

What ophthalmologists should know about conjunctivitis in the COVID-19 pandemic?

We are amidst a pandemic of COVID-19/SARS-CoV-2 and we have currently had over 3500 infected patients in India^[1] and over 1.2 million all over the world.^[2] What started off as a respiratory infection, presenting as pneumonia of unknown origin in Wuhan in December 2019,^[3] has given rise to a large spectrum of manifestations, leading to significant morbidity and mortality since then.^[2]

As ophthalmologists, even though we are not primarily involved as front-line healthcare professionals handling this pandemic, we have been in the news right from the early days of its onset.^[4,5] Ophthalmologists have been infected and have unfortunately even succumbed to COVID-19.^[5,6] A report of one of them being possibly infected through the ocular mucosa and then developing systemic symptoms^[4] gave rise to widespread panic, opening up the possibility of COVID-19 manifesting initially as conjunctivitis and the further likelihood of disease transmission through ocular secretions of infected patients.^[7,8]

Several countries have been laying down their protocols to prevent transmission in their ophthalmic healthcare set-ups.^[9,10] Routine out-patient visits and elective surgeries have been advised to be suspended by ophthalmic societies across the world.^[11,12] As healthcare professionals, it is our duty to attend to our patients requiring emergency ophthalmic interventions during this pandemic. Apart from ocular injuries, keratitis and retinal causes of acute vision loss, conjunctivitis has been one of the common presenting complaints of patients presenting for an emergency consultation. Though every patient in the present scenario could be a potential source of COVID-19, patients with conjunctivitis are being treated with greater fear, due to two reasons. First is the possibility of this condition being a presenting symptom of COVID-19 and second, the probable risk of transmission from tears from these patients.^[13,14]

Hence, the question “Is there a consensus on how to safely manage the present wave of conjunctivitis cases?” is doing the rounds among ophthalmic fraternity. *‘I think that when we actually live in uncertainty, we ought to first admit it; it is of great value to realize that we do not know the answers to different questions. This attitude of uncertainty is vital to all of us in going ahead with the current situation’.*

We cannot treat every one of these patients with equal level of suspicion utilising full personal protective equipment (PPE) or not treat any and refer all of them to a COVID-specific hospital, delaying ocular treatment until resolution of the viral illness. We have to find a balance between maximum possible ophthalmic treatments to provide adequate care to our patients while maintaining minimum possible risk of transmission. We also need to take into consideration, the extent of available resources nationally, in the form of PPE and avoid depleting them unnecessarily. We need to keep abreast of the scenario and keep modifying our consensus to suit the situation at different time points from now.

Through this article, we will try to shed light on the association of ocular mucous membrane with COVID-19 based on available literature and then provide an algorithmic approach to ophthalmologists on safely managing conjunctivitis during this pandemic. Conjunctival involvement in the form of congestion with watering has been noted even with the previous corona virus pandemic in 2003-04,^[15] but was not explored further. With the onset of COVID-19 pandemic, reports of association of conjunctival congestion in a few patients who tested positive for COVID-19 started emerging.^[4] Some hypotheses for route of spread have been proposed, ranging from a direct ocular mucous membrane inoculation of virus, to spread through lacrimal duct through nasopharynx and systemic spread to ocular surface through lacrimal gland, although none of these are proven.^[16]

In a study done on 30 COVID positive patients in Zhejiang,^[17] one patient was noted to have conjunctival involvement and conjunctival swabs taken early in the course of the disease were positive for SARS-CoV-2 by RT-PCR. Wu *P et al.* from Guangzhou^[18] reported conjunctival congestion in 12 out of 38 patients, with conjunctival swabs of 2 patients showing positivity for SARS-CoV-2 by RT-PCR. This study^[18] showed conjunctival involvement in more severely ill patients with COVID-19, unlike the previous study,^[17] which showed involvement in non-severe COVID-19 patient.

While the above two studies^[17,18] raised possibility of transmission of virus through the tears of these patients, another study done on serial tear samples of 17 patients in Singapore,^[19] could not demonstrate RT-PCR positivity of tear samples at any time point, though one patient had conjunctival redness during the course of the illness.

