

Thoracolumbar scoliosis posterior approach

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Keywords Adolescent idiopathic scoliosis ·
Posterior spinal fusion · Rod derotation · Pedicle screws ·
Free-hand technique

Introduction

Lumbar and thoracolumbar adolescent idiopathic scoliosis has traditionally been treated with an anterior approach and instrumentation. This anterior method has often had problems with kyphosis, pseudarthrosis, and loss of correction. Posterior approach combining pedicle screw fixation, rod translation and derotation manoeuvres enable a powerful coronal and sagittal plane correction [1].

Case description

This case describes a 13-year-old girl with a right thoracolumbar idiopathic scoliosis (Lenke type 5C) that has progressed despite two years wearing a brace.

The Cobb angle was 52°. Lateral bending X-rays showed a flexible curvature with decreasing of the Cobb angle to 23°.

Posterior spinal fusion was decided with instrumentation going to T8 proximally and L3 distally (designated as the stable vertebra).

Surgical procedure

The spine is exposed subperiosteally in a fashion similar to other posterior instrumented surgeries, going laterally to the transverse processes in the lumbar spine and to the costotransverse junction in the thoracic spine. Inferior facetectomy at all levels is performed bilaterally to provide maximum flexibility to the spine. The spinous processes are also resected. The bone recovered is prepared for use as a graft at the end of the procedure.

Pedicle screws are then placed across the deformity using the free-hand technique. Mono-axial screws are placed at the apex of the deformity on the reduction side (convex side). The convex (5.5 mm Cobalt Chrome) rod is bent to the desired profile shape and then placed progressively in the screw heads creating a partial reduction by translation. Derotation manoeuvre is applied to complete the coronal plane reduction and to obtain a good sagittal contour. After one screw is locked, compression force is applied to approximate sagittal balance and correct residual coronal deformity. Contralateral rod is then placed and secured. Two crosslinks are used to strengthen the construct at the proximal and distal part. Autologous bone graft is used for posterolateral fusion after posterior arc decortication.

Postoperative information

Patient stands up at day 3 with control X-ray at day 6, no brace is needed. The postoperative X-ray showed an improvement of the Cobb angle to 15°.

Electronic supplementary material The online version of this article (doi:10.1007/s00586-012-2196-0) contains supplementary material, which is available to authorized users.

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Discussion and conclusion

Wide posterior release with segmental pedicle screw instrumentation limited to the curve defined by the Cobb measurement for thoracolumbar adolescent idiopathic scoliosis provides excellent coronal and sagittal correction [2, 3]. The rod derotation technique corrects the scoliosis by bringing the spine to midline in the coronal plane and establishing thoracic kyphosis or lumbar lordosis (anterior and posterior medialisation effect) in the sagittal plane [1].

References

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