Reviewer's report

Title: In defense of adolescents: They really do use braces for the hours prescribed, if good help is provided. Results from a prospective everyday clinic cohort using Thermobrace. 2011 SOSORT Award winner.

Version: 1 Date: 12 June 2011

Reviewer: Manuel Rigo

Reviewer's report:

This paper was one of the three winners of the SOSORT Award 2011 (Annual Meeting of the SOSORT and 8th International Conference on Conservative Management of Scoliosis – Barcelona 19 – 21 May 2011) and is an excellent paper indeed.

It has been shown that end results define success of bracing, at least in changing the natural history of idiopathic scoliosis. Two main factors have been related with end result, in-brace correction and compliance. On the other hand, in-brace correction depends on several factors related with the brace itself (biomechanical principles, curve pattern specific design and technical quality) and the patient (age, curve flexibility, curve pattern, and others), while it is not clear which factors can influence compliance. Compliance is, in any case, essential. No brace can be effective if it is not wore the prescribed time.

This present study raises a very important question. Do patients wear the brace as prescribed? The authors refers several papers were compliance is reported to be low when measured objectively and significantly less than subjectively reported by the patients. In this present study, real and referred compliance are reported to be very similar and much higher than previously reported. According to the authors, the reason for such a high and honestly referred compliance is the team approach following the SOSORT Bracing Management Guidelines [1] and the brace design, SPoRT concept [2]. This is properly addressed in the discussion section and this authors' point of view is acceptable. The first one, team approach, is unquestionable. Team approach (or patient/parents management) is a constant in those papers reporting successful bracing end results [3, 4, 5, 6]. However, although the second one, brace concept, can logically be stated, it needs further discussion. Brace type affects differently quality of life (HRQL) [7], so it is right to assume that brace type could be also a reason for different compliance. Consequently, the SPoRT concept could be, at least theoretically, a reason for an increased compliance. Symmetry, low visibility and comfort is even more important for the authors than brace action to make the brace wearable in order to improve compliance. Table 7 from this present study shows a list of 10 papers with significantly lower compliance in comparison with that reported in this present study. In at least two out of the 10 papers the brace
type is defined, Willmington brace [8] and Boston [9]. Both braces are symmetric and low visible. Contrary, in all the above mentioned papers reporting good end results [3, 4, 5, 6], which would not be possible with bad compliance (not compliant patients were not excluded), the used brace was the Chêneau type brace, which is, by definition, an asymmetric brace producing usually postural over-correction. Some teams using Chêneau type braces are also able to achieve high compliance in their patients, no matter how asymmetric and visible is the brace. According to this reviewer experience, when using an asymmetric and sometimes visible brace, the brace produces three different types of discomfort at the beginning of the treatment: 1) physical discomfort mainly due to compression effect; 2) functional discomfort due to some functional limitations but due also to postural over correction, which changes the postural schema; and 3) emotional discomfort. No matter the type of brace, it will produce certain amount of physical and/or functional discomfort, which will produce secondarily 'emotional discomfort'. Thus, try to make the brace more comfortable from the physical and functional point of view is a valid strategy. However, 'emotionally discomfort' is probably also primarily produced by other different factors, acting even before the patient is able to recognize any 'physical and/or functional' distress. While this, let us call it, primary 'emotional discomfort' persists, patients will find always a reason for a low compliance, complaining about physical and/or functional discomfort. Once 'emotional discomfort' decreases (different strategies can be used to capture emotionally patients and their parents), 'physical and functional discomfort' can be at the same time reduced and overcame, improving compliance. Thus, team approach can make theoretically any brace type to be wearable or not wearable. The attached figure 1 shows an example to document this statement. A girl with a right thoracic scoliosis was treated with a Chêneau type brace (A) and came to our clinic after developing a noticeable skin lesion and rib deformity (B). Her first 'treatment team' had decided to cut down the left upper thoracic pad in order to reduce postural over-correction and visibility. The effect of this was that the three point system formed to correct the thoracic curve was ineffective and produced an unacceptable compression effect, cause of the lesion and secondary deformity observed down A and B.In spite of the assumed 'physical discomfort' the girl was fully compliant. Any strategy used by the first team was effective in achieve good compliance but with an unacceptable clinical result. Our team changed the strategy: a new brace was made and adapted (C) producing the desirable postural over-correction (Chêneau principles), from an effective three-point system, making the brace more visible. The girl has continued being compliant and few weeks after changing the brace, she showed a clinical improvement, with less rib deformity and a total resolution of the skin lesion (D). In conclusion, 'physical' first and 'functional' later discomfort was not a reason for this girl to be not compliant.

It is clearly acceptable and desirable that the authors of this present study discuss about brace type being a reason for improved compliance, however, improved compliance appears to be more related with the strategy to capture emotionally patients and parents rather than to the brace design. Discussion and conclusion sections are adequate and could be leaved in its current way, so this reviewer is not asking for a major compulsory revision, but may be the authors
could consider in their discussion some of the points raised above by this reviewer.

REFERENCES:

6. Zaborowska-Sapeta K et al: Effectiveness of Chêneau brace treatment for idiopathic scoliosis: Prospective study in 79 patients followed to skeletal maturity. Scoliosis 2011 6:2

Minor essential revisions:

In table 7. Rahman 2010 is incorrect. There is no paper from Rahman published on 2010 on this issue. It should be written Rahman 2005 [22]

Level of interest: An article of outstanding merit and interest 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:

I declare that I have no competing interests