

## Scoliosis Care: Where Anatomy and Psychology Intersect

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### ABSTRACT

**Background:** Adolescent idiopathic scoliosis (AIS) treatment depends heavily on brace compliance, which can be significantly influenced by psychosocial and neurodevelopmental factors. Adolescents with psychiatric comorbidities may face heightened challenges that increase the risk of curve progression and surgical intervention.

**Objective:** To describe a biopsychosocial, patient-centered orthotic management approach for an adolescent with high-magnitude scoliosis and complex mental health comorbidities.

**Methods:** A 14-year-old Risser 1 female with progressive double-curve scoliosis was treated using a full-time thoracolumbosacral orthosis based on a Rigo-Chêneau design. Care incorporated motivational interviewing, shared decision-making, cosmetic customization, compliance monitoring, peer support resources, and enhanced follow-up frequency within a coordinated multidisciplinary framework.

**Results:** Over eight months, the patient demonstrated exceptional engagement and adherence despite significant psychosocial stressors, including psychiatric emergency evaluation and rapid growth.

**Conclusion:** Integrating humanistic and behavioral health-informed strategies into conservative scoliosis care may substantially improve treatment adherence in complex adolescent cases.

### Keywords

Adolescent idiopathic scoliosis, Brace compliance, Biopsychosocial model, Neurodiversity, Motivational interviewing, Orthotic management.

### Background

At the time of the intake, the patient was a 14-year-old Risser 1 female at the 91st percentile for height, presenting with a 39 degree thoracic curve spanning T5-T12 with an apex at T5 and 29 degree lumbar curve spanning T12 to L4 with an apex of L2, complicated by pelvic obliquity. She has been previously diagnosed with ASD, ADHD- predominantly inattentive subtype, MDD, and GAD and has experienced involuntary psychiatric hospitalization,

partial hospitalization programs, and intensive outpatient programs. Prior to her engagement with Orthotics, the patient had been very actively participating with pediatrics, orthopedics, physical therapy, psychiatry, and outpatient psychotherapy in addition to specialized care/advocacy services geared toward the neurodivergent population. The patient has been described as “slow to warm up to providers,” with her treatment compliance questioned. Scoliosis bracing has been resisted by the pt until the curvature has progressed to approaching the surgical magnitude.

### Theoretical Orientation

This case was approached from the biopsychosocial theory perspective.

## Methods

In the context of a high magnitude double curve, full-time bracing was indicated and prescribed. University of Iowa Children's Hospital prediction guideline indicated a 33% chance of curve progression with 18 hour wear protocol. The patient was engaged with a strength-based approach utilizing Motivational Interviewing techniques with both intervention design and cosmetic finishing options collaboratively devised. The definitive orthosis designed was a Rigo-Cheneau variant with a trochanteric extension, axillary extension, lumbar derotation pad, thoracic pad. The pt was prepared for the orthosis to include a compliance monitor and the patient assented to the use of the monitor. The orthotic care was supplemented with psychosocial considerations: the patient was connected to ScoliosUs journaling and peer support resources. For additional normalization, the patient's plush teddy bear was also fit with a similar profile 'brace' with an identical cosmetic transfer. The patient was scheduled to a greater frequency of follow-up than is routine to allow for modifications and patient empowerment. The treating orthotist has maintained contact and treatment coordination with the prescriber and the PT so patient's challenges could be addressed quickly and effectively, fostering a sense of empowerment and agency and reinforcing the belief that the care providers care for the patient.

## Results

The pt has been wearing the TLSO for approximately 8 months. She has had outstanding engagement with the orthotist, keeping 4 follow-up appointments with one additional televisit and 0 cancellations or unkept visits. The installation of the compliance monitor was initially delayed due to unrelated logistics, and the wear-and-tear of the padding and the Velcro strapping supported patients' reported wear time. The pt was excited to have the monitor installed so her compliance is documented and supported.

During her treatment, the patient experienced a growth spurt, increasing her height from 91<sup>st</sup> to 95<sup>th</sup> percentile with an increase of the thoracic curve to 42 degrees. This was distressing to the pt and she quickly scheduled an additional follow-up with the orthotist when her treatment plan was collaboratively updated with contingency planning also taking place. It appears important to recognize that during her TLSO treatment time, the pt did experience an Emergency Room psychiatric evaluation with a concern for danger to self. Despite these challenges and stressors, patients' bracing compliance and engagement with the treating orthotist has been exemplary [1-9].

## Conclusions

Treatment compliance for adolescents diagnosed with scoliosis is a very well-documented and notorious challenge. Inattention,

hyperactivity, habit orientation, helplessness, hopelessness, and social exclusion seen in psychiatric diagnoses relevant to this case can make these difficulties more intense. Simultaneously, integrated, Humanistic and attentive care can overcome these challenges.

## Treatment Recommendations

Supplementation of behavioral health principles to physical medicine conservative scoliosis care is emphatically recommended for both neurodivergent and neurotypical children and adolescents. Normalizing/de-stigmatizing, empowering, and Rogerian Client-Centered/Humanistic strategies may offer outsized benefit.

## Future Research Advocacy

The impact of a scoliosis diagnosis on the behavioral health/quality of life of both the patients and their families may clarify challenges experienced by those diagnosed and those who care for them. The role of psychotherapy, peer support, and journaling in scoliosis care remains understudied.

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