‘Although our intellect always longs for clarity and certainty, our nature often finds uncertainty fascinating’ – Carl von Clausewitz. The existing literature shows interesting variability in conjunctival involvement as well as tear positivity for the virus in COVID positive patients. Nevertheless, even if the possibility of transmission through ocular secretions is miniscule, we cannot let our guards down. Appropriately protecting our ocular, nasal and oral mucosa is a must while treating any patient suspected of COVID-19.^[20]

Since we know the association of conjunctivitis with COVID-19 symptoms including fever, cough or breathlessness and possibility of viral shedding through tears, a meticulous algorithmic approach to conjunctivitis during this pandemic is necessary [Figs. 1 and 2]. As anosmia and ageusia have been shown to be associated significantly even in the early asymptomatic stages of the disease,^[21] we have included these in the screening questions.

Fig. 1 shows a step wise approach to a patient presenting with presumed infective conjunctivitis during this pandemic. The backbone of this approach is three-pronged. First is protecting ourselves and our hospital staff from getting infected, second is providing maximum possible appropriate treatment to the patient while minimising risk to other patients and third is our role in controlling the pandemic by screening patients, maintaining patients’ contact details/symptom survey, keeping track of them and providing them appropriate guidance/referral to COVID testing/quarantine centres.

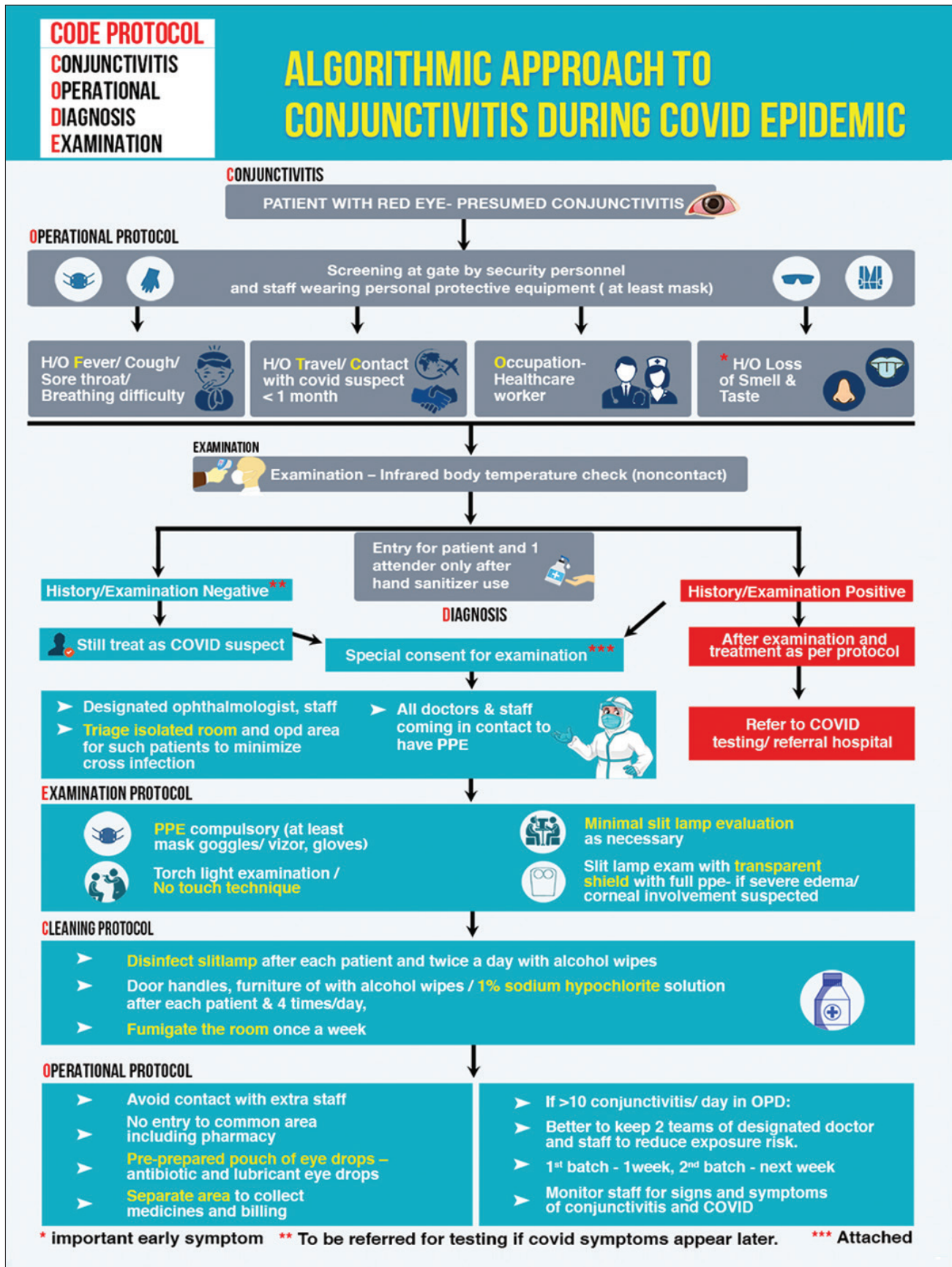


Figure 1: Algorithmic approach to management of conjunctivitis during COVID-19 pandemic (The algorithm is based on current understanding of COVID and is subject to change with evolving knowledge)

CODE PROTOCOL
CONJUNCTIVITIS
OPERATIONAL
DIAGNOSIS
EXAMINATION

ALGORITHMIC APPROACH TO CONJUNCTIVITIS DURING COVID EPIDEMIC

FOLLOW UP OF PATIENTS

- Call patient after 2 weeks unless very severe
- Can do emergency consultation / follow up online / on phone as advisable (refer telemedicine guidelines)

After 5 days

Symptomatically better?

Yes

Continue same treatment

No

- Upper respiratory Infection with conjunctivitis (not suggestive of COVID)- Add Tab Azithromycin 500 mg OD for 5 days
- Worsening symptoms of fever/sore throat etc - refer to physcian / Covid referral hospital
- Continue topical antibiotics, add topical steroids only if necessary
- Avoid oral Ibuprofen , prefer oral Paracetamol for symptomatic relief

Figure 2: Approach to follow-up after initial treatment of conjunctivitis during COVID-19 pandemic

