Epiretinal Membrane and Uveitic Macular Edema

While uveitic macular edema is the most common cause of visual impairment in patients with uveitis, epiretinal membrane formation in association with uveitis and uveitic macular edema is a common structural complication. Previous studies have reported negative effects of epiretinal membrane formation on visual acuity and a higher risk of failing medical therapy in patients with uveitic macular edema.

Lehpamer et al from the Icahn School of Medicine at Mount Sinai, New York, conducted a retrospective case-series study to evaluate the effect of epiretinal membrane in uveitic macular edema on visual acuity and on improvement and resolution of the edema. The researchers reviewed the records of all patients with a diagnosis of uveitic macular edema confirmed by spectral-domain optical coherence tomography seen at the institution from 2008 through 2011. These included

- the presence or absence of an epiretinal membrane (a thin, smooth hyperreflective layer between the neural retina and the vitreous)
- epiretinal membranes classified as wrinkled or not wrinkled
- macular edema identified by a central subfield retinal thickness of ≥315 μm

After a 6-month follow-up, a successful outcome was defined as a decrease in macular thickness to <315 μm. Visual acuity was measured during the first visit at which uveitic macular edema was identified (baseline), 3 months and 6 months.

Ten different uveitic diagnoses were present in the 77 patients (104 eyes). The most common
was intermediate uveitis, non-pars planitis type, that was present in 26% of the eyes.

The cohort included 59 patients with an epiretinal membrane in at least 1 eye, 26 of whom had an epiretinal membrane with wrinkling. These patients were significantly older than were the patients without epiretinal membrane.

Mean central subfield retinal thickness and mean visual acuity at baseline were similar among all 3 groups. However, a significantly greater proportion of patients with wrinkled epiretinal membrane had visual acuity of ≤20/200. All patients underwent similar treatment. At 6 months, eyes with an epiretinal membrane and surface wrinkling had significantly greater central subfield retinal thickness and significantly worse mean Snellen visual acuity. The differences in mean visual acuity could be attributed, at least in part, to the greater number of eyes with Snellen scores of ≤20/200.

Although the study population was small, the differences in outcomes were great enough to reach statistical significance. This retrospective review suggested that uveitic macular edema patients with an epiretinal membrane of sufficient severity to cause wrinkling of the retinal surface may not respond to therapy as well as patients without an epiretinal membrane or patients with an epiretinal membrane that has not wrinkled.


### Table 1. The angiographic stages of chorioretinal folds

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>Stage 1</td>
<td>Alternating bands of hyperfluorescence and hypofluorescence characteristic of choroidal folds</td>
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<tr>
<td>Stage 2</td>
<td>Areas of staining that correspond to early breakdown of the retinal pigment epithelium along with breaks in the Bruch membrane</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Stippled hyperfluorescence with a yellow, luteal macular appearance or atrophy of the retinal pigment epithelium</td>
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</table>

Medical examination when chorioretinal folds are detected.

Olsen et al from Emory University, Georgia, published the results of an observational retrospective case series of chorioretinal folds and their association with systemic disease, along with a description of a 3-stage hierarchy of chorioretinal fold-related maculopathy. Included in the study were 40 consecutive patients (57 eyes) with clinical signs of chorioretinal folds from 2 tertiary academic centers. Demographic information, ocular and medical history, potential causes, and associated systemic and ophthalmologic diagnoses were recorded. Mean age of the patients was 64 ± 17 years (range, 27–96 years); mean follow-up was 19 ± 30 months (range, 0–156 months).

All patients for whom information was available had a history of hypertension; 11 had a history of ≥1 autoimmune disease. Primary chorioretinal folds present in 51 eyes involved pathologic features that affect the choroid or sclera directly, typically arranged as linear or parallel folds extending through the central macula. Secondary chorioretinal folds were present in 6 eyes (4 resulting from scarring or fibrosis related to exudative age-related macular degeneration, 1 each from chorioternal scarring and a scleral buckle).

Stage 3 macular changes (Table 1) were noted in 10 eyes of 8 patients significantly older than patients with stage 1 macular changes (68 years vs 56 years; p < .01). Mean Snellen visual acuity in patients with stage 3 macular changes declined from 20/60 at the initial visit to 20/100 at the latest follow-up. Four of these eyes were treated for choroidal neovascularization, but showed no significant improvement; the mean Snellen visual

**Chorioretinal Folds: A Possible Marker for Other Disorders**

Although chorioretinal folds are relatively uncommon, their presence is associated with other conditions ranging from minor hyperopia to serious neoplastic, infectious or immunologic disorders. Thus, the clinician needs to be aware of the necessity for further
acuity in these eyes declined from 20/80 to 20/160 at an average follow-up of 19 months.

Patients with chorioretinal folds require a careful and thorough medical examination for inflammatory, neoplastic, infectious and infiltrative disorders because of the frequent association of the folds with systemic conditions. While it evolves slowly over many years through the 3 stages, chorioretinal fold-related maculopathy gradually leads to macular dysfunction.


Retinal Detachment and Multiple Retinal Breaks

Approximately half of patients with rhegmatogenous retinal detachments have multiple retinal breaks, but up to 20% of retinal detachments remain undetected, despite thorough examination. Undetected breaks account for the majority of surgical failures to repair rhegmatogenous retinal detachment. No previous studies have reported on the possible relationships between break location and other parameters such as break multiplicity.

Shunmugam et al from St. Thomas' Hospital, United Kingdom, analyzed data prospectively collected from 844 patients (844 eyes; mean age, 62 ± 11 years) who underwent rhegmatogenous retinal detachment surgery at a single vitreoretinal practice over an 11-year period. Patients who had undergone any previous vitreoretinal intervention, were <40 years of age or had eyes with aphakia, anterior chamber lens implants, giant retinal tears, retinal dialysis, macular hole-related retinal detachment, retinoschisis-related retinal detachment or a dislocated lens nucleus noted before cataract surgery were excluded.

