

# Direct vertebral rotation (DVR) does not improve clinical and radiological results compared to differential rod contouring (DRC) in patients treated surgically for idiopathic scoliosis

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**Introduction.** Direct vertebral rotation (DVR) is the most widespread method to correct axial vertebral rotation. Differential rod contouring (DRC) also includes derotation, but not to the same extent as DVR. DVR requires additional surgical effort with potential consequences, which are absent in DRC; moreover, the data concerning the clinical benefits of apical derotation are not convincing.

**Objective.** The objectives of this study were to compare clinical and radiological outcome after surgery in AIS patients having DRC alone vs patients with DRC followed by DVR.

**Material and methods.** In the present study, clinical and radiological outcomes were compared in patients who underwent surgery for AIS, having DVR and DRC vs DRC only. In total, 73 AIS patients with curves of 40–85°, participated in this study and were followed up for at least 2 years. Scores from the SRS-22 questionnaire were analysed, the angles of trunk rotation (ATR) were measured with an inclinometer and a radiographic assessment of coronal and sagittal spinal profiles was conducted. In 38 cases, only DRC was performed, and in 35 DRC was performed and followed by DVR; the groups did not differ from an epidemiological point of view.

**Results.** Total SRS-22 scores after 2 years were similar in both groups (4.23 ( $\pm$  0.33) in DRC vs 4.06 ( $\pm$  0.33) in DRC/DVR,  $p = 0.1$ ). In all components of SRS-22, the differences were minor, with  $p$  being way above 0.05. The mean ATR in the DRC/DVR group was slightly smaller ( $8 \pm 4^\circ$ ) than that of the DRC group ( $10 \pm 5^\circ$ ),  $p=0.16$ . Radiographic analysis did not show significant differences. The coronal curve was corrected by  $66 \pm 12\%$  for DRC and  $63 \pm 15\%$  for DVR,  $p = 0.28$ . Thoracic kyphosis in the DRC/DVR group increased by  $1^\circ$ , whereas in the DRC group the average kyphosis increased by  $5^\circ$  with a  $p$  value of 0.07. The complication rates were similar in both groups.

**Conclusions.** This investigation did not show any advantages of the combination of DRC and DVR in scoliosis correction over DRC only, both radiologically and clinically, yet it affected intraoperative parameters, extending the operation time with only a minor increase in blood loss.