Superior-64 Visual Field Testing using Virtual Reality with and without Eye-Tracking for Functional Upper Eyelid Surgery Evaluation

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Purpose: To compare Superior 64 visual field (VF) results administered on virtual reality (VR, Virtual Vision) with (VR-ET) and without (VR°) eye-tracking to standard automated perimetry (SAP) in patients with ptosis, brow ptosis and dermatochalasis.

Methods: Patients undergoing functional eyelid surgery evaluation from October 2021 to March 2022 underwent Superior 64 VF tests by SAP and VR° or VR-ET in random order with eyelids in their natural state (unT) and taped (T). Fulfillment of insurance coverage (IC) criteria for blepharoplasty, defined as a 30% increase in grid seen from unT to T, was assessed for agreement between VR and SAP.

Results: Thirty-nine eyes (20 OD, 19 OS) underwent VR°, and 19 eyes (9 OD, 10 OS) underwent VR-ET. SAP IC results agreed with VR° in 28 eyes (71.8%) and with VR-ET in 15 eyes (78.9%) ($P > .05$). Of eyes with disagreement, 73.3% met IC criteria on VR but not SAP. Test order was not associated with meeting IC criteria on VR or SAP.

Conclusion: Superior 64 VF testing for the fulfillment of IC criteria was comparable in SAP and VR, with no significant difference when eye-tracking was used. VR may serve as an alternative to SAP for upper eyelid surgery evaluation.