Letters

Don't Let COVID-19 Mask Your Diagnosis

Now that we are all trying to get our practices back in order, seeing patients while practicing good social distancing can present unexpected challenges.

Yesterday, I saw a 65-year-old patient who complained of having a red eye for three days. It appeared to be an atypical episcleritis. He offered no other complaints. I treated him with prednisolone acetate 1% drops. Later that day, he called me from the office of his primary care provider (PCP), who wanted to know if I had seen signs of ocular herpes zoster (there were no dendrites on exam). The patient went to the PCP because of a rash on his nose, which he hadn't mentioned to me because it wasn't in or near his eye. I didn't see it because, in practicing social distancing, he was wearing a mask. Obviously, my treatment plan changed.

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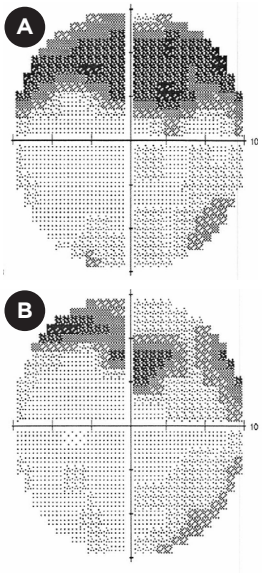
Watch for Mask-Related Diagnostic Artifacts

COVID-19 clinic policies require all personnel and patients to wear masks throughout the examination process, including the performance of perimetry. One of us (DJP) has found that if patient masks are not properly sealed, condensate on perimeter lenses can create visual field changes, which could be interpreted as glaucoma progression. Below is the left eye 10-2 visual field of a patient with advanced low-tension glaucoma, without and with taping of the mask.



The first visual field ("A") was performed without taping the upper portion of the mask, such that there was no seal between the mask and face. This caused perimeter lens condensation also visible in the upper one-half of her left eyeglass lens post-test. Compared with her former visual field, the upper field defect appeared to have worsened, suggesting the need for escalation of intraocular pressure-lowering therapy. The visual field was repeated ("B") after creating a seal with tape across the upper border of the mask resulting in findings that were consistent with her former visual field, refuting the suggestion of progression. Of note, there was no perimeter lens or eyeglass lens condensation after the secure seal.

We would like to alert the Academy membership to this type of mask-related diagnostic visual field defect.

It remains important to repeat visual field testing if disease progression is suspected. We do not recommend removal of masks for perimetry or other diagnostic testing. Instead, we suggest applying paper or hypoallergenic tape to securely seal the upper portion of masks on all patients undergoing such testing. This step would prevent visual field and other false positive condensation artifacts and restrict exhaled infectious contaminants. Our finding adds to a list of common causes of visual field artifacts including ptosis, a prominent brow, patient inexperience or inattention, misaligned perimeter lenses or head rotation creating lens rim changes, and poor hand dexterity. It is noteworthy that interference from lens condensation may also occur with other diagnostic tests, such as OCTs, auto- and phoropter refractions, A-scans, topography, fundus photography, and the use of hand-held lenses for retinal examinations. For as long as we have performed surgery with microscopes, we have been aware that a seal was necessary between mask and face to prevent fogging of oculars and impaired view of the surgical field.

We recommend that patients' masks are taped for testing. The tape offers the added benefit of not allowing the mask to inadvertently slip off the patient's nose and also discourages patients from taking "mask breaks" while in the office.

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Oral-Flora Endophthalmitis After Intravitreal Injection Despite Universal Face Mask Use

Endophthalmitis after intravitreal injection has a particularly poor prognosis if the causative organism is oral flora. We recently encountered a patient who developed endophthalmitis due to oral flora, which occurred after an injection with a prefilled aflibercept syringe. The treating physician and assistant were wearing N95 masks; the patient was wearing a dust mask.

Today's universal use of face masks may be perceived as further decreasing the risk of postinjection endophthalmitis, particularly from oral flora bacteria. One study showed that face mask use by the injector significantly decreased bacterial dispersal with no oral flora species isolated during a simulated intravitreal injection.[1] However, the simulated patient did not wear a mask.

