Reviewer’s report

Title: Efficacy of the Osaka Medical College (OMC) brace in the treatment of adolescent idiopathic scoliosis following Scoliosis Research Society brace studies criteria

Version: 2 Date: 6 February 2015

Reviewer: M S Wong

Reviewer’s report:

Minor Essential Revisions

Page 3

Line 3: typo “The efficacy of brace treatment of for patients with adolescent…”

Lines 3 & 4: “The efficacy of brace treatment for patients with adolescent idiopathic scoliosis remains controversial.” It seems this hypothesis does not consider the latest work done by Weinstein.

Line 11: The homogeneity of the population in terms of gender needs more justification, especially in the scoliosis topic that the treatment response of boys and girls is quite miscellaneous. “The study included 2 boys and 29 girls …”.

Page 4

Lines 3 & 4: Would “Instruction adherence rate” be a reliable method for analyzing the compliance?

Page 5

Lines 8 & 9: “Brace treatment is the only potentially effective in preventing curve progression…” This statement is not consistent with the controversial role, the authors declared for brace treatment in abstract.

Line 14: “…Cobb angle of between 25 and 50…”, the efficacy of this brace for 50 degrees is arguable.

Line 18: the ability of curve correction in this brace which is integrated in low profile design of brace and is claimed to work based on righting reflex needs to more explanation.

Page 7

Line 13: One of the cases was with DOUBLE THORACIC CURVE. As all the cases demonstrated the apex of the curve at T8 and below, it was curious to know how a double curve case can be formed only 2-3 vertebrae below the T8; One acceptable theory for such double curve case would be the possibility of one
of the curves above the T7 and in that case, later the application of low profile brace could be argued.

Page 8

Lines 3 & 4: Inconsistency of descriptive outcomes in text and table 1, as “..time in - brace after the prescription was from 1 year and 10 months to 6 years and 1 month....” While in the table it is mentioned that Time in brace minimum was 3 years and 1 month!

Page 9

Lines 4-6: It was curious about the Instruction adherence rate and the reason of deduction 2 hours for decreasing the expectation of patient’s declaration; why 2 hours and not 3 hours?
Also, it is quite interesting to know how the times of visit for all the patients could be organized based on the similar schedule.

Lines 13 & 14: A good strategy to decrease the chance for inter-rater variability of radiographic measurements.

Page 10

Lines 5-7: How many radiographs were taken totally for each case?

Page 12

Lines 2-12: Two cases have been shown as a proof on how the compliance can impress the final follow up Cobb angle. Although it is quite promising result, but it seems such a justification, need more elaboration. Grouping the cases to compliant and non-compliant while there are diverse cases in each subgroup is quite challenging. The case 1 is a lumbar case and the corrective forces could apply in a more efficient way in comparison with the Case 2 two that is a thoracic case and although he or she is a non-compliant, the mechanism of brace effectiveness has been ignored in this case.

Page 13

Line 19: Based on the Table 2. The results of this team are quite promising in comparison with the other research teams as the progression rate for surgical indication was only 9.7%; although the table clearly depicts how different researchers have different categories to define the success rate and progression rate for surgical based on Cobb angle changes.

Page 15

Line 18: In discussion, it was found that some points regarding the mental support for AIS patients and also their parents. Although they are critical issues, they were not covered directly in this work and in somewhat their explanation
might be out of the current research area.

Page 16

Lines 2-4: The authors stated the long term follow up as one of their limitations. This is a paradox while they already followed the Negrini’s idea to recruit the cases within 2 years and they claimed it would not affect the final results and at the same time a helpful way to increase the number of their research cases. Similarly, regarding compliance rate, although it was obtained subjectively, the results were not quite satisfactory (53.7 % ) and it is in paradox with the low rate of surgery progression of their case. The authors may state some explanation regarding the mentioned formula and the 2 hours deduction they have applied to neutralize the effect of overestimation.

Page 25

Lines 4 & 5: based on which parameter the authors believed that the brace corrects the standing posture of the patient, while they only had access to X-ray.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**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'