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VEPTR Can be Used in a Fusionless Procedure

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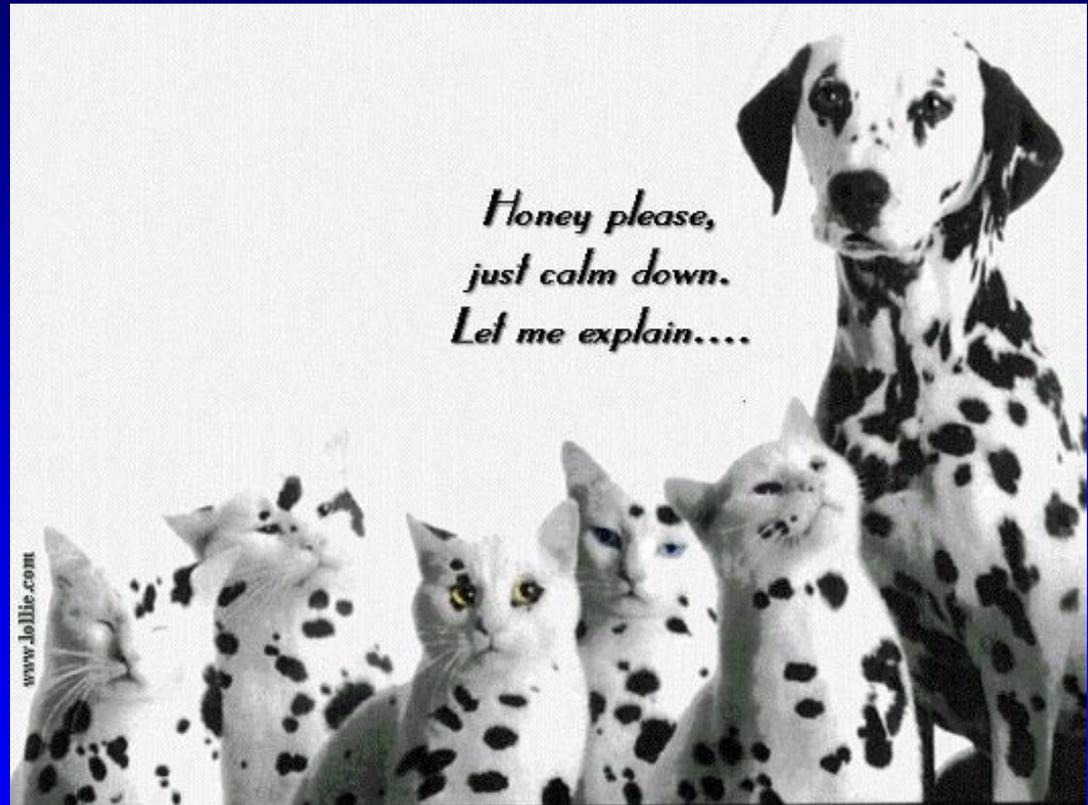
Morgan Stanley
Children's Hospital of New York-Presbyterian
Columbia University Medical Center



Columbia Orthopaedics
Pediatric Orthopaedic Surgery

Disclosures

- I am a consultant for Stryker Spine and Biomet Spine
- Royalties from Biomet Spine
- Receive Divisional support from Medtronic, Biomet, AO Spine
- Almost nothing I am discussing is approved for the indications that I am using it



No Conflicts Related to Presentation

End of Construct Failure

occurs when construct feels high loads

(PJK, Prox Hardware failure, Rod)

- Affected by patient size and curve –
 - Traction !
- Affected by differing anchor types
 - Sloppy vs rigid
- Affected by lengthening mechanism
 - physiologic vs nonphysiologic

