Reviewer’s report

Title: Surgical treatment for scoliosis

Version: 1 Date: 27 January 2008

Reviewer: Tomasz Kotwicki

Reviewer’s report:

General

The paper is an interesting short panorama of the techniques used in surgical management of scoliosis. It documents an important personal experience of the authors in this difficult surgery. The readers of Scoliosis may certainly benefit from this review.

Major Compulsory Revision

1. The supertitle “Review” should be added.

2. The title of the paper does not reflect the content of the paper. In fact, only the techniques are described but little information is provided on the indications, apart the Cobb angle, as well as on timing of surgery or the issue of the rib hump correction. Non-idiopathic scoliosis is mentioned but not really approached. Among many techniques, little attention is paid to the historical development of the techniques, but those currently popular are described. So the title suitable for the content could be:

Surgical treatment for idiopathic scoliosis: a review of techniques currently applied.

Or: Surgical management of idiopathic scoliosis: technical options for correction of spinal curvature.

Or something like that.

3. Little data on the clinical issues, patients satisfaction or complications are provided. It is not the authors’ fault but a simple consequence of the lack of these data in the published articles on the topic. So, in the Review section, page 4, 1st paragraph, the authors could mention that the particular techniques will be discussed only based on the radiological assessment of the correction obtained. There seem to be other non accessed points as for example thoracic selective fusion in double structural curvatures, the sagittal alignment or the transverse plane quality of correction in various methods. Generally, this paper will support the schema of thinking within the Cobb angle dogma.

4. With some cautiousness, it worth to remark that the follow-up of many proposed techniques is only middle term, sometimes short term. Life time follow-up is not available even for Paul Harrington’s patients.
5. In the **Indications for surgery**, point 3) **Larger the curve progress, more difficult to treat with surgery**, it may be an additional sentence to develop the argumentation (curve less flexible, more anchors needed, torsional deformity greater, operation longer, blood loss higher, risk of neurological complications higher etc.).

6. In **Posterior surgery** section the reference for Paul Harrington may be supplied, then the Cotrel and Dubousset (1984) paper may be cited.

7. In the **Anterior surgery** section the authors are asked to provide references for the statements: **loss of correction occurred frequently** and **thoracoscopic approach affects the pulmonary function after surgery**. Otherwise this section seems to be based more on opinions than on facts.

8. In the introduction to the **Fusionless surgery** section the authors should precise that the chapter will discuss the techniques which attempt to prevent from, or delay the long multilevel spinal instrumentation and fusion. In fact, the anterior convex epiphysiodesis is spinal fusion too, but it is limited to a few segments with the hope that the subsequent growth will redress or at least not deteriorate the curvature.

9. In the same section the authors could start by shortly mentioning that the spinal fusion, which eliminates segmental motion of an important part of the vertebral column, is one of the main points of critique for the current surgical state of the art. This critique comes both from the patients and the conservatively oriented physicians. Thus, the fusionless surgery would pretend to preserve the function of the spine and not only the morphology, as the fusion surgery does.

10. If the paper is limited to idiopathic scoliosis, then the "vertebral wedge osteotomies" reported for neuromuscular scoliosis may be presented just as the introduction to an eventual use of this technique for idiopathic scoliosis.

11. For the infantile or early juvenile scoliosis, the technique of instrumentation allowing repeated distraction of scoliosis without immediate fusion but with the final full instrumentation and fusion is known from the description of Moe et al.. This should be placed in the references.

12. It would be prudent to wait for long term results before opposing Harrington, Cotrel or Luque as unsatisfactory systems against the Isola as the only satisfactory one. In my experience of several early onset scoliosis children treated with delayed fusion, similar results may be obtained with various types of instrumentation.

**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions.
**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.