Gemini

2.5 Pro

升级

Chief complaint: right eyemarked decrease in visionhalf a month;
OCT findings: right eyeextensivemacular regionneurosensory retinal detachment，full-thickness hole>541μm，epiretinal membrane formation.
Preoperative best-corrected visual acuity (BCVA): OD CF/20 cm (with habitual correction +2.00 DS / −1.50 DC × 180° → 0.1).

Please answer in three numbered paragraphs using precise clinical terminology:
1. Diagnosis and supporting rationale.
2. Recommended treatment plan and justification.
3. Predicted uncorrected visual acuity (UCVA) one month after treatment and a brief explanation for your prediction.

Strictly base your answer on the provided information and add no unstated assumptions.

1. **Diagnosis and Supporting Rationale**
   The diagnosis for the right eye (OD) is Macular Hole Retinal Detachment (MHRD). This conclusion is supported by the direct correlation between the patient's chief complaint and the objective OCT findings. The acute, marked decrease in vision over half a month is a typical history for this condition. The OCT provides definitive evidence by simultaneously identifying a full-thickness macular hole (FTMH) with a large diameter of > 541 μm, an associated extensive neurosensory retinal detachment in the macular region, and the presence of an epiretinal membrane (ERM). The pathophysiology of MHRD involves vitreous fluid passing through the FTMH into the subretinal space, causing the neurosensory retina to detach from the underlying retinal pigment epithelium (RPE). The extremely poor initial best-corrected visual acuity (BCVA) of Counting Fingers (CF) is consistent with pathology involving both foveal architecture and retinal adhesion.
2. **Recommended Treatment Plan and Justification**
   The recommended treatment is pars plana vitrectomy (PPV) with membrane peeling and gas tamponade for the right eye. This surgical approach is justified as it addresses all identified pathological components of MHRD. The procedure involves the removal of the vitreous gel to eliminate vitreomacular traction, followed by peeling of the epiretinal membrane (ERM) and the internal limiting membrane (ILM) from the retinal surface. Peeling the ILM is crucial for large macular holes as it removes tangential tractional forces, increases retinal compliance, and significantly improves the rate of anatomical hole closure. Subsequently, a fluid-air exchange is performed to drain the subretinal fluid and re-appose the retina, followed by the injection of a long-acting intraocular gas (e.g., C_3F_8 or SF_6) to serve as an internal tamponade. This tamponade mechanically seals the macular hole, allowing for retinal reattachment and facilitating the closure of the hole.
3. **Predicted Uncorrected Visual Acuity (UCVA) and Explanation**
   The predicted uncorrected visual acuity (UCVA) one month after treatment will be poor, likely in the range of Counting Fingers (CF). This prediction is based primarily on the expected presence of the intraocular gas tamponade at the one-month postoperative interval. The significant difference in the refractive index between the gas bubble and the remaining aqueous humor creates a high-power minifying effect and an irregular optical interface, which severely degrades image quality and prevents the formation of a clear image on the retina. Therefore, regardless of the anatomical success of the surgery in reattaching the retina and closing the hole, the patient's uncorrected vision will remain profoundly impaired until the gas bubble is substantially or completely resorbed, which typically takes longer than one month.

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Fig. S3. Screenshots of Gemini 2.5 Pro responses for a macular hole case.