

Section 4

Clinical Case Reports

Real-world diagnostic examples with the PalmScan VF2000

Case 1 — Suspected Normal-Tension Glaucoma

62-year-old male, IOP 14 mmHg OU, suspicious disc cupping

Presentation

- 62-year-old male referred for optic nerve evaluation
- IOP within normal range (12–14 mmHg) on 3 visits
- Optic disc with cup-to-disc ratio 0.75 OD, 0.70 OS
- Patient unable to complete conventional HFA — claustrophobia at the HFA bowl
- Mild cervical spine limitation affecting positioning at tabletop instrument

VF2000 Findings

- Reliable 24-2 SITA-equivalent threshold test completed in 6 minutes OU
- Superior arcuate scotoma detected OD correlating with inferior rim thinning
- Reliable fixation throughout (gaze-tracking data: < 5% losses)
- OS: early nasal step, otherwise within normal limits

Clinical Impression

Findings consistent with early normal-tension glaucoma OD > OS. Patient initiated on topical prostaglandin therapy and scheduled for OCT RNFL baseline. The VF2000 was the only perimeter this patient could tolerate — testing was completed at his chair without repositioning.

Teaching Point

VR perimetry removes a critical barrier to diagnosis in patients who cannot use conventional tabletop instruments due to positioning limitations, claustrophobia, or physical disability.

Case 2 — Bitemporal Visual Field Defect — Pituitary Lesion

48-year-old female, headaches and peripheral vision loss

Presentation

- 48-year-old female with 4-month history of progressive headaches
- Reported bilateral peripheral vision 'closing in' — noticed while driving
- Visual acuity 20/20 OU; no RAPD; optic disc appearance normal
- Initial concern: could not reliably complete tabletop perimetry due to poor comprehension of the monocular test format

VF2000 Findings

- Classic bitemporal hemianopia identified on 24-2 equivalent testing OU
- Dense defect at vertical midline, respecting hemian pattern
- Integrated pupillometry showed attenuated PLR amplitude OS
- Results available in real-time during testing for immediate clinical review

Clinical Impression

Urgent MRI brain and orbits ordered — revealed a 2.1 cm pituitary macroadenoma with suprasellar extension compressing the optic chiasm. Patient referred for neurosurgical evaluation. The VF2000's multi-test capability also captured pupillometric asymmetry in the same session.

Teaching Point

The VF2000's real-time display and intuitive VR format can improve patient comprehension of the test task, enabling reliable results even in patients who struggle with conventional monocular perimetry. Integrated pupillometry adds neuro-diagnostic value in a single test session.

Case 3 — Pediatric Strabismus & Visual Field Screening

9-year-old child, failed school vision screen

Presentation

- 9-year-old male referred after failing school vision screening
- Parents noted intermittent left eye deviation since age 6
- Uncooperative with standard slit lamp and tabletop perimetry
- VA: 20/20 OD, 20/50 OS — concern for amblyopia

VF2000 Findings

- Child engaged readily with VR headset — described it as 'like a video game'
- Strabismus module: intermittent esotropia OS confirmed with cover-uncover protocol
- Stereopsis: reduced — 200 arc sec (Randot equivalent) vs. norm 40 arc sec
- Confrontation-level visual field: no gross defect detected OS

Clinical Impression

Diagnosis: intermittent esotropia with secondary amblyopia OS. Referred for strabismus surgery consultation and initiated patching therapy. The VR format markedly improved pediatric cooperation. The multi-modal session yielded strabismus, stereopsis, and field data simultaneously — a workflow impossible on conventional instruments.

Teaching Point

The VF2000's immersive VR environment dramatically improves cooperation in pediatric patients. The ability to run strabismus and stereopsis testing alongside visual field screening in one device reduces chair time and eliminates the need for multiple separate instruments.

Case 4 — Central Scotoma — Macular Degeneration Monitoring

74-year-old female, wet AMD on anti-VEGF therapy

Presentation

- 74-year-old female with known wet AMD OD on monthly ranibizumab
- Report of worsening central distortion between injection appointments
- OCT: subretinal fluid stable; no new hemorrhage
- Previous HFA testing inconclusive — patient could not maintain fixation at tabletop

VF2000 Findings

- 10-2 macular threshold test (VF2000 central field protocol) completed OD
- Dense paracentral scotoma 3–5° from fixation, superior > inferior
- Fixation gaze-tracked throughout — confirmed reliable results despite known central scotoma
- Amsler-equivalent distortion mapping consistent with complaint

Clinical Impression

Central scotoma pattern confirmed corresponding to the area of prior CNV activity. Anti-VEGF regimen adjusted to treat-and-extend. The VF2000's gaze-tracking allowed reliable data capture despite poor central fixation — a critical advantage over conventional perimetry which would have been unreliable in this patient.

Teaching Point

In patients with central pathology and unstable fixation, conventional perimetry often fails. The VF2000's integrated eye-tracking compensates for fixation instability, yielding valid threshold data even when the patient cannot fixate the central target reliably.