



# Management of Gibbus Deformity using Rib-based Distraction to the Pelvis:

John T. Smith, MD  
Jennie Mickelson, BS

University of Utah  
Salt Lake City, Utah  
USA

# Disclosures

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- Consultant: Synthes Spine
  - Royalties: VEPTR 2
  - Board Member: Chest Wall and Spine Deformity Research Foundation
  - Research support: Chest Wall and Spine Deformity Research Foundation
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# Background

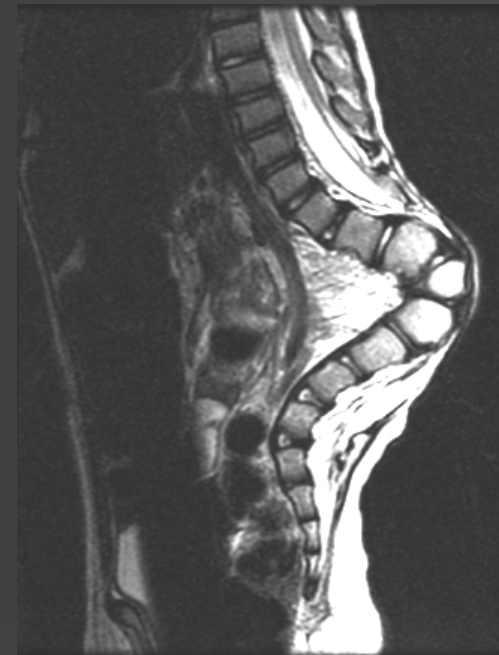
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- Gibbus Deformity in the growing child:
    - Challenging
    - Skin breakdown
    - Infection
    - Poor outcomes with early fusion/VCR
    - Secondary thoracic insufficiency syndrome
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# Surgical Options

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- Kyphectomy
- Skin Flaps
- Neonatal resection



Associated with a high rate of complications and a short trunk.

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# Utah Experience

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- IRB approved Single-Surgeon Consecutive Case Series
  - Congenital Gibbus Deformity managed with Bilateral Rib-Based Distraction to the Pelvis
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# Demographics

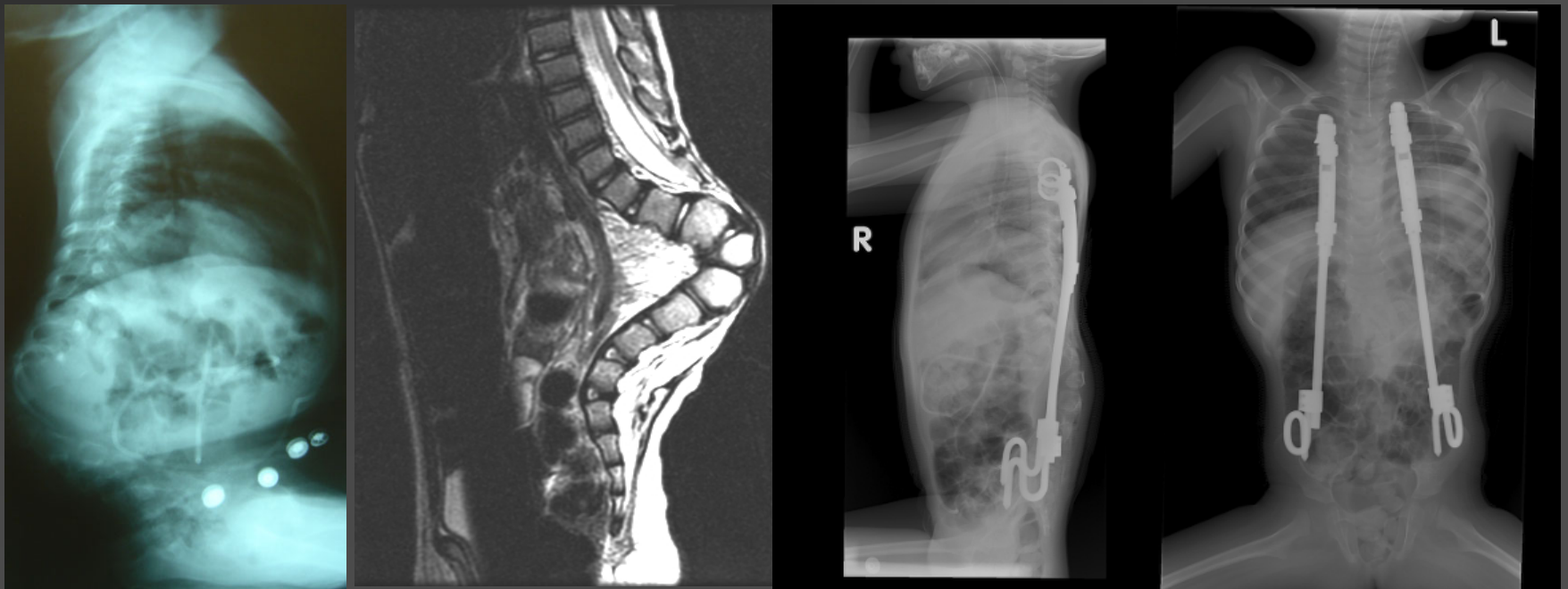
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- 4 Patients (2 males; 2 females)
  - Diagnosis: Myelomeningocele (2)
    - Congenital Kyphosis (1)
    - Congenital Kyphoscoliosis (1)
  - Average Age at Surgery: 20 Months (16-25 Mo.)
  - Average Follow-up: 26.2 Months (10-48 Mo.)
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# Cases

