



Short communication

Sustaining private eye care practices during initial days of the coronavirus pandemic

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ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic created new challenges for private eye care practices. Safety issues were encountered by both the healthcare workers and patients. This short communication addresses the changes made in our private eye care practice during the pandemic and the valuable lessons learned for the future.

Methods: We describe the challenges faced at our tertiary private eye care practice in India with respect to treating patients and preventing the transmission of COVID-19, considering the economic hardship within this area. We discuss the emerging economic, medical, legal, educational, and psychological issues and their solutions, which eye care hospitals could follow in the future to ensure safety without compromising quality of care.

Results: Eye hospitals required efficient operation with reduced fixed expenses. Clinical practices were followed in the hospital as per the recommendations of the country's apex ophthalmic body. Proper triage and prescreening of patients at the entrance, digitalization, teleophthalmology, staggered appointments, and role-appropriate personal protective equipment were important preventive measures. The operating room protocols were modified to ensure the safety of the operating staff. Special consent was obtained from patients to safeguard against legal repercussions arising from the pandemic. The training of residents and fellows led to new avenues, including the use of digital tools. Hospitals attempted to provide counseling and psychological support to their doctors and staff during these trying times.

Conclusions: The COVID-19 pandemic will not be the last pandemic to occur in an ever-changing world. This event provided us with many new insights into the economic, clinical, legal, and psychological challenges of the COVID-19 pandemic and with ways to overcome these challenges and emerge intact. Clinical and surgical training suffered during the pandemic; however, the impact was only temporary. Clinical research gained respect because of the efforts undertaken during the pandemic. The pandemic was exceptionally harsh on many private eye care practices, and we hope to provide useful and comprehensive solutions on how to successfully navigate a similar situation if encountered in the future.

KEYWORDS


coronavirus disease 19, COVID-19, severe acute respiratory syndrome coronavirus 2 infection, SARS-CoV-2, ocular surgery, ophthalmologist, sustainable development goal, private practices, India

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INTRODUCTION

The field of ophthalmology was a rapidly growing specialty until the emergence of coronavirus disease 2019 (COVID-19), which is caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) [1]. During this time, many individual ophthalmic practices were closed, and survival was difficult for larger ones. To stem the spread of disease and avoid overwhelming the healthcare infrastructure, the Indian government imposed home confinement on March 24, 2020, which was gradually lifted beginning on June 1, 2020 [1].

Home confinement significantly reduced the patient volume within hospitals. According to a recent online survey of ophthalmologists in India, only 27.5% of respondents were seeing patients during the home confinement, and cases were limited to ocular emergencies such as trauma, retinal detachment, and endophthalmitis [2]. Home confinement, however, was not a permanent solution to the problem. The home confinement was imposed when India became one of the four most affected countries in the world and the number of infected cases reached a half million [3].

In the absence of government economic bailouts, most private eye care practices, regardless of scale, had a difficult task of recovering their losses incurred during the months after the onset of the COVID-19 pandemic. This led to various temporary and permanent changes in the functioning of private ophthalmic practices [4]. Ophthalmic practices were more significantly affected than other surgical specialties owing to the close contact that ophthalmologists have with their patients [4].

Research has suggested that conjunctivitis is a rare manifestation of COVID-19 [5, 6]. SARS-CoV-2 can be isolated from the tears of infected patients with [7, 8] or without [9-11] conjunctivitis. Approximately 80% of persons testing SARS-CoV-2-positive are asymptomatic, as per the Indian Council of Medical research (ICMR) [12]. Dr. Li Wenliang, an ophthalmologist, died of COVID-19 in Wuhan on February 7, 2020, after contracting it from an asymptomatic patient with glaucoma [13]. Table 1 lists the ocular manifestations associated with COVID-19 [14-21].

The main challenge for private eye care practices was to balance the protective measures required to restart practice with the additional financial, legal, and psychological burden of these measures during the pandemic [22]. This article outlines the measures that private eye care practices can sustainably follow, using our own experience during the COVID-19 pandemic in a private tertiary eye care center in Bengaluru, India, practicing within the purview of constantly evolving national guidelines.

