Foveal Ectopia in Primary Macular Pucker

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Introduction

- Primary macular pucker is an age-related disease of the vitreoretinal interface caused by epiretinal membrane (ERM) formation.
- Macular pucker is often implicated in reduced visual acuity (VA) and visual distortion due to ERM contraction pulling the fovea out of shape.
- This can result in foveal ectopia which is the focus of this study.

Aims

- In order to estimate foveal ectopia pre-operatively without knowing a patient's pre-morbid foveal position we needed to devise a novel method, as outlined in **Figure 1.**
- We wanted to test the hypothesis that degree of Foveal Ectopia is related to ERM disease severity.

Methods

- Retinal height and foveal position were measured using digital callipers on Heidelberg Eye Explorer software.
- Foveal position was measured horizontally from middle of temporal optic disc and vertically either up or down depending on the position relative to that line.
- This was repeated for the fellow eye and the difference between those measurements was used to calculate Foveal Ectopia.

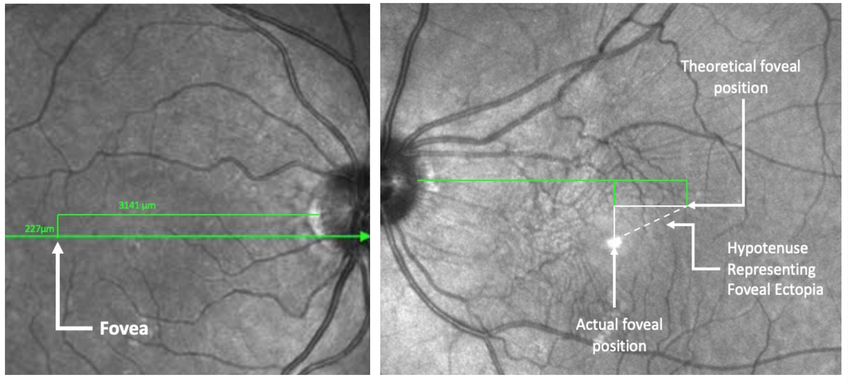


Figure 1: Images demonstrating the method used to measure foveal position relative to optic disc (left) and estimate foveal ectopia by comparing to fellow eye and calculating the difference (right)

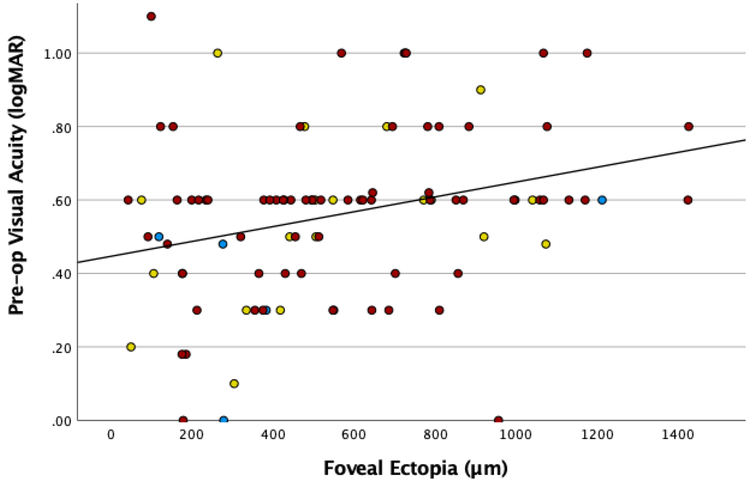


Figure 2: Scatter plot demonstrating positive correlation between foveal ectopia and VA in logMAR (higher logMAR value signifies worse VA)

Results

Variable	Result
Age Mean (± SD)	70.16 (± 8.22)
Male / Female, no. (%)	42 (42.4) / 57 (57.6)
Laterality Left / Right, no. (%)	42 (42.4) / 57 (57.6)

- A cohort of 42 men and 57 women with a mean age of 70.16 undergoing vitrectomy and peeling for unilateral macular pucker was identified.
- Foveal Ectopia was found to correlate with worsening pre-operative VA in logMAR (R= 0.294, p = 0.004).
- Furthermore, foveal ectopia had a significant positive correlation with maximum retinal height (R = 0.280, p = 0.005)
- There was a correlation between Foveal Ectopia and worsening post-operative VA in logMAR(R = 0.147), however it was not statistically significant (p = 0.150)

Conclusions

- From these data we can conclude that pre-operative foveal ectopia is related to ERM severity in two ways
  - **Symptoms**: Significant correlation with worsening pre-op visual acuity
  - **Structural deformity**: Significant positive correlation with maximum retinal height
- However, it cannot be concluded that foveal ectopia has an impact on post-operative outcome as while a trend was identified it was not statistically significant