

Mask-associated dry-eye in COVID-19 pandemic: A case report and review of the literature

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Abstract

Mask-Associated Dry Eye (MADE) has been showing a rising trend during COVID 19 pandemic. This phenomenon seems inevitable, as wearing a face mask is a requisite part of personal protective measures to suppress of the spread of virus. However, simple expeditious awareness among health care staff, including the general population, can decrease the incidence.

Keywords: Dry eye disease, COVID 19 Pandemic, Post-operative complications.

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Introduction

COVID 19 pandemic has drastically impacted the lifestyle worldwide, mandating wearing a face mask by everyone, particularly in a hospital setting.¹ Previous studies have reported that eyes are more prone to dryness post-operatively.²⁻⁴ Recently, dry eye is thought to be exacerbated by a loosely fitted face mask.² We present a case of a male patient who developed Mask-Associated Dry Eye (MADE), which was promptly identified and managed.

Case Report

A 57-year-old male patient presented in February 2021 to the Ophthalmology Clinic at the Aga Khan University Hospital, Karachi. He was diagnosed with bilateral cataracts for which he underwent right eye cataract surgery followed by left eye cataract surgery one week apart. Patient underwent routine phacoemulsification cataract surgery with multifocal intraocular lens (IOL) replacement under local anaesthesia. Post-operative recovery was uneventful and visual acuity was 6/6 in both eyes on 1st post-operative day. The patient stayed at home for three days following the second surgery then returned to work.

One week after returning to work, he presented with bilateral gradual decrease in vision with mild pain and discomfort in both eyes. His vision dropped to 6/30 in the right eye and 6/15 in the left eye. Upon examining his

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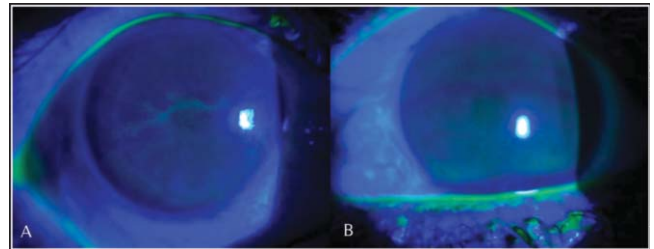


Figure-1: A) Right eye fluorescence staining showing superficial punctate erosions and pseudodendrites. B) Left eye showing diffuse superficial punctate erosions.

eyes conjunctiva was clear with no congestion; there were no anterior chamber cells or hypopyon, therefore, the possibility of Toxic Anterior Segment Syndrome (TASS) or endophthalmitis was improbable. The vitreous was clear, with a flat retina in both eyes. Fluorescence staining of the cornea showed multiple diffuse 4+ superficial punctate erosions (SPE) in both eyes (Figure-1). Our suspicion towards drug toxicity was least as patient had been using post-operative topical moxifloxacin and steroid eye drops in both eyes well before the appearance of SPEs without any side effects. Eyelid examination was normal, and exposure keratopathy was ruled out.

On careful general examination, it was observed that the patient was wearing a face mask that was loosely fitted over the face. He started wearing the face mask only after returning to work. A diagnosis of Mask-Associated Dry eye (MADE) was considered.

He was advised to wear a face mask using paper tape to make sure it firmly adheres to the skin. He was given lubricating ointment and hourly autologous serum drops that improved SPEs on next visit (Figure-1). He was thoroughly guided about the detrimental effects of wearing mask inappropriately and its concurrent

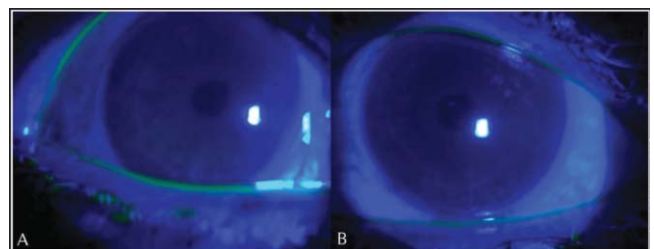


Figure-2: A) Right eye & B) Left eye, showing clear cornea with resolved Mask-Associated Dry Eye (MADE).

consequences on cornea. At the next follow-up visit, his condition resolved completely (Figure-2) with visual acuity being 6/6 unaided for distance and N6 unaided for near.

Discussion

There have been numerous aetiologies identified for the dry eyes and a new phenomenon termed as, MADE has been recently added to the list. Dry eye symptoms can vary from eye burning, pain, blurry vision, redness, foreign body sensation and epiphora.⁵

Development and exacerbation of dry eyes post-operatively in patients after cataract surgery is well documented.^{6,7} Intraoperative measures can contribute in immediate post-operative dryness; these measures include repeated drying/irrigation of cornea, use of frequent eye drops, phototoxicity, or surgical trauma causing corneal nerve transection. The elevation of inflammatory factors (proteolytic enzyme/cyclooxygenases), goblet cells loss and Meibomian gland dysfunction have all been postulated in the causation of dry eyes.^{3,8} Additional stimulating factors can lead to worsening of the existing symptoms.

It is postulated that a loosely fitted mask at the nose bridge permits exhaled air to make its way to the cornea, leading to aero-pharyngeal droplets inoculating at the corneal surface and evaporation of the tear film.^{2,9} In some cases, it can increase the risk of endophthalmitis post intravitreal injections.¹⁰ Topical anaesthetic drops used before cataract surgery can decrease blinking and corneal sensation, and sometimes the edge of the face mask can accidentally touch the corneal surface with the patient being unaware. Simple measures can help overcome MADE, including wearing face masks with spectacles or fitted goggles, carefully taping the top edge on the nose, and lubricating eye drops.¹¹

Conclusion

This patient had higher tendency of developing MADE because of his recent cataract surgery. However, it resolved with appropriate lubrication and the use of properly fitted mask. Considering multifactorial causes of

dry eyes, MADE should be kept in the differential diagnosis of dry eye disease during COVID 19 pandemic. Awareness regarding properly fitted face masks should be disseminated to prevent undesired post-operative outcomes.

Consent: Patient's written consent was obtained for publishing his case.

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Conflict of Interest: None.

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