## 18 month old child with kyphosis of Myelodysplasia



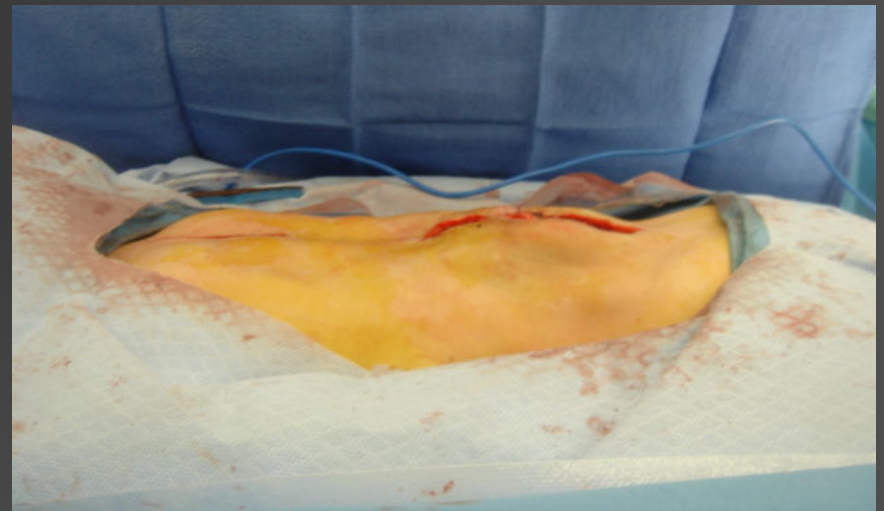
Smith et al; JBJS, October  
2010

# Intra operative



Prior to VEPTR  
insertion

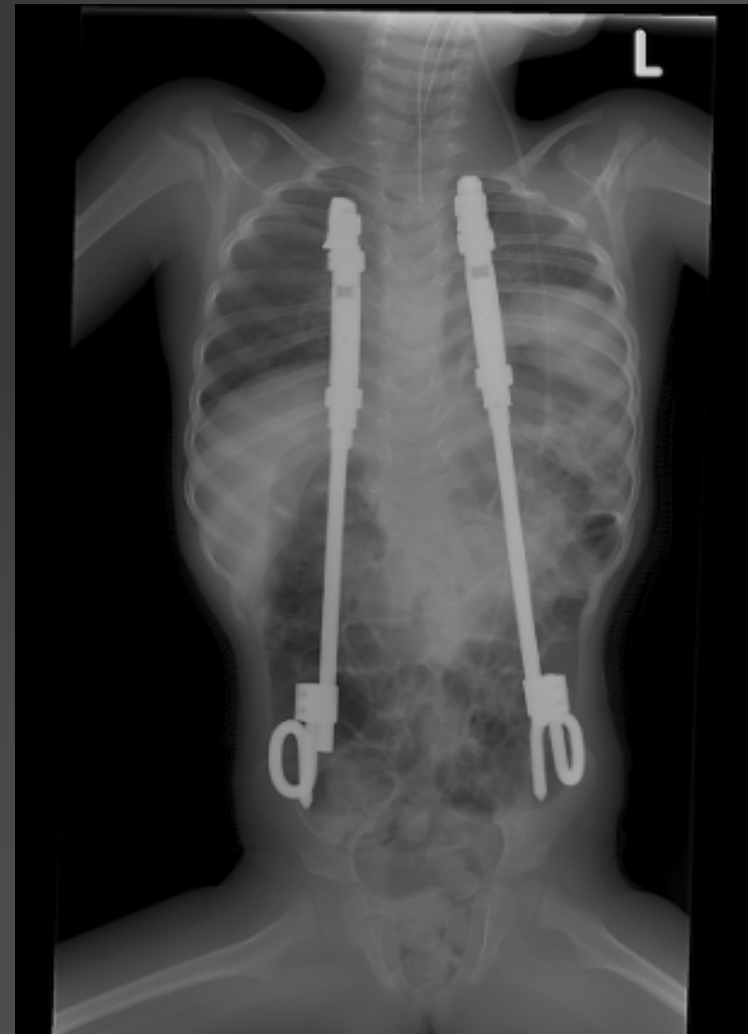
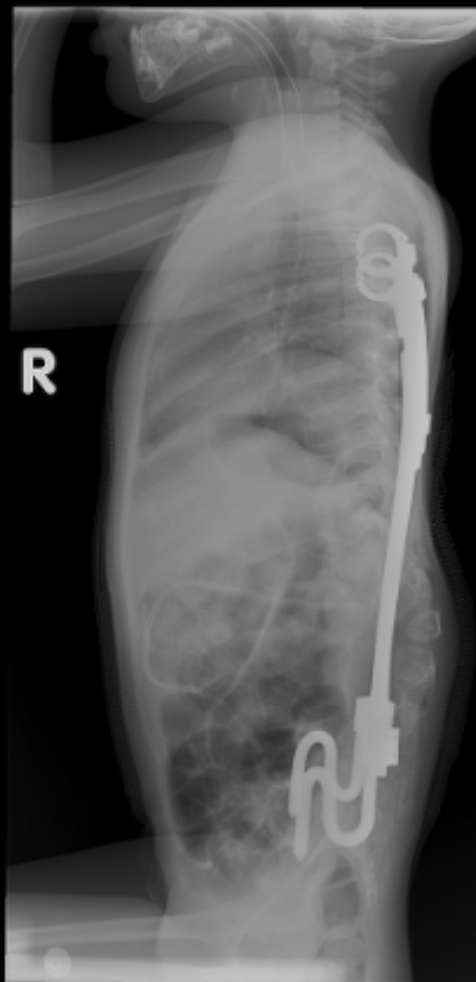
Skin expanders in  
place



