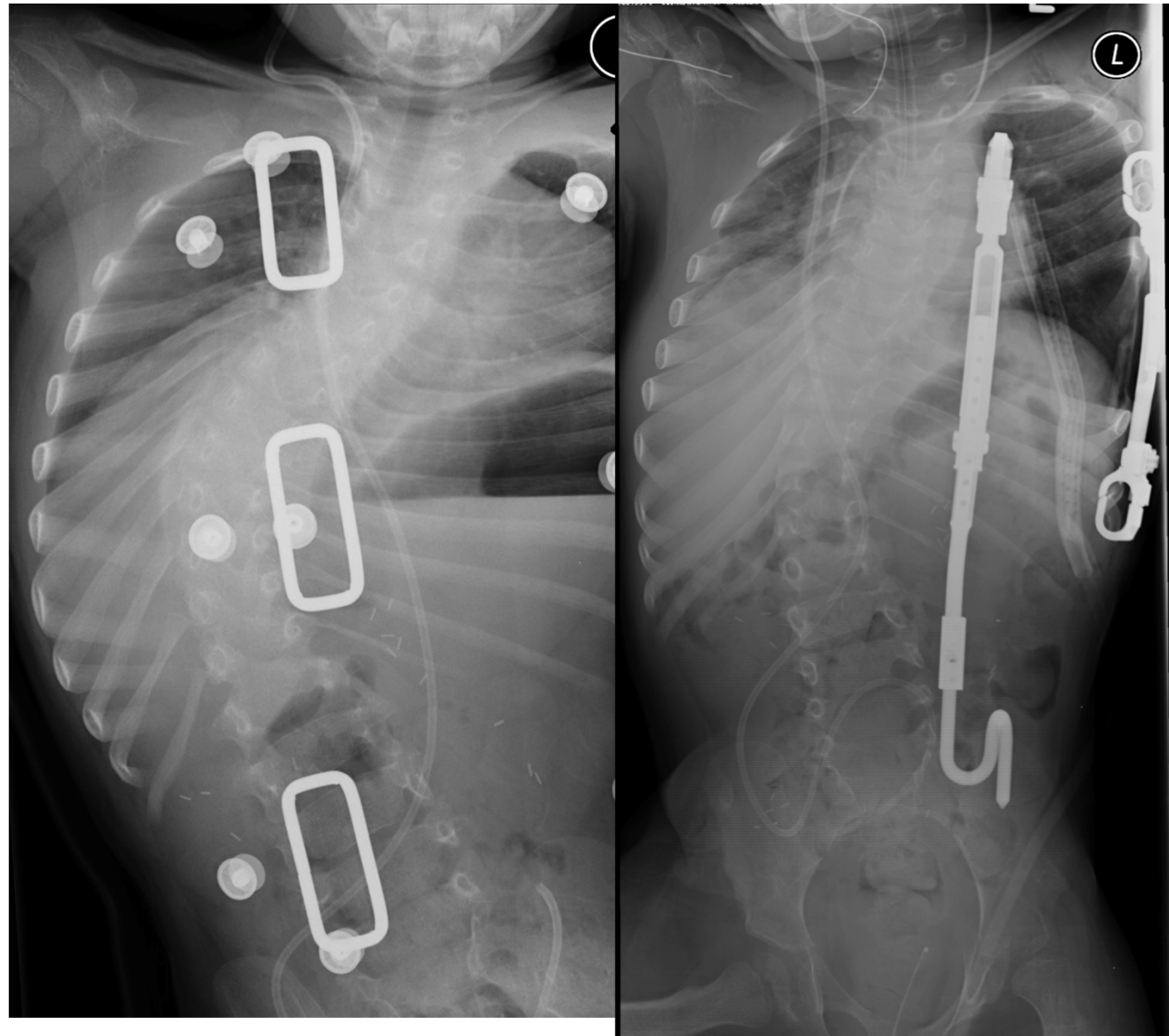


Age 5+2. Abdomen
would push through
cast. Uncomfortable.
Now age 10

