Macular Hole Development After Pars Plana Vitrectomy for Macular Splitting Retinal Detachment, A Case Series

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Introduction

Macular hole (MH) uncommonly develops post-vitreoretinal surgery, especially after retinal detachment (RD) repair. Macular splitting RD is a rare clinical entity, where one half of the retina is attached and another one is detached at the level of the fovea. The association between MH following surgical repair for macular splitting RD has not been investigated. In this study, we present a case series of MH development following macular splitting RD repair.

Methods

This is a retrospective, noncomparative case series from January 2011 to July 2020 at a single private practice. Patients with macular splitting RD confirmed with retinal drawing or optical coherence tomography (OCT) were identified and reviewed for MH development after pars plana vitrectomy (PPV) for macular splitting RD.

Results

Chart review was performed on 2200 patients with RD. Macular splitting RD was identified in 73 patients. Four patients developed macular hole after PPV for macular splitting RD. Hence, the incidence of MH development was 5.5%. Tables 1 to 3 demonstrate the demographics, baseline, surgical characteristics and surgical outcomes.

Table 1 Characteristics of patients who developed macular hole post-retinal detachment repair

Number of patients	N	4
Age	N (range)	70 (69-82)
Eye	Right	2 (50%)
Phakic status	Phakia	3 (75%)
Time to RD surgery, days	Mean (range)	0.5 (0-1)
Time from RD repair to MH formation, months	Median (range)	5 (4-34)
Follow up duration, months	Median (range)	14 (8-46)

RD: retinal detachment, MH: macular hole

Table 2 Baseline and Surgical characteristics

Initial BCVA logMAR	Mean (range)	0.28 (0.16 – 0.38)
	Snellen equivalent	20/40+1
Post-RD BCVA logMAR	Mean (range)	0.3 (0 – 0.52)
	Snellen equivalent	20/40
BCVA logMAR with MH	Mean (range)	0.52 (0.4-0.62)
	Snellen equivalent	20/60-2
Primary RD repair	PPV	4 (100%)
Secondary RD repair surgery	PPV	1 (50%)
	PPV/SB/membrane peeling	1 (50%)
MH repair	PPV/membrane peeling/ILM peeling/SF6	4 (100%)

BCVA: best-corrected visual acuity, logMAR: minimal angle of resolution, RD: retinal detachment, MH: macular hole, PPV: pars plana vitrectomy, SB: scleral buckle, ILM: internal limiting membrane, SF_6: Sulfur hexafluoride

Table 3. Surgical outcome

Macular hole repair success	N	4 (100%)
Final BCVA logMAR	Mean (range)	0.28 (0.18-0.34)
	Snellen equivalent	20/40+1
Complications post-RD		
ERM	N (Percentage)	1(25%)
Secondary Cataract	N (percentage)	2(67%)

BCVA: best-corrected visual acuity, logMAR: minimal angle of resolution, RD: retinal detachment, ERM: epiretinal membrane

Conclusion

Macular splitting RD may represent a unique risk factor for the development of postoperative MH, which has not been previously reported. Given the high incidence and potential risk for late MH development, surgeon awareness and long-term follow up is suggested for patients with macular splitting RD.

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