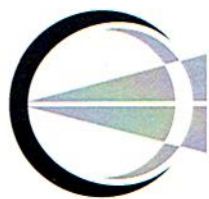


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*Surgical & Medical Retina, Uveitis, Macular Degeneration & Diabetic Eye Disease*



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# RETINA DIGEST®

WINTER 2017



## Ameliorating Vision Loss From Retinal Pigment Epithelial Tears

Approximately 10% of patients with vascularized pigment epithelial detachment develop a retinal pigment epithelial (RPE) tear. Treatment of vascularized pigment epithelial detachment, during or after the first 3 injections of anti-vascular endothelial growth factor (anti-VEGF) drugs, results in RPE tears in 12% to 20% of patients.

Heimes et al from St. Franziskus-Hospital, Germany, performed a retrospective analysis of 22 consecutive eyes that developed an RPE tear during or in association with the first 3 anti-VEGF injections for vascularized pigment epithelial detachment. At recall every 3 months, patients had their central visual function recorded; morphology of the RPE tear was analyzed using autofluorescence, spectral domain-optical coherence tomography and fluorescein angiography. Based on visual acuity after 2 years, the patients' eyes were categorized ( $n = 11$ ):

- **Group 1:** stable or improved best-corrected visual acuity (BCVA)
- **Group 2:** reduced BCVA

Changes in the size of RPE-free area and development of new subretinal hyperreflective tissue were evaluated.

At baseline, the groups had similar BCVA and RPE-free area size. The course of RPE tear height was similar in the 2 groups. However, the groups showed a highly significant different morphologic evolution, with group 1 showing an increasing recovery of autofluorescence in the RPE-free area and group 2 showing a fur-

### Inside This Issue

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- Classifying Lamellar Macular Hole
- Impact of Shift Work on Central Serous Chorioretinopathy

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ther growth of the choroidal neovascularization under the RPE tear. While both groups slowly developed new subretinal hyperreflective tissue over the entire previously RPE-free area, only in group 1 was the tissue covered by a new even more hyperreflective RPE band. Group 2 eyes received significantly fewer anti-VEGF injections than did group 1 eyes, especially during the first year.

Some practitioners may be reluctant to treat eyes with vascularized pigment epithelial detachment with anti-VEGF therapy. This study showed that stabilized or increased BCVA correlated with an increase of autofluorescence in the RPE-free area and the development of new subretinal hyperreflective tissue. Multiple injections in the first year of treatment appear to be beneficial for these patients.

*Heimes B, Farecki M-L Jr, Bartels S, et al. Retinal pigment epithelial tear and anti-vascular endothelial growth factor therapy in exudative age-related macular degeneration: clinical course and long-term prognosis. Retina 2016;36:868-874.*

## Risk of Pseudophakic Macular Edema After Cataract Surgery

Since 1998, the incidence of pseudophakic macular edema, the most common postoperative complication of cataract surgery to result in impaired vision, has fallen from between 0.2% and 20% to between 0.2% and 2.35%. Chu et al from the University of Bristol and Bristol Eye Hospital, United Kingdom, for the United Kingdom Pseudophakic Macular Edema Study Group, used the databases of the U.K. National Health Service to determine the real-world clinical incidence of postoperative pseudophakic macular edema, its impact on postoperative visual acuity and the effect of known or suspected risk factors.

Patients who underwent same-day cataract surgery over a 4-year period at 8 hospital ophthalmology departments were included in the study;

for those who had surgery on the fellow eye, each eye was counted separately. The presence of pseudophakic macular edema was established by a clinical finding or diagnosis of cystoid macular edema within 90 days of surgery; patients with diabetes mellitus (DM) were also included if they had clinically significant macular edema after a documented absence of maculopathy before surgery.

