Hemivertebra Resection Combined With Wedge Osteotomy for the Treatment of Severe Rigid Congenital Kyphoscoliosis in Adolescence

Comparison of Clinical, Radiographic, and Health-Related Quality of Life Outcomes Between the Hemivertebra Resection only and Hemivertebra Resection Combined with Wedge Osteotomy

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Objective

To compare clinical, radiographic, and health-related quality of life (Scoliosis Research Society [SRS]-24) outcomes in adolescent patients undergoing hemivertebra resection only (HR) or hemivertebra resection combined with wedge osteotomy (HRWO). And evaluate the surgical outcomes of adolescent patients with hemivertebra treated by hemivertebra resection combined with wedge osteotomy (HRWO).
HRWO allows for radiographical correction that surpasses that reported for HR. The average intraoperative blood loss was 764 ml (range, 450–890 ml) in A and 980 ml (range, 600–1100 ml) in B group \((P = 0.41, \text{NS})\). The average operation times were 4.3 hours (range, 2.5–5.8 hours) and 5.4 hours (range, 3.3–6.5 hours), respectively \((P = 0.62, \text{NS})\). There were no neurological complications.
Figure 1. HRWO is Hemivertebra Resection Combined With Wedge Osteotomy, that is, “V”-shaped bone resection of the adjacent vertebral body, including the hemivertebra body, the upper and lower disc, both endplate of adjacent segments, spinous process, bilamina, facet joint.
HRWO = 2 × Grade 4 osteotomy

* Grade 4 osteotomy, pedicle, partial body and disc resection

Figure 2. In comparison, the 7 domains of SRS-24 have gained similar results between HR and HRWO. The most significant change during the follow-up in both groups can be seen in the general activity and postoperative function. A, Postoperative. The $P$ value for the difference in satisfaction between the groups is 0.26. B, FFU. The $P$ value for the difference in General Activity between the groups is 0.32.
Figure 3. Radiographs of patient 18, a 16-year-old girl, who underwent hemivertebra excision Combined With Wedge Osteotomy surgery for hemivertebrae L2 (A) Preoperative PA, (B) FFU PA, (C) Preoperative lateral, (D) FFU lateral.
Conclusion.

- Hemivertebra resection, combined with WO(HRWO), through a single posterior approach is a technically challenging but safe and effective procedure for severe rigid kyphoscoliosis, especially in an adolescent patient with fixed kyphoscoliotic deformity. This posterior-only approach allows for dramatic radiographical correction that surpasses that reported for HR.
REFERENCES


Thank you !