

Boston vs. Providence brace in treatment of Adolescent Idiopathic Scoliosis

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Abstract

Adolescent idiopathic scoliosis (AIS) is a complex condition characterized by a lateral curvature and axial rotational deformity of the spine. Though bracing is effective, a need remains to identify the effect brace type has on spine curvature. To examine differences in patient demographics between the Boston and Providence brace, determine the corrective change in Cobb angle and RVAD and investigate the effect of brace type on curvature over time. A retrospective chart review was conducted of 105 patients diagnosed with AIS from 2013–2016 at CHW. Five spinal parameters were measured: Cobb angle, Risser, RVAD, kyphosis and lordosis. Data was collected before bracing, in-brace and at 24 months. A final treatment outcome of either Cobb angle correction (reduction $>5^\circ$), stabilization (change $\pm 5^\circ$) or progression (deterioration $>5^\circ$) was then evaluated. Providence brace provided significantly greater in-brace thoracolumbar Cobb angle and RVAD reduction in comparison to the Boston brace (Cobb angle -21.9° vs. -12.5° ; RVAD: -1.8° vs. 1.62°). Similarly, Providence users had a significantly smaller increase in Cobb angle and RVAD over time (Cobb angle: thoracic 14.2° vs. 15.0° ; thoracolumbar 23.6° vs. 26.0° ; RVAD: 5.2° vs. 8.5°). Ultimately, no significant difference in final treatment outcome was established between brace groups. Although the Providence brace provides less of an increase in thoracic and thoracolumbar curvatures over time, both braces are an effective treatment and achieve comparable outcomes. Selection of braces may vary with primary curve angle, curve location, patient compliance and quality of life.

Keywords: AIS; Boston brace; Providence brace; RVAD.