

Oral presentation

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Evaluation of the effect of vertebral and disc mechanical torsion on the correction achieved by posterior instrumentation in adolescent idiopathic scoliosis

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Objectives

To evaluate the effect of rotational deformation ('mechanical torsion') on the short-term and long-term effectiveness of modern posterior spinal instrumentation in treating the three-dimensional deformity of adolescent idiopathic scoliosis.

Methods

Ten patients with idiopathic scoliosis were imaged with three-dimensional magnetic resonance imaging pre-operatively and at six weeks and twelve months post-operatively following Isola posterior instrumentation [1]. Changes in the three-dimensional deformity were measured, and the effect of mechanical torsion within the vertebral bodies and discs on the overall changes analysed.

Results

Posterior instrumentation causes partial and temporary improvement in disc mechanical torsion but insignificant improvement in vertebral mechanical torsion. Changes in disc torsional deformity correlate with changes in apical rotation, Cobb angle and thoracic hypokyphosis.

Conclusion

Mechanical torsion within the vertebral bodies and discs of patients with idiopathic scoliosis presents a fundamental obstacle to effective derotational surgery, and is closely related to subsequent changes in the overall three-dimensional deformity following instrumentation.

References

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