Reviewer's report

Title: Effectiveness of Cheneau brace treatment for idiopathic scoliosis: prospective study in 79 patients followed to skeletal maturity

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Reviewer: Manuel Rigo

Reviewer's report:

This is a good paper. The authors report about a series of unselected (consecutive) cases according to SRS and SOSORT inclusion criteria. Although they are not comparing their results with a control group of consecutive untreated patients full filing the same inclusion criteria, the fact that they are able to compare their results with natural history and similar series, allow them in my opinion, to suggest conclusions like in a cohort study.

This is a paper of importance in its field and must be published in scoliosis. However I have to ask for some major compulsory revisions and some minor essential revisions.

Major Compulsory Revisions:

According to the above mentioned, my main concern is about authors concluding that ‘bracing was effective in preventing surgery in 78% of patients’. This conclusion would mean that all the patients treated with the brace would be reaching a surgical angular value (50° is the value defined in this study) without treatment. To make such an assumption they should provide a control group where all the patients progressed over the defined Cobb angle or to provide similar figure of surgical cases from natural history studies. This conclusion is not acceptable, The right conclusion for a cohort like study would be: ‘the results of this study suggest that bracing is effective in reducing the incidence of surgery in comparison with natural history’. First paragraph of the discussion section should be also reviewed on this point.

The authors define all the cases as progressive but they are not providing data about it. Progression can be defined when, after a follow up of six months, the Cobb angle increase 5° or more in cases where the initial Cobb angle was 20° or higher. In cases where the initial Cobb angle was under 20° progression is defined when the Cobb angle increase 10° or more after six months of observation. Whether the authors are able to document this point or not is not clear. Please clarify.

Minor Essential Revisions:

According to table 1 and first paragraph of the discussion section ‘the patients who progressed the most represented the youngest and least skeletally matured children’ (sic). Please review this sentence, I am not sure about it, although I
recognize I am not English native speaker. On the other hand, authors report about the proportion of single and double curves in table 1 which seems to be different looking at the progressive cases in comparison with stable and improved cases. It would be interesting to know about how the authors interpret the above mentioned two findings.

Compliance as well as in brace correction are two factors related to end results. To report about in brace correction, if possible for the authors, would be desirable in order to make the comparison with similar series more consistent.

I would suggest the authors also to add a column in table 1 about patients data of the whole population besides the patients data according to the four outcome subgroups. Descriptive statistics of the whole population is always desirable in order to compare the current series with other series treated the same way.

Discretionary Revisions:

Considering that scoliosis, the journal, is not limiting the amount of figures, it would be better that the authors add some pictures showing X-rays pre- and post- treatment (as well as in brace if possible), particularly of one of these cases showing improvement. Pictures showing clinical results would also improve the paper.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

According to the last point of this present list, I must declare that I personally have reported positively about the Chêneau type brace earlier. Although my review tried to be impartial, others could interpret that I am a biased reviewer.