Maintaining adequate social distancing, during initial screening at the triage area, in addition to what is mentioned in the algorithm, appropriate history to rule out allergic/seasonal and toxic conjunctivitis and looking for presence of circumcorneal congestion or anything else prominent enough on torch light to indicate any other serious organic eye pathology is a must.^[22] The final treatment package the algorithm provides is targeted towards the most common causes, which is viral/bacterial conjunctivitis. For simple straight forward epidemic conjunctivitis, medications can be provided without further examination.

Further examination on a slit lamp after screening should be as far as possible, a no-touch/non-contact technique and is better if both the doctor and patient do not speak during the examination to avoid cross infection. The extremely important schedule of cleaning/disinfecting instruments and examination room has been mentioned in the Fig. 1.

A combination of an antibiotic and a lubricant, e.g., Ciprofloxacin hydrochloride 0.3% or Moxifloxacin hydrochloride 0.5%, 4-6 times a day for two weeks and carboxymethyl cellulose 0.5% or sodium hyaluronate 0.1%, 4-6 times a day for 2 weeks, can be a standard pre-prepared package so that it can be dispensed immediately to the patient. This obviates the need for the patient to go to the common pharmacy area. For analgesia, non-steroidal anti-inflammatory drugs (NSAIDs) such as Ibuprofen is better avoided as they have been shown to worsen the systemic effects of COVID infection^[23] and oral Paracetamol can be added instead. It is best to avoid topical steroids during the pandemic as far as possible, as we may not be in a position to bring patients back for frequent follow-ups to monitor intraocular pressure. Follow-up schedule and plan is detailed in Fig. 2.

Oral Hydroxychloroquine (HCQ) has been shown to be effective in decreasing the viral load in systemic COVID-19 infection and its effects are enhanced in association with Azithromycin.^[24] HCQ, the drug used in malaria, is proposed to work in this condition, by inhibiting viral attachment and RNA fusion inside the host cells.^[25] With relevance to ophthalmology, Chloroquine eye drops (0.03%) is available and has been studied in dry eye disease in a twice daily dosage with no reported adverse events over a 28-day period of use.^[26] By an extension of its systemic effect, this could probably be used as a potential agent in the treatment of conjunctivitis caused by enveloped viruses including COVID-19. This interesting application however requires further studies before it can be brought to clinical use for this condition.

