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RETINA SOCIETY 2020 VR



Minimal Gas Vitrectomy to Minimize Risk of Retinal Displacement following Retinal Detachment Repair

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No Relevant Financial Disclosures

Summary: Minimal Gas Vitrectomy (MGV) for RD Repair

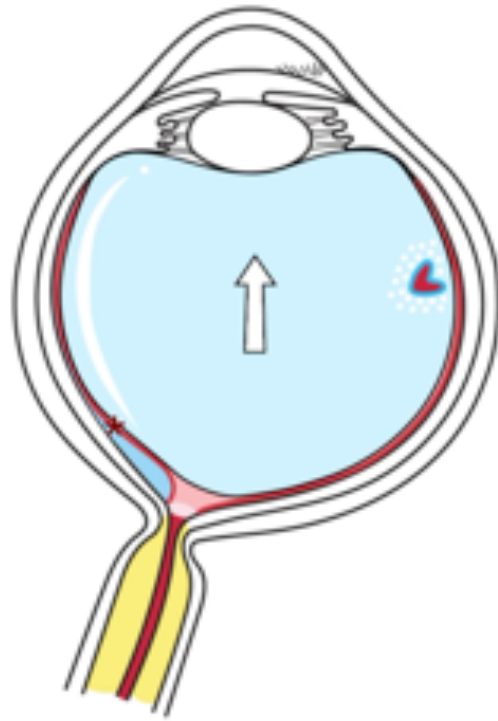
- MGV utilizes a small gas bubble tamponade with no air fluid exchange
- MGV may have lower rates of retinal displacement compared to standard vitrectomy/full gas fill
- MGV may have higher primary anatomic reattachment rates compared to standard pneumatic retinopexy



LIRA

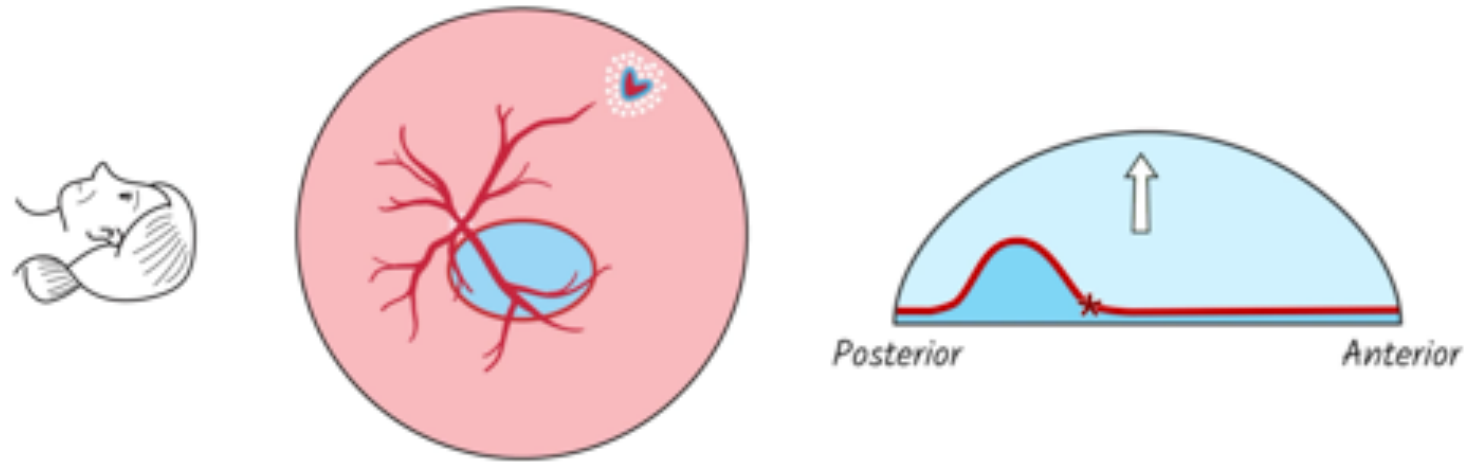
Low Integrity Retinal re-Attachment

Mechanism of Retinal Displacement in PPV



- * Arbitrary point
- Bouyant force
- Retinal stretch
- Fluid movement

Mechanism of Retinal Displacement in PPV



- * Arbitrary point
- ⇨ Bouyant force
- ⇨ Retinal stretch
- ⇨ Fluid movement

Retinal Displacement Following Pneumatic Retinopexy vs Pars Plana Vitrectomy for Rhegmatogenous Retinal Detachment

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[Video](#)

IMPORTANCE Retinal displacement following rhegmatogenous retinal detachment repair may have consequences for visual function. It is important to know whether surgical technique is associated with risk of displacement.

