

Peer Review File

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Reviewer A

The paper titled “Clinical features of Helveston syndrome and discussion of individualized surgical design” is interesting. Helveston syndrome can be improved using a personalized surgical design according to the degree of external strabismus A-pattern, superior oblique muscle overaction, and dissociated vertical deviation (DVD) degree, which improves the success rate of single surgery. Moreover, successful results can be achieved with or without combined superior oblique muscle reduction. However, there are several minor issues that if addressed would significantly improve the manuscript.

Reply: Thank you for reviewing my paper amidst your busy schedule!

1) The abstract is not adequate and needs further revisions. The research background does not indicate the clinical needs of this research focus. The study results need to show the clinical characteristics of the two groups of patients.

Reply: We have modified our text as advised. (see Page 1, line 29-33; Page 2, line48-50)

2) When the superior rectus needs to be operated along with the horizontal recti, will the correction of large angle exotropia bring higher risk of anterior segment ischemia? How to evaluate its long-term results?

Reply: When the Superior rectus muscle needs to be operated together with the horizontal recti, the Medial rectus muscle can be folded instead of shortened for the correction of large angle exotropia. The internal rectus folding will greatly reduce the risk of anterior segment ischemia and reduce inflammatory reaction(see Page 14, line 450-452). The long-term effects after surgery are mainly evaluated based on eye position and visual acuity. At the same time, we can also evaluate the changes of iris blood flow before and after Strabismus surgery through coherence light tomography angiography (OCTA), so as to evaluate the anterior segment ischemia. We have modified our text as advised. (see Page 15, line 472-474)

3) How to develop precise intervention measures? How is the current progress? Suggest adding relevant content.

Reply: We have listed the precise personalized surgical design scheme in the article, which can be designed according to the A-pattern, the degree of superior oblique muscle overaction, the DVD, and the degree of fundus rotation.(see Page 13-14, line 423-457)

We have made corresponding modifications regarding the current progress.(see Page 14, line 467-468)

4) This study is a retrospective analysis, which is likely to cause some deviations in the results. It needs to be further confirmed by multi-center clinical trials.

Reply: We have modified our text as advised.(see Page 14, line 472-474)

5) The introduction part of this paper is not comprehensive enough, and the similar papers have not been cited, such as “Surgical management of Helveston syndrome (Triad exotropia), Int Ophthalmol, PMID: 34748142”. It is recommended to quote this article.

Reply: We have already cited this article in the discussion section.

6) The number of patient samples in this study is too small, and a large sample study should be added for verification.

Reply: We have already put forward the same viewpoint.(see Page 14, line 471)

Reviewer B

Reply: Thank you for reviewing my paper amidst your busy schedule!

1) First of all, the authors’ analysis is the comparisons between patients with Helveston syndrome undergone the horizontal muscle surgery alone and the horizontal muscle surgery combined with superior oblique muscle surgery, so the current study cannot answer the research questions of clinical features of Helveston syndrome and individualized surgical treatments. The authors need to accurately describe the research questions in the title and elsewhere, as well as the clinical research design in the title.

Reply: Helveston syndrome generally designs surgical plans based on the patient's specific condition, and there are various surgical methods. However, there is still controversy over whether the surgery should be performed in one go or in stages. This article compares the horizontal muscle surgery alone and the horizontal muscle surgery combined with Superior oblique muscle surgery to illustrate that as long as the personalized scheme is designed according to the patient's A-pattern, the degree of superior oblique muscle overaction, the DVD, and the degree of fundus rotation, a good result can be achieved in one operation to reduce the psychological and economic burden of patients.

2) Second, the abstract is not adequate and needs revisions. The background did not describe the knowledge gaps on the clinical features of Helveston syndrome and what the clinical significance is of the comparison between the two treatments. The methods need to describe the inclusion criteria and the clinical factors collected for this study. The results need to briefly present the clinical characteristics of the two groups.

Reply: We have modified our text as advised.(see Page 1-2, line 29-63)

3) Third, in the introduction of the main text, the authors need to review what has been known on the clinical characteristics and treatment of Helveston syndrome, analyze the knowledge gaps and explain why there is a controversy regarding the two surgical treatments. Importantly, why the authors compared the two surgical treatments and what the research question is to be answered by this comparison. One prerequisite for this comparison the baseline comparability otherwise the conclusion would be misleading.

Reply: We have modified our text as advised.(see Page 3-4, line 83-91)

4) Fourth, in the methodology of the main text, please accurately describe the clinical research design, i.e., a case series, and select appropriate reporting guidelines. Please describe the data collection of baseline clinical factors. In statistics, please describe the test of the baseline comparability of the two groups, test of the normality of the continuous variables, and ensure $P < 0.05$ is two-sided.

Reply: Sorry, as we are not proficient in statistics, I will need some time to learn and revise your suggestion. We will try our best to read relevant books and search for relevant materials to supplement. I have already supplemented the research design. (see Page 4, line 113)