Reviewer's report

Title: Bilateral apical vertebral derotation technique by vertebral column manipulation compared with vertebral coplanar alignment technique in the correction of Lenke type 1 idiopathic scoliosis

Version: 1 Date: 14 January 2013

Reviewer: Gabriel Piza Vallespir

Reviewer's report:

- Major Compulsory Revisions

Abstract (Methods, Paragraph 1): Retrospective case-control study. This definition is in contrast with the statements in the Methods (paragraph 1). Patients selected and enrolled during a period of time were included by admittance order in one of the two groups of study and followed for 18-22 months. I think this should be considered a prospective clinical assay.

- Minor Essential Revisions

Methods (paragraph 3): the surgical technique of VCM described by the authors does not match exactly with the original technique (explained in the paper in Discussion (paragraph 2)), because there is not a real quadrilateral frame as only three screws are used to rotate the apex. This difference should be commented.

Methods (paragraph 4): In the original VCA technique pedicle screws were placed at every level also in the concave side. Once the VCA correction is done over the convex side, the concave rod has to be inserted and locked. This rod has to hold the correction while the Coplanar System is released. It is uncertain if the ability of this rod to keep the correction (specially the rotation) would be the same with one half of the screws. This possibility should be commented.

Methods (Paragraph 3): The sentence “After assembly, ventral and medially directed spinal implant force combined with clockwise rotation force was applied using the vertical and convex derotator handles” is unclear. It is only understandable if the VCM technique is already known.

Results (paragraph 5): flexibility of the major curves, according to table 1 (demographic data) is 37.2 and 38.8% for groups A and B respectively, so they are >30%.

Results (paragraph 8): “Another advantage is that VCM quadrilateral frame Could reduce the possibility that the lateral screw may need to be removed because of its proximity to the aorta after the correction by direct vertebral rotation technique [25].” I think lateral screw is unclear; it probably refers to concave screw.
Table 3: the “Thoracic kyphosis angle of flatback” is an unclear concept. It is difficult to understand what does it refer to.

- Discretionary Revisions

Methods (paragraph 4): “For the patient with hyperkyphosis, the bandage was wound (the space was 20 mm to 30 mm) between the tops of the tube to reconstruct the normal kyphosis.” It should say, “a bandage was wound”

Methods (paragraph 6): According to the Spinal Deformity Study Group (Radiographic Measurement Manual, O’brian MF et al. 2005) lumbar lordosis should be measured from T12 upper endplate of to S1 upper endplate.

Reference 14: This is a mistake not attributable to the authors. Due to an unfortunate misunderstanding with Spine Journal, the name of all the authors of this paper was erroneously referenced. In Spain middle name is seldom used. After the first name, we use two surnames, being the first the main one. So, the right way to reference the first four authors of the paper should have been Piza G, Burgos J, Sanpera I and Hevia E.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

- Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this paper, either now or in the future? Yes

- Do you hold or are you currently applying for any patents relating to the content of the manuscript? Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript? Yes

- Do you have any non-financial competing interests in relation to this paper? Yes

The reviewer is one of the inventors of the VCA (Vertebral Coplanar Alignment) system (Instrumentation and methods for reducing spinal deformities, United States Patent: 8,147,524. April 3, 2012) and co-author of the paper describing the surgical technique (ref. 14 in the manuscript).

The reviewer sold the patent to Medtronic Inc. that holds all the rights on its manufacturing and marketing. Nowadays, the reviewer does not receive any royalties on the VCA marketing nor holds any stock or share in the company that markets VCA.