C.F. – Kyphoscoliosis in 2 yo



- **Traction**
- **Sloppy Anchors**
- **Physiological lengthening**

Preop Traction 11.16.09



Growing Rods for Kyphoscoliosis



Use of Halo

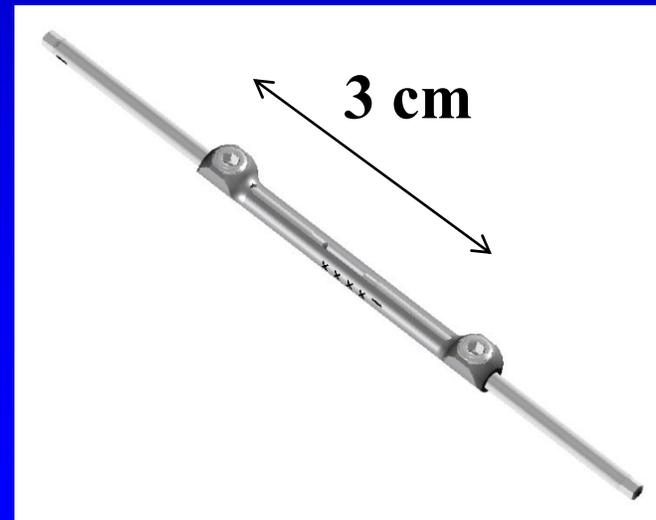
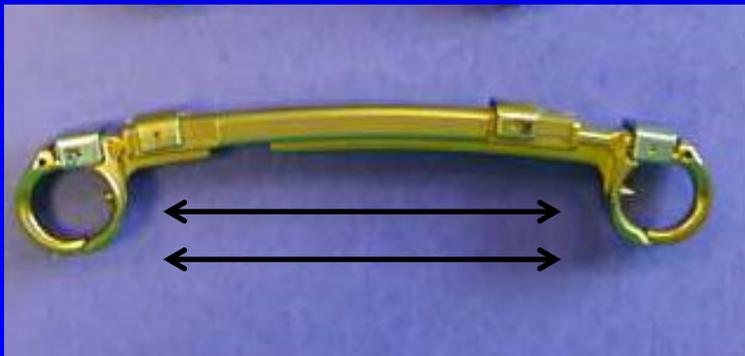
Non physiological lengthening

Distraction: Growth Rods vs VEPTR

1x vs 2x lengthening



physiological lengthening



VEPTR – control of distraction

physiological lengthening



500 mm

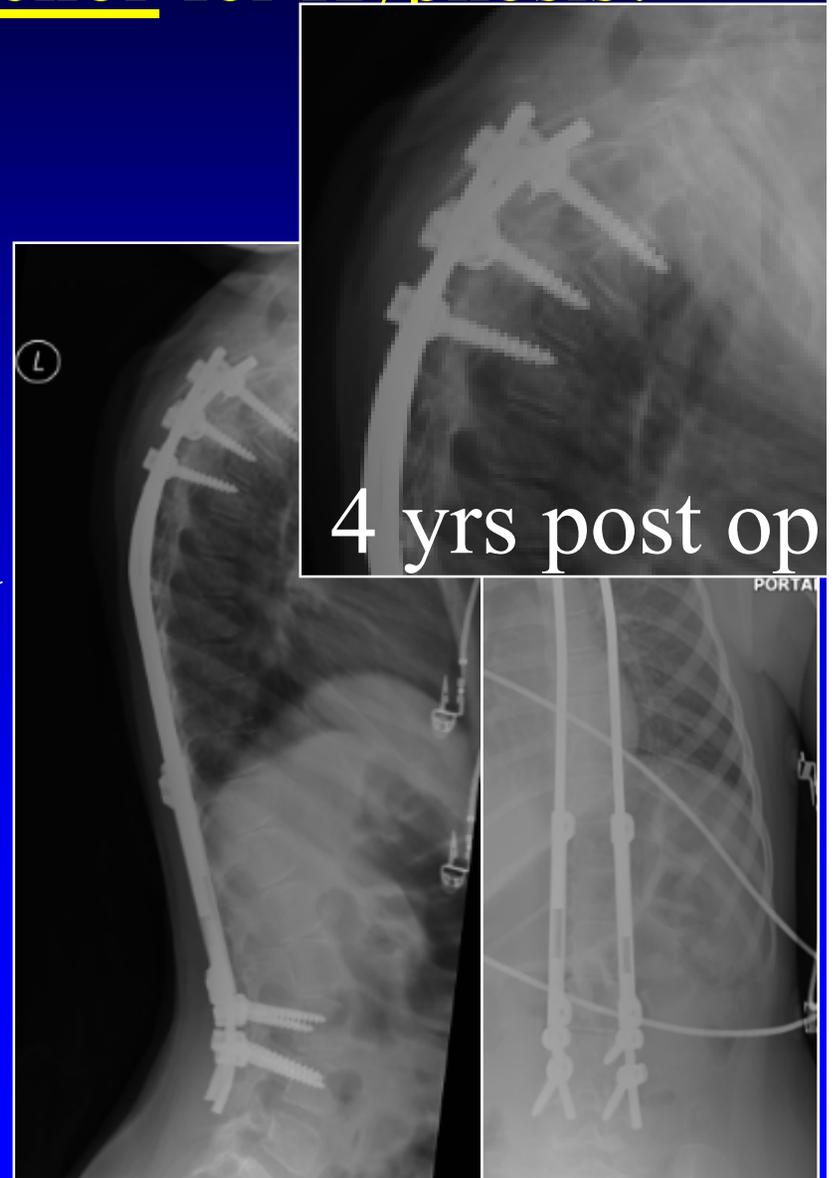


220 mm

Expandable Rods: What is ideal Proximal Anchor for Kyphosis?

