Modified Posterior Vertebral Column Resection for Severe Spinal Deformity: A Retrospective, Comparative Study

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INTRODUCTION

- Posterior vertebral column resection (PVCR) has several advantages over a combined anterior-posterior procedure for management of severe, rigid spinal deformities.
- PVCR is a versatile procedure that allows both translation and angular correction, which can correct even the most severe spinal deformities. However, this versatility comes at the cost of being an extremely challenging surgery which is known to have a high complication rate.
- The technique, described by Suk and colleagues, has a high complication rate. Modifications of the technique which can reduce this complication rate might make this challenging procedure safer.

AIM

To report the results of posterior vertebral column resection (PVCR) in severe, rigid spinal deformity & to describe a modified technique for PVCR and compare its result with the conventional technique

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METHODS

- Study Design : Retrospective cohort
- Thirty-eight patients underwent PVCR for severe, rigid spinal deformities. These patients had a deformity in excess of 90° and a flexibility index < 20%.
- Twenty-one of 38 patients (Group 1) underwent PVCR by the technique reported by Suk and colleagues
- 17 patients (Group 2) underwent a modified PVCR technique. Our technique involves retaining the posterior elements until the other steps of PVCR are completed, which prevents ventral settling and allows for less handling of an already tight spinal cord.
- The results and complications were compared between the two groups.

Outcome Measures

1. Mean correction of deformity (sagittal and/or coronal)
2. Estimated blood loss (EBL)
3. Operation time
4. Neurological and non-neurological complications
5. Patient-reported
6. outcome score (SRS-22r)

RESULTS

- The mean operating time was 251 minutes and the mean blood loss was 1251 ml.
- Mean coronal correction of 50% and a mean sagittal correction of 52.4% were achieved.
- Intraoperative loss of motor evoked potentials was seen in 8 patients while there were 2 instances of permanent postoperative deficit, both occurring with the conventional PVCR technique.
- The average operating time, mean correction and blood loss did not differ between the two techniques. There was, however, a reduction in the occurrence of neurological complications with the authors' modified technique.

CONCLUSION

Our retrospective study with a small cohort suggests that the authors' modified technique of PVCR, wherein the posterior elements are preserved until just prior to attempting to correct the deformity, may be safer in terms of neurological complications when compared to the conventional technique. However, larger studies are warranted to conclusively establish this.