Dear Editor and Reviewers,

Enclosed please find manuscript No. 71399 titled, “Sequential sagittal alignment changes in the cervical spine after occipitocervical fusion” to be considered for resubmission as an ***Original Article*** to ***World Journal of Clinical Cases***.

We thank the editor and reviewers for their overall positive reviews of our work and their constructive feedback for our manuscript. We revised our manuscript point-by-point based on the comments and suggestions. All changes to the manuscript are marked in red in the revised manuscript, and the responses are listed point-by-point below in blue.

All of the authors have read the revised manuscript and agreed with its contents, and no portion of this work has been submitted for consideration elsewhere. Thank you very much in advance for considering our manuscript.

Sincerely,

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The Point-by-point Response to Reviewers' Comments

We thank the editor and reviewers for their overall positive reviews of our work and their constructive feedback for our manuscript. We revised our manuscript point-by-point based on the comments and suggestions. All changes to the manuscript are highlighted marked in red in the revised manuscript, and the responses are listed point-by-point below in blue.

Reviewer #1:

*1）**Comment:** The introduction section is well written. If the authors describe research trends on "CSA of patients with CJD" in more detail in the introduction section, it can help readers understand.*

Response: We have added the latest researches on "CSA of patients with CJD" to the revised manuscript: Matsubayashi et al. found that the occipital to C7 angle (O-C7a) is regulated by T1 slope and the corresponding O-C7a is divided into the occipital to C2 angle (O-C2a) and C2–C7 angle (C2-7a), which have negative correlation to each other and then maintain horizontal gaze. Korovessis et al. demonstrated that postoperative O-C2a, pharyngeal inlet angle (PIA) and T1-slope safely predict HRQOL outcomes following OCF for fresh trauma (Page 5, line 2-6).

Reviewer #2:

*1）**Comment:** Authors mention that it is retrospective study. However, the language of the text is as if it were a prospective study. For example, the authors mention "The effectiveness of OCF surgery in restoring CSA may be limited by the realignment of the craniocervical junction being neglected". Similarly in results section, it has been mentioned "A total of 84 patients were enrolled in the OCF group." How can it be retrospective study if authors are enrolling them for study? If it is a retrospective study, cases must come from hospital records and control can be enrolled. Also looking at the tables and data collection, it doesn't appear to be a retrospective study as two follow-ups are there. Authors may please explain and correct the study design mentioned in the article accordingly.*

Response: This study was a retrospective study: 1) The results of our study showed that there were no significant changes in O-C2a or C2-7a from before to after OCF surgery. The

O-C2a of the patients with craniocervical disorders at the last follow-up was still significantly smaller than that of the asymptomatic volunteers, while the C2-7a of those patients was larger. We considered the main reason to be that we focused on decompression, reduction, and fusion for the treatment of craniocervical disorders but neglected the importance of restoring craniocervical sagittal alignment (Page 9, line 21-23). So, we concluded that the effectiveness of OCF surgery in restoring CSA may be limited by the realignment of the craniocervical junction being neglected. 2) We have corrected the sentence to "A total of 84 patients were included in the OCF group". 3) In our department, all patients with spine surgery were told to accomplish clinical follow up at 1 month, 3 months, 6 months, 1 year and 2 years after surgery when they were discharged. In order to accomplish the analysis of this study, we only included the patients at least 1 year of radiographic follow-up data with adequate visualization of the cervical spine on pre- and postoperative films (Page 5, Line 20-28).

2）Comment: *Authors have done their study on "Sequential sagittal alignment changes in the cervical spine after occipitocervical fusion". Further authors have mentioned "We considered the main reason to be that we focused on decompression, reduction, and fusion for the treatment of craniocervical disorders but neglected the importance of restoring craniocervical sagittal alignment". If authors had not done anything to restore the craniocervical sagittal alignment, then how did they accept it to change? In other words, how did they feel the need of the study.*

Response: The results of our study showed that there were no significant changes in O-C2a or C2-7a from before to after OCF surgery. The O-C2a of the patients with craniocervical disorders at the last follow-up was still significantly smaller than that of the asymptomatic volunteers, while the C2-7a of those patients was larger. This means that we failed to restore the CSA effectively in these patients. We thought that the educational value of our manuscript was to remind the readers to give greater emphasis of CSA restoration and its solutions regarding OCF.

3）Comment: *Authors have mentioned "A lateral radiograph of the cervical spine was obtained at baseline, 1 month and the last follow up after OCF surgery". Authors may clarify as to how they could draw this conclusion from the study.*

Response: We have corrected the sentence to "A lateral radiograph of the cervical spine

was obtained preoperatively, postoperatively, and at the last follow-up" in the revised manuscript (Page 6, Line 6-7).

4）Comment: *Authors may discuss quoting evidence, reliability of data collection through telephonic conversation. Does data collection through telephonic conversation lead to bias which confounds the outcome of the study?*

Response: The patients were defined as having dysphagia if they needed swallowing agents or pureed foods to avoid choking [*Wang LN, Hu BW, Song YM, et al. Predictive abilities of O-C2a and O-EAa for the development of postoperative dysphagia in patients undergoing occipitocervical fusion. Spine J, 2020; 20(5): 745-753*]. The questions through face-to-face questioning and telephone interviews were the same, so it won't lead to bias by telephonic conversation.

