



Differential Lengthening of MCGR Does Not Improve Coronal Decomensation

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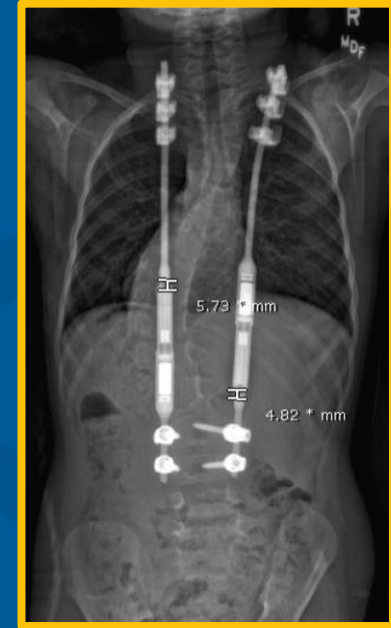
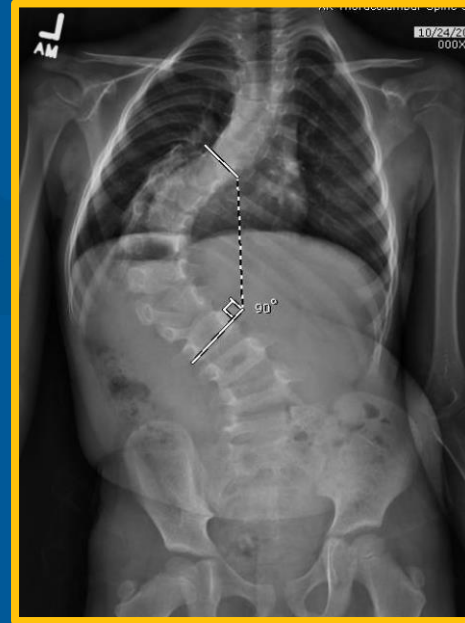
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Background

- MCGR rods allow for deformity correction and non-invasive spine lengthening
- Differential lengthening proposed as a technique to improve curve correction or coronal balance in dual MCGR constructs
- No reports in literature on effectiveness of differential lengthening



Purpose

To evaluate the effect of intended differential lengthening on coronal balance and radiographic lengthening amounts in EOS patients with MCGR constructs



Methods



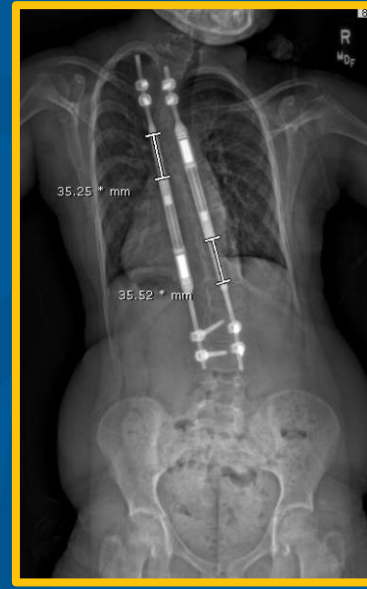
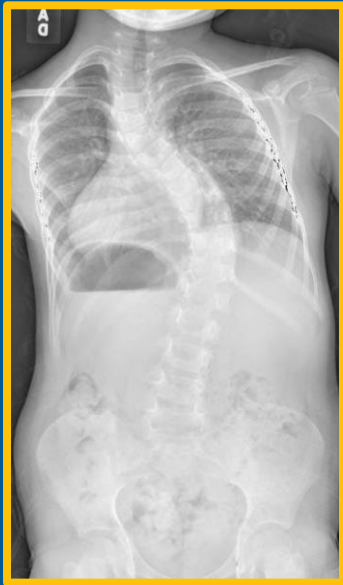
- Retrospective review of EOS patients treated with MCGR prior to final fusion from a multicenter database
- Index instrumentation at < 10 years of age with ≥ 2 year follow up
- Patients with prior spinal instrumentation or lack of documented lengthening amounts were excluded

Methods



- Intended lengthening amounts recorded by each surgeon
- Rod lengthening amounts measured either from plain film imaging or ultrasound
- Differential lengthening defined as $\geq 2\text{mm}$ difference between total intended rod lengthening on each side over the lengthening period

- 33 patients mean age at index: 5.7 years
 - Neuromuscular (N=14)
 - Idiopathic (N=9)
 - Syndromic (N=8)
 - Congenital (N=2)
- Mean radiographic follow-up: 2.4 years



Results



- 10 (30%) patients had differential lengthening
 - Mean intended difference between rods of 3.6mm
- 23 (70%) patients had symmetrical lengthening

Results - Rod Length

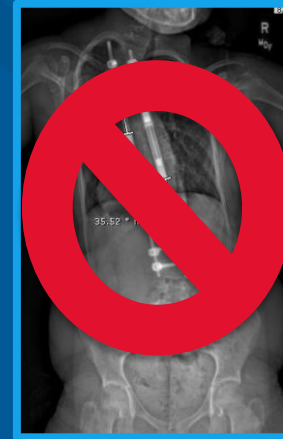
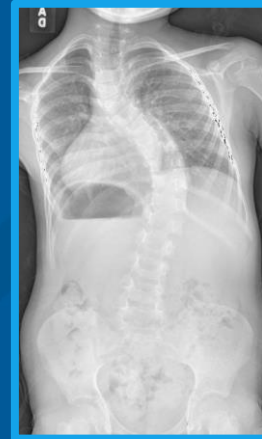
	Differential (N=10)	Symmetrical (N=23)	P-value
Total distraction difference between rods sides (mm)	1.6	2.1	0.60

Results - Coronal Balance

No significant difference between groups for change in coronal balance from post-op to last radiographic follow-up ($p = 0.68$)

Pre-Op coronal balance (mm)	33.6	25.1	0.31
Post-Op coronal balance (mm)	26.3	20.3	0.44
Final coronal balance (mm)	23.2	19.2	0.83

- Differential and symmetrical lengthening had similar:
 - *Postoperative change in coronal balance*
 - *Difference in distraction between rods*
- Differential lengthening may not further improve alignment following initial implantation



Take Home

Do everything you can to get it right from
the first time in the OR