

Use of a Novel Corrective Device for Correction of Deformities in Adolescent Idiopathic Scoliosis

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Ir J Med Sci 189(1):203-210, 2020.

OBJECTIVE: The aim of this study was to evaluate the correction achieved with the use of the Rod Link Reducer, a novel instrument for the correction of pediatric spinal deformity, in low pedicle screw density constructs.

METHOD: A prospective cohort study of 31 patients with severe adolescent idiopathic scoliosis with major TL/L curves was performed. Pre- and postoperative Cobb angles and coronal balance, operative time, estimated blood loss, fusion levels, and screw density were recorded. Patients were grouped into those with Lenke A/B (18/31) and Lenke C (13/31) curves. The primary goals were curve correction, for the Lenke A/B group, and good coronal balance with preservation of distal motion segments, for the Lenke C group.



Rod Link Reducer
Three-Plane Deformity
Correction Technique



Rod Link Reducer holding correction prior to contralateral rod placement



Contralateral rod of the Rod Link Reducer *in situ* with reduction towers

AP Radiographs - Lenke C Curve



Pre-op



Post-op

RESULTS:

Lenke A/B Group (18/31 patients)

- Mean Cobb angle correction: $64 \pm 10\%$
- Mean coronal balance correction*: Pre-op $14.5 \pm 12.5\text{mm}$ to post-op $10.9 \pm 10.6\text{mm}$
- Mean operative time: 185 ± 38 min
- Mean intraoperative blood loss: $677 \pm 255\text{ml}$

Lenke C Group (13/31 patients)

- Mean Cobb angle correction: $53 \pm 11\%$
- Mean coronal balance correction*: Pre-op $19.7 \pm 20.5\text{mm}$ to post-op $17.4 \pm 12.6\text{mm}$
- Mean operative time: $196 \pm 34\text{min}$
- Mean intraoperative blood loss: $736 \pm 253\text{ml}$

- Screw density was 1.3 ± 0.1 screws per vertebrae fused.
- No patient received an allogenic blood transfusion.
- No adverse neurological events occurred.

CONCLUSION: In this study, the Rod Link Reducer was found to be a safe, efficient, and economic surgical correction method that allows for excellent correction of spinal deformity and a short operative time.

CSVL - Central Sacral Vertical Line.

*Mean coronal balance correction is measured as the perpendicular distance from C7 plumbline to CSVL.