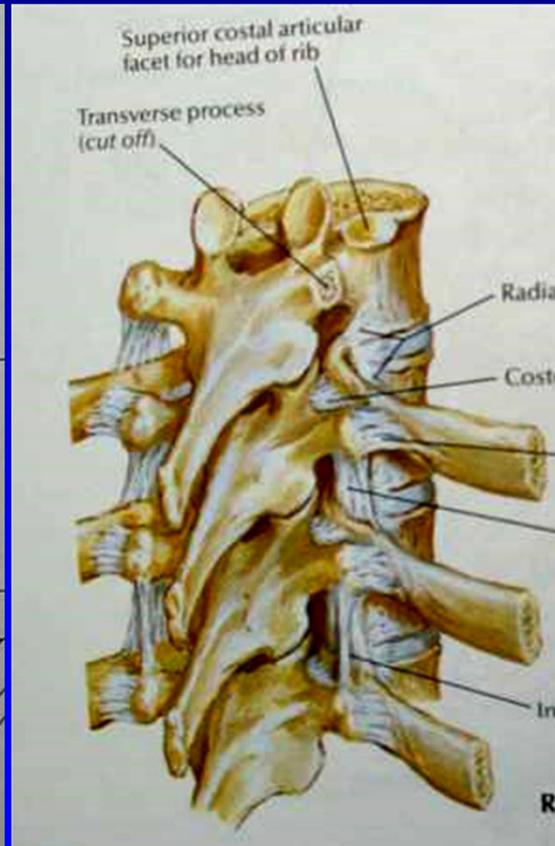
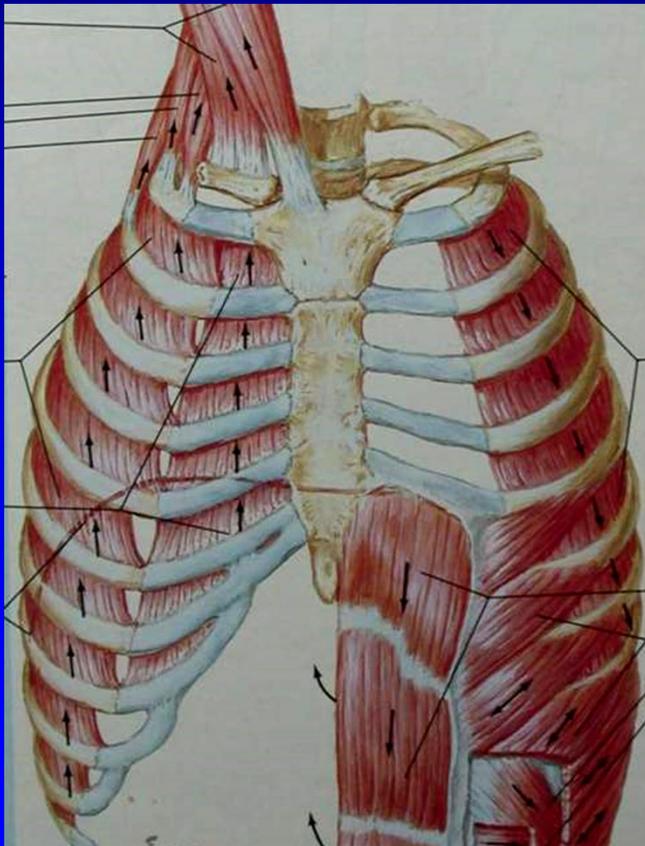
- Proximal Junctional Kyphosis more likely
- Intuitively worse with rigid fixation and more midline dissection

Anchors



Costotransverse joint and nonrigid fixation to rib allows “low modulus construct”