OBJECTIVE To compare retinal displacement following rhegmatogenous retinal detachment repair with pneumatic retinopexy (PR) vs pars plana vitrectomy (PPV).

INTERVENTIONS OR EXPOSURES Fundus autofluorescence images were assessed by graders masked to surgical technique.

DESIGN, SETTING, AND PARTICIPANTS A multicenter retrospective consecutive case series in Canada and the UK. A total of 238 patients (238 eyes) with rhegmatogenous retinal detachments treated with PR or PPV who underwent fundus autofluorescence imaging from November 11, 2017, to March 22, 2019, were included.

MAIN OUTCOMES AND MEASURES Proportion of patients with retinal displacement detected by retinal vessel printings on fundus autofluorescence imaging in PR vs PPV.

RESULTS Of the 238 patients included in the study, 144 were men (60.5%) and 94 were women (39.5%); mean (SD) age was 62.0 (11.0) years. Of the 238 eyes included in this study, 114 underwent PR (47.9%) and 124 underwent PPV (52.1%) as the final procedure to achieve reattachment. Median time from surgical procedure to fundus autofluorescence imaging was 3 months (interquartile range, 1-5 months). Baseline characteristics in both groups were similar. The proportion of eyes with retinal vessel printing on fundus autofluorescence was 7.0% for PR (8 of 114) and 44.4% for PPV (55 of 124) (37.4% difference; 95% CI, 27.4%-47.3%; $P < .001$). Analysis based on the initial procedure found that 42.4% (42 of 99) of the eyes in the PPV group vs 15.1% (21 of 139) of the eyes in the PR group (including 13 PR failures with subsequent PPV) had displacement (27.3% difference; 95% CI, 15.9%-38.7%; $P < .001$). Among eyes with displacement in the macula, the mean (SD) displacement was 0.137 (0.086) mm ($n = 6$) for PR vs 0.297 (0.283) mm ($n = 52$) for PPV (0.160-mm difference; 95% CI, 0.057-0.263 mm; $P = .006$). Mean postoperative logMAR visual acuity was 0.31 (0.32) ($n = 134$) (Snellen equivalent 20/40) in eyes that initially underwent PR and 0.56 (0.42) ($n = 84$) (Snellen equivalent 20/72) in eyes that had PPV (-0.25 difference; 95% CI, -0.14 to -0.35 ; $P < .001$). Among eyes with displacement, mean postoperative logMAR visual acuity was 0.42 (0.42) ($n = 20$) (Snellen equivalent 20/52) in those that initially underwent PR and 0.66 (0.47) ($n = 33$) (Snellen equivalent 20/91) in those that initially underwent PPV (-0.24 difference; 95% CI, -0.48 to 0.01; $P = .07$).