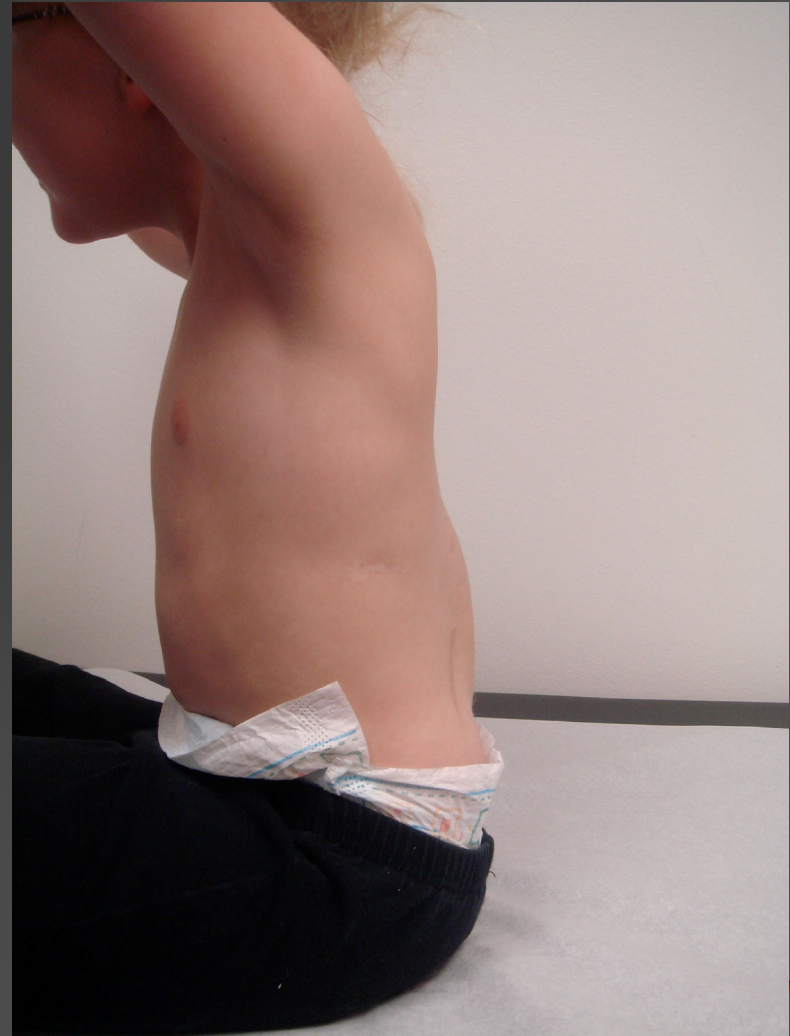
Post VEPTR insertion

No vertebral resection

# 1 Month Post-op



## 2 years after initial implant and