



Comment on: ‘Factors affecting anatomical and visual outcome after macular hole surgery: findings from a large prospective UK cohort’

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To the Editor:

We read the paper by Steel et al. [1] with great interest and welcome their study demonstrating large macular holes do not behave differently in terms of surgical anatomical closure at the arbitrary “cut-off” value of 400 μm , confirming the findings of our previously study published in 2018 [2]. Whereas we demonstrated that a size of $\sim 630 \mu\text{m}$ appears to represent a significant inflection point where surgical macular hole closure significantly decreases, the BEAVRS dataset suggests a value of $\sim 500 \mu\text{m}$. The authors suggest the difference may be due to the fact that the ROC analysis in our study “shows a fairly low profile covering a number of possible values”, and being a larger series, they suggest that 500 μm is the correct, pragmatic “cut-off”.

Scrutiny of our ROC curve demonstrates a very similar profile to the BEAVRS study, and whilst the AUC value for the BEAVRS study was 77.9%, for our study the value was 76.9% (i.e., virtually identical). Further analysis (unpublished) of our data demonstrates to achieve 70% sensitivity and 69% specificity, the range of values are between 608 and 630 μm (i.e. a relatively narrow range of possible values and less than the quoted range by the BEAVRS dataset study of 464–500 μm). We politely suggest the authors have misinterpreted the perceived “flatness” of our ROC analysis as it purely relates to the scale of the drawn axes.

With larger numbers (though over half of the cases were $<400 \mu\text{m}$, Supplementary Table 2), we acknowledge the BEAVRS dataset may have an increased ability to determine the likely “true” cut-off value. However, we question the authors stating their data as necessarily prospective and

consecutive. As well as data entry being from a relatively small pool of available BEAVRS surgeons (35 from ~ 200 consultant vitreoretinal surgeons in the UK), and one surgeon alone contributing over 10% of all cases, the data entry tool for the BEAVRS macular hole dataset allows data entry up to 4 months post event. Whilst this is a very sensible and pragmatic approach to try to maximize utilization of the database, it does introduce the possibility of selection bias among surgeons entering data, despite its anonymity. It also has no ability to confirm and validate the data as consecutive. The surgical results of their study demonstrate a very high surgical success rate even above 600 μm ($\sim 87\%$) in contrast with our study [2] (success rate 77% above 600 μm) and other studies demonstrating a significantly lower success rate for larger holes (Gupta et al. [3], 67% $> 500 \mu\text{m}$). This introduces the possibility of surgeon selection bias, favouring inclusion of those cases more likely to close or retrospectively completing those cases which did close. The authors should at least acknowledge this as a potential limitation of their study, particularly as surgeons may be reluctant to lower their “success rate” as they may use their data for evidence of personal audit and professional revalidation.

The authors have made a great contribution to determining the correct classification of “large” macular holes, i.e. those that have a significantly increased risk of surgical failure and worthy of consideration of alternative techniques for anatomical closure, but until a true prospective, consecutive study that minimizes potential bias of data entry is conducted, the approximate value at which that classification lies will remain uncertain.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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References

1. Steel DH, Donachie PHJ, Aylward GW, Williamson TH, Yorston D. Factors affecting anatomical and visual outcome after macular hole surgery: findings from a large prospective UK cohort. *Eye*. (2020). <https://doi.org/10.1038/s41433-020-0844-x>.
2. Ch'ng Soon W, Patton N, Ahmed M, Ivanova T, Baumann C, Charles S, et al. The Manchester large macular hole study: is it time to reclassify large macular holes? *Am J Ophthalmol*. 2018;195:36–42.
3. Gupta B, Laidlaw DAH, Williamson TH, Shah SP, Wong R, Wren S. Predicting visual success in macular hole surgery. *Br J Ophthalmol*. 2009;93:1488–91.