Oral HCQ has also been recently approved for prophylactic use by ICMR (Indian Council of Medical Research) in health care workers and in people caring for covid-19 patients.^[27] However, in those with renal/hepatic damage, pre-existing retinal damage, G6PD deficiency, cardiac arrhythmias and those on tamoxifen hormone therapy, caution needs to be exercised as it can cause serious adverse events.^[28] The significant adverse event of retinal toxicity is known to occur only when daily dose exceeds 6.5 mg/kg and cumulative duration exceeds 5 years.^[28] As ophthalmologists, we should be able to dispel concerns/fears in our colleagues of other specialties about retinal toxicity in such short term prophylactic role.^[29]

Ophthalmologists treating conjunctivitis patients during this pandemic can opt to have oral HCQ prophylaxis as advised by the ICMR.^[27] In practices where there are multiple specialists, the administration can plan weekly rotations for ophthalmologists

in charge of triage clinics and conjunctivitis care, followed by a week of self-quarantine. Furthermore, these care-givers should be monitored closely for any symptoms of COVID-19.

It is important to know the relevant consent to be obtained during such pandemics. Whenever a patient is to be brought inside the out-patient area during the pandemic, it is important to get a consent signed by the patient, in order to keep the patient informed of his/her responsibility as a responsible citizen and the potential risks he/she is signing up for. We suggest that the All India Ophthalmological Society Consent Form be used for this purpose [Supplementary Fig. 1].^[30]

We hear from several ophthalmologists, that out of anxiety and fear of something new, there is a lot of confusion on how to manage these cases of conjunctivitis at this point of time. *'Of course, you learn from certain moments, and you always get more and more experience, so may be in the future you will do some different things, but in general, the basics always stay the same.'* – Max Verstappen.

The basics of managing conjunctivitis still remain the same and it is beyond the scope of this article to reiterate the general overview of management of conjunctivitis, which is familiar to all of us.^[31] The algorithmic approach is to be utilised in conjunction with your existing experience of management of conjunctivitis patients. Do not hesitate to take assistance from your state ophthalmic societies or AIOS whenever there is a requirement or query. Let us work together positively to fight the pandemic and protect ourselves, our patients and the world.

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Dr Shetty is on the Editorial Board of the Journal of Refractive Surgery and IJO. We are grateful to him for his high-quality scientific contributions to IJO and for working on this informative Guest Editorial at a short notice.

COVID-19 Pandemic Emergency Ophthalmic Treatment Consent Form

Patient name: _____

Age : _____

I understand the novel coronavirus causes the disease known as COVID-19. I understand the novel coronavirus virus has a long incubation period during which carriers of the virus may not show symptoms and still be contagious.

During the lockdown in the wake of the current Corona companion, I have come to the hospital by myself for Emergency Treatment.

I have been made aware of the fact that under the current pandemic all non-urgent ophthalmic care is not allowed.

If I am an asymptomatic carrier or an undiagnosed patient with COVID 19, I suspect it may endanger doctors and hospital staff. It is my responsibility to take appropriate precautions and to follow the protocols prescribed by them.

I am aware that I may get an infection from the hospital or from a doctor, and I will take every precaution to prevent this from happening, but I will not at all hold doctors and hospital staff accountable if such infection occurs to me or my accompanying persons.

In case I or my attendant get the COVID 19 infection after the visit to the hospital, I will inform the hospital authorities at the earliest, so that appropriate tracking of the patients/attendants and hospital staff present on the day of my visit can be done.

I verify the information I have provided on this form is truthful and accurate. I knowingly and willingly consent to emergency treatment completed during the COVID-19 pandemic. If I hide my facts and relevant details and because of my knowing or unknowing behavior or action the hospital staff gets infected, I may be held responsible for appropriate compensation in the court of law.

SIGNATURE/THUMB IMPRESSION OF PATIENT

Name _____ Date _____

Mobile No.: _____

Address: _____

Name of the Attendant: _____ Date: _____ Mobile No. _____

Signature of the Attendant

Name of the Doctor/Hospital Personnel _____ Date: _____

Signature of the Doctor/ Hospital Personnel

Supplementary Figure 1: COVID-19 pandemic emergency ophthalmic treatment consent form