

ORAL PRESENTATION

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Does 3D back contour changes following spinal fusion in children with idiopathic scoliosis?

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From 11th International Conference on Conservative Management of Spinal Deformities - SOSORT 2014 Annual Meeting

Wiesbaden, Germany. 8-10 May 2014

Background

Oftentimes, patients find trunk asymmetry, including thoracic rib hump, shoulder level difference, more troubling than a significant Cobb angle, as topographical deformity can be readily visualized. Evaluating improvement in these back contour parameters lends to additional criteria by which to assess post-surgical improvement. Quantec raster stereography is recognized as an accurate and reliable tool for monitoring three-dimensional back contour in patients with idiopathic scoliosis before and after surgery.

Aims

To investigate the 3D back contour changes in adolescent idiopathic scoliotic deformity from surgical intervention using Quantec imaging.

Design

In this prospective controlled study, 35 patients undergoing anterior and/or posterior spinal fusion were evaluated pre and post-operatively by Quantec Spinal Imaging System and radiography.

Methods

Mean age of patients 14.5 years, with mean follow-up duration 1.7 years. A reliable Quantec protocol was established previously in the literature, consisting of twelve parameters. Pre and post-operative parameters were analyzed by paired t-test evaluating the effects of spinal fusion on scoliosis deformity.

Results

Significant improvement was seen in thoracic Cobb angle from 52.9 to 19.6 degrees ($p < .0001$) and

thoracolumbar from 54.7 to 21.3 degrees ($p < .0001$). This correlated with Quantec thoracic Q-angle improvement from 34.8 to 10.6 ($p < .0001$), and thoracolumbar Q-angle from 36.3 to 12.4 ($p < .0001$). Thoracic rotation improved from -8.6 to -5.6 ($p = .042$). Suzuki rib hump sum decreased from 15.7 to 11.5 ($p = .016$), and trunk asymmetry decreased from 40.6 to 24.1 ($p < .0001$). Left/right percent surface area also improved.

Conclusions

This study builds upon previous evidence that spinal fusion produces measurable improvements in lateral curvature, trunk rotation, and topography deformity.

Published: 4 December 2014

doi:10.1186/1748-7161-9-S1-O61

Cite this article as: Thometz *et al.*: Does 3D back contour changes following spinal fusion in children with idiopathic scoliosis? *Scoliosis* 2014 **9**(Suppl 1):O61.

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