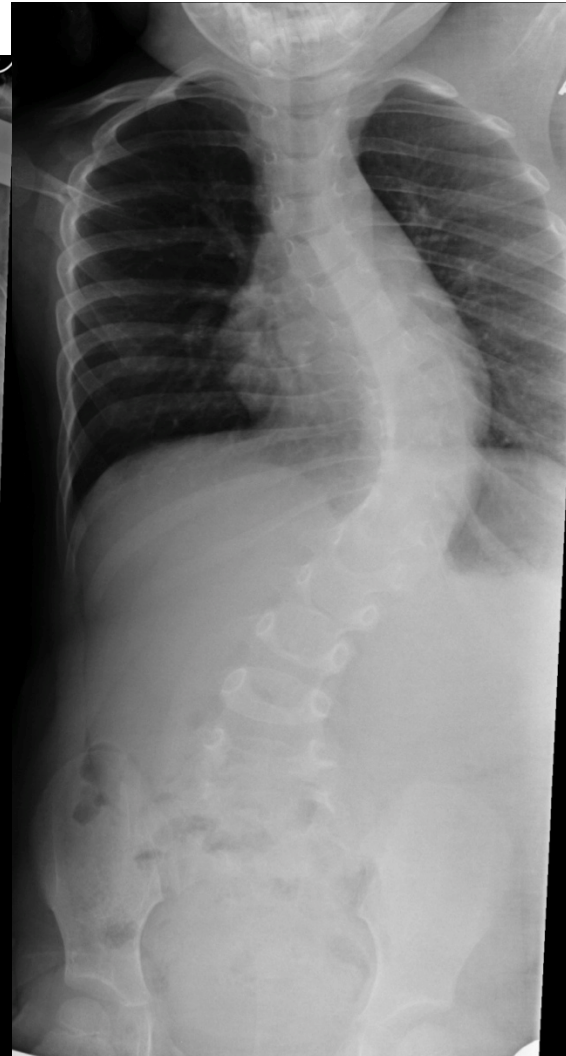
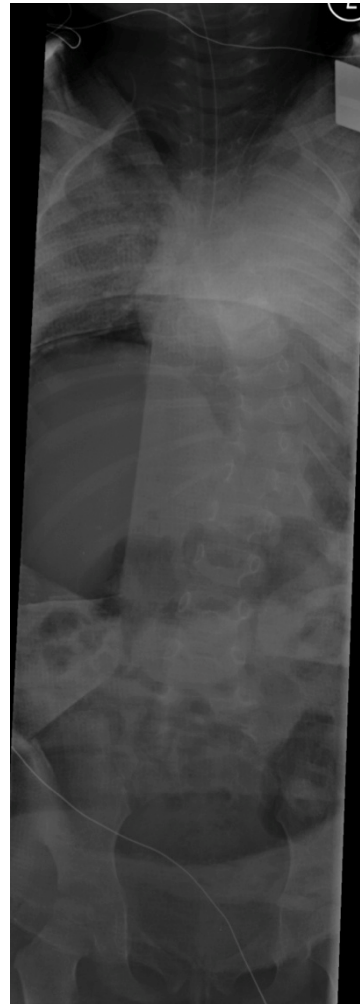


Another treatment is probably better:

