

Case Series: Halo Gravity Traction and Triple Rods Technique Integration for Severe Rigid Scoliosis of Various Aetiology

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INTRODUCTION:

The management of severe and rigid scoliosis presents significant challenges in clinical practice. Delayed treatment-seeking behaviours among patients often result in the progression of pronounced spinal curves and imbalances. Surgical planning and strategy are crucial for safe and the most effective treatment.

The treatment for severe scoliosis combines preoperative halo gravity traction (HGT) and the triple rod technique, proven safe and effective in patients with severe rigid scoliosis. We'll showcase this through three cases with diverse origins of severe rigid scoliosis.

Case 1

A 13-year-old girl with severe kyphoscoliosis presented with a large structural thoracic curve. She underwent preoperative HGT for a duration of 4 weeks, with a gradual increase in weight up to 14 kilograms. Subsequently, she underwent posterior instrumentation and fusion (PSIF) using the triple rod technique without any complications.

Case 2

19 years old girl with adolescent idiopathic scoliosis (AIS) presented to us with Lenke 3. She was placed under HGT for 4 weeks duration with maximum weight of 11kgs and later successfully underwent PSIF using triple rod technique.

Case 3

A 15-year-old girl with Marfan syndrome presented with triple major curves. She underwent preoperative HGT for 4 weeks duration, gradually increasing the weight to 12 kilograms. She then underwent PSIF with the triple rod technique.

Table 1: Flexibility and Cobb Angle Changes During Treatment Period Flexibility

Cases	Cobb's Angle (Percentage of reduction of cobb's angle)		
	Pre-HGT	Pre-operative	Post-operative
Case 1	T :115	T :93 (19%)	T :87 (24%)
Case 2	MT :90	MT :65 (27%)	MT :36 (60%)
	L :79	L :60 (24%)	L :22 (72%)
Case 3	PT :41	PT :38 (7%)	PT :27 (34%)
	MT :113	MT :80 (29%)	MT :57 (49%)
	L :75.8	L :53 (30%)	L :36 (53%)

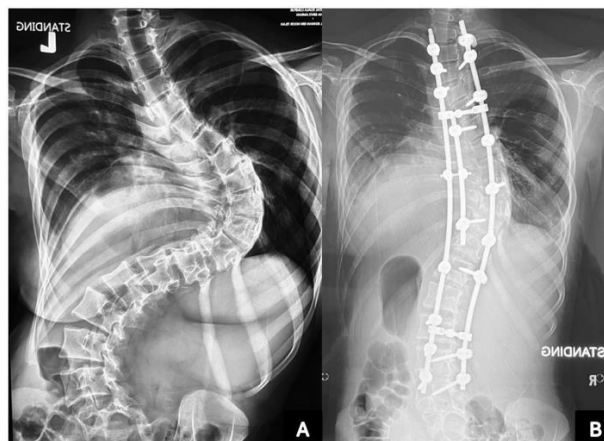


Fig. 1 The A pre-operative anteroposterior and B post-operative operative radiographs of a patient treated with the three-rod technique from Case 3.

CONCLUSION:

This treatment combines HGT and triple rod technique for severe scoliosis, ensuring safety and effectiveness. Preoperative traction aims to reduce neurological risks and facilitate effective surgical correction in a controlled manner. Intraoperative correction and global balancing with the triple rod technique further enhance the correction of severe scoliosis.

REFERENCES:

1.Jiao, Y., Tan, H., Feng, E., Wang, Z., Lin, Y., Zhao, J., & Shen, J. (2022b). Apical region correction and global balance: a 3-rods surgical strategy for the treatment of severe and rigid scoliosis.