Daily In-Person Clinic Volume Reductions by Subspecialty

	Total	Cornea	Retina	Glaucoma	Pediatrics	Neuro-ophthalmology	Plastics	Optometry
Average Pre-COVID Visits	**261.3**	35.0	64.0	47.8	46.0	18.0	14.4	36.1
Average March 18 to April 18	**79.0**	12.9	24.2	12.7	11.9	8.3	5.0	4.0
% Reduction	**69.8%**	63.3%	62.1%	73.4%	74.1%	53.8%	65.3%	88.8%

These days, both injector and patient are wearing masks. With cloth or even surgical masks, airflow occurs around the edges of the mask, as evidenced by fogging of patients' eyeglasses and of our condensing lenses during funduscopy. Based on our case, we are concerned that face masks may deflect oral flora bacteria toward the eyes during exhalation or speaking and therefore may increase the risk of oral flora endophthalmitis. We hypothesize that taping the top of the patient's mask prior to prep and injection could lower the risk of this devastating outcome. While it will take time and experience to discern whether such an intervention is beneficial, we feel that this simple maneuver is worth strongly considering.

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1 Wen JC et al. *Arch Ophthalmol.* 2011;129(12):1551-1554.

Slowdown by Subspecialty During the Pandemic

In concord with the Academy's recommendations released March 18, 2020,[1] all Vanderbilt providers ceased providing any treatment other than urgent or emergent care. Outpatient clinic volumes were immediately trimmed. Providers reviewed their upcoming clinics at least a week in advance and assigned each patient a color-coded marker in Epic, identifying those patients who needed to be seen urgently (red marker), those who could wait at least one month (white marker), and those who were eligible for telemedicine visits (yellow marker). All patients scheduled for nonurgent visits were tentatively rescheduled after June 1, 2020.

Urgent patient visits were kept after all potential risks were reviewed with the patient. When possible, patients were offered a telemedicine visit with their provider. This protocol resulted in a 70% reduction in clinic volumes the month following release of the Academy recommendations (see Table). The overwhelming majority of the Retina service's in-person visits were for intravitreal injections. Treatment intervals were safely extended when possible, keeping in mind that evidence suggests extension beyond eight weeks may result in suboptimal visual outcomes.[2]

Ultimately, certain operational changes—such as a HIPAA-compliant telemedicine platform—will persist in the future.

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1 aao.org/headline/alert-important-coronavirus-context.
2 Schmidt-Erfurth U et al. *Ophthalmology.* 2011;118(5):831-839.

Keeping Up With Fuchs Dystrophy

I would like to highlight two points related to "Evaluation and Management of Fuchs Dystrophy" (Ophthalmic Pearls, May). These are updates to a rapidly changing field.

First, the transcription factor 4 (*TCF4*) trinucleotide repeat expansion is associated with approximately 75% of cases of late-onset Fuchs dystrophy in U.S. and European populations.[1] Although other listed genes have been associated with Fuchs endothelial corneal dystrophy (FECD), they account for a small proportion of cases, many of which are early-onset FECD.[1] Genetic associations have not yet been identified in as many as 25% of late-onset cases of FECD.

Second, cutoffs for endothelial cell density (ECD) and central corneal thickness (CCT) are not helpful when assessing whether corneas with FECD might decompensate after cataract surgery.[2] Endothelial cell analysis in FECD is often not possible because guttae prevent visualization of cells, and when cells are visible, ECD is inaccurate because of regional variation in guttae distribution. Furthermore, cell density might not equate to cell function in FECD. Changes (or stability) over time in CCT can be helpful in practice, but absolute measurements of CCT are not. Instead, corneal posterior elevation and pachymetry map patterns derived from Scheimpflug tomography are better predictors of FECD prognosis, including after cataract surgery, and are independent of CCT.[3] Corneal tomography[4] has become a routine ancillary test for assessing patients with FECD in my practice (in contrast to endothelial photography, which is rarely performed).

The Academy's *Cataract in the Adult Eye Preferred Practice Pattern* (2016) and *Basic and Clinical Science Course* series (2018-19) do indeed suggest cutoff values for ECD and CCT when evaluating FECD. These were based on older studies, and it is now time to update these texts and our clinical practices with the latest evidence.

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1 Afshari NA et al. *Nat Commun.* 2017;814898.
2 Patel SV. *BMJ Open Ophthalmol.* 2019;4(1):e000321.
3 Patel SV et al. *Ophthalmology.* 2020;127(3):315-323.
4 Karmel M. *EyeNet.* 2020;24(1):17-18.

Editors' note: The *Preferred Practice Patterns* are revised every five years. Each volume of the *Basic and Clinical Science Course* undergoes major revision every four years.