METHODS

In this short communication, we share our experiences regarding the challenges in treating patients while maintaining additional safety measures to prevent transmission of COVID-19 in a private tertiary eye care center in Bengaluru, India. We debate details of the emerging economic, medical, legal, educational, and psychological issues and their solutions, which eye care hospitals could follow in the future to ensure safety without compromising quality of care. The hospital ethics committee approved this study. The Narayana Nethralaya Ethics Committee, with approval number EC reference NO C/2020/09/09 (virtual), approved the study. All tenets of the Helsinki Declaration were observed.

RESULTS

During the COVID-19 pandemic, our hospital was required to function efficiently with reduced fixed expenses. The hospital adhered to the recommendations of the All India Ophthalmological Society during the pandemic.

Table 1. Ocular manifestations associated with coronavirus disease 2019 [14-21]

| Author (Year) | Ocular manifestations |
|-----------------------------------|---|
| Sanjay et al. (2023) [14] | Viral keratouveitis. |
| Mahendradas et al. (2022) [15] | Bilateral post fever retinitis with retinal vascular occlusions. |
| Sanjay et al. (2021) [16] | Bilateral panuveitis, papillitis, and central retinal artery occlusion. |
| Sanjay et al. (2021) [17] | Reactivation of a quiescent unilateral anterior uveitis. |
| Sanjay et al. (2021) [18] | Central serous chorioretinopathy. |
| Ling et al. (2020) [19] | Ocular surface symptoms. |
| La Distia Nora et al. (2020) [20] | Conjunctivitis. |
| Aggarwal et al. (2020) [21] | Ocular pain, redness, discharge, and follicular conjunctivitis. |

Critical preventive measures included proper triage and pre-screening of patients at the entrance, digitalization, tele-ophthalmology, staggered appointments, and role-appropriate personal protective equipment (PPE). Operating room protocols were altered to ensure safety of the surgical staff. Obtaining special consent from patients was imperative to safeguard against legal risks pertaining to COVID-19. Training of residents and fellows continued despite the decreased patient volume. The hospital provided counseling and psychological support for the doctors and staff under the challenging circumstances. Clinical research gained respect because of the efforts undertaken during the pandemic. The pandemic was exceptionally harsh on many private eye care practices, and we hope to provide useful and comprehensive solutions on how to successfully navigate a similar situation if encountered in the future. We discuss the emerging economic, medical, legal, educational, and psychological issues in our private eye care practice during the pandemic and the valuable lessons learned for the future.

DISCUSSION

Economic measures

Elective procedures, such as cataract and refractive surgery—the primary revenue generators in ophthalmology—were postponed during the home confinement [2]. An industry survey conducted in the United States revealed that ophthalmology lost 81% of its patient volume in March–April 2020, more than any other specialty, with reductions in cataract surgeries of 97% and in glaucoma procedures of 88% [23]. Although private ophthalmic practices sought to resume elective outpatient (OPD) and operation theater (OT) practices after the restrictions were relaxed, many ophthalmologists were unsure of the prevailing guidelines for resuming elective surgeries, given the extreme fluidity of the situation [2].

Patients avoided visiting the hospital out of fear of exposure to the virus, and they preferred to postpone elective surgeries because of limited time and money [24, 25]. The performance of expensive procedures such as refractive surgery, premium intraocular lens surgery, and cosmetic procedures such as botulinum toxin injections plummeted during the following economic recession [26, 27]. The cost of PPE and intensified sanitation measures further increased the fixed hospital expenses [28]. Hence, the hospital required cost-efficient operation with an ethical increase in revenues.

Measures to reduce expenditures

Rental payments were postponed by many ophthalmic practitioners, citing the clause of “force majeure”. Other payments for bills and maintenance of ophthalmic instruments were similarly postponed in communication with the vendors [29]. Private ophthalmic practices had to consider a temporary release of unused space to the property owners, thereby eliminating a non-performing asset [29]. Purchases of new equipment were also delayed.

At our center, air conditioning costs were reduced by keeping doors open in general seating areas for ventilation and sanitation reasons, and by operating at reduced capacity, except at OT and diagnostic facilities.

Individual practitioners collaborated with larger centers such as ours to pool their resources, reduce individual costs, and increase collective revenues to stay afloat [29].

