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Early clinical improvement, delayed patient perception: divergent aesthetic outcomes during brace treatment for adolescent idiopathic scoliosis

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Background

Aesthetic appearance is a primary treatment outcome in adolescent idiopathic scoliosis, as established by the SOSORT consensus. Trunk aesthetics can be assessed clinically using the Trunk Aesthetic Clinical Evaluation (TRACE) and subjectively through the self-image domain of the Scoliosis Research Society questionnaire (SRS-22).

Study Design

Retrospective study based on a prospective clinical database, conducted as a secondary analysis of a previously published cohort

Objective (s)

To evaluate the effect of rigid and very rigid "push-up" bracing on aesthetic outcomes in adolescents with idiopathic scoliosis, as assessed both clinically by physicians and subjectively by patients.

Methods

Patients were recruited from March 2003 to December 2017. Inclusion criteria were: diagnosis of adolescent idiopathic scoliosis, age <18 years at first evaluation, Cobb angle between below 45°, and Risser stage 0–2 at baseline. For the present analysis, the cohort was restricted to patients treated with rigid or very rigid "push-up" (according to the SOSORT-SRS classification) braces and with available TRACE assessment at first consultation. Aesthetic outcomes were assessed using TRACE and patient-reported outcome measures, including the SRS-22 (total score and self-image domain) and ISYQOL, at baseline (before bracing – T0), four months after brace initiation (T1), after reaching Risser stage 3 (T2), and after complete brace weaning (end of treatment - T3).

Results

A total of 1,004 patients were included in the analysis. The majority were female (83.7%, n = 840). Mean age at T0 was 12.9±1.4 years. Mean T0 Cobb angle was 28.5±7.9°, with a mean change in Cobb angle from T0 to T3 of −1.8±8.0°. Mean brace wear compliance, expressed as percentage of prescribed wear time, was 91.7 ± 13.5% (available for 587 patients). Mean duration of bracing treatment was 3.9 ± 2.1 years.

Mean TRACE scores were 46.1±16.0 at T0, 29.2±15.1 at T1, 26.1±16.8 at T2, and 26.8±16.0 at T3 (Figure 1), while mean SRS-22 self-image scores were 17.5±2.8, 17.1±3.1, 17.3±3.3, and 19.3±2.7, respectively.

Clinical aesthetics (TRACE) improved early and then stabilized over time (repeated-measures ANOVA, Greenhouse–Geisser corrected, $p < 0.001$), whereas patient-perceived aesthetics (SRS-22 self-image) improved mainly at the end of treatment ($p < 0.001$).

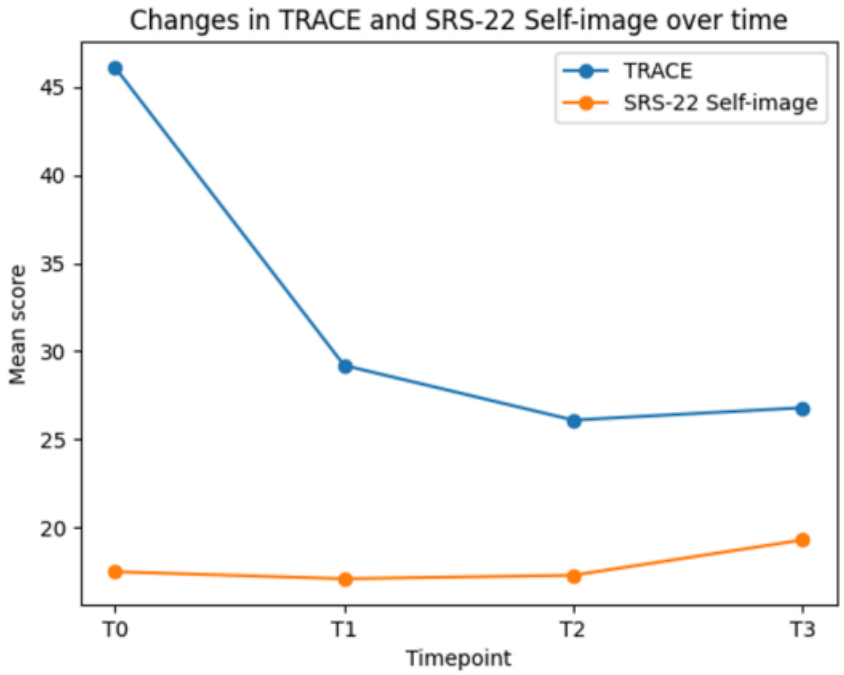

Figure 1. Longitudinal changes in clinician-assessed (TRACE) and patient-reported (SRS-22 self-image) aesthetic outcomes during brace treatment. For TRACE, lower scores indicate better trunk aesthetics, whereas for the SRS-22 self-image domain higher scores indicate better patient-perceived aesthetics

Conclusion(s)

Rigid and very rigid "push-up" bracing led to a marked improvement in clinician-assessed trunk aesthetics within the first four months of treatment, followed by stabilization over time. In contrast, patients did not perceive this improvement until brace weaning, when self-image significantly improved.

Clinical significance

Rigid bracing leads to a clear and early improvement in trunk aesthetics; however, patients may not perceive these changes until treatment completion. Actively showing patients objective aesthetic improvements during treatment may enhance understanding, satisfaction, and compliance.