

Oral presentation

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Evaluation of pulmonary function before and after vertebral arthrodesis in idiopathic scoliosis

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Introduction

Severe adolescent idiopathic scoliosis (AIS) may produce a pulmonary restrictive dysfunction, as well as aesthetic and functional modifications of the spine. The deformation of the thorax ("oblique oval-shape chest"), determines the change of insertional geometry of respiratory muscles and the decrease of contractile efficacy of the diaphragm on the concave side of the scoliotic curve.

Materials and methods

A total of 45 patients affected by thoracic AIS with mean Cobb angle of 66° degree underwent surgery. All the patients were evaluated for spine deformity (lateral deviation and rotation of the vertebral column) and pulmonary function (vital capacity, total lung capacity, forced expiratory volume in one second, thoracic gas volume), before surgery and 1, 2, 4 years after surgery.

Results

In the analysis of reciprocal relationships among lateral deviation and rotation of vertebrae and lung volumes and capacities, we observed an optimal correction of the curve for its lateral deviation, a slight improvement for vertebral rotation and only a maintenance of pulmonary function.

Conclusion

A strong correlation exists between vertebral rotation, pulmonary function and deformity as well as decreased elasticity of rib chest. Vertebral arthrodesis poorly influences

these elements. In order to prevent or treat pulmonary dysfunction of scoliotic patients, we should also modify vertebral rotation and rib chest shape. This is confirmed by results of our studies on evolution of pulmonary ventilation and diaphragmatic movement in idiopathic scoliosis using radioaerosol ventilation scintigraphy.

References

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