The employees—both doctors and paramedical staff—as well as the employers were requested to shoulder graded pay cuts for a few months until revenues returned to pre-pandemic levels [29]. These deductions ranged from 30% to 50% for low earners, 50% to 70% for medium earners, and as much as 80% to 100% for high earners and management. Yearly increments and bonuses were deferred or canceled [29].

We discovered ways to stagger staffing, justify pay cuts, conserve the scarce PPE, and multi-task with our available staff to work more efficiently.

Measures to supplement income

Doctor consultation fees and certain procedural charges were increased to compensate for the increased cost of PPE incurred by the hospital, while pricing of some elective procedures was reduced to promote access to cash-poor clients [29] and to protect low socioeconomic groups.

The hospital aggressively pursued reimbursements from third party administrators and government panels such as the Central Government Health Service and Ex-Servicemen Contributory Health Service, which reimburse hospitals after procedures (sometimes after a few months) [29].

The medical staff were asked to work extra hours, including weekends and public holidays, to increase patient access, and appointments were staggered to avoid overcrowding. Vulnerable staff were redeployed into areas not involving direct patient care, such as medical records and research.

Tele-consultation was used to maintain contact with patients and to generate some revenue [30].

Clinical measures

Expert ophthalmic committees formulated extensive guidelines in consensus with those issued by the Ministry of Health and Family Welfare of India, regarding safety protocols for emergency and elective OPD and OT during the COVID-19 period [31]. Below are summaries of the protocols followed at our tertiary eye hospital.

Out Patient Department (OPD) measures

Appointments: Patients were requested to make appointments before visiting to ensure spacing of visits, limit the number of appointments per hour, and reduce waiting time for patients. For the initial few months, the number of in-person appointments was reduced, and patients were actively encouraged to seek tele-consultation for follow-up or minor eye problems [32].

COVID-19 screening and triage: All patients and hospital staff underwent mandatory COVID-19 symptom pre-screening and triage at the hospital entrance. Anosmia with or without dysgeusia was found in nearly 50% of infected patients; this was easily identified using substances such as coffee beans and garlic and served as an effective addition to screening [33]. Set protocols were devised for managing conjunctivitis cases [34]. These could be followed in charitable OPDs as well.

Digitalization: The hospital encouraged digital payments from the patients to reduce cash-related fomite transmission. Electronic medical records helped to minimize paper transactions. Lab reports and prescriptions were sent online to the patient and the pharmacy, respectively. During the pandemic, the government of India advised the public to use the Aarogya Setu™ mobile application [35] to monitor clustering of cases, aid contact tracing, and surveil quarantines, and our patients were asked to follow this advisory [36]. Protocols were issued for handling SARS-CoV-2-positive patients and for sharing contact information with the government for future tracing if cases emerged [37, 38].

Waiting and OPD areas: Aerosol-generating procedures such as non-contact tonometry [39] were avoided. An “open-door” policy reduced unnecessary touching of doorknobs and handles and improved ventilation [37]. Non-emergency cross-referrals were either avoided, arranged through scheduled appointments, or conducted telephonically with the sub-specialist. The laser indirect ophthalmoscope was preferred over the contact laser delivery system for retinal laser photocoagulation [28].

Tele-ophthalmology: This available but sorely underutilized tool was approved by the government of India in the wake of the COVID-19 pandemic [40]. Before then, it was primarily used in underserved areas through trained ophthalmic technicians for screening and referral of diabetic retinopathy [41], glaucoma, and retinopathy of prematurity. Patient satisfaction was high (88–99.8%), and reliability of diagnosis was comparable to that of slit-lamp examination [42]. Recent advances in smartphone-based tele-ophthalmology have extended these services into the mainstream [30]. Services include online applications for visual acuity assessment; online refraction tools; video-based examination of adnexal and surface diseases, ocular motility, pupils, red reflex, and corneal light reflex (performed by the patient as directed by the doctor); forwarding online/scanned examination reports for a second opinion; and refilling prescriptions for chronic eye diseases [43]. Many private ophthalmic practices built or borrowed a customized application in which patients could book online appointments and conduct video consultation. We utilized a similar customized smartphone-based application for our patients [30]. It was successfully used during the home confinement and will continue to be used to advise patients of hospital visits, procedures, and surgery; to follow patients with chronic stable eye diseases such as glaucoma and uveitis; and to encourage patients who are reluctant to visit the hospital, are unable to travel due to restrictions, are quarantined or isolated, or have no time to visit the hospital [30]. These services were provided free of cost to the patients during the home confinement and could be appropriately billed within their scope and limitations as per the prevailing government guidelines [40].

