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

Ali Siddiqui, BS; Lindsay M. Andras, MD; Alexander Nazareth, MS; Kenneth D. Illingworth, MD; Purnendu Gupta, MD; M.G. Vitale MD, MPH; John T. Smith, MD; Growing Spine Study Group; Children’s Spine Study Group; David L. Skaggs MD, MMM
Disclosures

- Ali Siddiqui BS - None
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• 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

<table>
<thead>
<tr>
<th>T1-T12 height</th>
<th>6mo post-op</th>
<th>12mo post-op</th>
<th>24mo post-op</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>184mm</td>
<td>185mm</td>
<td>181mm</td>
</tr>
</tbody>
</table>

### 2016

**Spine Deformity**

Magnetically controlled Growing Rods for Early-onset Scoliosis  
_A Multicenter Study_ of 23 Cases With Minimum 2 years Follow-up
Purpose

To investigate the outcomes of MCGR patients that had episodes of minimal rod lengthening
Methods

• Multicenter, retrospective review of MCGR patients from 4 institutions

• Inclusion criteria:
  – EOS diagnosis
  – Index MCGR instrumentation at < 10 years of age
  – At least 1 year of follow-up
  – Rod lengthening attempt w/ intended lengthening ≥ 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
Results

• 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
# Results

<table>
<thead>
<tr>
<th>Outcome of rod lengthening attempt</th>
<th>N</th>
<th>Mean intended lengthening (mm)</th>
<th>Mean actual lengthening (mm)</th>
<th>Mean percentage of intended lengthening achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful rod lengthening</td>
<td>382</td>
<td>4.2</td>
<td>3.4</td>
<td>80%</td>
</tr>
<tr>
<td>Minimal rod lengthening</td>
<td>65</td>
<td>4.5</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>
When do minimal rod lengthenings occur?

36 patients with a minimal lengthening

- Mean time to 1st minimal rod lengthening: **17.4 months**
- 1st minimal rod lengthening occurred on the **5th lengthening** attempt on average
Results

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\textsuperscript{st} subsequent attempt

5/22 (23%) Lengthened on 2\textsuperscript{nd} subsequent attempt

2/22 (9%) Unsuccessful after at least 2 attempts
How much lengthening occurs after the 1st 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: 65%
Conclusions

• 18% of MCGR patients experience minimal lengthening episodes (< 1mm lengthening)

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

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


