





## Letter to the Editor

## Pseudophakic vitrectomy or phacovitrectomy for idiopathic epiretinal membranes and the risk of postoperative macular oedema

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Editor,

An idiopathic epiretinal membrane (iERM) may lead to severe loss of vision and metamorphopsia. Pars

plana vitrectomy for iERM removal has been shown to be successful (Guber et al. 2019). However, a substantial number of patients do not show visual acuity (VA) improvement. Macular oedema (ME) is one of the complications responsible for delay in visual recovery or disappointing final visual outcome after intraocular surgery (Frisina et al. 2014). The precise pathogenic mechanism of postoperative ME is not fully understood but is multifactorial and mainly attributed to inflammation (Romano et al. 2013), possibly augmented by mechanical handling of the ERM and ILM.

Patients undergoing phacovitrectomy may have a higher incidence of ME compared with vitrectomy alone, due to theoretically more inflammation because of the longer duration of surgery and surgical trauma. We investigated the incidence of postoperative ME after uneventful iERM peeling surgery in pseudophakic patients undergoing vitrectomy compared with phakic patients undergoing phacovitrectomy.

In this retrospective study, we included 204 eyes of 202 consecutive patients who underwent surgery for an iERM in 2018. Spectral-domain optical coherence tomography (SD-OCT) was used to detect macular abnormalities preoperatively and 6 weeks

postoperatively. Preoperative iERMs were graded using the ectopic inner foveal layer (EIFL) staging scheme (Govetto et al. 2017). ME was based on the presence of increased central foveal thickness, increased total macular volume and/or increase in cystoid spaces in the outer retina. Presumably, after iERM peeling only cystoid spaces in the outer retina can be assigned to ME, as cystoid spaces in the inner retina (microcystic macular oedema) are associated with peeling of the ERM and ILM (Dolz-Marco et al. 2016). We found no significant difference in age, gender, iERM stage (albeit stages 1 and 4 were underrepresented), central foveal thickness, total macular volume, presence of PVD or BCVA between the two groups ( $p > 0.05$ ) (Table 1). Furthermore, we found no significant difference in intraoperative use of dyes (MembraneBlue-Dual, infracyanine green or triamcinolone) between the two groups ( $p > 0.05$ ). Standard postoperative anti-inflammation protocol consisted of preoperative subconjunctival injection of betamethasone acetate and topical prednisolone acetate steroids drops, 4 times daily, that were tapered over 4 weeks.

We found that patients undergoing phacovitrectomy for an iERM had a significantly increased risk for developing postoperative ME compared with

**Table 1.** Pre- and 6 weeks postoperative findings

Variable	Vitrectomy	Phacovitrectomy	Overall	p-Value
Total patients	57	147	204	
Male	36 (63%)	75 (51%)	111	ns
Female	21 (37%)	72 (49%)	93	ns
Mean age at surgery $\pm$ SD (range)	74 $\pm$ 6 (58–87)	70 $\pm$ 7 (43–84)	72 $\pm$ 7 (43–87)	ns
Stage of iERM (EIFL staging scheme)				
1	4 (7%)	10 (7%)	14 (7%)	ns
2	22 (39%)	68 (46%)	90 (44%)	ns
3	25 (44%)	59 (40%)	84 (41%)	ns
4	6 (10%)	10 (7%)	16 (8%)	ns
Preoperative PVD	41 (72%)	113 (77%)	154 (75%)	ns
Preoperative ME	5 (9%)	13 (9%)	18 (9%)	ns
Postoperative ME	7 (12%)	53 (36%)	60 (29%)	<0.01 <sup>†</sup>
Treated for ME	3 (5%)	34 (23%)	37 (18%)	<0.01 <sup>†</sup>
Preoperative CFT in $\mu$ m $\pm$ SD	493 $\pm$ 95	499 $\pm$ 85	497 $\pm$ 88	] <0.01
Postoperative CFT in $\mu$ m $\pm$ SD	436 $\pm$ 57	485 $\pm$ 87	471 $\pm$ 82	
Preoperative TMV in mm <sup>3</sup> $\pm$ SD	10.6 $\pm$ 1.6	10.8 $\pm$ 1.6	10.7 $\pm$ 1.6	] <0.01
Postoperative TMV in mm <sup>3</sup> $\pm$ SD	9.7 $\pm$ 0.7	10.1 $\pm$ 1.0	10.0 $\pm$ 1.0	
Preoperative logMAR BCVA $\pm$ SD	0.4 $\pm$ 0.2	0.4 $\pm$ 0.2	0.4 $\pm$ 0.2	] *
Postoperative logMAR BCVA $\pm$ SD	0.3 $\pm$ 0.2	0.3 $\pm$ 0.2	0.3 $\pm$ 0.2	

Comparing macular oedema and BCVA in patients undergoing vitrectomy or phacovitrectomy pre- and 6 weeks postoperative.

BCVA = best corrected visual acuity, CFT = central foveal thickness, ns = not significant, SD = standard deviation, TMV = total macular volume.

<sup>†</sup> Significance calculated with Pearson's.

\* Difference between preoperative and postoperative, significance calculated with matched *t*-test.

pseudophakic vitrectomy, 36% versus 12%, respectively (Table 1). Noteworthy, not all patients with ME, based on our OCT criteria, were treated for ME. The overall incidence of ME in our study was 29%; however, only 18% were treated (Table 1). This difference can be explained by our strict definition of ME for study purposes, whereas in daily practice sometimes conservative management was chosen.

A potential strategy to reduce postoperative ME may be to modify anti-inflammatory medication regimes. Given the high incidence of ME after vitrectomy for iERM and the fact that various inflammatory mediators, including prostaglandins, are biosynthesized several weeks after surgery, a stronger and longer acting steroid perioperatively may give a lower incidence of ME. Indeed, in a subgroup analysis, Guber et al. reported a statistically significant difference in ME in patients receiving intravitreal triamcinolone at the end of iERM surgery (0% ME) compared with the control group (19% ME). Furthermore, a subconjunctival injection of dexamethasone 5–6 hr before conventional scleral buckling retinal detachment surgery decreased

1 week postoperative blood-retina barrier breakdown (Bali et al. 2010). Preoperative anti-inflammatory priming may also be beneficial in phacovitrectomy surgery.

Our retrospective study supports the hypothesis that eyes undergoing phacovitrectomy for iERM have a higher risk of postoperative ME compared with vitrectomy alone. Modification of pre- and perioperative anti-inflammatory therapy, rather than switching to sequential surgery, may be a viable strategy to reduce the risk of postoperative ME and merits further study.

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