Extensive cleaning of equipment and spaces: All India Ophthalmological Society protocols were used in cleaning the commonly used surfaces and equipment during the COVID-19 pandemic [28, 37, 44]. The manufacturer’s guidelines were followed to effectively clean the equipment without damaging it. Ultraviolet (UV) light has disinfectant action against respiratory viruses, and various UV disinfection chambers, such as CoronaOven™ (Log 9 Materials, Bengaluru, India), were indigenously developed to disinfect and re-use N95 masks, eye goggles, and shields, and to bridge the gap in PPE availability [45]. This method was actively used at our tertiary eye care center.

Operation theater (OT) measures

Elective surgeries for patients with suspected or confirmed COVID-19 were postponed until after recovery. For emergency surgeries, patients were referred to a government-designated COVID-19 facility with an intensive care unit.

All surgeries were preferably outpatient, limiting hospital exposure.

The aim was rapid and safe surgery, following all universal precautions [31, 44, 45]. Surgeries during off-hours or with an incomplete team were avoided.

Between consecutive cases, a time gap of 20 min was maintained in which the OT table, equipment, and carts were cleaned, and the surgeon rescrubbed and changed gowns. For high-volume surgeries, such as cataract surgery, two separate OTs were used alternately.

Surgeries mandating general anesthesia were avoided unless necessary. In general anesthesia cases, the operating team (except the anesthetist and assistant) entered the OT 20 min after intubation and waited outside the OT during extubation [46].

The hospital provided fresh 3-ply surgical masks for all patients undergoing major or minor procedures. A povidone-iodine gargle (1:30 dilution in water) for 15 s has high in-vitro virucidal efficacy against respiratory viruses such as SARS-CoV-2 and Middle East respiratory syndrome coronavirus [47]. Patients were asked to perform povidone-iodine gargles before coming to the hospital to reduce their oropharyngeal viral load for 4–6 h. The virucidal efficacy of povidone-iodine in adenoviral conjunctivitis has been established [48]. Hence, instillation of povidone-iodine 5% into the conjunctival sac for 3–5 min prior to ocular surgery can reduce viral transmission from the ocular surface [49].

COVID-19 testing

According to the latest ICMR guidelines, pre-surgical COVID-19 testing with reverse-transcriptase polymerase chain reaction (RT-PCR) is not mandatory for elective or emergent ocular surgeries unless the patient shows symptoms of COVID-19 [50]. Because many patients with COVID-19 are asymptomatic and the sensitivity of RT-PCR for SARS-CoV-2 from nasopharyngeal swabs ranges between 60% and 70% [51], all of our patients were operated with full precautions, assuming they were potentially infected [51]. Mortality and pulmonary complications are more common in patients who undergo surgery with perioperative SARS-CoV-2 infection [52]. Knowledge of the patient's COVID-19 status prompts stricter measures to prevent transmission. Asymptomatic patients were tested at the operating surgeon's discretion, particularly in those with systemic co-morbidities such as diabetes, hypertension, or cardiovascular, pulmonary, or renal diseases [53]; immunocompromised patients; and those undergoing general anesthesia procedures, aerosol-generating procedures, or oculoplastic procedures involving the nasopharynx (e.g., dacryocystorhinostomy) [46]. In our practice, nasopharyngeal and oropharyngeal sample collection for COVID-19 RT-PCR testing was provided at the hospital in collaboration with a laboratory recognized by the National Accreditation Board for Testing and Calibration Laboratories for RT-PCR testing [54], providing safe and convenient RT-PCR testing for the patients undergoing emergency or elective surgery.

