Reviewer's report

Title: Surgical treatment for scoliosis

Version: 1 Date: 6 February 2008

Reviewer: Theodoros B. Grivas

Reviewer's report:

The review paper "Surgical treatment for scoliosis" is presenting basic knowledge and recent innovation of surgical treatment for scoliosis. This review is a nice piece of summary of the current wisdom on the topic.

However there are some points for discussion.

Page 4, first paragraph.
An indication for surgical treatment could be the motivation of a scoliotic child, and her/his family, suffering a curve in the so called "gray zone" of spinal deformity, with a determination for correction and straightening of her/his spine.

Page 5, last lines of the top paragraph.

Another concern with segmental pedicle screw constructs is that vigorous correction of a major curve is an overcorrection relative to the flexibility of the upper compensatory curve [10].

This statement is raising the question of curve flexibility and the preoperative evaluation of curves correctivity, an issue which is not discussed in this review at all. This preoperative flexibility study will also dictate the necessity of the anterior release in some scoliotic cases.

Some references are mentioned on the topic for consideration.


Page 6 Subtitle: To control growth.

The authors are nicely mentioning the fusionless method of stapling.

The major problem with this method is that the selection of the surgical candidates is a demanding issue. There are no definite and solid criteria for hallmarking a curve as progressive. Therefore using this method we are sometimes at risk to operate on a "benign" and not on a progressive curve. This issue must be discussed in this review.

In the fusionless and/or the growth manipulation techniques the authors could include the so called "Luque Trolley" performed alone or with ARCE (anterior release and convex epiphysiodesis), a well documented technique, used for the treatment of Early Onset Scoliotics (EOS) since many years in UK.

See the very initial report on this surgical strategy presented in 1990 by:


In this report the findings for two groups of children with progressive infantile idiopathic scoliosis treated indifferent ways, namely: 1. Combined epiphysiodesis and rodding, which is a new one, (n=9) and 2. Posterior rodding alone (n=5). In the first group nine patients aged 1.3 to 5.4 years each had a two-stage surgical procedure; at the first stage involving a thoracotomy, 4-5 discs and vertebral growth-plates were excised on the convexity of the curve and rib autografted (convex epiphysiodesis, Roaf); at the second stage, Luque L-rods (more recently U-rods for maintaining stability and less subcutaneous bulging) were attached to the laminae by wires ("Luque trolley") which allows the spine to grow along the rods. After surgery, the Cobb angle corrected from 58 to 21 degrees (65%) (p=0.008) and the apical vertebral rotation (Perdriolle) from 33 to 24 degrees (26%) (p=0.02). At follow-up (mean 3.4 years, range 1.3-5.4 years), the Cobb angle was 22 degrees (static - 62% total correction) and apical vertebral rotation decreased to 15 degrees (to a total 54%) (p=0.008). In the second group, five patients, aged 5 to 6.6 years, had rodding alone; their Cobb angle reduced from 48 to 22 degrees (54%) (p=0.04) and the apical vertebral rotation from 22 to 19 degrees (13%) (p=0.36). During follow-up, the Cobb angle increased to 46 degrees and AVR to 27Â°. These results were significantly worse than the patients in the first group. It was conclude that the combined anterior and posterior spinal surgical procedures arrest curve progression and produce some derotation of the apical rotational deformity in the spine. In contrast posterior rodding alone did not prevent progression of Cobb angle nor apical vertebral rotation.


The issue of de-rotation techniques and results, either a) as an immediate postoperative outcome, using contemporary techniques of the surgical treatment of AIS, or b) as a longer term result of surgically induced growth manipulation for the treatment of EOS, must also be addressed.

Some suggested literature for consideration is:


and for

b) see:


PRATT RK, WEBB JK, BURWELL RG, CUMMINGS SL.: Luque trolley and convex epiphysiodesis in the management of infantile and juvenile idiopathic scoliosis.


What next?: Accept after minor essential revisions

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

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.