Traditional Growing Rod Graduates of Different Etiologic Categories have Similar Clinical and Radiographic Outcomes

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Introduction

• Current literature has rarely compared outcomes of GR surgery between the various etiologic categories of EOS.

• This study aimed at comparing long-term results of TGR treatment between different etiologies of EOS.
Methods

• Retrospective
• Multicenter database query
• 202 patients
• Four etiological categories: Congenital, Neuromuscular, Syndromic, and Idiopathic.
Results (demographics)

- Age: 6.7 ± 3.5 years
- Females: 125  Males: 77
- Follow up: 7.8 to 8.7 years
- BMI: 16.0 in Syndromic to 17.7 in Idiopathic
- Ambulatory Status:
  - Congenital 95%, Neuromuscular 30%, Syndromic 83%, Idiopathic 100% (p<0.001)
Results

Etiology

- Congenital: 28
- Neuromuscular: 65
- Syndromic: 57
- Idiopathic: 52
Results (Major Curve Magnitude)

Mean major coronal curve magnitude (°)

Pre Index: Neuromuscular 79°  Idiopathic 71°
Post Final: Neuromuscular 44°  Idiopathic 38°
Results (Major Curve % Correction)

Mean major curve percent correction (%)

- Pre index to post index
- Pre index to pre final
- Pre index to post final

Categories:
- Congenital
- Neuromuscular
- Syndromic
- Idiopathic
Results (Global Kyphosis)

Mean global (maximum) kyphosis (°)

Pre Index: Neuromuscular 58° Idiopathic 44°
Post Final: Neuromuscular 46° Idiopathic 43°
Results (T1-S1 Spine Height mm)

(mm) Mean Spinal height T1-S1

- Congenital
- Neuromuscular
- Syndromic
- Idiopathic

Pre Index: Idiopathic 285 Congenital 248
Post Final: Idiopathic 343 Congenital 382
Results (T1-T12 Spine Height mm)

(mm) Mean Thoracic height T1-T12

- Congenital
- Neuromuscular
- Syndromic
- Idiopathic

Pre Index: Idiopathic 177 Congenital: 155
Post Final: Idiopathic 237 Congenital: 207
Results (Lengthenings)

Number of Lengthenings

- Congenital: 7.4
- Idiopathic: 6.3
Results (Revision Surgeries)

Number of Revisions

- Syndromic: 3.2
- Congenital: 2.3
Conclusion

• Major curve correction, maintenance of kyphosis, percentage truncal growth, incidence of deep infection, implant-related and neurological complications were all similar between the four C-EOS etiological groups.

• Medical complications were significantly lower among idiopathic EOS patients.
Conclusion

• The results provide clear evidence that TGR treatment is effective for all EOS categories.
THANK YOU