

Oral presentation

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Efficacy of bracing in worst cases (over 45°): end-growth results of a retrospective case series

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Objectives

The objective of this study was to verify the efficacy of bracing for adolescent idiopathic scoliosis (AIS) in the worst cases (over 45°) refusing surgery.

Background

45°-50° curves are considered surgical, but not all patients want to face surgery, and a treatment should be warranted to help them avoid fusion. The efficacy of bracing in this degree of curve is generally considered poor, but our experience seems to point to a different conclusion which needs verification.

Methods

In this retrospective study, the population included all AIS patients with at least one 45° degree curve at first evaluation that reached the end of treatment since our database started in 2003. We had 14 females and 2 males. 6 had a previous, failed brace treatment. At the start of their treatment, the mean age was 14.1 ± 1.7 years, and the mean Cobb angle measurement was $49.4^\circ \pm 4.3^\circ$ (range 45°-58°). Patients received full time treatment (23 or 24 hours per day) for one year with a Risser cast (11) or a Sforzesco brace (5) respecting SOSORT criteria, in addition to specific exercises. Outcome criteria included the following: SRS (unchanged; worsened over 6°; over 45° at the end of treatment; surgically treated; 2 years follow-up); clinical (ATR, hump, Aesthetic Index, plumbline distances); radiographic (Cobb degrees); and ISICO (optimum; minimum). ANOVA and chi-test were used in data analysis.

Results

The reported compliance in the 4.5 ± 1.6 treatment years was $90.5 \pm 15.5\%$. At the end, 5 patients (31%) were still measuring over a 45° Cobb angle (range 32°-50°). No one was fused, and this remained true at the 2 years follow-up for the 50% that reached it. Improvements were found in 69% and 56% of worst and average curves, and in 56% and 80% of Thoracic and Lumbar curves respectively. We found highly statistically significant reductions of maximal (-8.6°), average (-4.8°), thoracic (-6.0°) and lumbar (-10.2°) curves. Statistically significant improvements were found for Aesthetic Index and Thoracic ATR, with a decrease of plumbline distances. According to ISICO criteria, 75% of patients had minimum and 63% optimal results.

Conclusion

Curves over 45° represent a challenge for physicians and patients that can be faced with high efficacy braces, good methodology (SOSORT criteria), dedication, and compliance (high motivation that can come from a decision or hope to avoid surgery). In these optimal situations, according to this retrospective study, surgery can be avoided in some cases.