expansions



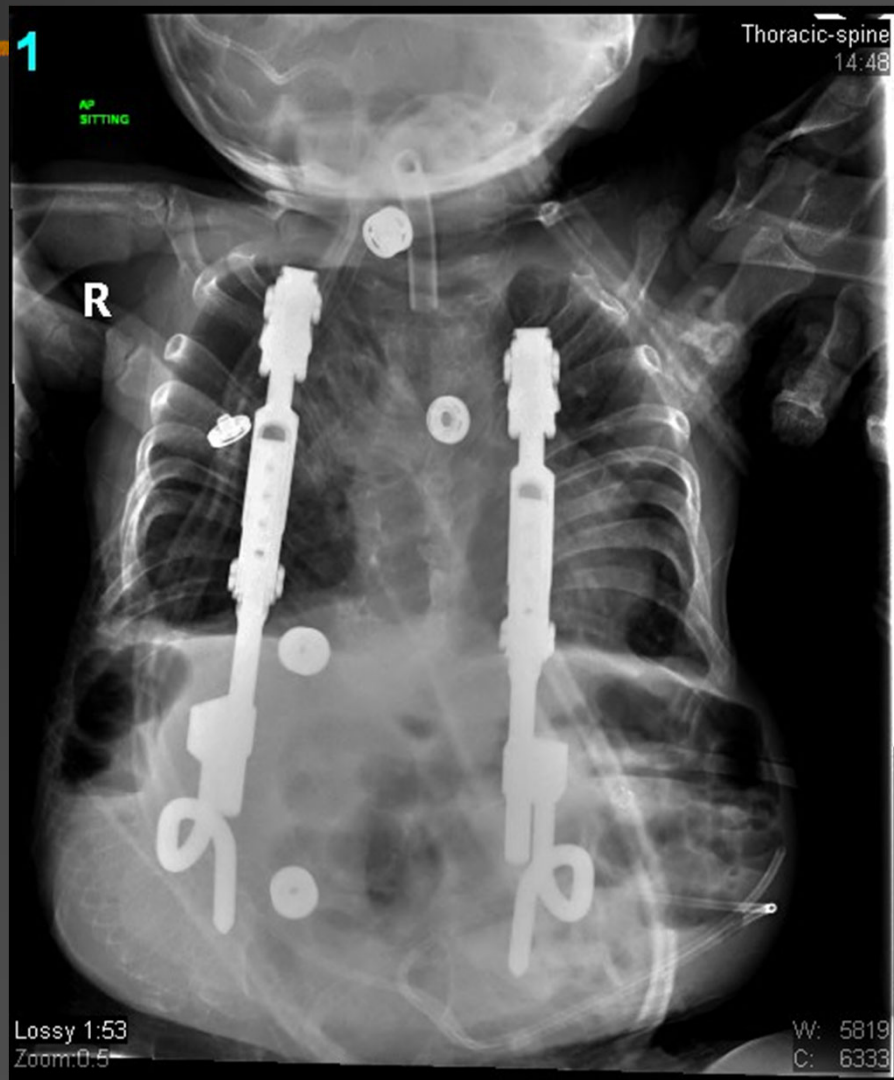
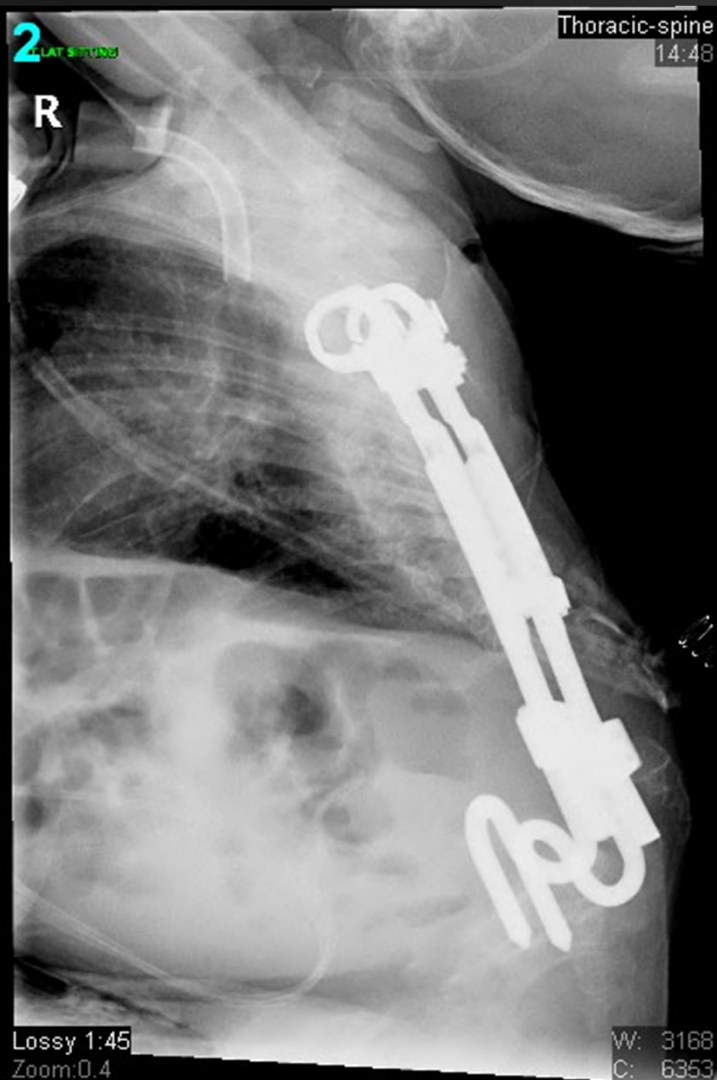
# 4 Year follow-up after exchange to VEPTR 2 Devices



