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Idiopathic scoliosis patients with curves more than 45 Cobb degrees refusing surgery can be effectively treated through bracing with curve improvements.

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Abstract

BACKGROUND CONTEXT: It is a broad consensus today that scoliosis curves cannot be improved through bracing, and the Scoliosis Research Society (SRS) methodological criteria for bracing have the avoidance of progression as their only objective. Consequently, in curves more than 45°, fusion is considered as basically the only possible treatment.

PURPOSE: The purpose of the study was to verify in a series of patients who utterly refused surgery if it was possible to achieve improvements of scoliosis of more than 45° through a complete conservative treatment (bracing and exercises).

STUDY DESIGN/SETTING: Retrospective cohort from a prospective database.

PATIENT SAMPLE: Out of 1,148 idiopathic scoliosis (IS) patients at the end of treatment, the sample comprised 28 subjects older than 10 years, still growing, with at least one curve above 45°, who had continually refused fusion. The group comprised 24 females and four males, including 14 in which previous brace treatments had failed; at the start of treatment, the age was 14.2±1.8 years and Cobb degrees in the curve were 49.4° (range, 45°-58°). Subgroups considered were gender, bone age, type of scoliosis, treatment used, and previous failed treatment.

OUTCOME MEASURES: Self-report measurement: SRS-22; physiological measures: Cobb degrees, Bunnell angle of trunk rotation (ATR), aesthetic index (AI), and sagittal plumb line distances.

METHODS: The methods comprised full-time treatment (23 or 24 hours per day) for 1 year with Risser cast, Lyon, or Sforzesco brace; weaning of 1 to 2 hours every 6 months; with strategies to maximize compliance through the Society on Scoliosis Orthopaedic and Rehabilitation Treatment (SOSORT) management criteria applied and specific scientific exercises approach to scoliosis exercises (SEAS) performed.

RESULTS: Reported compliance in the 4.10±1.2 treatment years was 94%, with satisfaction regarding treatment and excellent results at the SRS-22. Two patients (7%) remained above 50° Cobb but six patients (21%) finished between 30° and 35° Cobb and 12 patients (43%) finished between 36° and 40° Cobb. Improvements have been found in 71% of patients and a 5° Cobb progression in one patient. Statistically, we found highly significant reductions of the main (-9.25°), average (-6.6°), thoracic (-7.8°), and lumbar (-15.9°) curves. Statistically significant improvements have been found for the AI and ATR, with a general decrease in plumb line distances.

CONCLUSIONS: Bracing can be successfully used in patients who do not want to undergo operations for IS with curves ranging between 45° and 60° Cobb, given sufficient clinical expertise to apply good braces and achieve great compliance. Future studies could demonstrate the percentages at which this result can be achieved.

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