Eye banking guidelines

Unlike elective surgeries, the need for urgent tectonic or therapeutic corneal/scleral transplants persisted during the pandemic [55]. Eye banking activities continued through the conventional hospital cornea retrieval program, but excluding donors who were SARS-CoV-2-positive or had conjunctivitis, symptoms of COVID-19, computed tomographic evidence of SARS-CoV-2 lung infection, or history of travel to affected areas [56]. Home collection and collection from high-transmission zones were avoided. Our recovery technicians and doctors used PPE (including N95 masks, caps, face shields/visors, gloves, and gowns) while recovering the donor tissue [56]. The Eye Bank Association of India recommendations suggested that a nasal swab from the donor could be collected and immediately sent for RT-PCR COVID-19 testing at the laboratory [56]. Corneo-scleral rim excision was preferred over whole eyeball enucleation. Tissue was preserved in intermediate preservative medium, and if not utilized, was transferred to glycerol on the last day of preservation and kept in a deep freezer for future tectonic use until conditions improved. Tissue was quarantined for 48 h in the eye bank prior to its use for transplantation [56]. In cases of delayed or non-availability of corneal/scleral tissue, the threshold for tectonic/therapeutic corneal transplantation became much higher, and surgeons attempted to salvage the globe through measures such as cyanoacrylate gluing, multilayered amniotic membrane grafting, Tenon's patch grafting, and conjunctival flaps, even for large corneal melts [57].

Protection of staff

Staggered staffing: The doctors (general and sub-specialist) and staff attended work according to a roster, subject to evolving guidelines [29]. In our practice, this ensured social distancing and reduced the logistic burden of traveling without fully operational public transport. It also allowed extension of the workable timing of the

hospital (including weekends), staggering of patient appointments, and optimal PPE utilization. If the hospital needed to quarantine any of its staff and their contacts, a backup team would be available to allow the hospital to function. Staff that traveled from afar or those without personal vehicles were aided with transportation or lodging. Those staff who traveled from other states were required to self-quarantine before rejoining work, as per the individual state government policies [58].

Minimizing staff interaction: In our practice, staggered mealtimes, distant seating (1 m apart) [59], minimal talking during meals (when masks were not worn) [60], facial recognition biometry for attendance [61], and replacing inter- and intra-departmental meetings with video conferencing [62] were measures taken to reduce clustering of staff.

PPE: Role-appropriate PPE was important to ensure staff safety while minimizing waste of this precious resource [29, 31]. The PPE requirements for the ophthalmic OPD and OT doctors and paramedical staff at our tertiary eye care hospital were based on the prevailing guidelines during the pandemic [31, 46].

Chemoprophylaxis: The ICMR recommended hydroxychloroquine for health care workers caring for COVID-19 patients and asymptomatic contacts of confirmed cases [63]. Although clear evidence in favor of this age-old antimalarial drug remains lacking, hydroxychloroquine was used as post-exposure prophylaxis for ophthalmologists who unknowingly came into contact with a suspected/confirmed COVID-19 patient or who operated on a SARS-CoV-2-positive patient [64]. The decision to use chemoprophylaxis was left to the individual's discretion. Any contraindications to hydroxychloroquine use, such as pre-existing arrhythmias, allergy, and glucose-6-phosphate dehydrogenase deficiency, were excluded before administering the drug [65].

Personal precautions: In our practice, the staff were advised to avoid bringing any personal items to the hospital, to cover well with clothing and wear closed shoes, to avoid sharing food and cutlery, and to clean their phones and keys with alcohol swabs. They were advised to shower and change all clothing as soon as they reached home.

Protection of the patients

The patients' feelings of safety were important in outpatient consultation and operative procedures during the COVID-19 pandemic. In addition to the aforementioned preventive protocols, we attempted to minimize the durations of patients' hospital stays. Follow-up visits were preferably conducted using tele-medicine, and surgeries were performed on an outpatient basis [29]. We instructed patients on the instillation of dilating eye drops at home, and this was applied to follow-up cases unless contraindicated. COVID-19 testing before elective surgery gave the patients more confidence that in addition to extensive OT precautions, their fellow patients were also free of disease [51].

Legal measures

Hospitals were responsible for ensuring data security on tele-consultation to protect patient confidentiality [30]. A verbal and digitally signed consent and a precisely correct prescription were crucial [30]. The patients were given a disclaimer regarding the limitations of tele-ophthalmology and were advised to visit the hospital in case of non-resolution or worsening of the eye condition. Prescribing scheduled drugs online was not advisable in such scenarios [40].

