Effect of Compliance Counseling on Brace Use and Success in Patients with Adolescent Idiopathic Scoliosis


Abstract

Background: Outcomes of orthotic management of idiopathic scoliosis depend on patient compliance with brace wear. The purpose of this study was to determine if counseling based on objective compliance data increases brace use and therefore reduces the likelihood of surgery.

Methods: Two hundred and twenty-two patients with adolescent idiopathic scoliosis were prospectively enrolled in a study to determine if physician counseling based on data obtained from compliance monitors (sensors embedded in the brace) improves brace use and decreases curve progression. Patients were placed into two groups. In the counseled group, patients were aware of the compliance monitor in the brace and were counseled at each visit regarding downloaded brace-usage data. The patients in the noncounseled group were not told the purpose of the monitor in their brace, and the compliance data were not made available to the physician, orthotist, or patient.

Results: Ninety-three patients who were counseled with use of the compliance data and seventy-eight patients who were not so counseled completed bracing or underwent surgery; twenty-five patients were lost to follow-up before completing brace treatment, and twelve were still undergoing brace treatment at the time of the study review. The average curve magnitude at the initiation of bracing was 33.2° in the counseled group and 33.9° in the noncounseled group (p = 0.21 [not significant]). Patients in the counseled group wore their orthosis an average of 13.8 hours per day throughout their management, while noncounseled patients wore their brace an average of 10.8 hours per day (p = 0.002). Of the counseled patients who finished brace treatment, 59% did not have curve progression of ≥6°, whereas 25% had progression to ≥50° or to surgery. In the noncounseled group, 46% did not have curve progression of ≥6°, whereas 36% had progression to ≥50° or to surgery. Noncounseled patients who had curve progression to a magnitude requiring surgery wore their brace an average of 9.6 hours per day compared with 12.6 hours per day for the counseled patients who required surgery. The amount of daily brace wear by children who did not have curve progression to a magnitude requiring surgery was significantly greater than that by children who did require surgery (p = 0.029).

Conclusions: Providing patients undergoing bracing for adolescent idiopathic scoliosis with feedback about their compliance with brace wear improves that compliance. Patients who wore their brace more hours per day had less curve progression. Patients in both groups who had curve progression to a magnitude requiring surgery wore their brace less than their counterparts for whom bracing was successful. Compliance monitoring and counseling based on that monitoring should become part of the clinical orthotic management of patients with adolescent idiopathic scoliosis.

Level of Evidence: Therapeutic Level II.