



18% of MCGR Patients Experience Minimal Rod Lengthening Episodes and Most Successfully Lengthen on Subsequent Attempts

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### Background

- Magnetically controlled growing rods (MCGR) have been a significant advancement in growth friendly spinal implants used to treat early onset scoliosis
- New challenges: Incomplete/less than intended rod distraction





### Background

	6mo post-op	12mo post-o	op 24mo post-op	
T1-T12 height	184mm	185mm	181mm	
Spine	2016		SPINE Volume 41, Number 18, pp 1456–1462 © 2016 Wolters Kluwer Health, Inc. All rights reserved	
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### To investigate the outcomes of MCGR patients that had episodes of minimal rod lengthening





- Multicenter, retrospective review of MCGR patients from 4 institutions
- Inclusion criteria:
  - EOS diagnosis
  - Index MCGR instrumentation at < 10 years of age</li>
  - At least 1 year of follow-up
  - Rod lengthening attempt w/ intended lengthening  $\geq$  3mm
- Definition:
  - Minimal rod lengthening episode
    - Intended lengthening ≥ 3mm but with actual lengthening < 1mm



### Results

#### -205 patients met inclusion criteria

-Mean age at index surgery: 7.4 yrs

-Mean follow-up: 2.3 year













# • 36/205 (18%) patients had episodes of minimal rod lengthening

- Neuromuscular (N=13)
- Idiopathic (N=9)
- Congenital (N=9)
- Syndromic (N=5)

• 65/447 (15%) lengthening attempts resulted in minimal rod lengthening in those patients





Outcome of rod lengthening attempt	N	Mean intended lengthening (mm)	Mean actual lengthening (mm)	Mean percentage of intended lengthening achieved
Successful rod lengthening	382	4.2	3.4	80%
Minimal rod lengthening	65	4.5	0	0%



## 36 patients with a minimal lengthening

- Mean time to 1<sup>st</sup> minimal rod lengthening: <u>17.4 months</u>
- 1<sup>st</sup> minimal rod lengthening occurred on the <u>5<sup>th</sup> lengthening</u> attempt on average





### 36 patients with a minimal lengthening

6/36 (17%) Revision surgery

22/36 (61%) Attempted further rod lengthenings

8/36 (22%) No further documented lengthening attempts



### Results

#### 22 patients attempted further MCGR lengthening



15/22 (68%) Lengthened on 1<sup>st</sup> subsequent attempt

5/22 (23%) Lengthened on 2<sup>nd</sup> subsequent attempt

2/22 (9%) Unsuccessful after at least 2 attempts



How much lengthening occurs after the 1<sup>st</sup> minimal rod lengthening episode?

- After first minimal lengthening episode, the mean total rod lengthening was:
  6.4 mm
- Mean percentage of total intended lengthening achieved:
  <u>65%</u>



### Conclusions

 18% of MCGR patients experience minimal lengthening episodes (< 1mm lengthening)</li>

 91% of those patients will successfully lengthen with 2 more attempts

• If at first you don't succeed, try, try again!









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