Editorial

Cataract surgery in neovascular age-related macular degeneration: where do we stand?

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Comment on: Starr MR, Mahr MA, Barkmeier AJ, *et al.* Outcomes of Cataract Surgery in Patients With Exudative Age-related Macular Degeneration and Macular Fluid. Am J Ophthalmol 2018;192:91-7.

Received: 16 August 2018; Accepted: 26 August 2018; Published: 28 August 2018.

doi: 10.21037/aes.2018.08.05

View this article at: http://dx.doi.org/10.21037/aes.2018.08.05

Population ageing is a pervasive and enduring global phenomenon with profound implications in many facets of the human life. Because the prevalence and morbidity associated with cataracts and age-related macular degeneration (AMD) are age-related, both conditions concomitantly contribute to the visual impairment of a greater number of elderly individuals in westernized countries (1).

Although phacoemulsification is a safe and effective procedure for cataract-induced visual loss in otherwise healthy subjects, concerns have been raised regarding the effects of inflammation and possibly intraocular pressure fluctuations during cataract surgery in patients with underlying AMD (2). At least in theory, cataract surgery could upset the immunological balance and thereby increase the risk of progression of AMD (1). A meta-analysis by Kessel *et al.* (1) found that cataract surgery improves visual function in patients with AMD and that the 6- to 12-month risk of neovascular AMD (nAMD) was not increased after the procedure. However, at the time, the authors could not provide evidence-based recommendations concerning cataract surgery in patients with nAMD actively undergoing anti-vascular endothelial growth factor (anti-VEGF) injections.

We know for a fact that the presence of nAMD *per se* will negatively influence the visual outcome after cataract surgery by creating a ceiling effect to the patient's functional gains (3). However, deferring surgery for a visually significant cataract in patients with nAMD will also adversely affect visual function (1) and jeopardize the acquisition of retinal imaging necessary for disease monitoring. So how should we advise a patient with a visually significant cataract and active nAMD?

Recently, Starr *et al.* (4) conducted a retrospective study aimed to investigate whether the preoperative presence of macular fluid on optical coherence tomography (OCT) in eyes with nAMD affects visual outcomes following cataract surgery. A total of 81 eyes of 72 patients with nAMD who had had at least one anti-VEGF injection (either aflibercept, ranibizumab or bevacizumab) prior to cataract surgery and at least 6 months of follow-up after the procedure were included in the study. The authors reported an improvement in the mean best-corrected visual acuity (BCVA) at both 4–6 weeks and 6 months postoperatively. It is noteworthy, however, that 25 eyes (30.9%) developed new or worsening intraretinal and/or subretinal fluid after surgery. Furthermore, 8 eyes (9.9%) had a worsening in BCVA at 6 months after phacoemulsification. Although a correlation with the procedure itself cannot be established, these eyes were more likely to have preoperative macular fluid (P=0.03) and new or worse subretinal fluid following cataract surgery (P=0.04). When comparing eyes with preoperative fluid against those without, there was a trend toward better final BCVA in the eyes without fluid preoperatively, but the difference was not statistically significant. The study provides real-world results supporting cataract surgery in nAMD patients with visually significant cataracts that are actively being treated

with anti-VEGF injections, despite the presence/absence of macular fluid preoperatively.

Although the study has a retrospective design, fact is that randomized controlled trials in this particular clinical context may pose ethical complications. Still, the limited number of included patients and the lack of a control group are important limitations. Daien *et al.* (5) recently published the results of a retrospective, matched case-control study on behalf of *The Fight Retinal Blindness! Project*, where the authors assessed outcomes after cataract surgery in patients undergoing treatment for nAMD. The cases (n=124) were compared with 372 phakic eyes also being treated for nAMD (1:3). The controls were matched for nAMD treatment before surgery, baseline BCVA, age and length of follow-up. Despite finding evidence of a modest effect of cataract surgery on choroidal neovascularization (CNV) activity in eyes being treated for nAMD, visual outcomes at 12 months were significantly better in eyes that had phacoemulsification compared with controls (65.8 *vs.* 61.3 letters, P=0.018), with a mean visual acuity gain of 10.6 letters. Importantly, vision loss was more common in patients who underwent surgery within the first 6 months of anti-VEGF therapy, thus suggesting that cataract extraction within 6 months of starting treatment for nAMD should be avoided whenever possible. The study methodology provides striking more convincing evidence than the study of Starr *et al.* (4). Still, both studies converge in the fact that nAMD patients with visually significant cataracts may successfully undergo phacoemulsification without a visually significant worsening of their underlying neovascular process.

To sum up, when managing patients with visually significant cataracts and active nAMD undergoing anti-VEGF injections, the available body of evidence suggests that cataract extraction is usually beneficial, providing a significant improvement in visual function. However, whenever possible, the procedure should be delayed until the patient has underwent at least 6 months of anti-VEGF treatment.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned and reviewed by the Science Editor Mr. Qiang Liu (Editorial Office, *Annals of Eye Science*, Guangzhou, China).

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/aes.2018.08.05). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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doi: 10.21037/aes.2018.08.05
Cite this article as: Marques JP, Silva R. Cataract surgery in neovascular age-related macular degeneration: where do we stand? Ann Eye Sci 2018;3:47.

