

CASE STUDY: Vertical + Horizontal TLSO Treatment in a Skeletally Immature Patient With Scoliosis

By Debra Auten, CPO, LPO

Nonoperative scoliosis treatment has long included the side-bending technique. In the late 1970's C. Ralph Hooper, Jr., CPO and Fredrick E Reed, MD, developed a thoracolumbosacral orthosis (TLSO) for night use, utilizing a lateral bending

technique. Proper measurement, fitting, and adjustment of a nighttime bending brace by a qualified orthotist has been shown to prevent the progression of curves in skeletally immature patients with adolescent idiopathic scoliosis.¹

Figure 1
Observation before
orthotic treatment
03-2016



Figure 2
Curve progressing
07-2016



Figure 3
Vertical TLSO after
decompression
03-2016



Orthotic treatment of scoliosis occurs either horizontally (nighttime treatment) or vertically (daytime treatment). In both-treatment scenarios, the spine is loaded due to the effects of gravity in different planes. For skeletal immature patients with a rapidly progressing curve, both treatment scenarios may prove beneficial.

This case study features a young female patient with scoliosis orthotically managed with a daytime TLSO in combination with a nighttime bending brace. She has a history of Chiari malformation (surgical decompression 09/2016) and cervicothoracic syrinx. The sequence of events occurred as follows:

1. Observation by orthopedics at 4 years of age (Figure 1).
2. Curve progression noted at 4 + 4 years of age (Figure 2)
3. Vertical TLSO (posterior closing with corrective scoliosis padding) treatment began at 4+5 years of age (Figure 3).
4. Chiari Malformation repair at 4 + 6 years of age.
5. Despite acceptable in-brace correction and TLSO wear compliance (16 - 18 hours per day), the patient showed evidence of a worsening trunk shift to the left (Figure 4). A nighttime TLSO (the Charleston Bending Brace) was added to the orthotic treatment regimen at 6 + 3 years of age (Figure 5).
6. The patient currently wears the daytime TLSO 10-12 hours per day and the Charleston Bending

Brace 8 - 10 hours at night.

As of 10/2018, with a patient age of 6 + 7 years, no progression of the curve has been observed since the addition of the Charleston Bending Brace four months ago. The patient is currently wearing her third daytime TLSO (due to growth) and her first Charleston Bending Brace. She is followed by orthopedist and orthotists every four months. **OP**



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References

1. Price CT, Scott DS, Reed FR Jr., Sproul Jr., Riddick ME, "Nighttime Bracing for Adolescent Idiopathic Scoliosis With the Charleston Bending Brace: Long-Term Follow-Up" *J Pediatr Orthop.* 1997; Vol. 17, N. 6.

Figure 4
Left Trunk shift starting
09-2017



Figure 5
Charleston Bending Brace
06-2018



Figure 6
Current out of brace
10-2018

