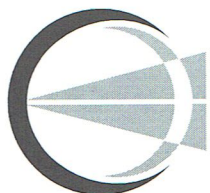


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Surgical & Medical Retina, Uveitis, Macular Degeneration & Diabetic Eye Disease



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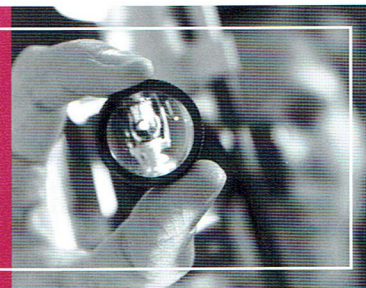
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SPRING 2015



Efficacy of Cataract Surgery In AMD Patients

The Blue Mountain Eye Study and the Beaver Dam Eye Study reported an association between cataract surgery and accelerated age-related macular degeneration (AMD) progression, yet other studies, including the Age-Related Eye Disease Study (AREDS), have shown that AMD patients had improved visual acuity after cataract surgery. The primary purpose of both AREDS and its follow-up study AREDS2 was to determine whether dietary supplements could reduce the risk of developing advanced AMD. Now Huynh et al from the National Institutes of Health, Maryland, have used data from AREDS2 to evaluate visual acuity after cataract surgery in patients with AMD.

The AREDS2 study enrolled 4203 participants aged 50 to 85 years of age who were determined to be at high risk for developing advanced AMD. Of the 8406 eyes in the study, postoperative visual acuity assessments were available for 1232 eyes (793 patients; median age, 78 years; 58% were women) that underwent cataract surgery after

enrollment. Eyes were classified according to the AREDS AMD severity (AAS) scale:

- **mild AMD** (AAS 1–3)
- **moderate AMD** (AAS 4–6)
- **severe AMD** (AAS 7–8)
- **noncentral geographic atrophy** (GA; AAS 9)
- **advanced AMD** (central GA, neovascular AMD or both; AAS 10–11)

Eyes were also classified into 3 cortical opacity groups and 3 posterior subcapsular cataract (PSC) opacity groups by severity (group 1: 0%; group 2: >0% to ≤5%; group 3: >5% for each opacity factor).

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- Fluoroquinolones and Retinal Detachment
- Epiretinal Membrane Surgery In Highly Myopic Eyes

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After adjusting for sex, age at time of surgery, years between preoperative and postoperative measurements of visual acuity, and cortical and PSC severity groups, all eyes showed a significant gain of visual acuity after cataract surgery regardless of AMD classification. This gain increased with greater severity of cortical and PSC opacities (Table 1). This pattern continued when only eyes with preoperative visual acuity of 20/40 or worse were included. No significant difference was found between patients with a history of diabetes, who gained a mean of 9.0 letters, and patients without, who gained a mean of 9.4 letters ($p = .71$).

At the time of the previous large cohort studies, anti-vascular endothelial growth factor therapy was unknown. Now, it is the standard treatment of patients with AMD. Therefore, AMD status should not serve as an impediment to surgery in patients with cataracts.

Huynh N, Nicholson BP, Agrón E, et al; Age-Related Eye Disease Study 2 Research Group. Visual acuity after cataract surgery in patients with age-related macular degeneration: Age-Related Eye Disease Study 2 report number 5. Ophthalmology 2014;121:1229-1236.

Early Identification of Hydroxychloroquine Retinopathy

Hydroxychloroquine, an antimalarial drug, is used to treat cases of lupus and rheumatoid arthritis that prove refractory to other therapies. Given the critical need for early detection of ocular hydroxychloroquine toxicity to prevent vision loss, the American Academy of Ophthalmology has recommended adding objective tests, such as multifocal electroretinography, fundus autofluorescence and spectral-domain optical coherence tomography (SD-OCT), to subjective measures such as central visual field.

Such objective tests may aid in identifying damage from hydroxychloroquine before the appearance of the classic bull's-eye retinopathy. However, there is disagreement about which screening test is the most sensitive and specific. Marmor from Stanford University School of Medicine and Melles from Redwood City Medical

Center, California, reported on a subset of patients with hydroxychloroquine toxicity who showed pathognomonic visual field loss without any obvious structural damage on SD-OCT.

