

ORAL PRESENTATION**Open Access**

Prospective study of 136 adolescent scoliosis of more than 40° treated with the Lyon brace

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From 9th International Conference on Conservative Management of Spinal Deformities - SOSORT 2012
Annual Meeting
Milan, Italy. 10-12 May 2012

Background

Due to a lack of prospective studies, which are difficult to perform, bracing adolescent scoliosis is discussed from 30°, and sometimes surgery is proposed at this angulation. It seems interesting to study the results of scoliosis over 40° with the Lyon brace, and to present the criteria for successful treatment.

Aim

To prove the effectiveness of the Lyon conservative treatment in the most difficult conditions. If treatment is effective for scoliosis over 40°, it is even more so for lower angulations.

Methods

We selected in our prospective database a cohort of 176 adolescent scoliosis patients with curves over 40° seen between 1998 and 2007. At this angulation, the Lyon management involves 2 plaster casts, each worn for two months, and a full time Lyon brace up to 18 months after the end of the growth, and a specific program of physiotherapy (Lyon method).

Results

24 patients (13.6%) did not accept the protocol and chose surgery. 11 patients (6.25%) discontinued during the treatment. 136 patients (136 females and 18 males) can be studied statistically. Mean initial angulation is 45.4° (+6.33); reducibility in plaster cast and brace is 50%. At follow up 2 years after weaning, angulation is 40.5° (+13.1). 61 patients (45%) improved by more than 5°, 27 patients (20%) are stable, 48 (35%) are worsening by more than 5°. The results are worse in boys (57% failure). 21 patients were evaluated 10 years after weaning of the brace. Mean

progression during this period is 5° (0.5°/year) identical to that of the general adult scoliotic population. The best results are obtained when the lower vertebra is L3 (89%); the worst when the lower vertebra is T12 (53%). The two significant predictors of failure of conservative treatment are:

- A prior treatment ($p>0,05$).
- Early onset scoliosis (EOS) and non-idiopathic scoliosis ($p>0,01$).

Conclusions

Conservative treatment with Lyon brace and physiotherapy was effective in halting scoliosis progression in 65% of patients including prior treatments. The results of this study confirm that bracing is effective even after 40°. For EOS and non idiopathic, it allows waiting until end of growth for surgery.

Published: 3 June 2013

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doi:10.1186/1748-7161-8-S1-O34

Cite this article as: De Mauroy: Prospective study of 136 adolescent scoliosis of more than 40° treated with the Lyon brace. *Scoliosis* 2013 8(Suppl 1):O34.

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