Hospitals were advised to obtain a special COVID-19 consent form signed by the patients upon visiting the hospital or undergoing elective surgery during the pandemic [31]. This was done to avert any legal inconveniences or a "blame game" if a patient became infected. The risk of SARS-CoV-2 infection was clearly explained to the patient before elective surgery. The information allowed the patient to choose the timing of surgery with infection risk in mind.

Educational measures

Classroom lectures were replaced with online meetings to continue didactic training for residents and fellows [66, 67]. Webinars and virtual meetings with external faculty were useful for continuing education of ophthalmologists and trainees. The lost opportunities for up-skilling surgical performance owing to cancellation or deferment of OT activities could be partially compensated using virtual simulation platforms [66-68].

Hands-on instruction, in both the clinics and the OT, is an essential component of ophthalmic training [66]. Unfortunately, the active surgical training of residents and fellows was adversely impacted in many tertiary eye centers because of reduced surgical volume and exposure time [66]. Temporary suspension of outreach activities, such as ophthalmic camps, further limited training opportunities [24].

In similar times, training on surgical simulators and in wet labs (for cataract training, vitrectomy, and keratoplasty) has been used to help trainees build their surgical skills [66, 67]. Some institutes have also asked to extend the duration of training to compensate for the “lost” months [66].

Psychological measures

The practicing ophthalmologists in India reported financial and psychological concerns during the pandemic [69]. These were exceedingly stressful times for ophthalmologists, trainees, and staff. Nearly one third of responding ophthalmologists in an online survey reported some form of depression during this time, more so among the young and non-practicing [70]. Many ophthalmologists feared infecting their vulnerable family members and preferred to separate from them, further weakening their emotional support systems [70]. Through regular online meetings, our hospital management took steps to reassure employees about their safety, job security, and freedom from social stigma in case of infection [29]. The inclusion of doctors and staff in policy-making decisions was important in addressing the practical issues they faced [1].

On a positive note, the pandemic gave many doctors newfound time to pursue their hobbies, exercise, meditate, and spend time with their families. Many utilized this time to upgrade their skills through reading or online courses. A dramatic rise in COVID-19-related publications highlighted the importance of medical research and scientific reporting [71-73].

Our key message is that private eye care practices initiated novel measures to reopen their practices during the COVID-19 era. In this article, we have shared the experiences of a private Indian tertiary eye center in overcoming the challenges posed by the COVID-19 pandemic, in accordance with the extensive and constantly evolving guidelines formulated by the All India Ophthalmological Society and government policies. The hospital followed enhanced safety measures, enforced social distancing within the hospital, and balanced the financial burden of these additional measures with the marginalized revenues. The strength of this study is that we explored the different impacts of COVID-19 on the patients, health care staff, and institutions. However, our understanding of the long-term needs of the patients, in terms of socioeconomic concerns, is limited. The impact of the pandemic on other aspects of health care, such as financial resources, attrition of staff, and the mergers of smaller practices, are also subjects of concern. Further research could investigate the effectiveness of our proposed solutions in other health care facilities to yield more practical solutions for subsequent pandemics.

CONCLUSIONS

COVID-19 is certainly not the last pandemic to occur. The pandemic provided new insights into the economic, clinical, legal, educational, and psychological challenges posed and on ways to overcome these challenges and emerge intact. Some of these economic and clinical reforms have been continued even after the pandemic has passed. Because of measures taken to minimize the adverse effects on the mental health of the staff, they have emerged more resilient and teamwork oriented. Clinical and surgical training did suffer during the pandemic; however, this effect was minimized and transient rather than permanent. Clinical research has gained respect as a result of the efforts during the pandemic. The pandemic was exceedingly harsh on many private ophthalmic practices, and we, through our experience, hope to provide useful and practical solutions to successfully navigate any similar situations in the future.

ETHICAL DECLARATIONS

Ethical approval: This study was approved by the hospital ethics committee. The study was approved by the Narayana Nethralaya Ethics Committee, with approval number EC reference NO C/2020/09/09 (virtual). All tenets of the Helsinki Declaration were observed.

Conflict of interests: None.

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