

CLINICAL CHARACTERISTICS, RISK FACTORS, AND SURGICAL OUTCOMES OF SECONDARY MACULAR HOLE AFTER RETINAL DETACHMENT SURGERY

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Introduction

- Secondary full-thickness macular hole (FTMH) is an uncommon complication following rhegmatogenous retinal detachment (RRD) repair, with a reported incidence of approximately 0.3–0.6%.
- It occurs more frequently after macula-off detachments and is strongly associated with epiretinal membrane (ERM) formation, which is thought to contribute through tangential traction on the fovea.
- Additional risk factors include high myopia, recurrent retinal detachment, and bacillary layer detachment (BALAD) in fovea-off RRDs.
- Although vitreomacular traction is considered the main mechanism in primary macular holes, this theory is challenged when a macular hole develops after complete PVD or after pars plana vitrectomy (PPV).
- Secondary FTMHs may develop after any retinal detachment repair and typically present within the first months after surgery.
- Standard management with repeat PPV, internal limiting membrane peeling, and gas tamponade achieves high anatomical closure rates (88–100%), although visual recovery is often limited by previous macular damage.

Objective

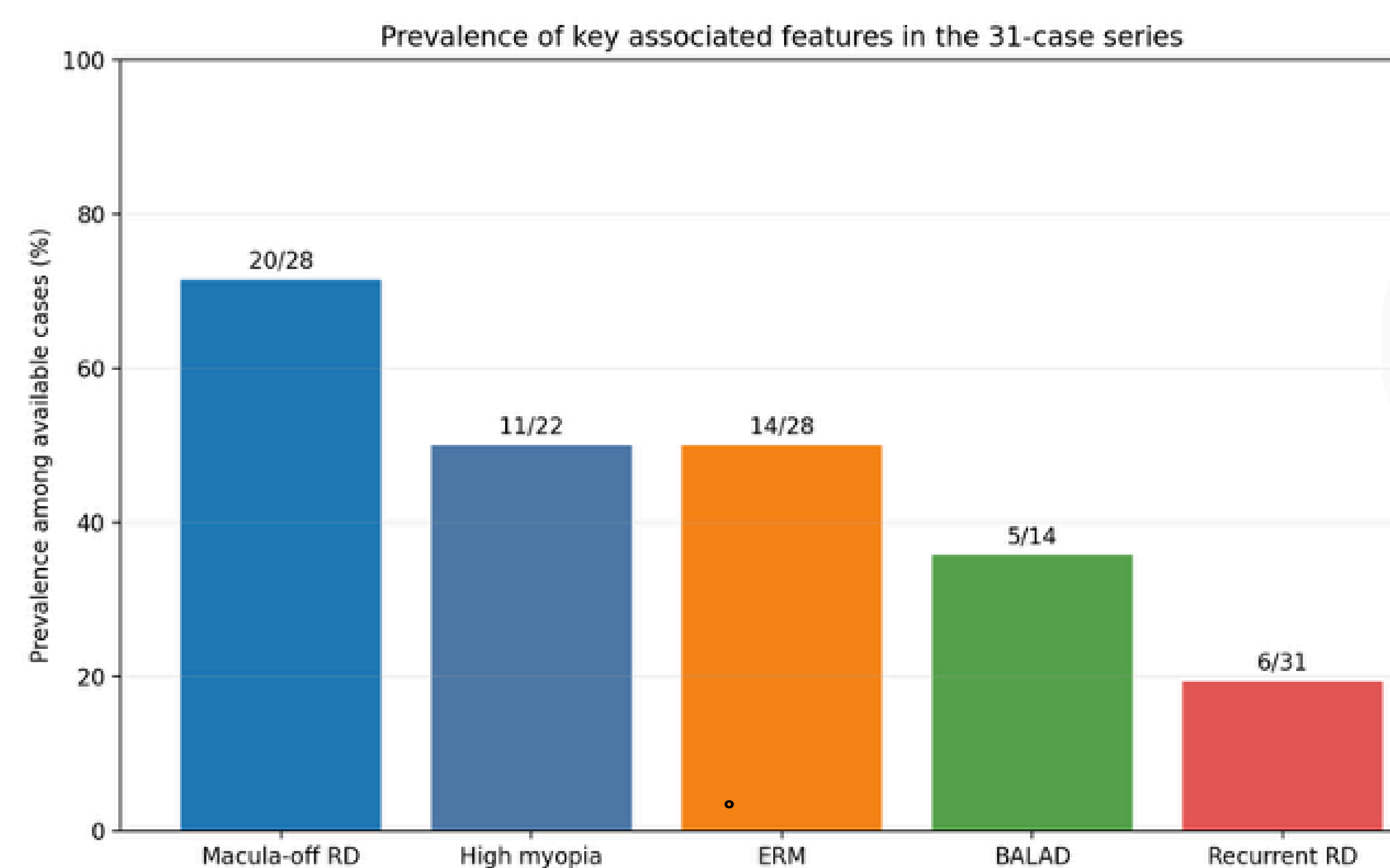
- To report the clinical features, and treatment outcomes of patients with macular hole after pars plana vitrectomy for rhegmatogenous retinal detachment

Methodology

- Single-center study (Calgary Retina Consultants). Patients with rhegmatogenous retinal detachment who underwent vitrectomy as a retinal repair between 2011 and 2024.
- The medical records of these patients were reviewed and patient data including age, history of high myopia, status of macula, surgical procedure, number of surgeries performed for RD, time interval between initial vitrectomy and MH formation, visual acuity at time of MH diagnosis, surgical procedure performed for MH surgery, visual acuity at final follow-up and status of MH at final visit were recorded.

Results

The cohort included 31 cases with a mean age of 60.8 years (median 62, range 22–86). ERM was present in 14/28 (50.0%), high myopia in 11/22 (50.0%), macula off RD in 20/28 (71.4%) and BALAD in 5/14 (35.7%).



Results

- Time from RD repair to MH diagnosis (26 cases), with a mean of 677.0 days (SD 957.0; median 59.5; range 7–3073).
- Hole closure status was documented in 24 cases; closure occurred in 19/24 (79.2%).
- Mean VA improved from 1.06 logMAR at diagnosis to 0.86 logMAR at final follow-up, with a mean change of -0.20 logMAR. This improvement was statistically significant ($p=0.0255$)

Discussion

In this 31-case series, macula off retinal detachment, ERM and high myopia were observed in approximately half of recorded cases, and BALAD in roughly one-third. These macular holes seem to differ from idiopathic macular holes with respect to their underlying cause, as well as their visual and anatomical outcomes.

Conclusion

In patients who developed a macular hole after pars plana vitrectomy for retinal detachment, associated factors included epiretinal membrane, macula-off retinal detachment, recurrent retinal detachment, and high myopia. Although successful macular hole closure was achieved, visual improvement remained limited.

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