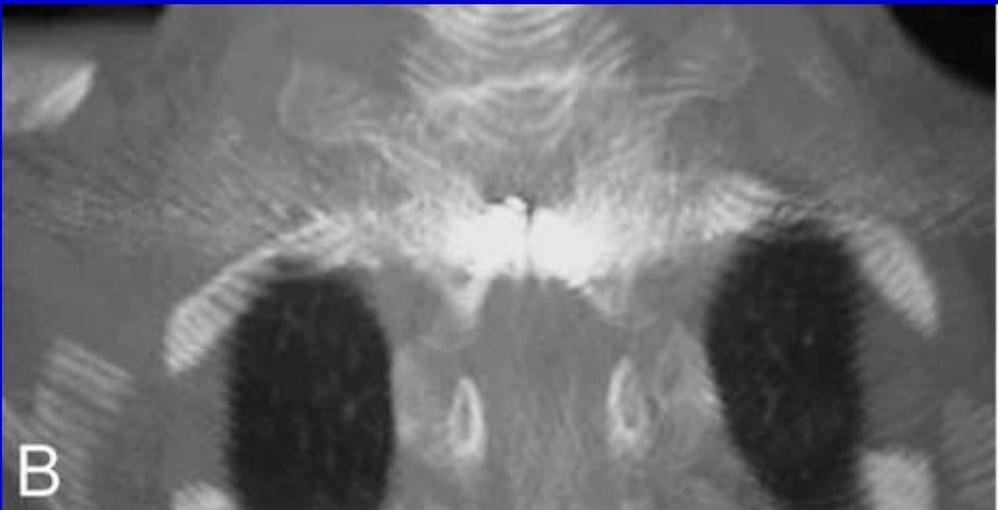
Anchors



Pedicle Screws in Young Kyphotic Kids: Lessons Learned



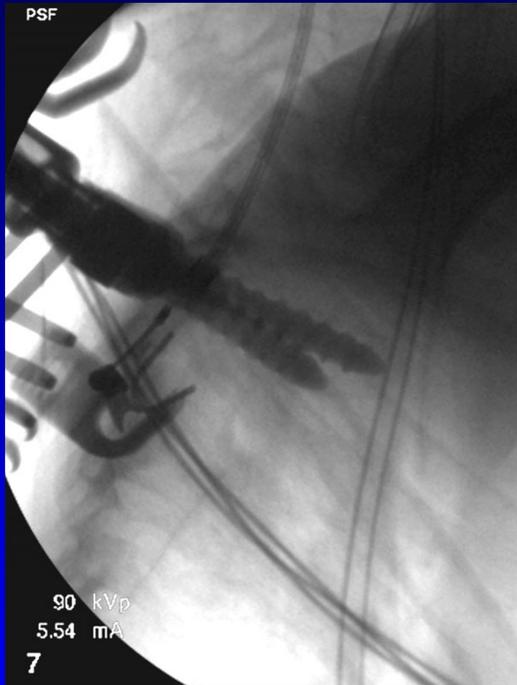
- Case report of screw pullout in growing rod resulting in paralysis



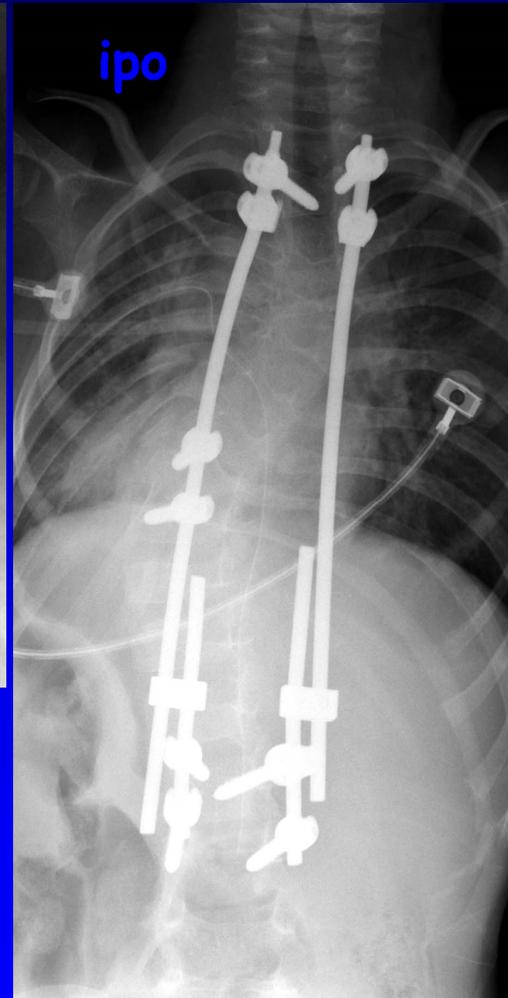
- Foundation should have at least 2 screws at different levels

