Preoperative Pneumatic Retinopexy as an Adjunct for Pars Plana Vitrectomy

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Purpose:
To discuss the role of preoperative pneumatic retinopexy (PPnR) as an adjunct to pars plana vitrectomy (PPV) for repair of rhegmatogenous retinal detachment (RRD).

Methods:
A retrospective consecutive case series of all RRDs with multiple large breaks in more than one quadrant, and/or inferior breaks requiring PPV, who received PPnR 48-72 hours prior to surgery between 2016-2020 was conducted. On the day of presentation, PPnR was performed with intravitreal gas of either 0.6mL sulfur hexafluoride (SF₆) or 0.3mL perfluoropropane (C₃F₈) was injected in the superotemporal quadrant of the pars plana. Patients were then advised to maintain a face-down position for 4 hours, and then in a position to tamponade the retinal break. The preoperative gas bubble was removed at the start of the PPV using a trocar blade to open the valved cannula. The eye was tilted as superiorly as possible to allow for easier removal of any residual preoperative gas. It was noted by the surgeon that the PPnR resulted in a reduced volume of SRF, and thus fluid-air exchange (FAX) using a backflush cannula was done through the primary break without the need for perfluoro-n-octane (PFO) or a posterior drainage retinotomy in any of the cases. Retinal breaks were lasered in the attached retina prior to FAX, while breaks in the detached retina were lasered after the FAX. The vitreous cavity air was then flushed with either 22% SF₆ or 18% C₃F₈ gas.

Results:
A total of 106 eyes underwent the PPnR technique. The RRDs on average involved 5.3±2.2 clock hours with inferior retinal breaks in 35% and multiple retinal breaks extending greater than one clock hour in 90% of the eyes. The primary anatomical success rate at 3-month follow-up was 91% and all had a final best corrected visual acuity better than 20/200. The use of perfluorocarbon heavy liquid, posterior drainage retinotomy or silicone oil tamponade was required in 8% of cases.

Conclusions:
Two-stage repair with PPnR as an adjunct to PPV may facilitate ease of surgery, as well as anatomical and functional success for RRDs with multiple large inferior breaks.