



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

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Disclosures

- *Paid Consultant Synthes Spine, USA
 - *Royalties: VEPTR 2 device

 - **Nothing to disclose
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Background

- 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

- 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

- 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

Research Question:

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?

Methods

- 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

- 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

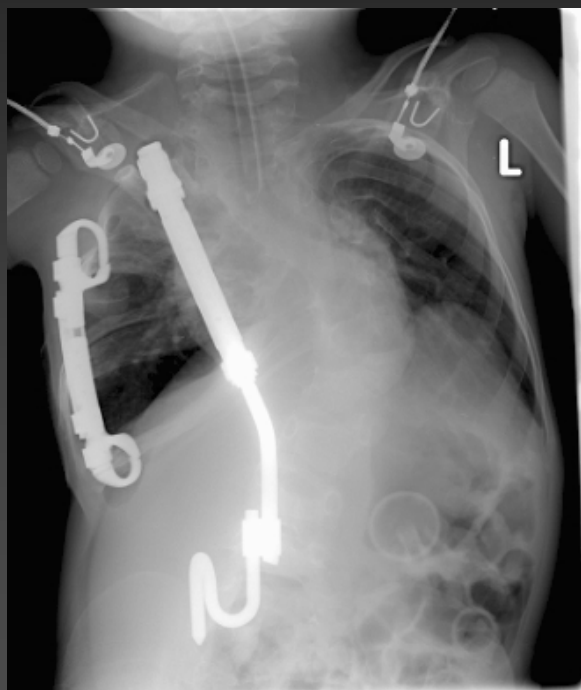
- This population of children are at high risk for infection due to the need for multiple procedures, significant co-morbidities, poor nutrition, etc
 - Improved techniques for management of soft tissues and implant coverage may reduce the incidence of infection
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Conclusion

- 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

- 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