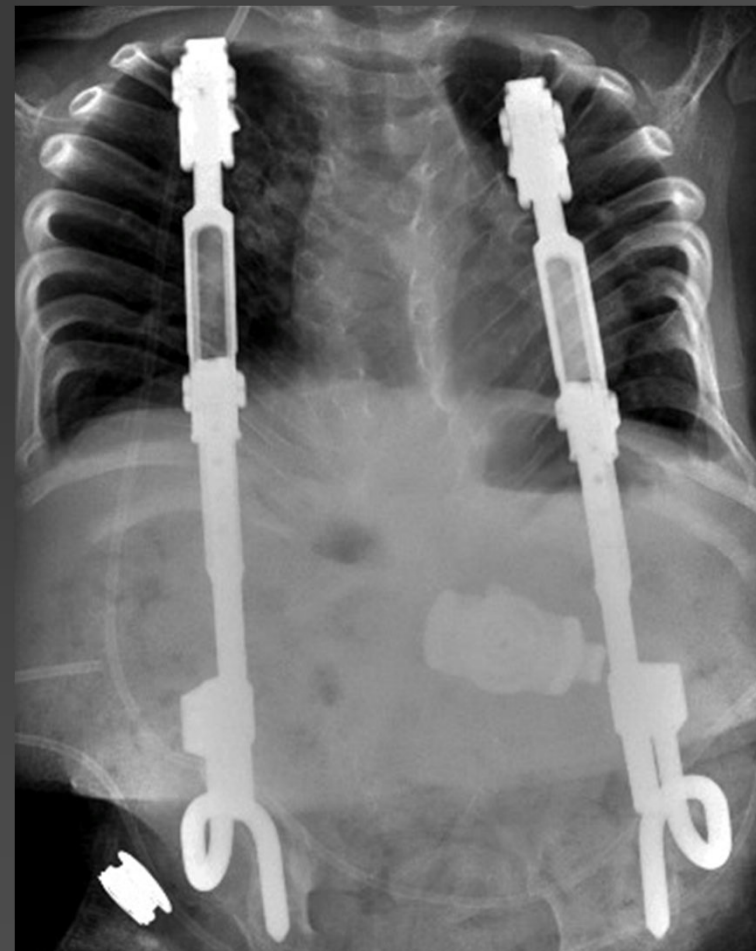
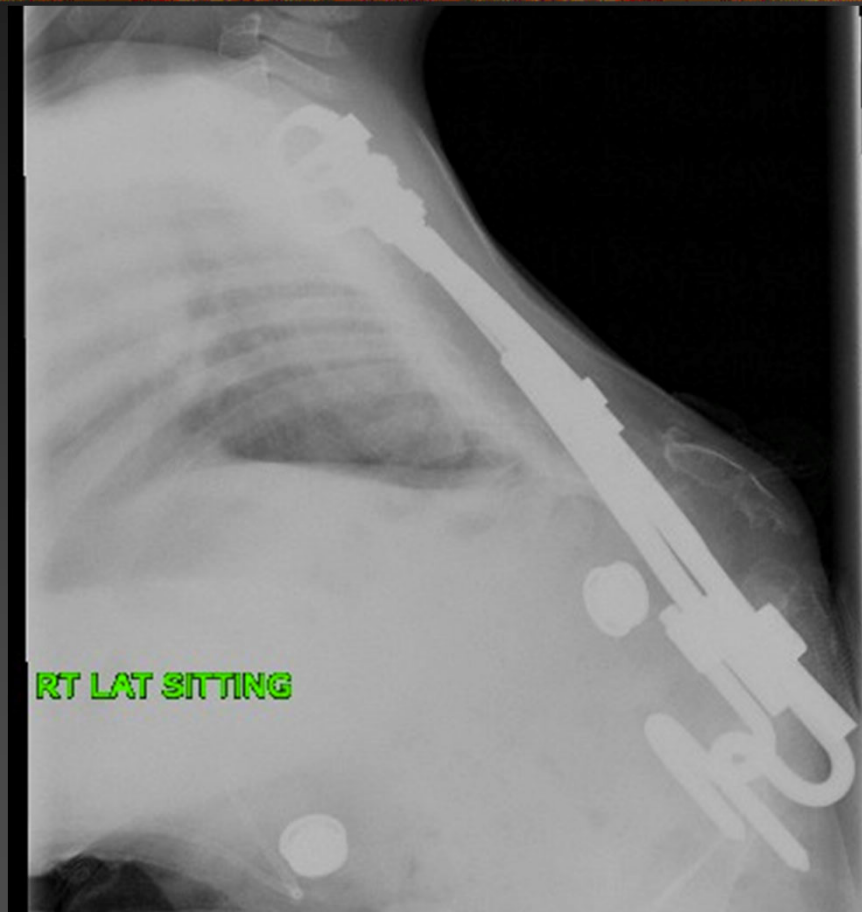
# 18 Month old boy with Spina Bifida and severe gibbus deformity. Trach dependent



# 1 month post op. Weaning off ventilator!



18 months/2 expansions from initial  
implant. Off Ventilator altogether



# Results

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- Pre-Op Gibbus:  $114^{\circ}$  (105-154 $^{\circ}$  )
  - Post-Op Gibbus:  $52^{\circ}$  (36-80 $^{\circ}$  )
  - Complications: 2
    - Dural leak after expansion
    - Infection after initial implant, resolved with debridement and antibiotics
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# Discussion

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- Advantages:
    - Avoids the poor midline skin
    - Avoids early fusion and short trunk
    - Preserves sitting posture on ischium rather than sitting on the sacrum due to 2° lumbo-sacral kyphosis
    - Surprising flexibility of the gibbus deformity when done early
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# Conclusions

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- Early results promising
  - Recommend early intervention
  - Better than early fusion/kyphectomy
  - Growth sparing
  - Complications acceptable to date
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An aerial photograph of a city nestled at the base of large, rugged mountains. The city features a mix of modern and older buildings, including a prominent white multi-story building with a grid-like facade. In the foreground, there are residential houses, a large white dome-shaped structure, and a road with a few cars. A construction crane is visible on the left side of the image. The text "Thank you" is overlaid in a yellow, sans-serif font on the right side of the image.

Thank you