

Ocular Dominance: Is it of any value to the Vitreoretinal Surgeon?

A study of Epiretinal Membrane in the dominant eye vs non-dominant eye

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- **The impact of ocular dominance on patient symptomatology in ERM is not well studied**
- **We hypothesised patients would be more likely to be referred for ERM in their dominant eye**
- **18 consecutive patients with unilateral ERM were reviewed for their ocular dominance status**
- **Dominance testing revealed that 72.2% of patients had ERM in their non-dominant eye (p=0.038)**
- **This study did not find that the dominant eye was associated with being referred for ERM, this is consistent with results found by Liu et al 2023¹**



Introduction

- Ocular dominance is usually the realm of the cataract surgeon. Only two previous studies have tested patient's ocular dominance in surgical macular pathology, and none exclusively for epiretinal membrane (ERM).^{1,2}
- We hypothesise that a patient's ocular dominance may influence being symptomatic of ERM.
- This study aims to determine if a patient's ocular dominance is associated with referral to vitreoretinal clinic for ERM, or subsequent decision for surgery.

Methods

- All new referrals from March 2025 – August 2025 for epiretinal membrane in a single consultant surgeon's tertiary vitreoretinal clinic were included in this study.
- Excluded patients were those patients with bilateral epiretinal membrane (n=3), visual acuity worse than 6/60 (1) and presence of other visually significant macular pathology (0).
- All patients were assessed for ocular dominance by one of four team members using the Miles Test. Three consecutive matching outcomes for laterality of ocular dominance were required to ensure accurate results.

References

1. Liu Y, Wang X, Zhu M, Xu GZ. Clinical Characteristics of Macular Hole and Macular Epiretinal Membrane in Dominant and Nondominant Eyes. *Biomed Environ Sci.* 2023 Jan 20;36(1):112-116. doi: 10.3967/bes2023.014.
2. Patel PJ, Steel DH, Hirneiß C, Brazier J, Aly A, Lescrauwaet B; MeMo Study Group. Patient-reported prevalence of metamorphopsia and predictors of vision-related quality of life in vitreomacular traction: a prospective, multi-centre study. *Eye (Lond).* 2019 Mar;33(3):435-444. doi: 10.1038/s41433-018-0230-0. Epub 2018 Oct 12. PMID: 30315266; PMCID: PMC6460702.

Results

- Over the six-month study period in our clinic, 18 eligible patients were assessed as new referrals for epiretinal membrane.
- The mean age of all patients assessed for ERM during the study period was 71.1 years. 38.9% of patients reviewed were female and 33.3% of ERMs were in the patients left eye.
- Following ocular dominance testing it was found that 72.2% of ERMs referred to our service were in the patient's non-dominant eye (p=0.038)
- 66.7% of the patients assessed for ERM proceeded with surgery (80% for dominant eye, 61.3% for non-dominant eye, p=0.614).

Conclusions

- This study hypothesised that ocular dominance with ipsilateral epiretinal membrane would increase the likelihood for referral to our clinic for consideration of membrane peeling. This was based on the proposition that patients may be more symptomatic of the effects of the membrane in their dominant eye. It is worth noting that the referral basis for epiretinal membrane is not homogenous, with some patients referred moreso based on OCT appearance than true effect on quality of life.
- This study is limited primarily by its small sample size, but also a lack of quantification of distortion and distinct heterogeneity between the groups.
- Given that there was found to be a significant association between referral for epiretinal membrane and epiretinal membrane being in the non-dominant eye, this could be explained by the insidious nature of epiretinal membrane causing a change in the patient's ocular dominance to the contralateral side as an adaptive phenomenon. Exploring this theory further would require recruiting patients for whom ocular dominance had already been assessed prior to developing epiretinal membrane, which would prove difficult to recruit.