5）Comment: *Authors have not mentioned the Age group in the inclusion criteria. Was this not considered?*

Response: We have added the clarification of Age group in the inclusion criteria (Page 5, Line 21).

6）Comment: *Authors may consider discussing about the measures to prevent DYSPHAGIA in OCF.*

Response: We have added the discussion about the measures to prevent dysphagia after OCF in the revised manuscript (Page 10, Line 12-21)： Previous studies evaluated many factors that might lead to post dysphagia, such as O-C2a, fused segments, age, pathologies, subaxial cervical positioning. However, O-C2a was the only significant independent variable correlated to dysphagia. Consequently, operative positioning of O-C2 is the most effective way to avoid post dysphagia. Bagley et al. advocated that preoperative halo immobilization might allow patients to have their head fixed in a particular position and prevent dysphagia. Wang et al. and Meng et al. recommended that surgeons avoid O-C2a reductions greater than 5° during OCF surgery to prevent postoperative dysphagia. Huang and Gonda et al. attempted to maintain patients' head and neck neutrality by an algorithm based on the comparison of pre- and intra-operative X rays and CT scans.

*7）**Comment:** Authors may consider removing the word "all" from statistical analysis section such as "All data…" and "All values…".*

Response: We have corrected the description in the revised manuscript (Page 6, Line 25-29).

*8）**Comment:** Please give p-value to verify the sentence "However, the proportion of female patients was significantly higher in the patients with dysphagia".*

Response: The p value was 0.019 and we have added in the revised manuscript (Page 8, Line 6).

*9）**Comment:** In Table 2 and Table 3, p-value is calculated and interpreted for many comparisons. However, authors did not mention anything about the multiple comparison criteria.*

Response: The relationships between variables were assessed using Pearson's correlation test, which belongs to bivariate correlation analysis. And these parameters (O-C2a, O-EAa, C2Ta, C2-7a, T1 slope, C2-7 SVA, and PIA) were chosen for comparison based on previous studies (Page 6, Line 7-8).

*10）**Comment:** What do authors mean by "Pearson correlation's mean"?*

Response: The "Pearson correlation's mean" refers to the Pearson product moment coefficient, also known as r value. We have corrected it to "Pearson product moment coefficient" in the revised manuscript (Page 17, Line 1-4).

*11）**Comment:** In Table 3, please mention statistical method used to calculate each and every p-value.*

Response: The differences between radiological parameters at different time points were analyzed by paired samples t test. And the differences between the two groups were analyzed by independent samples t test.

*12）**Comment:** Authors mention about one-way ANOVA. However repeated measures ANOVA would be the suitable method for analyzing this data. Authors may please justify. Also, some of the variables are asymmetrically distributed, whereas same statistical method has been*

used for analyzing all variables without checking assumptions for the tests. Statistical analysis needs special attention. Authors may do needful.

Response: The differences between radiological parameters at different time points were analyzed by paired samples t test. And the differences between the different groups were analyzed by independent samples t test. In fact, we did not use one-way ANOVA in this study. We are very sorry for the mistake and we have deleted the sentence "One-way ANOVA was also utilized to compare the parameters among different groups" in the revised manuscript.

Editors:

1）Comment: *The authors did not provide the approved grant application form(s). Please upload the approved grant application form(s) or funding agency copy of any approval document(s); The authors did not provide original pictures. Please provide the original figure documents. Please prepare and arrange the figures using PowerPoint to ensure that all graphs or arrows or text portions can be reprocessed by the editor.*

Response: We have uploaded the approved grant application forms and original pictures via editorial system.

2）Comment: *The "Article Highlights" section is missing. Please add the "Article Highlights" section at the end of the main text.*

Response: We have added "Article Highlights" to the revised manuscript (Page 11-12).

3）Comment: *It is unacceptable to have more than 3 references from the same journal. To resolve this issue and move forward in the peer-review/publication process, the authors must revise the reference list accordingly.*

Response: We have revised the reference list in the revised manuscript (Page 12-14).

4）Comment: *Before final acceptance, uniform presentation should be used for figures showing the same or similar contents; for example, "Figure 1Pathological changes of atrophic gastritis after treatment. A: ...; B: ...; C: ...; D: ...; E: ...; F: ...; G: ...". Please provide decomposable Figures (in which all components are movable and editable), organize them into a single PowerPoint file. Please authors are required to provide standard three-line tables, that is, only the top line, bottom line, and column line are displayed, while other table lines are hidden. The contents of each cell in the table should conform to the editing*

specifications, and the lines of each row or column of the table should be aligned. Do not use carriage returns or spaces to replace lines or vertical lines and do not segment cell content.

Response: We have revised the uniform presentations of figures and tables in the revised manuscript (Page 15-18). And we have uploaded the approved grant application forms and original pictures via editorial system.