Author’s response to reviews

Title: Clinical and physiological effects of transcranial electrical stimulation position on motor evoked potentials in scoliosis surgery

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Dr Theodore Grivas
Editor
Scoliosis Journal

Dear Dr Grivas,

Re: MS: 1184802530319667

Thank you for all the helpful comments and suggestions.

For Reviewer #1, I have, as suggested, re-organized the Introduction to reflect the aims of the study and problems defined in a clearer fashion. I have also elaborated what the motivation of the study is and the clinical outcome/significance that were hoped to achieve. In addition, the Conclusions have been strengthened in line with the aims outlined in the Introduction. I have added the following: ‘In practice, MEPs are usually with the C3C4 cross scalp or C3Cz/C4Cz midline stimulating positions during IOM. To our knowledge, there are no reported instances of false negatives with neurological deficits reported in the literature with either stimulating position during scoliosis surgery. However, obtaining concurrent ipsilateral and contralateral MEP amplitude are of value in reducing false positive observations during IOM (1). To this end, it would therefore be of interest to ensure that large, distinct and reproducible MEPs can be obtained ipsilaterally and contralaterally intraoperatively. Here, we aim to compare the efficacy of eliciting MEPs from 2 stimulating positions, clarify the predominant underlying mechanisms involved,
as well as address any arising practical implications.

For Page 10, particularly on the literature review, I have reorganized the entire paragraph to make the discussion clearer. Figure 1 has been modified to incorporate a clearer indication of both stimulating positions.

For Reviewer #2, I have added original tracings on MEPs obtained using both stimulating positions as Figure 2.

Reference 8 has also been corrected as suggested.

For Reviewer #3, on page 3, the line has been changed to ‘contributed to by summation of…’. On page 4, I have removed the parenthesis after ‘electrode’. On page 5, the train of 4 twitch refers to 4 consecutive visible twitches observed when stimulating the median nerve at the wrist. This has been elaborated. The test is used in the operating theatre to rapidly ascertain if neuromuscular blockade effects have worn off. On page 6, I have changed the line to ‘pedicle screws were averaged’. On page 6, I have removed the word ‘the’ as suggested. On page 6, I have changed the line to ‘minimal intensities required’. On page 6, I have removed parentheses in paragraph 2. On page 6, I have elaborated on the final paragraph: ‘…..The surgical decision made immediately usually entails removal of pedicle screws, loosening or removal of correction rods.’ On page 8, I have changed the paragraph 1 to ‘The main findings of our study were…’. On page 9, paragraph 2, I am suggesting that the longer latencies obtained with the midline stimulating position may be due to ineffective stimulation of ipsilaterally conducted MEPs. These ipsilateral MEPs have shorter latencies and are summated early with contralateral MEPs to manifest as larger and earlier occurring MEPs seen with the cross scalp stimulating position (2). On page 10, I have removed the underscore. On page 10, line 17, I have expanded the paragraph by adding that ‘… the corpus callosum, which is a large white matter tract playing a vital role in interhemispheric interactions, is likely to be crucially engaged in our observations intraoperatively.’ I have also corrected Reference 8 has suggested. Figure 1 has also been modified to include right and left labeling.

A revised version has been uploaded with this letter. Please do not hesitate to contact me for further clarifications.

Yours sincerely,

YL Lo

References