Anchors

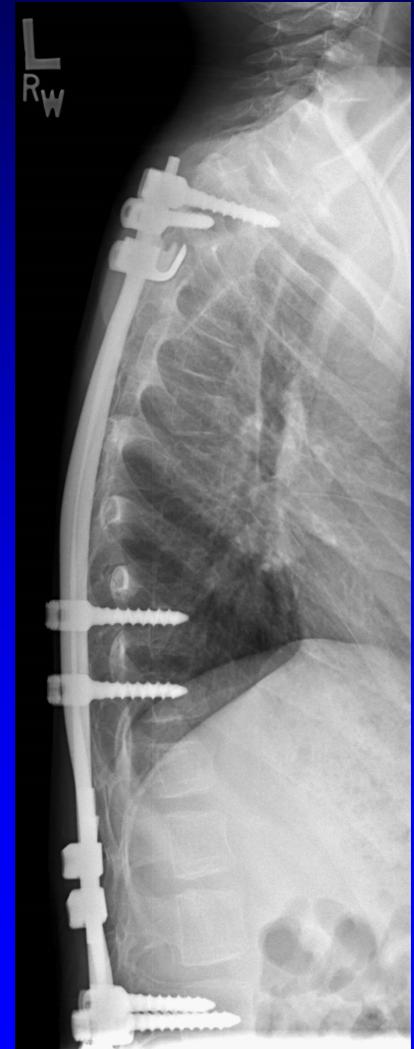
If you think t.p.s. might be better
upper thoracic anchor.....



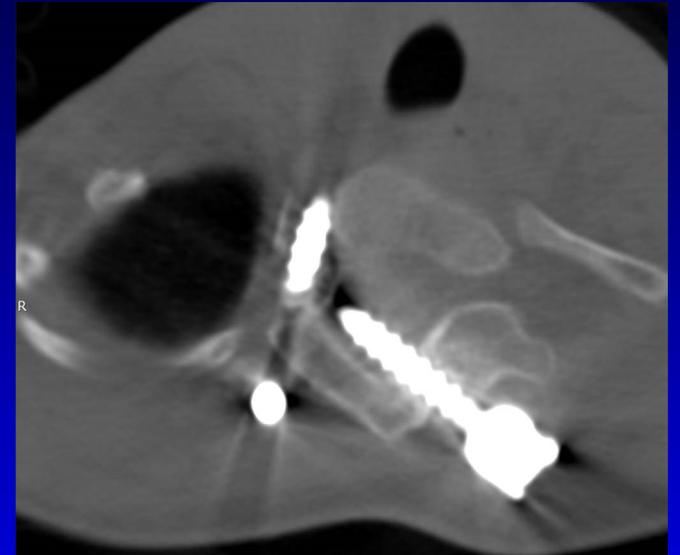
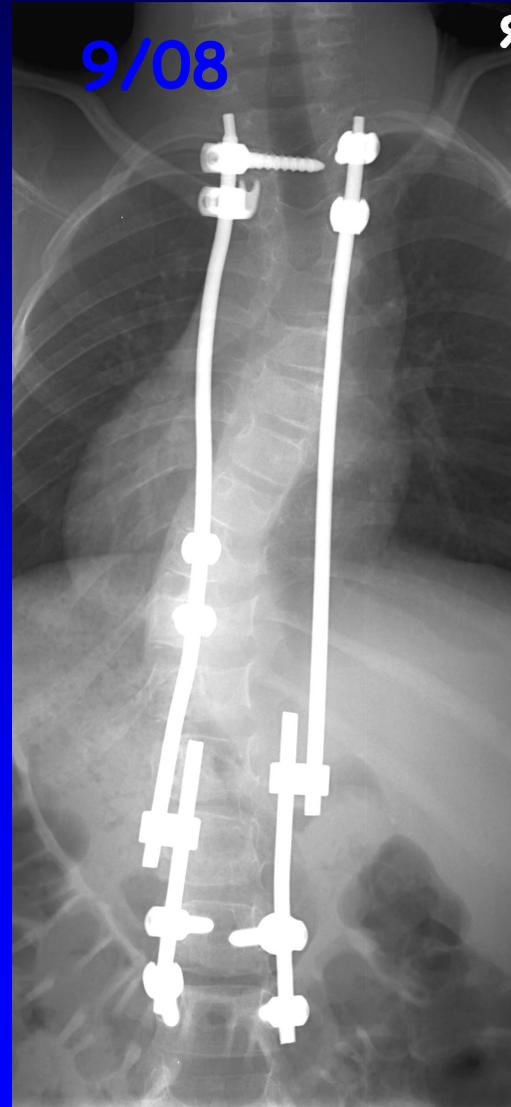
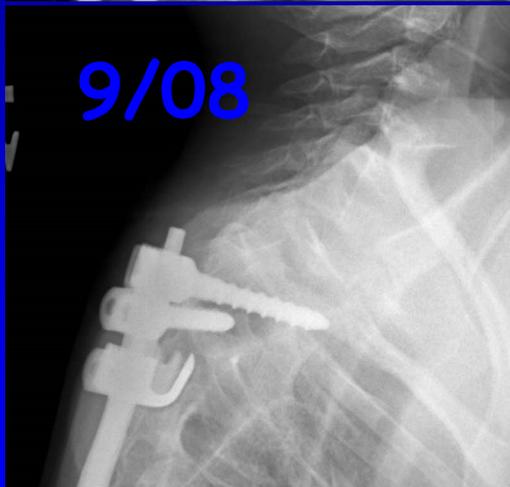
Dos 9/06
uneventful



