Reviewer’s report

Title: The effect of Goldmann 2-mirror and Sussman 4-mirror gonioscopy on keratometry and corneal surface topography.

Version: 1 Date: 30 May 2006

Reviewer: Daniel O'Leary

Reviewer’s report:

General

It is well known that the cornea is susceptible to moulding when hard surfaces are pressed against it - indeed this forms the basis for orthokeratology, which aims to produce rapid and large changes in refraction and corneal shape (see e.g. Carkeet, N.L., Mountford, J.A., Carney, L.G. (1995). Predicting success with orthokeratology lens wear: A retrospective analysis of Ocular characteristics. Opt. Vis. Sc., 72:12, 892-898.) This paper looks to see whether routine clinical gonioscopy could change the shape of the cornea enough to cause a significant shift in the calculated power of an intraocular lens implant. It shows quite convincingly that if gonioscopy is performed prior to corneal topography then the latter results may be slightly distorted for the following 10-15 minutes. The results are apparent with topographical measurements, but not with keratometric measurements; the authors suggest quite plausible that this is probably because the keratometric measurement areas are away from the centre of the cornea, and so are less affected by the procedure.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Generally the methods are adequately described to allow the results to be meaningful clinically. However the results are reporting transient changes in the cornea following gonioscopy, and so a tightened description of the procedures is needed. As the procedures require gonioscopy to be performed on each eye in succession before post-gonioscopy corneal parameters are measured, some indication of the timing would make the results more meaningful. For example, did the 2 different gonioscopy procedures take the same length of time? How long was the time-gap between the last gonioscopy and measurement of corneal shape?

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Discretionary Revisions (which the author can choose to ignore)

The authors might like to point out that their results suggest that for best IOL power selection, corneal topography should be assessed before any contact procedures are carried out. In addition, it is likely that post-gonioscopy refraction is altered by about the same amount as is post-gonioscopy corneal topography, and so where post-gonioscopy topography has to be relied on in an IOL calculation, errors can be minimised by including a refraction measurement taken straight after topography.

What next?: Accept after minor essential revisions

Level of interest: An article of limited interest

Quality of written English: Acceptable
Statistical review: No

Declaration of competing interests:

I declare that I have no competing interests