Breaks were classified as small (<0.5 disc diameters [DD]), medium (0.5–2.0 DD) or large (>2.0 DD). The presence of proliferative vitreoretinopathy and vitreous hemorrhage was noted, as were the procedures undertaken and patient outcomes.

The primary success rate was 87%; 10% achieved success after additional surgery, and 3% failed to achieve retinal reattachment. The majority of patients (58.8%) had breaks in >1 quadrant. The superotemporal (ST) quadrant was the most frequently involved (582 eyes; 69%), followed by the superonasal (SN) quadrant (341 eyes; 40%), the inferotemporal (IT) quadrant (274 eyes; 32%) and the inferonasal (IN) quadrant (144 eyes; 17%). Solitary breaks occurred most often in the ST quadrant (55.5% of all such patients), while the IN quadrant was the least likely location.

Breaks in the ST quadrant were significantly and negatively predictive of breaks in other quadrants, while breaks in the IN quadrant were primarily associated with breaks in adjoining quadrants. The odds of retinal breaks in each quadrant are summarized in Table 2. Fundus-obscuring vitreous hemorrhages occurred in 12% of

<p>| Table 2. Odds of having retinal breaks in each quadrant (dependent variable) as a function of the presence of breaks in other quadrants (predictive variable) |</p>
<table>
<thead>
<tr>
<th>Predicting variable</th>
<th>ST</th>
<th>SN</th>
<th>IT</th>
<th>IN</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST</td>
<td>—</td>
<td>0.33 (0.24–0.45)</td>
<td>0.54 (0.39–0.74)</td>
<td>0.76 (0.52–1.12)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p = 3.6E^-12a</td>
<td>p = .0002a</td>
<td>p = .17</td>
</tr>
<tr>
<td>SN</td>
<td>0.33 (0.24–0.45)</td>
<td>—</td>
<td>0.57 (0.41–0.78)</td>
<td>1.82 (1.25–1.62)</td>
</tr>
<tr>
<td></td>
<td>p = 3.4E^-12a</td>
<td></td>
<td>p = .0002a</td>
<td>p = .002a</td>
</tr>
<tr>
<td>IT</td>
<td>0.53 (0.38–0.74)</td>
<td>0.56 (0.41–0.77)</td>
<td>—</td>
<td>1.69 (1.16–2.47)</td>
</tr>
<tr>
<td></td>
<td>p = .0002a</td>
<td>p = .0004a</td>
<td></td>
<td>p = .006a</td>
</tr>
<tr>
<td>IN</td>
<td>0.80 (0.54–1.19)</td>
<td>1.81 (1.24–2.66)</td>
<td>1.65 (1.13–2.43)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>p = .27</td>
<td>p = .002a</td>
<td>p = .01a</td>
<td></td>
</tr>
</tbody>
</table>

Data expressed as odds ratio (95% confidence interval) and are adjusted for age and sex. Odds analyzed by logistic regression. *p < .05
cases and were most significantly associated with large tears, while proliferative vitreoretinopathy was found more frequently in older patients.

The presence of a retinal break in an inferior quadrant was strongly predictive of the existence of other retinal breaks, while the presence of a retinal break in the ST quadrant made finding additional retinal breaks in the adjacent quadrants unlikely. The authors speculated that posterior vitreous detachment is a sequential process most frequently occurring first in the superior quadrants and progressing inferiorly. The discovery of an inferior retinal break should prompt the clinician to look for other breaks.


Pregnancy and Recurrent Ocular Toxoplasmosis

Previously diagnosed ocular toxoplasmosis, the most common retinal infection worldwide, is characterized by periodic recurrences of active disease. Hormonal changes have been suggested as a factor inciting reactivation of toxoplasmic retinochoroiditis lesions during pregnancy, but little objective evidence exists to support this belief.

Braakenburg et al from the VU Medical Center Amsterdam, the Netherlands, investigated recurrence rates of ocular toxoplasmosis during pregnancy. Questionnaires were sent to all female patients of childbearing age (16–42 years of age) examined from 1995 through 2005 at the ophthalmology department of a university hospital. The 86 women who met the inclusion criteria had serologic confirmation of Toxoplasma gondii infection, documented active retinochoroiditis or documented retinal scars consistent with past episodes of active retinochoroiditis.

With information gathered from 50 respondents regarding the number and outcome of all pregnancies, and the number and dates of episodes of active toxoplasmic retinochoroiditis, the researchers calculated the recurrence rate during pregnancy and nonpregnant periods. Results were adjusted for potential confounders, including patient age at the time of recurrence and interval since the last episode of active retinochoroiditis.

During the median study period of 11.7 years, 128 active toxoplasmic retinochoroiditis episodes occurred—6 during 34 reported pregnancies. The authors calculated the recurrence rate using 2 different starting times (the earliest date on which the patient was known to be at risk for recurrence or age 16 years, whichever was later, vs the date of the resolution of the first observed episode if the study began with an episode). Using the first approach, pregnant women had a smaller risk of recurrence; the results were similar using the second approach. Both sets of results achieved statistical significance, although that significance disappeared in the adjusted analyses.

These results suggest that the risk of recurrent toxoplasmic retinochoroiditis decreases or remains steady during pregnancy, in contradiction of the accepted belief that the risk increases during pregnancy. The common wisdom may have arisen because the peak age-specific prevalence of ocular toxoplasmosis coincides with the childbearing years. Moreover, women are more likely to be closely monitored for ophthalmic problems during pregnancy, which may result in an increase in diagnoses. More studies need to be undertaken to resolve this conundrum.