From a large retrospective study of patients who had taken cumulative doses of >1000 g of hydroxychloroquine, 150 patients were found to have retinopathy as determined by clear parafoveal scotomas between approximately 2° and 6° on 10-2 fields or clear parafoveal thinning and damage on SD-OCT in the same parafoveal region. Eleven cases clearly demonstrated prominent parafoveal ring scotomas on field testing, despite a seemingly normal SD-OCT. Half of these patients had been taking doses

Table 1. Adjusted^a gain in visual acuity score after cataract surgery at a mean postoperative period of 7 months (n = 1232)

Group	Estimate (gain of letters on visual acuity score)	95% CI	p value
AMD severity			
Mild AMD	11.2	6.9–15.5	<.0001
Moderate AMD	11.1	9.1–13.2	<.0001
Severe AMD	8.7	6.7–10.7	<.0001
Noncentral GA	8.9	5.8–12.1	<.0001
Central GA, neovascular AMD or both	6.8	4.9–8.8	<.0001
Cortical cataract^b			
Group 1	8.3	6.5–10.0	<.0001
Group 2	8.9	6.5–11.4	<.0001
Group 3	10.9	8.4–13.3	<.0001
PSC^b			
Group 1	5.4	4.1–6.6	<.0001
Group 2	7.4	5.4–9.4	<.0001
Group 3	15.3	10.8–19.8	<.0001

^aAdjusted for age at time of surgery, gender, years between preoperative and postoperative acuity, and AMD severity, cortical cataract or posterior subcapsular cataract. ^bGroup 1, cortical/PSC = 0%; group 2, cortical/PSC >0% and ≤5%; group 3, cortical/PSC >5%.

of more than the recommended 6.5 mg/kg/day (range, 5.6–8.4 mg/kg/day), with a median cumulative dosage for the 11 patients of 2060 g (range, 1270–2700 g) >14 years (range, 9–19 years).

All patients in this group had fields that were basically symmetrical in showing a parafoveal ring scotoma with no obvious SD-OCT-identified damage in either eye.

No patients had a history of macular disease or any indication that their maculopathy had any cause besides hydroxychloroquine toxicity. Interestingly, no patients from the larger group demonstrated clear damage on SD-OCT in the presence of normal fields.

The use of both the SD-OCT and the multifocal electroretinography tests in patients taking hydroxychloroquine in high doses and/or over long periods of time is recommended. Patients on hydroxychloroquine therapy should have regular ophthalmologic checkups.

Marmor MF, Melles RB. Disparity between visual fields and optical coherence tomography in hydroxychloroquine retinopathy. Ophthalmology 2014;121:1257-1262.

Fluoroquinolones and Retinal Detachment

Several recent studies have suggested an increased risk of retinal detachment in patients taking oral fluoroquinolones. These studies, combined with a report of a rhegmatogenous retinal detachment linked to ciprofloxacin led by Kapoor et al from the Mayo Clinic, Minnesota, investigated whether an association exists between use of oral fluoroquinolone and subsequent rhegmatogenous retinal detachment and symptomatic retinal

Table 2. Rhegmatogenous retinal detachment procedures after first prescription

	Fluoroquinolone (n = 38,046)	Macrolide (n = 48,074)	β-lactam (n = 69,079)	p value ^a
Repair				
≤7 days	0	1	0	.33
≤30 days	1	1	1	.91
≤90 days	3	2	5	.75
≤365 days	12	8	24	.17
Prophylaxis				
≤7 days	1	0	0	.21
≤30 days	1	3	1	.35
≤90 days	1	3	7	.36
≤365 days	5	10	17	.46

^aUnadjusted p value.

breaks. This study used the data of the Rochester Epidemiology Project to identify all patients in Olmsted County, Minnesota, who had received a prescription for an oral fluoroquinolone, macrolide or β-lactam antibiotics between January 1, 2003, and June 30, 2011. These patients were then checked for diagnoses of rhegmatogenous retinal detachment and retinal breaks occurring within 1 year of the first prescription date.

Patients receiving prophylaxis for asymptomatic retinal breaks discovered during routine follow-up were excluded, as were patients with a history of endophthalmitis, necrotizing retinitis, ipsilateral intraocular surgery, severe ocular/head trauma within 90 days of the retinal detachment procedure, serous/exudative retinal detachment or diabetic retinopathy-related tractional retinal detachment.

