Are Current EOS Treatments Really Better than Fusion or Natural History for Pulmonary Function?

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Disclosures

- Research support:
- Medtronic
- K2M
- Globus Medical
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- “There is no agreed upon definition of EOS ....”
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Classification of EOS

- Scoliosis with onset < ten years of age
- Regardless of etiology

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Spinal growth

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Natural history
Pehrsson et al. 1992

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Succes criteria

• Survival
• Pulmonary function
• Cardiac function
• HRQL
• Reduce caregiver burden
Pulmonary Function Test

- FVC (forced vital capacity)
- FEV1 (forced expired volume in 1 second)
- TLC (total lung capacity)
- VC (vital capacity)
Pulmonary Function Test

- FVC (forced vital capacity)
- FEV1 (forced expired volume in 1 second)
- TLC (total lung capacity)
- VC (vital capacity)
- Lung clearance index?
- Diffusion capacity?
Early fusion

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• n = 21
• Worse PFT
• Worse HRQL
• Shorter spines
• More pain
Current EOS treatments

- Observation
- Casting
- Surgery
  - hemiepiphysiodesis
  - growing rods
  - expandable rods
  - staples and tethers
  - guided growth

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Pulmonary and Radiographic Outcomes of VEPTR (Vertical Expandable Prosthetic Titanium Rib) Treatment in Early-Onset Scoliosis

Ozgur Dede, MD, Etsuro K. Motoyama, MD, Charles I. Yang, MD, Rebecca L. Mutich, RT, Stephen A. Walczak, RRT, Austin J. Bowles, MS, and Vincent F. Deeney, MD


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CME Review

How to avoid misinterpreting lung function tests in children: a few practical tips

Janet Stocks 1,*, Jane Kirkby 1,2, Sooky Lum 1

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2 Great Ormond Street Hospital for Children NHS Foundation Trust, London, UK

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Is pulmonary function the best variable?

Are Current EOS Treatments Really Better than Fusion or Natural History for Pulmonary Function?
Is There a Relationship Between Thoracic Dimensions and Pulmonary Function in Early-Onset Scoliosis?

Michael Glotzbecker, MD,* Charles Johnston, MD,† Patricia Miller, MS,* John Smith, MD,‡ Francisco Sanchez Perez-Grueso, MD,§ Regina Woon, MPH,¶ John Flynn, MD,‖ Meryl Gold, BA,* Sumeet Garg, MD,** Gregory Redding, MD,†† Patrick Cahill, MD,‡‡ and John Emans, MD*
Conclusion

• Prospective studies needed
• Reference values
• PFT in children
• Is PFT a proxy variable?
• PFT and clinical relevant changes
• Surgical treatment principles
• Health economy
Thank you
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Long term prognosis
Infantile IS

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Congenital scoliosis.
Hemiepiphysiodesis age 5. T3-T6 right side

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Long term prognosis
Infantile IS

• Born 1991
• Growing rod 1999
• Final fusion 2004
• Thoracic anterior fusion 2007