



# Can Infection Associated with Rib Distraction Instrumentation be Managed without Implant Removal? A Multi-Center Study

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# Disclosures

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- \*Paid Consultant Synthes Spine, USA
  - \*Royalties: VEPTR 2 device
  
  - \*\*Nothing to disclose
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# Background

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- Rib Distraction Techniques (i.e. VEPTR) are widely used for management of:
    - Thoracic Insufficiency Syndrome (TIS)
    - Progressive scoliosis with chest wall constriction
    - Hypoplastic thorax syndromes
  - Complications remain problematic
    - Migration
    - Wound slough
    - ***Infection (~15%)***
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# Infectious Disease Literature

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- Established infection following spinal instrumentation and fusion usually *requires* implant removal
  - Infection demands prolonged antibiotic management
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# Smith et.al. SRS 2009

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- Single institution review of infections associated with Rib-based Distraction
- 19 infections in 16 patients
- All managed with I&D, antibiotics and resolved
- ***No patient required implant removal***

Spine 2010, in press

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# Research Question:

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Can infection associated with Rib Distraction Techniques managed without implant removal be validated at multiple institutions?

Are infections associated with non-fusion technology (Growing Instrumentation) *different* than infections after spinal fusion?

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# Methods

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- IRB approved Retrospective chart review
  - All VEPTR patients at Sites 3,6,& 7
  - 2002-2009
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# Diagnosis: Infection Group

- Jeunes Syndrome (1)
- Jarcho-Levine Syndrome (1)
- Congenital Myopathy (2)
- Progressive scoliosis (2)
- Spina Bifida (2)
- Congenital Scoliosis (11)
- Cerebral Palsy (3)
- Poland Syndrome (1)
- OI (1)
- Arthrogrposis (1)
- Beals Syndrome (1)
- Spondylo epiphyseal dysplasia (1)
- Rib Fusion after TEF repair (1)

# Results

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- 176 patients treated with Rib Distraction Techniques at 3 participating institutions
  - 31 infections in 28 patients
    - Superficial: 19
    - Deep: 12
    - 16% of patients experienced at least one infection
    - 2.3% of patients had instrumentation removed due to infection
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# Infection Group

- Average age: 6 years
- Average BMI: 16.6 (low)
- Average ANC: 7.32 (low)
- Procedure associated with infection:
  - Initial implant: 12.45%
  - Expansion: 61.17%
  - Exchange: 7.92%
  - Revision: 12.45%
- 22/31 infections were associated with a wound dehiscence



# Management

- 24 patients were treated with irrigation, debridement, and closure of the wound.
- 27 patients received IV antibiotics
- Median duration of IV therapy: 37\* days
- Median of oral suppressive therapy: 23\*\* days
- 6 patients required more than one debridement to control the infection
- 2 patients *initially* managed with oral antibiotics alone failed.

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2 patients length IV therapy was unknown \*\* 4 patients length of oral therapy was unknown



6 patients required implant removal to  
resolve infection

# Conclusions

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- This population of children are at high risk for infection due to the need for multiple procedures, significant co-morbidities, poor nutrition, etc
  - Improved techniques for management of soft tissues and implant coverage may reduce the incidence of infection
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# Conclusion

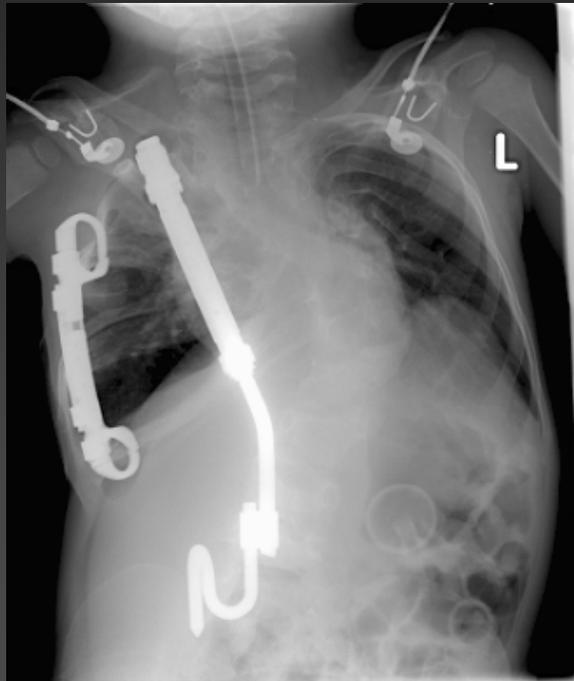
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- Most infections associated with rib distraction techniques can be managed *WITHOUT* removal of the devices.
  - This differs significantly from the known experience with established infections in spinal fusion patients.
  - These data may be useful in educating our infectious disease colleagues for future patients
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# Conclusions

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- This Multicenter experience did not replicate our Utah experience at consistently managing infection without implant removal
  - Further study is needed
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Thank You