

# Classification of Early Onset Scoliosis (C-EOS) and MCGR Lengthening Outcomes

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# DISCLOSURES

I have nothing to disclose

My co-authors have nothing to disclosure



# BACKGROUND

- MCGR are increasingly becoming the standard of care implants for surgical treatment of EOS
- Despite initial enthusiasm for this technology, a better understanding of its mechanical abilities and limitations is being discovered
- Variables such as construct design and lengthening intervals are being investigated to assess their impacts on MCGR efficacy



# BACKGROUND – PATIENT IMPACT

- An understanding of the typical asynchrony of MCGR intended compared to actual implant lengthening is now appreciated.
- While implant specific issues may account for this, patient variables may also play a role and are still unknown.



# PURPOSE

This study aims to determine the effects of EOS etiology on total MCGR lengthening efficacy

# HYPOTHESIS

Patient classification according to the etiology subgroup of C-EOS predicts MCGR lengthening success



# METHODS

- Retrospective chart and radiology review of all patient who underwent MCGR implantation and treatment for EOS at a single institution.
- All etiology and patient ages were included, a minimum of one year of MCGR lengthening was required for inclusion.
- Medical record review was used to determine the intended lengthening of each rod at each lengthening visit and post-lengthening radiographs were measured to determine the actual lengthening achieved.
- The lengthening ratio over the entire follow-up period (achieved / intended) was compared across scoliosis etiologies using the non-parametric Kruskal-Wallis analysis of variance.



# RESULTS – OVERALL POPULATION

- 34 patients were included in the study
- C-EOS etiologies were as follows:

C-EOS Etiology	Number of Patients
Neuromuscular	20
Idiopathic	7
Syndromic	5
Congenital	2

- No difference in mean overall lengthening ratio (achieved/intended) between convex and concave rods
  - Convex: 0.63
  - Concave: 0.64 (p= 0.97)



# RESULTS – C-EOS

- No significant variation in mean total lengthening ratio across the four etiological categories in either rod

Patient Classification	Number of Patients	Mean Lengthening Ratio Concave Rod *	Mean Lengthening Ratio Convex Rod *
Congenital	2	0.81 ± 0.08	0.63 ± 0.05
Idiopathic	7	0.63 ± 0.35	0.61 ± 0.35
Neuromuscular	20	0.63 ± 0.30	0.64 ± 0.30
Syndromic	5	0.60 ± 0.28	0.61 ± 0.22

\* *P value: Concave = 0.88; Convex = 0.99*



# CONCLUSIONS

1. There appears to be a mean achieved/intended lengthening ratio of 0.64 with MCGR
  - No difference in either concave or convex implant
2. EOS etiology, as classified by the C-EOS does not appear to significantly correlate with the MCGR lengthening efficacy
3. Further analysis may determine other significant factors that may predict lengthening success