After filtering the records of 81,984 eyes in the original dataset to create groups with a single mutually exclusive criterion, the remaining patients' eyes were divided into 3 groups:

- **Group 1:** without DM and no copathology except amblyopia (reference group;  $n = 35,563$ )
- **Group 2:** without DM and  $\geq 1$  copathologies or posterior capsule (PC) tears/vitreous losses ( $n = 11,429$ )

**Table 1. Relative risk for eyes in groups 2 and 3**

Risk factor	Group 2 Relative risk (95% CI)
Epiretinal membrane	5.60 (3.45–9.07)
Retinal vein occlusion	4.47 (2.56–7.82)
Previous RD repair	3.93 (2.60–5.92)
Uveitis	2.88 (1.50–5.51)
PC tear/vitreous loss	2.61 (1.57–4.34)
Prostaglandin analogue	1.11 (0.82–1.51)
High myopia	0.82 (0.56–1.19)
Dry age-related macular degeneration	0.79 (0.55–1.14)
Risk factor	Group 3 Relative risk (95% CI)
Any DR	6.23 (5.12–7.58)
Panretinal photocoagulation and stable DR	9.11 (6.07–13.68)
All proliferative DR	10.34 (5.13–20.85)
Severe NPDR	6.59 (2.21–19.63)
Moderate NPDR	8.53 (5.62–12.94)
Mild NPDR	8.08 (6.02–10.85)
Very mild NPDR	3.00 (2.00–4.49)
DM no DR	1.80 (1.38–2.36)

*CI, confidence interval; NPDR, nonproliferative diabetic retinopathy.*

- **Group 3:** with DM with or without diabetic retinopathy (DR) or maculopathy ( $n = 4485$ )

Pseudophakic macular edema was diagnosed in 415 eyes in group 1 (1.17%), 178 eyes in group 2 (1.56%) and 181 eyes in group 3 (4.04%).

Group 2 eyes with epiretinal membranes, previous retinal vein occlusion, uveitis, previous retinal detachment (RD) repair or PC tear/vitreous loss had a significantly increased risk of pseudophakic macular edema, as did group 3 eyes with or without DR, with the risk increasing with the severity of the DR (Table 1). Group 3 eyes had significantly worse visual acuity at the last assessment (up to 24 weeks after surgery).

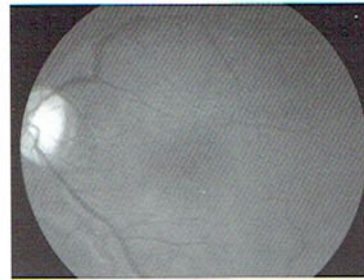
Patients with DM had an incidence of pseudophakic macular edema after cataract surgery nearly 4× as high as the incidence in patients without DM and >2× higher than did patients with 1 additional pathology. In the latter group, 5 different comorbidities significantly increased risk after surgery. These results can be used to counsel patients on the risks of cataract surgery and guide practitioners in establishing postsurgery follow-up care.

*Chu CJ, Johnston RL, Buscombe C, et al; United Kingdom Pseudophakic Macular Edema Study Group. Risk factors and incidence of macular edema after cataract surgery: a database study of 81 984 eyes. Ophthalmology 2016;123:316-323.*

## Classifying Lamellar Macular Hole

**L**amellar macular hole is a partial-thickness defect of the macula with an irregular foveal contour and separation between outer and inner retinal layers. Optical coherence tomography (OCT) and spectral-domain OCT have blurred the distinction between lamellar macular hole and other macular conditions.

Govetto et al from the Stein Eye Institute at the University of California, Los Angeles, suggested that the breadth of the current definition has led to the misclassification of some retinal pathologies. To investigate the anatomic and functional



**Figure 1.** A fundus image showing macular pucker with a lamellar macular hole. (Image courtesy of Dr. Daniel Berinstein.)

features of the eyes, they performed a retrospective observational chart review of 102 eyes in 90 consecutive patients (mean age,  $73.2 \pm 10.0$  years) with lamellar macular hole diagnosed by spectral-domain OCT (Figure 1).

The recorded morphological characteristics of the lamellar macular holes included shape, minimum foveal retinal thickness, mean central foveal thickness, presence and thickness of the associated epiretinal proliferation, presence of typical epiretinal membrane, integrity of the ellipsoid layer, and location and morphology of intraretinal separation; the maximum diameter of the edge of the hole and the maximum intraretinal diameter were also measured. Lamellar separation of the neurosensory retina was classified as either cavitated or schitic. Retinal thickening, retinal folds and wrinkling, and intraretinal cystic spaces were evaluated as signs of retinal traction.

