

Collateral damage: Corneal injury due to mask use during the COVID-19 pandemic - A case series

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Though masks are the best shield against COVID-19, they can be a source of discomfort and ocular side effects. We discuss three cases of corneal injury due to mask use. Three patients, who were healthcare workers, presented with discomfort, photophobia, and pain in the eyes. While adjusting the mask, they had an ocular injury. There were multiple superficial linear abrasions in the eyes. They recovered with treatment. Though masks are imperative during the COVID-19 pandemic, it is important to be aware of a possible mask injury.

Key words: Corneal abrasions, COVID-19, masks

The COVID-19 pandemic has rattled the whole world. With no known treatment and unpredictable mortality, prevention has been deemed to be important. Hence, masks, being one of the most important ways to prevent the spread of the disease, have been made compulsory.^[1] N95 masks are of various types, such as surgical masks with elastic loops or masks with side cuts at the ears.^[2] Due to the close proximity of the edge of the mask to the eye during wearing, removal, or adjustment of the mask, ocular injuries can occur. In addition, due to N95 masks, the tear film may be compromised as it evaporates rapidly, which causes dryness and accelerates the invasion of pathogenic organisms. Discomfort due to dry eyes may also increase eye rubbing, thus increasing the possibility of transmission of infection through fomites. All these factors lead to increased concern for ocular infections, ocular irritation, and corneal abrasions secondary to prolonged mask wear.^[3] Corneal abrasion can lead to redness, foreign body sensation, pain, photophobia, watering, and blurring of vision.^[4] Leaving the eye untreated can lead to bacterial infection.^[5] We report three cases of corneal abrasion due to N95 masks. Consent for publication of the cases and the images have been taken.

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Case Reports

Case 1

A 28-year-old health care worker presented with discomfort, photophobia, and pain in both eyes. She was wearing an N95 mask with elastic bands fitted over the back of the head. She was adjusting her mask with the aid of the elastic strap, and the mask snapped back onto her face and the upper margin of the mask rubbed against her eye. Her vision was 6/6 in both eyes by Snellen's chart examination. On slit-lamp biomicroscopy, there was a superficial corneal abrasion at the 4-o'clock position in the right eye measuring approximately 3 × 1 mm as shown in Fig. 1. When examined with fluorescein staining, there were multiple linear epithelial defects. The patient was treated with a bandage contact lens, topical antibiotics, and hydroxypropyl methylcellulose eye drops. The next day, her symptoms had improved and there was no evidence of the abrasion; the bandage contact lenses were removed. She was advised to continue the medications for a week. Follow-up visits did not reveal any infection or corneal scarring.

Case 2

A 35-year-old health care worker presented with complaints of pain, foreign body sensation, and watering of the left eye. As in the abovementioned case, this patient had a similar history of usage of the N95 mask. Her vision was 6/6 in both eyes. There was a superficial corneal abrasion at 5–6-o'clock position in the left eye measuring approximately 3 × 2 mm as shown in Fig. 2. On fluorescein staining, there were multiple linear superficial abrasions. The patient was treated with hydroxypropyl methylcellulose eye drops. The next day, symptoms had improved and there was no evidence of abrasion. Follow-up visits did not reveal any infection or corneal scarring.

Case 3

A 30-year-old health care worker presented with complaints of pain, foreign body sensation, photophobia, watering, and redness of the right eye since one day. In this case, the patient was using an N95 mask with side cuts at the ears. She was performing her routine activity at her clinical setting and accidentally hit her chin and the edge of the mask rubbed against her right eye. Her vision was 6/6 in both eyes. There was a corneal abrasion at the 6-o'clock position in the right eye measuring approximately 2 mm in diameter as shown in Fig. 3. On fluorescein staining, there was an epithelial defect 2 mm in diameter. The patient was treated with hydroxypropyl methylcellulose eye drops and antibiotic eye drops. The next day, symptoms had improved and there was no evidence of abrasion. Follow-up visits did not reveal any infection or corneal scarring.

