Comment on: Efficacy of 3D digital visualization in minimizing coaxial illumination and phototoxic potential in cataract surgery: pilot study

We read with great interest the article by Rosenberg et al., reporting the effect of a 3D digital visualization system in minimizing coaxial operative illumination and maintaining comparable visualization and safety compared with the traditional analog microscope.1

Our experience supports this report. We found that performing cataract surgery at a lower fraction of light intensity with the 3D visualization system may also reduce photophobia complaints and patient stress at the beginning of surgery. The authors reported an association between improved postoperative day 1 visual outcome and lower surgical light intensity levels. After light exposure during cataract surgery, the speed of visual recovery will depend on light intensity and macular integrity preoperatively.2 Indeed, contrary to patients operated with conventional visualization, we notice in our practice that most patients operated at a low light intensity with the 3D digital visualization system are able to detect hand motion or counting fingers immediately at the end of surgery.

However, a precise preoperative optical coherence tomography macular screening evaluating the anatomical architecture and the ellipsoid band integrity is important to determine whether the two populations of patients undergoing surgery with the conventional and the 3D visualization systems have a comparable vulnerability to light exposure. Furthermore, the association between improved postoperative day 1 visual outcome and lower surgical light intensity levels will not be established without including variables likely to influence early visual recovery.

Postoperative corneal swelling is a frequent event on the first day after cataract surgery.3 Corneal edema, although mild and transient, is associated with delayed vision recovery. A statistical analysis including postoperative central corneal thickening is needed to determine whether the surgical light intensity level is an independent factor influencing visual acuity rehabilitation at the first postoperative day.

Otherwise, the use of the 3D system could influence the occurrence of postoperative corneal swelling. By improving visualization and impression of depth of the narrow surgical space in patients with shallow anterior chambers, the 3D system could help to make intraocular maneuvers safer and probably improve the localization of ultrasound delivery from the endothelium during surgery.4 Indeed, in a prospective series of 134 patients (unpublished data), we found that using the 3D system was associated with reduced corneal swelling and better visual recovery at the first operative day in eyes with shallow anterior chambers (anterior chamber depth ≤3 mm).

Finally, we congratulate the authors for their pilot study that may contribute to future strategies improving the safety of cataract procedures and reducing the risk of retinal phototoxicity.

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REFERENCES


Disclosures: None reported.

Reply: Efficacy of 3D digital visualization in minimizing coaxial illumination and phototoxic potential in cataract surgery: pilot study

We thank Sandali et al. for their thoughtful comments. We are delighted to learn that their experience in regard to safety and visual recovery associated with 3D digital visualization and use of lower coaxial illumination levels during cataract surgery is also a positive one.

Although we did not formally examine the relationship between lower coaxial illumination levels and patient impressions of reduced photophobia and improved operative tolerance during cataract surgery, we agree with Sandali et al. and have anecdotally found this to be the case as well. For example, one young man with keratoconus was only able to tolerate the procedure at a 5% (of maximum) light intensity level; the 3D digital visualization system allowed sufficient visualization at that illumination level for the procedure to be performed safely.

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