The Northern Ireland Experience with Growth Rods: Improving significant scoliosis deformity

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Background

• Northern Ireland
  – Regional spinal service in Belfast
  – Four spinal deformity/scoliosis surgeons
    • Mr Eames/Hamilton/McLorinan/Verzin

• Scoliosis surgery
  – Different operative techniques described
  – Since 2004 growth rods have been used
Purpose of Study

• Questions to answer:

• (i) How much do growth rods improve scoliosis deformity?

• (ii) Does the improvement in Cobb angle continue with each lengthening?
Materials and Methods

• Consecutive patients between June 2004 and October 2012

• Retrospective review of all notes and x-rays

• Cobb angles recorded
Results

• 25 patients - 17 male, 8 female

• Diagnoses included infantile and juvenile idiopathic scoliosis, congenital, neuromuscular and other aetiologies

• Average age at surgery 6.6 years (range 2 – 12 yrs)
Results

• Surgery
  – 9 pts had single growth rod (6 required conversion)
  – 15 pts had dual rods inserted primarily
  – 1 VEPTR
  – Levels ranged from T2 – L5 (hooks used superiorly in 12 cases)

– Complications:
  • 2 broken rods and 1 rod cut out requiring revision
# Results – Cobb angles

<table>
<thead>
<tr>
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<th>Average Cobb angle</th>
<th>Cobb angle Range</th>
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<tbody>
<tr>
<td>Pre - op</td>
<td>70°</td>
<td>40° - 108°</td>
</tr>
<tr>
<td>Post op</td>
<td>44°</td>
<td>26° - 74°</td>
</tr>
<tr>
<td>Last review</td>
<td>40°</td>
<td>19° – 66°</td>
</tr>
</tbody>
</table>
Cobb angle vs Time
Average Cobb angle vs Review
Conclusions

• Questions to answer:

• (i) How much do growth rods improve scoliosis deformity?

• Answer: From $70^0$ to $40^0$ on average
  Therefore by $43\%$ on average
Conclusions

• Questions to answer:

• (ii) Does the improvement in Cobb angle continue with each lengthening?

• Answer: Yes, but the majority occurs at the initial lengthening procedure
Key messages

• Growth rods can dramatically improve significant scoliosis deformity, with dual rods our preferred technique

• The use of growing rods in the immature spine is a safe and effective method for improving and maintaining the corrected Cobb angle, in the Northern Ireland population

None of the authors has any potential conflict of interest

Thank you