Optimization of Casting in Infantile Scoliosis

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Methods:

• Two surgeons trained directly with Ms. Mehta.
  • Traction with manual manipulations.
  • D shaped posterior cut-outs.
  • Planned cast change intervals.

• Center A
  • Radiographs at each cast change.
  • Over the shoulder casts.

• Center B
  • Radiographs every 6 months.
  • Under arm casts.
3 yo or less at first cast. At least 50° curve magnitude. Minimum 3 year follow up. Neuromuscular diseases other than syringomyelia and congenital curves excluded.

- Center A
  - 40 over shoulder Casts.
  - Radiographs during each casting session.
  - Mean follow-up 6.2 years.

- Center B
  - 36 under arm casts.
  - Radiographs at most every six month.
  - Mean follow-up 5.9 years.
Curve resolution at follow-up (Minimum 3 year follow-up)

<table>
<thead>
<tr>
<th></th>
<th>Number of Children</th>
<th>Cured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center A</td>
<td>40</td>
<td>9 (23%)</td>
</tr>
<tr>
<td>Center B</td>
<td>36</td>
<td>11 (31%)</td>
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</table>

- P=0.1 in Multivariable Statistics, so difference explained by chance alone.
## Effect of Syrinx or Genetic Syndrome

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<th>Cured</th>
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<tbody>
<tr>
<td><strong>Center A</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No comorbidity</td>
<td>30</td>
<td>7 (23%)</td>
</tr>
<tr>
<td>Syrinx or Genetic Syndrome</td>
<td>10</td>
<td>2 (20%)</td>
</tr>
<tr>
<td><strong>Center B</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Comorbidity</td>
<td>26</td>
<td>8 (31%)</td>
</tr>
<tr>
<td>Syrinx or Genetic Syndrome</td>
<td>10</td>
<td>3 (30%)</td>
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</table>
Age vs Curve Magnitude at Presentation
Probability of Cure with Age

Cure plotted against Age

Prob of Cure Given Age = \frac{1}{1 + \exp(-1.953 + 1.816 \times \text{age})}
Probability of Cure with Curve Magnitude

1.2 yo boy at presentation and at age 7 after 28 months of casting.
Conclusions

• Frequent radiographs gave no advantage.
• Over the shoulder casting is not necessary.
• Starting early is critical to curve resolution even in large curves.
• Cures are possible with very large curves and in older children.
Thank you