Reviewer’s report

Title: Visual acuity improvements after implantation of toric intraocular lenses in cataract patients with astigmatism: A systematic review

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Reviewer: Marek Rekas

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The exchange of astigmatism type aberration into spherical, as it happens in the case of corneal surgeries, is always beneficial for the patient if the complications associated with this procedure are not taken into consideration. Similar situation is observed in the case of corneal astigmatism correction by toric IOLs implantation. However, the correction lies in the positioning of corneal toric surfaces and IOL relative to each other.

Major Compulsory Revisions
1.

UCVA is indeed an objective measure in the case of IOLs. However, the period of observation after which it can be recognized as such should be taken into consideration. A lot of factors can influence UCVA e.g. PCO because different lens materials were presented in this systematic review. Certainly, if the authors took this fact into account, the objective observation time would have to be about 24 months. Thus, the effect of PCO on UCVA can be omitted and it is understandable. However, it seems that mutual factors such as SIA (surgically inducted astigmatism) and stabilization of toric lens axis should be included in the selection of the considered works. The minimal observation time in this case should be about 6 months and this criterion is fulfilled by 6-7 works included in the survey (please address).

2.

Undoubtedly, primary corneal astigmatism affects the final value of UCVA because the toric IOL power depends on it. On the other hand, the higher level of corneal astigmatism the smaller the error accepted during toric IOL positioning. About 30% reduction of toric IOL power at the deviation > 10 ° is greater in the case of IOL of greater optical power than in the case of IOL of smaller optical power and this fact affects UCVA. However, in the systematic review there were considered the results of works in which the preoperative astigmatism oscillated from 1,57 to as much as 10,12 D (please comment).

3.

Is the interpretation of UCVA as the closest to ‘standard’ VA 20/20 justified? The accepted standard is relative because in relation to VA acc. to Snellen the closest is the result obtained by Lane at al. (12).
Lane (12)
log MAR = -0,07
MAR=10-0,07=0,85
UCVASnellen=1,17

Medicate(14)
log MAR = 0,11
MAR=100,11=1,29
UCVASnellen=0,78

The result concerns rather „the best“ UCVA but not the closest to other values, because as I have demonstrated, this fact is relative (please comment).

Minor Essential Revisions
1. In numerous works, as in the one presented here, the term „steep cornea“ is used. Of course, all physicians understand the meaning of such a statement and it is used in everyday medical jargon. From the point of view of physics, steeper axis is nothing else but a surface of larger curvature and such a statement seems to me to be more advantageous for a research study. (page 3)

2. The same remark concerns the statement „restore sight.....due to clouding....“. In my opinion it should be: restore VA deteriorated by cataract...

Conclusion: The work requires correction or taking into consideration the remarks. The main conclusion, drawn on the basis of a systematic review, are of the nature of putting knowledge in some order and they are correct.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests’