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Assessment of surgically induced astigmatism: toward an international standard, II

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In response to the recent publication by Holladay et al.,(1) we would like to make a few comments. The authors deal well with the basic difficulties of reporting of astigmatic change discussed in Goggin et al.. (2) The advantages of expressing astigmatism in the cross cylinder format and of using doubled angles are well demonstrated. However, there are number of unsubstantiated assertions and an important omission.

They “introduce” a form of measurement of outcome against a target and limit this to an attempted complete correction of astigmatism. Firstly, not all treatments need aim at zero astigmatism and secondly Alpins has described extensively the use of a Targeted Induced Astigmatism (not always zero) in at least three publications. (3,4,5) The earlier two were published in time for inclusion by Holladay et al. yet none were cited. It is notable that the Alpins technique has much wider application (non-zero targets, deliberate alteration of axis etc.).

The authors describe a method of analysis of aggregate data on astigmatism using the x and y co-ordinates of double angled plots as the basic data for the derivation of means and standard deviations. Presumably, this is to avoid the separation of direction and magnitude data. However, the reason given is that, “for descriptive statistics the components of astigmatism must be orthogonal”, an assertion that requires further explanation. They go on to explain this statement by saying that the principal is similar to the preferred use of logMAR data for statistical analysis of acuity data. This is not the case. The use of logMAR notation is to render acuity data in a linear instead of a geometric scale and allow simple statistical manipulation. The problem here is quite different. We would assert, furthermore, that, in vector analysis, the handling of magnitude and orientation data separately is legitimate as long as the
techniques of vector analysis are properly applied. This is one of the major purposes of vector analysis. Holladay et al. give no more substantial reason for their technique.

If one concedes that angle plots are a useful graphical method of displaying aggregate data on remaining astigmatism, there is no clear advantage of double angle plots for this purpose and analysis by other means need not lead to erroneous results, despite their unsubstantiated assertions to the contrary. The tendency for horizontal flattening is as well demonstrated in figures 5B (single angle) as in 5A (double angle), in their paper.

Finally, in their abstract they mention that their method is the “best”. This would suggest that they applied some form of standard comparison of their method with others. Other good methods have already been described, yet no such comparison is presented. (3,4,5) While we support their efforts to establish a standard of recording and analysis, we would disagree that their method is the “best”, but, there again, that is only our opinion!
References


2. Goggin M, Pesudovs K. Assessment of surgically induced astigmatism: toward an international standard. in press.


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