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50 Years Ago in *THE JOURNAL OF PEDIATRICS*

How the Milwaukee Brace Shaped the Treatment of Scoliosis

Keim HA. The Milwaukee Brace for Treatment of Scoliosis. *J Pediatr* 1971;78:864-6.

The Milwaukee brace for the treatment of adolescent idiopathic scoliosis (AIS) as described by Hugo Keim at the New York Orthopaedic Hospital in 1971 was an upgrade of the cervico-thoracic-lumbar-sacral orthosis developed in 1946. They implemented (1) a throat mold instead of a chin pad, which avoided further deformities, (2) a pelvic girdle to correct the curve, and (3) a lighter thermoplastic material instead of leather or metal. The Milwaukee brace attempted to control upper thoracic curves in a way that modern underarm braces could not. Unfortunately, this came at the cost of impaired cosmesis and discomfort, so the brace had poor compliance.¹

Currently, low-profile underarm thoraco-lumbar-sacral orthosis (TLSO) designs such as the Wilmington, Providence, Rigo-Chaneau, and Boston braces, that are better tolerated and aesthetically pleasing, have largely replaced the Milwaukee brace.¹ These are custom thermoplastic, computer-designed braces that allow for scoliosis correction via combinations of longitudinal traction, derotation, and lateral or posterolateral forces.

At present, the standard of care for 30°-45° AIS curves in skeletally immature children is a TLSO worn full time (18-23 hours per day) up to skeletal maturity. This is supported by the randomized BRAIST trial that demonstrated successful nonoperative control of these curves in 72% of patients treated with a TLSO compared with 48% of patients treated with observation alone.²

Most of the principles of scoliosis bracing today have not changed since Keim's article in 1971: close communication between orthotist and surgeon, pressure pads or rotation at the deformity apex, brace wear for the majority of the day, allowing exercise and time off the brace, serial radiographs to track progression and continual bracing until skeletal maturity are the basics of brace treatment today.

The Milwaukee brace was the first widely used removable orthosis for the nonoperative treatment of AIS and to this day represents a critical innovation in the field of orthopedic surgery.

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