Discussion

As face mask wearing is an important way of minimizing the spread of COVID-19, all health care workers wear N95 masks

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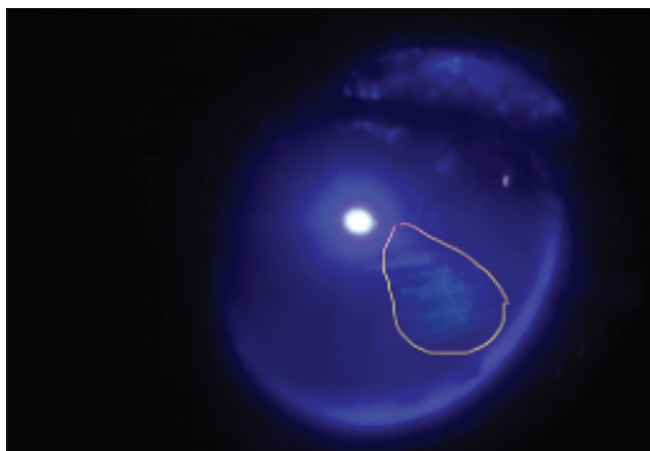


Figure 1: Right Eye multiple corneal abrasion at the 4-o'clock position measuring approximately 3 × 1 mm

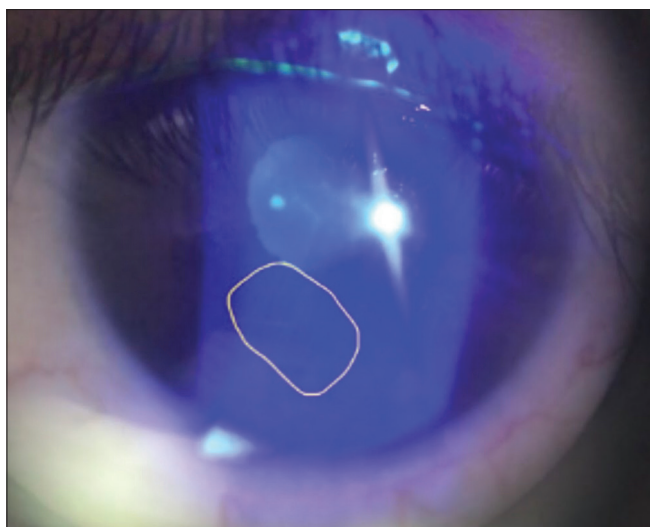


Figure 2: Superficial multiple linear corneal abrasion at the 5–6-o'clock position in the left eye measuring approximately 3 × 2 mm

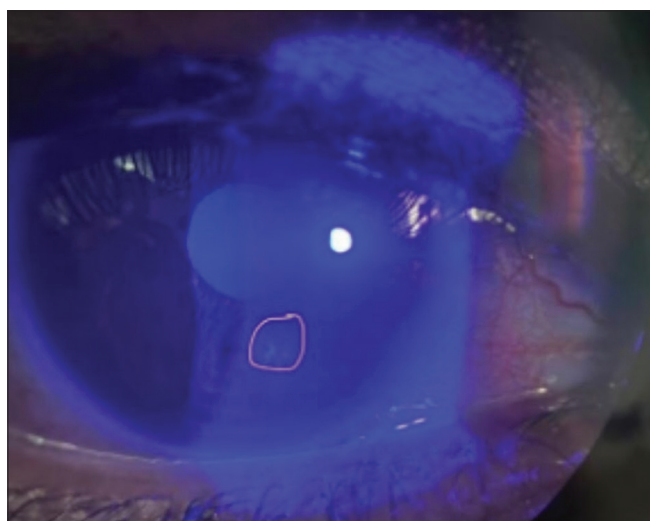


Figure 3: Corneal abrasion at the 6-o'clock position in the right eye measuring approximately 2 mm in diameter

within clinical areas. One should adapt to the present pandemic situation and aim to avoid edges of the face mask injuring the cornea while removing or adjusting the mask^[6] as they can cause injury, as elaborated in the cases described. Sleep masks are known to be a cause of recurrent epithelial erosions.^[7] Masks can be associated with increased evaporation of tears and ocular irritation.^[3,8] In addition, continuous positive airway pressure (CPAP) is known to cause the aforementioned ocular effects.^[9] Thus, it is important to be aware of possible mask injuries, which can be worsened by an already compromised cornea. We suggest that while adjusting or removing the mask, only the loops/bands are used. As an additional precaution, the eyes may be closed while removing or adjusting the mask. Furthermore, to avoid sudden movement of the mask, a micropore tape can be applied over the mask on the nasal bridge. We postulate that, as ophthalmologists and other healthcare workers have easy access, they undergo thorough examination immediately. We would suggest that the general population should consult an ophthalmologist in the event of a mask-related eye injury and undergo a thorough examination to prevent any untoward effects later. A health advisory regarding possible injury by masks can be issued among healthcare workers and the general population.

Conclusion

Though masks are imperative during the COVID-19 pandemic, they need to be used with care and it is important to be aware of a possible mask injury.

Declaration of patient consent

Consent to publish the cases and images was gathered.

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Conflicts of interest

There are no conflicts of interest.

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