2 yr
later,
lengthen
x3
uneventful



Spastic paraparesis, urinary retention
5 mo after last uneventful lengthening

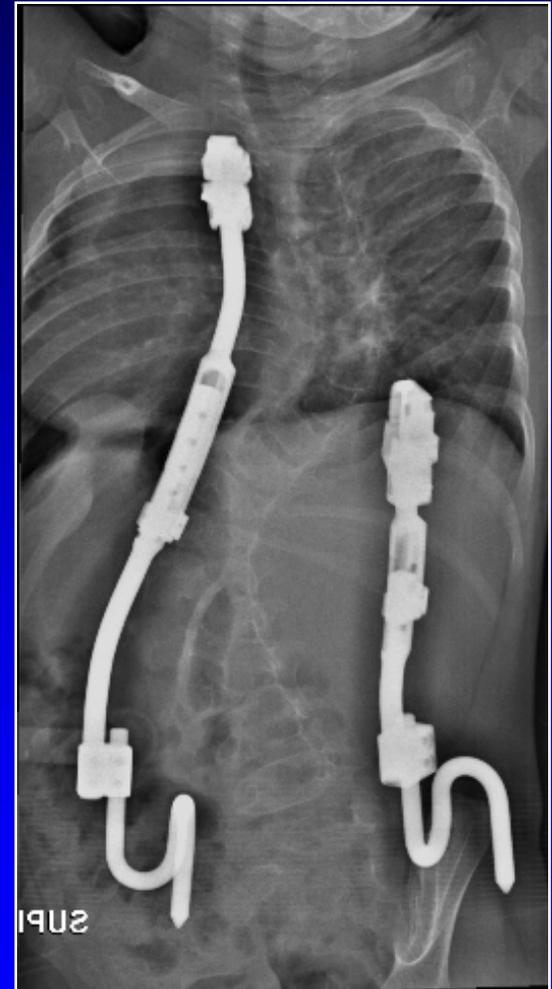


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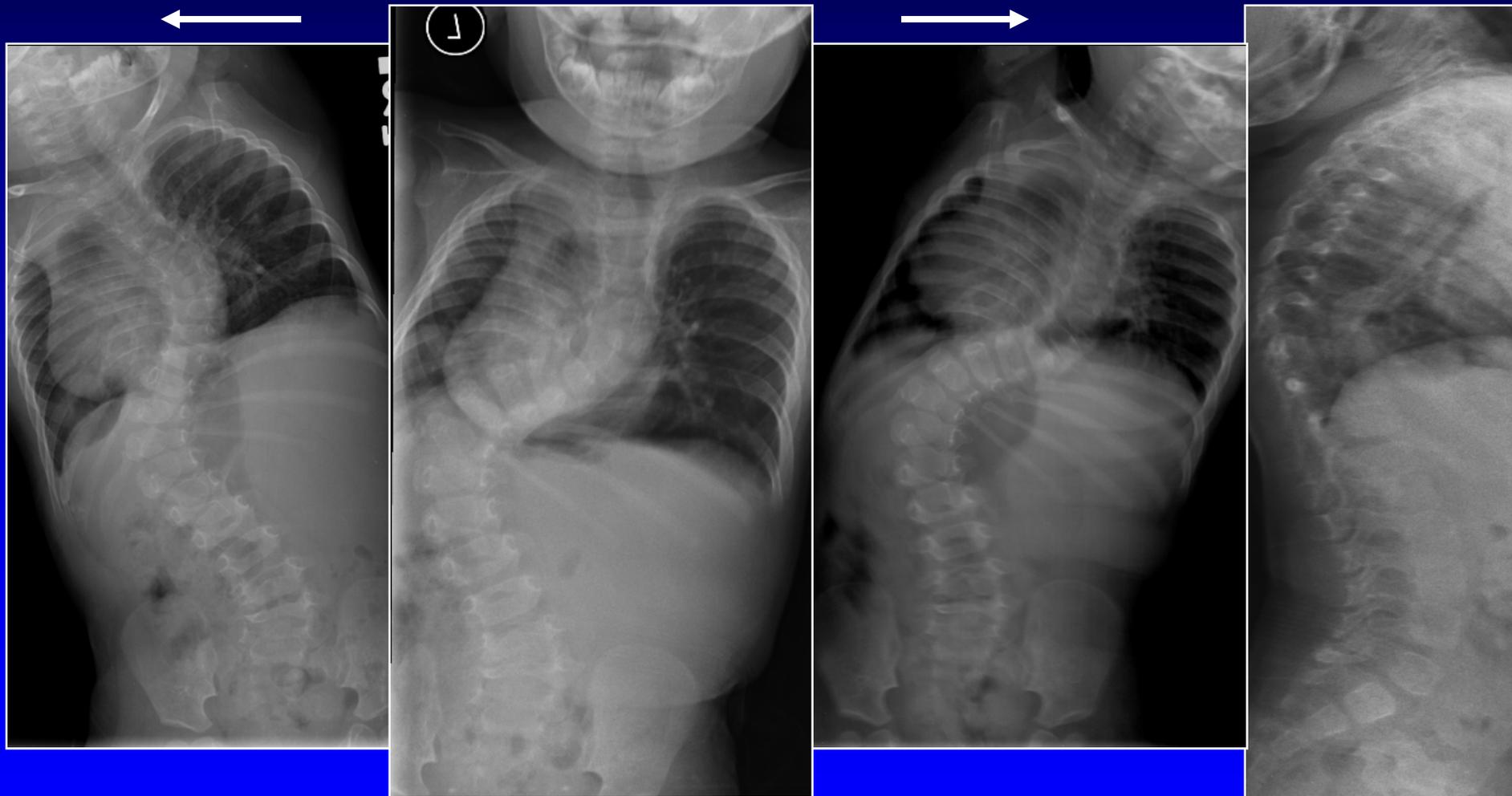
Rib Foundations in the Young Child

- Use rib foundations *when possible* to stall in child <5 yo
- Safe, “sloppy” and effective
- Avoid midline

