Bracing in severe skeletally immature adolescent idiopathic scoliosis – Does a holding strategy change the surgical plan?

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Background

The purpose of the study was to assess the changes in flexibility during night-time bracing in skeletally immature adolescent idiopathic scoliosis (AIS) with curves in the surgical range.

Methods

We included a consecutive cohort of 89 AIS patients with curves ≥ 45° and an estimated growth potential. All patients were eventually treated with fusion surgery and all patients had side-bending radiographs prior to both bracing and surgery. Curves were classified as structural or nonstructural curves according to Lenke at both timepoints.

Results

The main curve progressed by a mean of 12±10° and the secondary curve by 8±8°. Flexibility of the main curve decreased from 50±19% to 44±19% (p=0.001) and the underlying curve from 85±21% to 77±22% (p=0.005). In 69 patients (79%) the Lenke category did not progress during bracing. In 14 patients (15%), the progression

in Lenke type occurred in the thoracic region (i.e., Lenke type 1 to type 2) while 6 patients (7%) progressed in the lumbar region (i.e., Type 1 to type 3).
In the 69 patients that did not progress, we found that the last touched vertebra moved distally by one or two levels in 26 patients.

Conclusion

This is the first study to describe that curve flexibility decreases during bracing in severe AIS. However, this had only a modest impact on the surgical strategy. Bracing as a holding strategy can be applied but the risk of losing flexibility in the lumbar spine should be outweighed against the risks of premature fusion surgery.

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