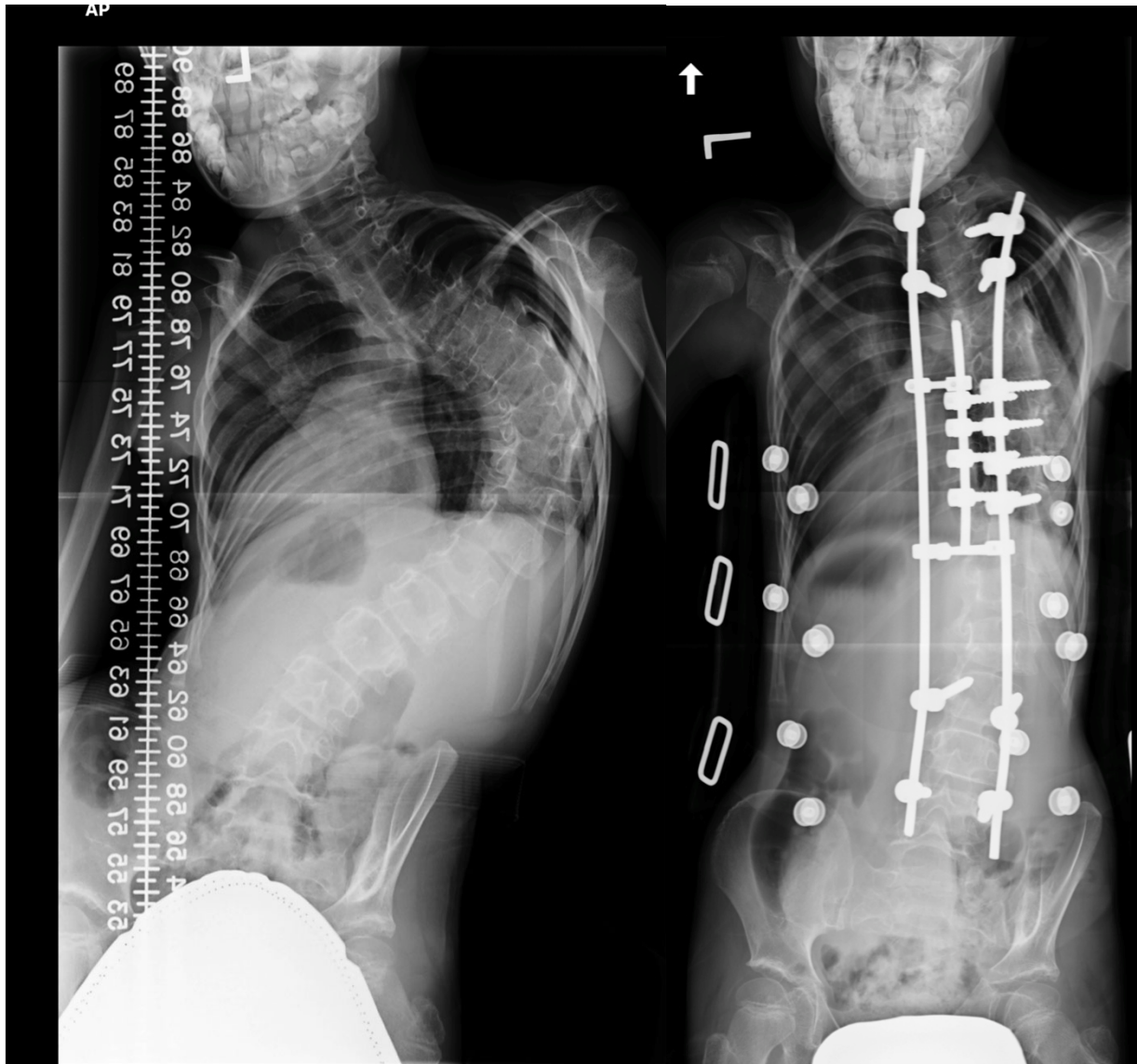
- SMA
- CP
- Myelo



3.5 yrs casting to age 6 and ready stop and
use growing rods



Surgery is the Only Real Option



Starting

- Diagnosed with Progressive Infantile Scoliosis
- Child OK for anesthesia
- Goals are either cure or delay surgery

Stopping

- The patient doesn't need treatment.
- Your treatment either isn't working or is unlikely to work.
- The problems of the current treatment aren't worth it.
- Another treatment is probably better.
- The family wants a different treatment and understands the issues.
- No way without surgery.

Sometimes a break can help

- Gortex pantaloons with fiberglass can be used in both smaller curves nearly resolved and in larger curves where the goal is delay.
- Non-resolving curves can use a summer time brace and recast with cooler weather

Thank you