Patients prescribed fluoroquinolones were older than patients in the other 2 groups; women were less likely to be prescribed β-lactams. Within 1 year of their first prescription, 0.03% of patients taking fluoroquinolones, 0.02% of patients taking macrolides and 0.03% of patients taking β-lactams underwent procedures to repair rhegmatogenous retinal detachment; 0.01% of patients taking fluoroquinolones, 0.02% of patients taking macrolides and 0.02% of patients taking β-lactams underwent prophylactic treatment for symptomatic retinal breaks (Table 2).



Logistical regression analysis failed to find any relationship between increasing initial medication dosage and retinal detachment. Given the retinal detachment rate for an earlier population-based study conducted in the same community, the number of events in this study was not significantly different from the expected rate.

Rhegmatogenous retinal detachment is a significant threat to sight. However, over the 8.5 years of data in this study, only 1 case of retinal detachment was reported within 30 days and 3 cases within 90 days after beginning a course of fluoroquinolones, rates of 0.002% and 0.008%, respectively. Based on these results, no significant link exists between fluoroquinolone use and rhegmatogenous retinal detachment.

Kapoor KG, Hodge DO, St. Sauver JL, Barkmeier AJ. Oral fluoroquinolones and the incidence of rhegmatogenous retinal detachment and symptomatic retinal breaks: a population-based study. Ophthalmology 2014;121:1269-1273.

Epiretinal Membrane Surgery In Highly Myopic Eyes

El Sanharawi et al from Quinze-Vingts National Ophthalmology Hospital, France, undertook a retrospective, nested case-control study of epiretinal membrane (ERM) surgical outcomes in highly myopic eyes. The original cohort included 509 consecutive patients with either primary or secondary ERM who underwent pars plana vitrectomy between January 1, 2004, and July 31, 2010. Of these, 36 patients had high myopia, defined as a spherical equivalent refractive error before surgery of -6.00 diopters (D) or greater. Each member of this group was matched by age, preoperative visual acuity, year of surgery and gauge of vitrectomy system with 2 controls ($n = 64$) from the original cohort. Surgical procedure was similar in both case and control groups.

Patients underwent optical coherence tomography scans preoperatively, at 3 to 6 months and 1 year postoperatively, and then as subsequently deemed necessary. Best-corrected visual acuity (BCVA) was reported as the logarithm of

the minimal angle of resolution (logMAR). Post-operative complications, including severe hypotony (intraocular pressure [IOP] <6 mm Hg) and hypertony (IOP ≥ 30 mm Hg), suprachoroidal hemorrhage, retinal tear, retinal detachment, vitreous hemorrhage and endophthalmitis, were tracked.

At baseline, mean spherical equivalent refraction was -8.48 ± 2.75 D in the highly myopic eyes, 0.12 ± 1.83 D in the control eyes ($p < .0001$); no significant difference in BCVA existed between case and control eyes or in macular thickness. At 3 years follow-up, mean BCVA improved significantly in both groups, from 0.56 ± 0.20 logMAR to 0.32 ± 0.20 logMAR in the highly myopic eyes ($p < .001$) and from 0.54 ± 0.22 logMAR to 0.26 ± 0.19 logMAR in the control eyes ($p < .001$). At final examination (mean, 3.1 years), the highly myopic eyes had improved 2.9 lines while the control eyes (mean, 3.4 years) had improved 3.2 lines. The differences between the groups in improved vision were not significant.

Mean central macular thickness improved by $119 \mu\text{m}$ in the case group ($433.1 \pm 71.6 \mu\text{m}$ at baseline to $314.1 \pm 54.3 \mu\text{m}$ at 1-year follow-up; $p < .001$) and by $125 \mu\text{m}$ in the control group ($427.8 \pm 66.7 \mu\text{m}$ at baseline to $302.9 \pm 48.9 \mu\text{m}$ at 1-year follow-up; $p < .001$); the mean change did not differ significantly between groups. Complication types and rates were similar in both groups. The authors found that the presence of high myopia does not affect the outcomes of ERM surgery.

El Sanharawi M, Sandali O, Bonnel S, et al. Epiretinal membrane surgery outcomes in highly myopic eyes without traction maculopathy: long-term results of a case-control study. Am J Ophthalmol 2013;156:319-325.

SUMMER 2015

- Streptococcal endophthalmitis
- Anti-VEGF treatment and quality of life
- OCT findings after retinal detachment repair

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