The researchers identified 2 distinct subtypes of lamellar macular hole. The first type, designated degenerative lamellar macular hole, was characterized by a “top hat” appearance along with a foveal bump, a round-edged intraretinal cavitation potentially involving outer retinal layers and lamellar hole-associated epiretinal proliferation; a disrupted ellipsoid zone was also present. The second type, designated tractional lamellar macular hole, was characterized by a “moustache” appearance along with a tractional epiretinal membrane, intact ellipsoid and sharp-edged schisis-like appearance.

Degenerative and tractional lamellar macular holes were present in 48 (47.06%) and 43 (42.15%) eyes, respectively; the remaining 11 (10.78%) eyes demonstrated features of both types and



were classified as mixed lesions. Patients with degenerative lamellar macular hole were significantly older and had thinner mean central foveal thickness at baseline. Eyes with tractional lamellar macular hole had significantly better best-corrected visual acuity (BCVA) at both baseline and last follow-up visit; however, BCVA remained relatively stable in both groups throughout the study.

These results suggested that lamellar macular hole has at least 2 distinct subtypes. Tractional lamellar macular hole may be related to macular retinoschisis and pseudoholes, while degenerative lamellar macular hole might be caused by an unknown chronic, progressive, degenerative mechanism.

*Govetto A, Dacquay Y, Farajzadeh M, et al. Lamellar macular hole: two distinct clinical entities? Am J Ophthalmol 2016;164:99-109.*

## Impact of Shift Work On Central Serous Chorioretinopathy

People who perform shift work (working hours outside of standard daylight hours) suffer from misalignment of circadian rhythms and sleep disturbances that have been associated with altered secretion of cortisol and catecholamine hormones. Given that patients with central serous chorioretinopathy demonstrate higher levels of cortisol and catecholamines, Bousquet et al from the Université Sorbonne Paris Cité, France, designed a study to test the hypothesis that shift work might be a risk factor for central serous chorioretinopathy.

The study enrolled 40 patients (mean age,  $44.1 \pm 8.6$  years) with central serous chorioretinopathy and 40 sex- and age-matched control patients. In addition to answering questions about previously identified risk factors (systemic diseases, medications, alcohol and tobacco use, personal and work-related psychological stresses) and working hours, patients in both groups completed

the Insomnia Severity Index (ISI) instrument, a 7-item self-reporting questionnaire assessing sleep onset, sleep maintenance, early-morning awakening problems, sleep dissatisfaction, interference of sleep difficulties with daytime functioning, noticeability of sleep problems by others and distress caused by sleep difficulties. A score of  $>10$  out of a possible score of 28 signifies insomnia.

The univariate analysis of the results showed that sleep disorders, shift work, corticosteroid use and stress were all significantly associated with central serous chorioretinopathy, but not with hypertension, depression, allergic disease, tobacco use or alcohol use. Patients in the central serous chorioretinopathy group had a significantly higher mean ISI score than did patients in the control group ( $9.6 \pm 6.2$  vs  $4.1 \pm 4.5$ ;  $p < .001$ ); shift workers had a significantly higher mean ISI score than did day workers ( $10.9 \pm 5.5$  vs  $5.2 \pm 5.5$ ;  $p < .001$ ). Multivariate analysis confirmed that shift work, corticosteroid use and recent psychological stress were significant risk factors.

This study suggested that, in addition to corticosteroid use and stress, shift work may be an independent risk factor for central serous chorioretinopathy. Patients with central serous chorioretinopathy who perform shift work may need to have their work schedules reconfigured.

*Bousquet E, Dhundass M, Lehmann M, et al. Shift work: a risk factor for central serous chorioretinopathy. Am J Ophthalmol 2016;165:23-28.*

### SPRING 2017

- Ocular toxocariasis
- Acute retinal necrosis and retinal detachment
- MEK inhibitors and macular edema

In The  
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