Purpose: The coronavirus (COVID-19) pandemic has had a profound impact on how glaucoma care is delivered, necessitating reduced clinic flow, social distancing, and use of face coverings by patients and staff. This case highlights the need to be aware of improperly fitted face masks as a cause of artifact on standard automated perimetry (SAP).

Clinical Presentation: A 32-year-old female underwent SAP with the 24-2 SITA Fast test of the Humphrey Field Analyzer wearing an ear-loop surgical face mask. At the end of testing, it was noted that the mask had ridden up the patient’s face. Small amounts of condensate were noted on the perimeter lens.

Clinical Findings: SAP demonstrated good reliability indices but in both eyes, there was a marked reduction in sensitivity inferiorly. The glaucoma hemifield test was outside normal limits. It was ensured the upper border of the mask was well sealed with the loops secured around the ears and nasal strip of the mask pinched down. Visual fields were repeated and found to be normal.

Conclusions: Poorly fitting face masks represent a new cause of visual field artifact which may mimic pathologic field defects. Without careful attention during testing, the cause of such artifacts may not be apparent, especially as reliability indices may be normal. Adjustments to the fit of face masks may help prevent fogging or mask slippage and increase test reliability.

Key Words: visual field artifacts, standard automated perimetry, face masks, glaucoma, visual field defect

The coronavirus (COVID-19) pandemic has had a profound and potentially permanent impact on how glaucoma care is delivered, necessitating reduced patient flow, social distancing, and use of face coverings by patients and staff. Changes to clinical practice can have unintended consequences and we wish to highlight a case of visual field artifact on standard automated perimetry (SAP) due to an improperly fitted face mask. In normal circumstances, close monitoring of patients during the visual field testing is important to improve test reliability but this may be challenging with the need to social distance, and the use of face masks introduces a new potential barrier to reliable visual field testing.
problem that ophthalmic surgeons will be familiar with from personal experience during their time as residents learning to use an operating microscope. For tie-back surgical masks, knotting the 2 ties so they lie above and below the ear has been described to prevent superior venting and air leak, instead creating a "lateral vent." The techniques suggested may be useful in preventing an upward direction of air leak, reducing condensation and fogging of the lens but it remains unclear whether they will prevent the mask riding up the face during perimetry.

Ordinarily, visual field technicians should remain in close proximity to patients undergoing perimetry to ensure the patient is correctly positioned and responding appropriately to the test. This may be more problematic if technicians are required to socially distance from patients, however, this case highlights that there may be a greater need to monitor patients during testing if they are wearing a mask. Some patients wearing masks during perimetry may also feel restricted and uncomfortable, potentially reducing test reliability. It is essential that ophthalmologists follow local recommendations on the use of face masks, and it is difficult to envisage a situation where an ophthalmologist would be justified in deviating from face mask guidance for the purpose of attempting to obtain a more accurate visual field test. This case though is useful to highlight face masks as a potential cause of visual field artifact.

FIGURE 1. Results of standard automated perimetry performed with a poorly fitted ear-loop face mask. GHT indicates glaucoma hemifield test; MD, mean deviation; PSD, pattern standard deviation; SITA, Swedish Interactive Threshold Algorithm; VFI, visual field index.

FIGURE 2. Visual field test performed with a face mask in the correct position. GHT indicates glaucoma hemifield test; MD, mean deviation; PSD, pattern standard deviation; SITA, Swedish Interactive Threshold Algorithm; VFI, visual field index.
CONCLUSIONS

Poorly fitting face masks represent a new cause of visual field artifact which may mimic pathologic visual field defects. Ideally, visual field technicians should advise patients of the need for a securely fastened face mask before visual field testing and check that the face mask does not move during testing. Adjustments to the fit of face masks using the techniques suggested may help prevent fogging or slippage of masks and increase test reliability.

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