STRUCTURAL AND FUNCTIONAL CHANGES IN PATIENTS UNDERGOING IDIOPATHIC EPIRETINAL MEMBRANE SURGERY

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BACKGROUND

- Idiopathic epiretinal membrane (iERM) is a fibro-cellular membrane that proliferates on the inner surface of the retina specifically at the macula.
- It can cause traction on the surface of the retina leading to symptoms such as distortion and blurred (central) vision.
- Treatment involves performing a pars plana vitrectomy after which the ERM is peeled with or without the removal of the Internal Limiting Membrane (ILM).
- Several parameters have been studied for identifying the visual outcomes after PPV for iERM peeling.
- However, limited studies have explored the outcomes of iERM surgery in patients with central sub-foveal bouquet abnormalities.

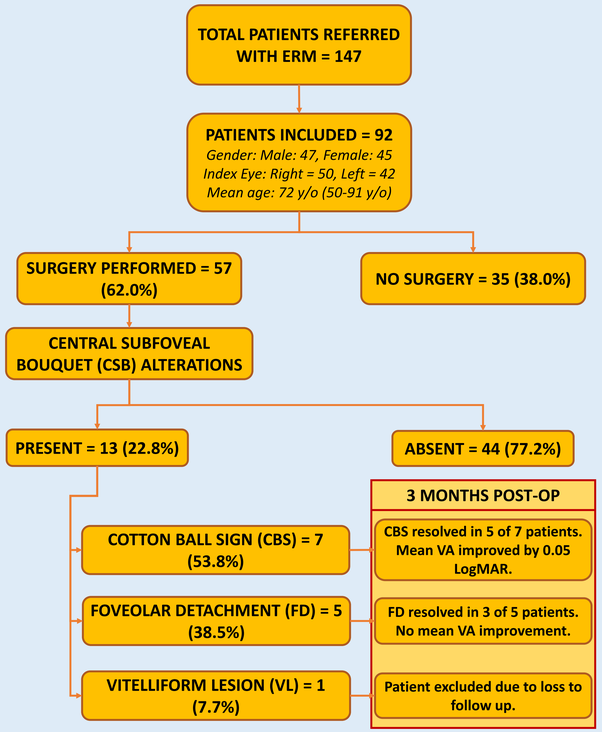
AIM

- To assess prevalence of, and changes in CSB tractional abnormalities among patients undergoing pars plana vitrectomy for idiopathic ERM (iERM) and its association with related structural and functional outcomes.

METHOD

- Retrospective, consecutive, and observational case series.
- Electronic patient records and OCT images of patients operated for iERM from 01/2018 - 12/2019 were reviewed.
- Patients with iERMs +/- CSB tractional alterations (cotton ball sign, foveolar detachment, vitelliform lesion) were analysed.
- Patients with secondary ERM (e.g. following retinal vascular diseases or any intraocular surgery with the exception of uncomplicated phaeco-emulsification) were excluded.
- A minimum follow-up of 3 months post-op was required.
- The Snellen Visual Acuity (VA) was recorded and the Central Foveal Thickness (CFT), CSB height were measured using the OCT software.
- An independent sample t-test was done to assess whether the mean CFT was statistically different in the groups compared.

RESULTS

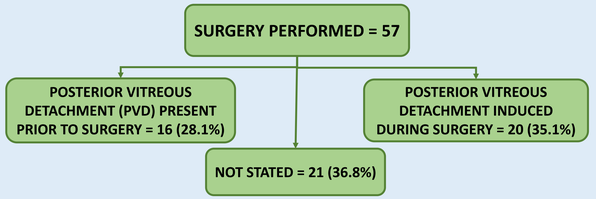


CSB ALTERATIONS	NO CSB ALTERATIONS
VA marginally improved by 0.01 LogMAR at 3 months post-op.	No mean VA improvement at 3 months post-op (P = 0.62).

- Patients with CSB alterations had a greater mean Central Foveal Thickness (CFT) at baseline compared to those without CSB changes (401.7µm vs 374µm). However these means were not statistically significant (P = 0.49).
- The baseline mean CFT was greater for patients with FD (425.5µm) compared to those with CBS (382.8µm).

RESULTS

	SURGERY	NO SURGERY
Mean Age (years)	72.4 (9.2)	72.3 (7.0)
Mean Duration of Symptoms (months)	14.9 (12.9)	20.1 (13.9)
Mean VA LogMAR Pre-op	0.47 (0.25)	0.33 (0.23)
Mean VA LogMAR Post-op	0.47 (0.32)	Not Applicable
Mean CFT (µm); P < 0.01	445.7 (143.5);	272.9 (119.8)
Ectopic Inner Foveal Layer (% cases)	44.8	14.3
Retinal Layers Well Defined (% cases)	81.0	100.0
Foveal Pit Present (% cases)	24.1	68.6



	PVD INDUCED	PVD PRESENT
Mean Age (years)	70.7 (9.1)	74.3 (9.8)
Mean Duration of Symptoms (months)	18.1 (10.8)	9.6 (7.9)
Mean VA LogMAR Pre-op	0.41 (0.27)	0.48 (0.23)
Mean VA LogMAR Post-op	0.31 (0.25)	0.59 (0.35)
Mean CFT (µm); P = 0.89	442.2 (184.0)	455.8 (105.4)
Ectopic Inner Foveal Layer (% cases)	50.0	37.5
Retinal Layers Well Defined (% cases)	90.0	81.3
Foveal Pit Present (% cases)	25.0	18.8
Central Bouquet Alterations	25.0%	31.3%

CENTRAL SUB-FOVEAL BOUQUET

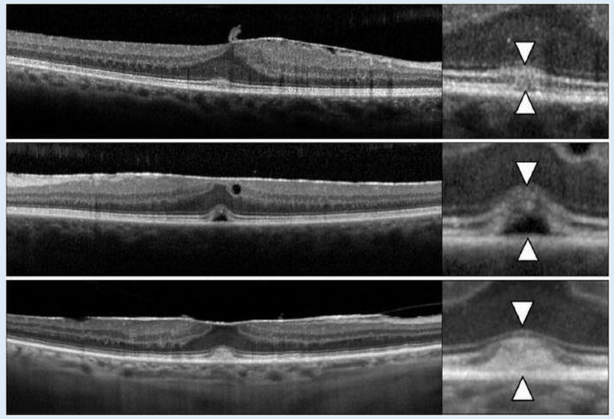


Figure 1: image highlighting the tractional abnormalities of the central bouquet. Top: cotton ball sign, Middle: Foveolar Detachment, Bottom: Vitelliform Lesion. [1]

DISCUSSION AND CONCLUSION

- CSB alterations tend to resolve postoperatively. The resolution is more likely in eyes with CBS than FD. The resolution may be more likely with a longer follow up, as studies have suggested.[2]
- The small improvement of mean VA, alongside the greatest percentage of resolution at 3 months post-op suggests that the cotton ball sign represents a reversible structural change as previously postulated. However, a larger sample size is required to ascertain this finding.
- Eyes with a greater CFT were more likely to undergo surgery as the mean CFT for those who had surgery was statistically different to those who did not (P <0.01).
- Assessing the status of the vitreoretinal interface and the presence of PVD or not prior to surgery could provide insight into the nature and the characteristics of the forces that led to different types of structural changes in ERM patients.

REFERENCES

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2. Damasceno, N., Damasceno, E., Yannuzzi, N., Crane, A., Relhan, N., Smiddy, W. and Flynn Jr, H., 2020. The Central Subfoveal Bouquet in Idiopathic Epiretinal Membranes . *Clinical Ophthalmology*, Volume 14, pp.2353-2359.