

Epiretinal Membrane and Cystoid Macular Oedema After Vitrectomy for Giant Retinal Tear–Related Retinal Detachment: The Manchester GRT Study

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Background

- Post-vitrectomy epiretinal membrane (ERM) and cystoid macular oedema (CMO) can affect functional outcomes following repair of giant retinal tear–related rhegmatogenous retinal detachment (GRT-RRD).
- We aimed to determine the incidence, predictors, and visual impact of ERM/CMO after primary pars plana vitrectomy (PPV) for GRT-RRD.

Methods

- Retrospective single-centre review of 110 consecutive GRT-RRD eyes undergoing primary PPV (2012–2024).
- Data included demographics, pre-op features, intra-op details, and post-op outcomes. ERM/CMO were assessed when OCT was available at baseline, at 2 months, and final follow-up.
- Associations were tested with univariate tests and multivariable logistic regression.

Results

- **Incidence:** ERM in 60% (54/90); CMO in 23.6% (26/88).
- **ERM grading:** Stage 1: 30 (55.5%); Stage 2: 16 (29.6%); Stage 3: 5 (9.3%); Stage 4: 3 (5.5%).
- **Interventions:** 14 (25.9%) underwent ERM peel; 3 received sub-Tenon or intravitreal steroid for CMO.
- **Predictors:**
 - Univariately, ERM was associated with trauma ($p = 0.033$) and with the absence of high myopia ($p = 0.015$) (Table 1). Multivariately, ERM remained associated with trauma (OR 39.2, $p = 0.022$) and with greater RRD extent per clock hour (OR 1.49, $p = 0.019$). Myopia was protective against ERM (OR 0.09, $p = 0.003$).
 - No significant predictors for CMO.
- **Anatomical/functional impact:** ERM and CMO groups were associated with an increased post-op CRT ($p < 0.05$), but final best-corrected visual acuity (BCVA) was not significantly different between affected and unaffected eyes (Table 2).

Table 1. Univariate analysis of pre- and intraoperative characteristics in eyes with and without ERM

Variable	ERM (n = 54)	No-ERM (n = 36)	p-value
Age (Mean ± SD)	51.88 ± 14.81	50.05 ± 14.51	0.564
Gender (Male)	44 (81.5%)	23 (63.9%)	0.061
High myopia (Yes)	11 (20.4%)	16 (44.4%)	0.015
Trauma (Yes)	12 (22.2%)	2 (5.6%)	0.033
Lens Status (Pseudophakic)	22 (40.7%)	10 (27.8%)	0.448
Macula Off (Yes)	21 (38.9%)	15 (41.7%)	0.792
Tamponade SF6 (Yes)	1 (1.9%)	2 (5.6%)	0.338
Tamponade C2F6 (Yes)	30 (55.6%)	19 (52.8%)	0.795
Tamponade C3F8 (Yes)	9 (16.7%)	4 (11.1%)	0.463
Tamponade SO (Yes)	14 (25.9%)	10 (27.8%)	0.846
GRT Size (Mean ± SD)	7.4 ± 3.5	6.8 ± 3.2	0.440
RRD Extent (Mean ± SD)	10.1 ± 2.9	9.3 ± 2.8	0.061

Table 2. Comparison of pre- and postoperative BCVA (logMAR) and CRT (µm) in eyes with and without ERM and CMO.

Outcome	ERM (n = 54)	No ERM (n = 36)	p (ERM)	CMO (n = 26)	No CMO (n = 62)	p (CMO)
Pre-op BCVA (logMAR)	1.15 ± 1.07	1.03 ± 1.01	0.942	1.06 ± 1.03	1.15 ± 1.06	0.428
BCVA – 2 months (logMAR)	0.55 ± 0.52	0.53 ± 0.54	0.888	0.64 ± 0.56	0.48 ± 0.47	0.059
BCVA – discharge (logMAR)	0.38 ± 0.45	0.51 ± 0.52	0.075	0.45 ± 0.46	0.39 ± 0.43	0.296
CRT – pre-op (µm)	288.3 ± 32.6	271.9 ± 28.4	0.167	279.0 ± 21.1	281.6 ± 34.4	0.799
CRT – 2 months (µm)	325.1 ± 86.7	283.3 ± 38.7	0.021	331.3 ± 94.0	296.3 ± 58.8	0.109
CRT – discharge (µm)	332.7 ± 80.4	295.9 ± 67.1	0.009	366.8 ± 94.5	297.0 ± 56.4	< 0.001

Discussion

- ERM is very common (60%) after GRT-RRD repair. It is associated with trauma, greater RRD extent, and absence of myopia. 26% of patients underwent ERM peel during the follow-up.
- CMO occurred in 23.6% with no predictors identified.
- Despite increased CRT, final BCVA was not significantly different in cohorts with ERM/CMO. However, BCVA is not a sensitive functional test to assess visual function worsening in ERM/CMO.
- Primary ILM peel may be useful in high-risk eyes for postoperative ERM (e.g., traumatic or extensive RRDs).