Reviewer’s report

Title: Development and repeatability of an everyday clinical tool to evaluate aesthetics in scoliosis patients: TRACE (Trunk Aesthetic Clinical Evaluation)

Version: 1 Date: 22 November 2008

Reviewer: Martha Hawes

Reviewer’s report:

RE: Development and repeatability of TRACE

REVIEWER’S REPORT

GUIDELINES

When assessing the work, please consider the following points:

1. Is the question posed by the authors new and well defined?
   yes. see below for concern about emphasis and strengths.

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?
   yes

3. Are the data sound and well controlled?
   yes.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   yes

5. Are the discussion and conclusions well balanced and adequately supported by the data?
   see below. In this reviewers’ opinion, there are important aspects of their work that should be highlighted.

6. Do the title and abstract accurately convey what has been found?
   yes.

7. Is the writing acceptable?
   see below.

Editorial suggestions

All suggestions are critically needed but minor changes.

Regarding #1 and 5, above: In my view, the most important gap filled by this tool is the ability to use it to provide a meaningful qualitative analysis to the patient, in
a form that can readily be standardized between clinics and among independent populations. It is critical to highlight these points at the start of the manuscript in the introduction and the abstract. Efforts to quantify surface deformity using such methods as Moire photography are scientifically attractive but tend to obscure the actual appearance which is at issue, in the interest of generating numbers that can be dealt with in a quasi-statistical manner. The fact that physician groups agree with each other (first sentences of the 'background') on the importance of aesthetics is undermined by recent studies (1-5, below, and cited by the authors in their manuscript) documenting a marked discrepancy between the opinions of physicians and the patients who will be the ultimate judges of success or failure.

Even more important, clinicians' stated goals of scoliosis treatment can vary markedly over time (6,7). Thus, in 1941 the stated goal of surgery by experts in the field was "to leave the patient with a slight residual deformity and mild curvature," while more recently it was "to restore acceptability and help mitigate future social and psychological disadvantage."

While clinical approaches to treatment can change with the times, patient needs do not, and their treatment choices will still be affecting their lives long after the clinical paradigm has moved on to a new 'goal' of treatment. Patients need tools that allow them to judge, in a form that is meaningful and direct--"What is wrong? How bad is it? Why is this a problem? How will your treatment approaches be of clinical value to me now and in the future, based on this set of circumstances?" The degree of deformity is important not only per se but also because it can be a predictor of future problems with the primary clinical issues of scoliosis--restrictive lung disease, pain, and restriction in activities of daily living (8-13). Recent studies (e.g. 1-4) have shown that, when patients are asked, these are the issues that are of most concern in treatment choices and satisfaction. Increased pain, not "aesthetic appearance," was noted as the most important reason for patient dissatisfaction, when the patients themselves were asked whether treatment had been a success or failure.

These considerations make it critical to balance the subjective opinions of clinicians in judgement of appearance with the equally subjective opinions of the patient. For this to be accomplished, a direct, inexpensive and nondestructive (e.g. no radiation exposure) tool is needed that can be used to provide a 'big picture' of patient signs and symptoms, what these signs and symptoms mean, and how they can be used to judge changes over time. ID and TRACE appear to be ideal for this purpose. Efforts to validate their role as a quantitative instrument are not of as much importance as its standardization and clarity. If it really is 'aesthetic appearance' that is the most important (or only) issue for a given patient, that makes it even more essential to use a tool like TRACE that clearly and objectively documents aesthetic appearance. If quantification is a goal, then variability from one set of photos to another (i.e. morning vs evening, one day to the next, etc) may be of more importance than inter-rater measurements.


General: There are formatting issues needing attention throughout the manuscript (i.e. indents, consistency in lower/upper case for ‘table’ the 'AIS' abbreviation needs to be introduced after the first use of adolescent idiopathic scoliosis, and then used consistently throughout split infinitives and other grammatical issues in the abstract are highlighted for correction (below). I can do this for the whole manuscript, if needed.

A reference needs to be provided for Kappa statistics. Given the controversies associated with this method, a parenthetical explanation together with additional
references might be worthwhile (i.e. 'We used Kappa statistics, a method that allows xxx with xxx samples, based on a sample of n..' and acknowledge the published controversies (e.g. a-c, below)


There are a few places in the abstract that I have provided suggested changes in wording, for consideration by the authors.

p. 1, Abstract.

para. 1. I would recommend for sentence 3: 'The aim of the present study is to develop a clinical tool for the assessment of aesthetics in adolescent idiopathic scoliosis (AIS) patients, and to verify its reliability and repeatability.'

para 2. sentence 2: "We built on this experience to develop a Trunk Aesthetic Clinical Evaluation (TRACE), that is based on four sub-scales--shoulders (0-3), scapulae (0-2), hemi-thorax (0-2) and flanks (0-4). Each point is fully described, to provide an ordinal scale for increase of asymmetry." next to last sentence--'12-point scale' not '12-points scale'.

Instead of 'A hundred and sixty PA photographs....', I would recommend 'One hundred-sixty posterior-anterior (PA) photographs of (How many?) AIS patients were scored in two independent tests, by each of four observers, using AI and TRACE. Kappa statistical analysis was used to identify the minimum clinically significant change (95% confidence level)."

Para 4 (RESULTS): 'We found the intra- and inter-rater reliability of AI to be fair.

Para. 5 (conclusions): I recommend 'TRACE is a low-cost tool that provides a direct measure of aesthetic appearance that can be used to educate patients and to monitor changes in clinical signs over time. Its routine clinical use by physicians is advised.'

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.