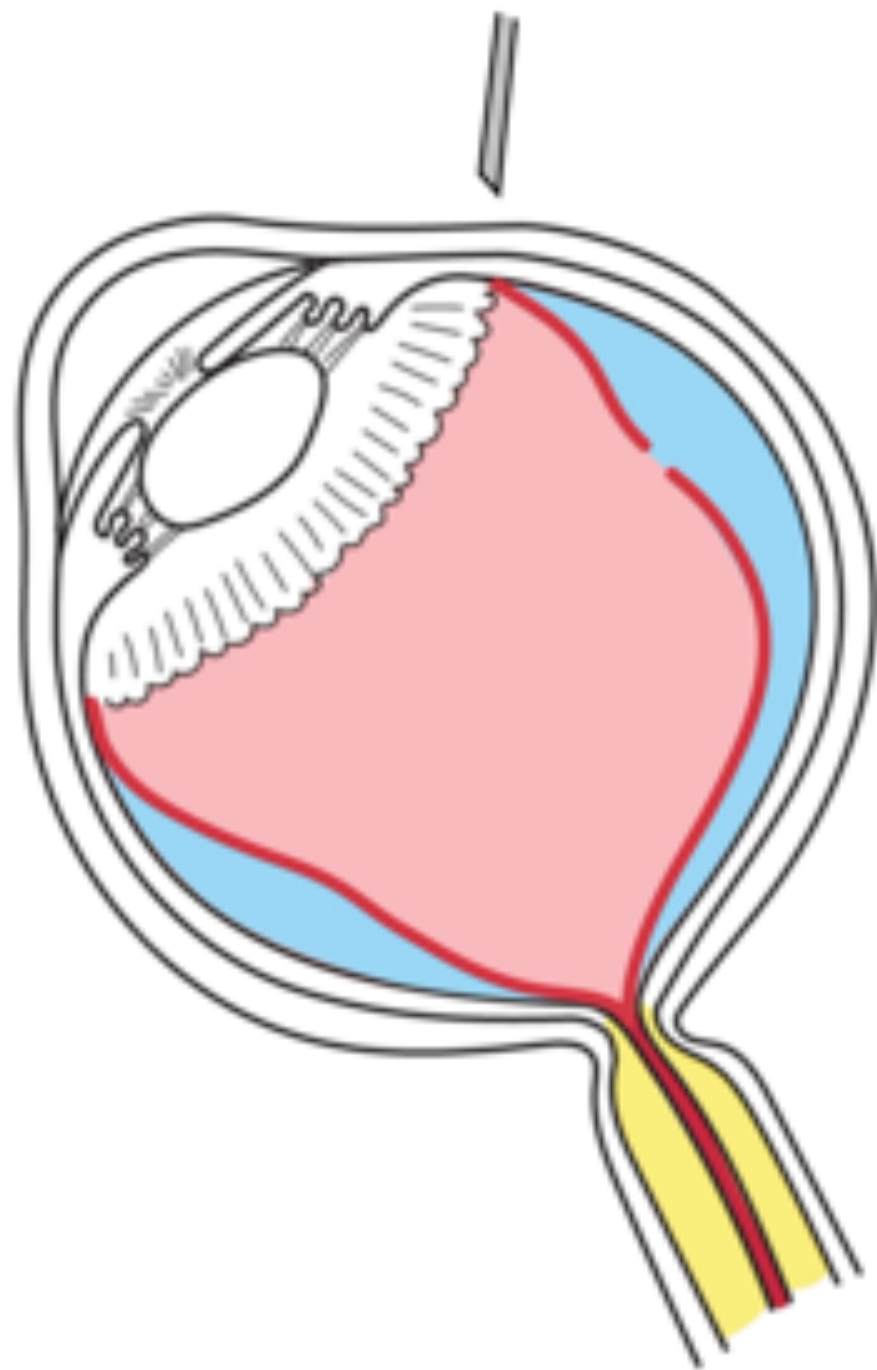
CONCLUSIONS AND RELEVANCE These findings suggest that retinal displacement occurs more frequently and is more severe with PPV vs PR when considering the initial and final procedure used to achieve retinal reattachment. Recognizing the importance of anatomic integrity by

INTEGRITY Study: Retinal displacement

Retinal Displacement among PnR successes vs PPV successes

- PnR successes: **7.0% (8/114)**
- PPV successes: **44.4% (55/124)**

*p < 0.0001



How can we make PPV better?



Indications: Minimal Gas Vitrectomy (MGV) for RD Repair

- Pneumatic retinopexy is preferable for cases meeting PIVOT trial criteria
- MGV may be an option for surgeons with limited experience/comfort with pneumatic retinopexy or some patients with extended criteria
- MGV may be ideal for patients found to meet PIVOT criteria intraoperatively with pre-operative factors limiting examination such as:
 1. vitreous hemorrhage
 2. capsular phimosis
 3. small pupil
 4. patients with no visible break

WALLPAPER ANALOGY FOR RETINAL DETACHMENT



LIRA vs HIRA



THANK YOU