Reviewer’s report

**Title:** Segmental Correction of Adolescent Idiopathic Scoliosis by All-Screw Fixation Method in Adolescents and Young Adults Minimum 5 years follow-up with SF-36 Questionnaire

**Version:** 1  **Date:** 8 October 2011

**Reviewer:** Baron S. Lonner

**Reviewer’s report:**

The authors of "Segmental Correction of Adolescent Idiopathic Scoliosis by All-Screw Fixation Method in Adolescents and Young Adults Minimum 5 years follow-up with SF-36 Questionnaire" have presented five year follow-up on an already well-established and accepted technique, the use of pedicle screws for adolescent idiopathic scoliosis. I would recommend acceptance for publication for your journal pending some revisions.

The strength of this paper is in the reporting of SF-36 patient reported outcomes and comparison of these to age-matched controls. However, a number of weaknesses or questions exist which should be addressed by the authors:

1. The authors report not only on AIS patients but also young adult up to age 31 with adolescent-onset scoliosis so that the group is non-homogenous particularly in regards to the age in which SF-36 outcomes are reported. The age at follow-up should be reported. The SF-36 has only been validated in adults. Were any of the patients under age 18 at follow-up. The study may be underpowered to show this, but were there any differences in SF-36 outcomes based on age, number of levels fused, or lowest-instrumented vertebrae. Do the authors have access to the data set for healthy Taiwanese controls allowing for statistical comparison rather than a merely descriptive one?

2. The description of assessment of apical vertebral rotation following surgery in "Methods" should be clarified. If a screw was present at the apex, how exactly was the N-M rotation determined by assessing adjacent vertebra? Were there ever cases in which the apical vertebrae and adjacent ones instrumented with pedicle screws?

3. Were there any cases in which monoaxial screws were not used, were they only used at the apex, did the relative percentages of screw type vary significantly between cases? Was titanium used in all cases for the rod? What was the technique of correction-eg., was direct vertebral derotation employed, compression-distraction, rod derotation, etc?

4. Radiographic evaluation is notoriously inaccurate. Were there any clinical problems in cases in which screws were misplaced. Was the technique previously employed by Lenkes group for radiological assessment employed?
How were screws placed-freehand, laminotomy to assess the pedicle location, etc?

5. Was thoracoplasty used in any case? How did this compare to the use of thoracoplasty in the author's historical hybrid and all hook constructs?

6. Although the authors report an improvement of both hypokyphosis and hyperkyphosis in this cohort, there is an actual decrease in the overall kyphosis and lordosis in the overall group. Could this have an impact longterm on adjacent mobile segments? Was this more a problem for longer constructs? What was the impact of anterior release on kyphosis. The authors should separate out the anterior release patients to analyze separately. This would make the group more homogenous again and separate the effect on correction and maintenance thereof, of an anterior release.

If the authors can adequately address these issues, I would recommend for publication.

Thank you,

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**Level of interest:** An article whose findings are important to those with closely related research interests

**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'