Anchors

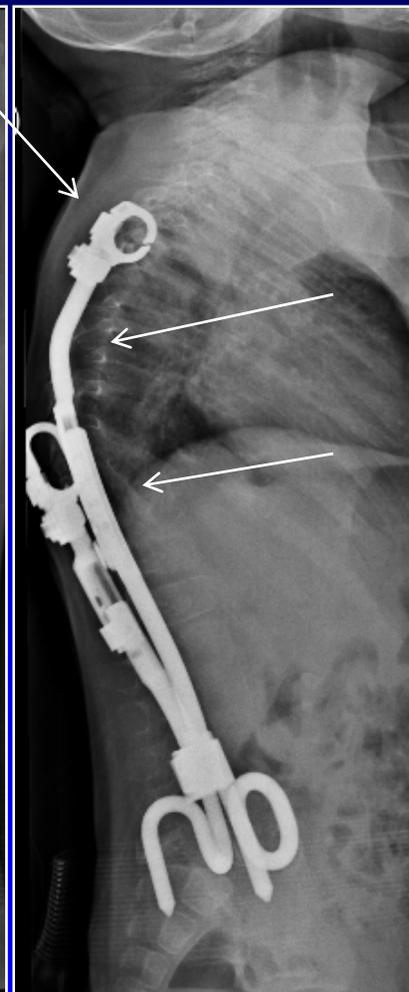
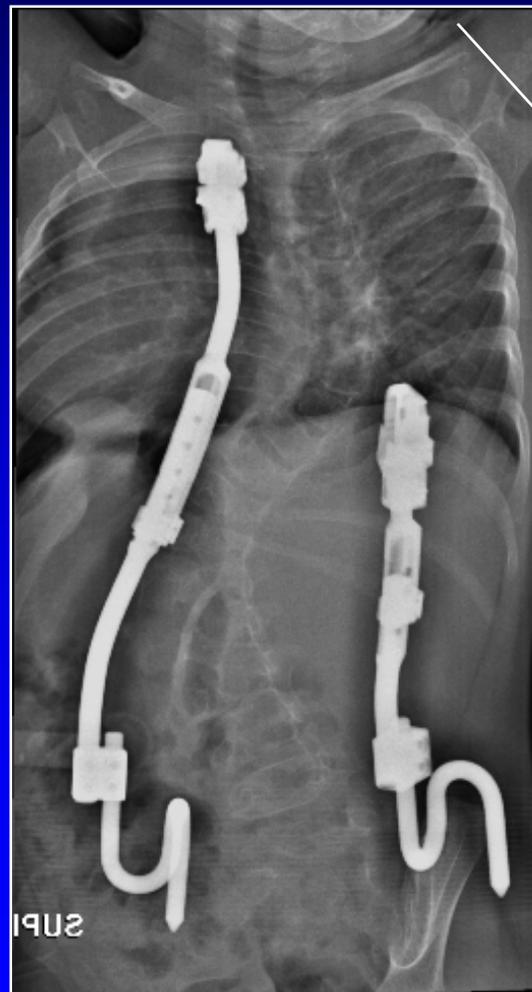
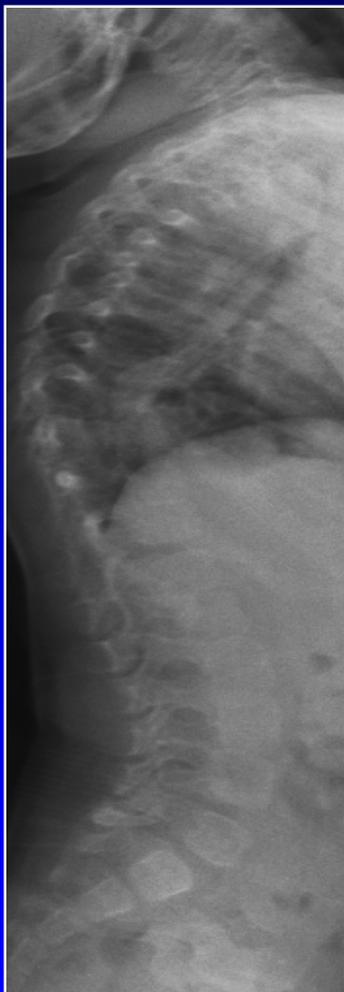


14 mo with kyphoscoliosis and CDH;
failed bracing



1/8/2009

E.W - 10 mo post op



DATA SPEAKS !

THE EFFECT OF VEPTR IMPLANTATION ON SAGITTAL PLANE ALIGNMENT

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M.S., KRISTEN ZAHARSKI B.A., MARY
RIORDAN B.A. AND THE CHEST WALL
STUDY GROUP

VEPTR in Hyperkyphosis

- 91 patients with fu > 2 years
- 19 patients with kyphosis >50 deg
- 72 patients < 50 degrees
- Mean age at Index Surgery 5yrs 4 mo
- Mean FU 42 mo

Results of VEPTR on Sagittal Plane

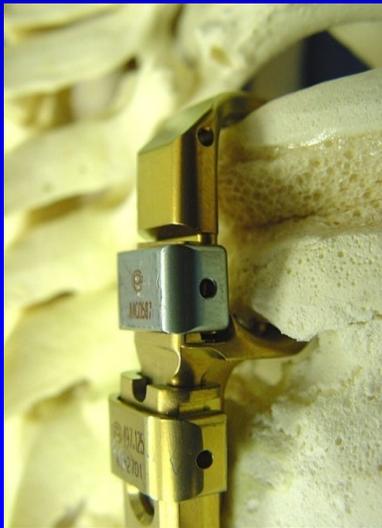
- VEPTR in normokyphosis < 50 deg
 - Preop 39
 - Post Op 39
 - Final 50 (lengthening is kyphogenic but ok)
- VEPTR in Kyphosis > 50 deg
 - Preop 70
 - Post Op 59 (cantilever reduction)
 - Final 75 (lengthening is kyphogenic but ok)

Growth Strategies for Kyphosis: Lessons Learned

- Preop traction - stiff kyphotic curves > 60
 - instrumentation holds better than corrects
- Sloppy (Low modulus) anchors
- Save bone for later
 - Avoid PS in young
 - Span deformity with long constructs

Conclusion: VEPTR is good option for hyperkyphosis

- Anchors are more forgiving
- Lengthening options more versatile
- Larger Device less likely to fx



Thank You



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