Reviewer’s report

Title: Prevalence and key radiographic spinal malalignment parameters that influence the risk for gastroesophageal reflux disease in patients treated surgically for adult spinal deformity

Version: 1 Date: 14 Nov 2017

Reviewer: Mitsushige Sugimoto

Reviewer's report:

Major comments:

1. In general, the epidemiology and pathology of GERD in patients with adult spinal deformity is known.

2. Sensitivity of the FSSG for diagnosis of GERD is about 70%. In addition, GERD included reflux esophagitis and non-erosive reflux esophagitis. In this study, because most of patients grouped as GERD-positive were dosed PPI, those may be patients with NERD or functional heart burn.

3. Serious problem of this is luck of endoscopic evaluation, as authors suggested.

4. Most of readers of this study is Gastroenterologist. Therefore, authors should add detail explanation about spinal deformity-related words.

5. Did authors enroll all of patients with spinal deformity who were treated with thoracolumbar corrective surgery between April 2010 and March 2014?

6. Ethical committee approved in 2014. However, this study was performed between April 2010 and March 2014. Did authors receive informed consent from all eligible patients to enroll this study, not operation?
7. Intake of NSAIDs is risk factor for development of GERD. This situation may influence occurrence of GERD-related symptoms.

8. Patients improved GERD-related symptom after operation might stop intake of PPI. Because PPI is first-line drug for GERD treatment, discontinuous of PPI may affect FSSG score.

9. What did difference between standing and FBB position mean?

10. Please show parameters used at the multivariate analysis.

11. Fig2; Please divided FSSG score into acid-related score and dysmotility score.

12. Fig3; Please show association with FSSG score and TLK (FBB) at post-operation.

13. If possible, authors should compare with adult spinal deformity patients operated and not for GERD-related symptoms.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Yes
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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