



THINKING ABOUT OPHTHALMOLOGY IN THE ERA OF THE COVID-19 PANDEMIC

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ABSTRACT

There is no part of the health care system that has remained unscathed by the COVID-19 pandemic in terms of its organizational, scientific or medical models. The surgical specialties were called upon to analyse the concepts of urgency and deferrable, reconsider the procedures and the times for those, and to evaluate new and specific strategies for the remote and safe management of patients. The aim of this paper is to evaluate new and different approaches in the field of ophthalmology triggered by the COVID-19 emergency. We analysed literature and on line documents; key words for the research were: SARS-CoV-2, COVID-19, ophthalmology, ophthalmologist, eye, guidelines, and their combinations. We reported the results of the research according to the following topics: official society guidelines, suggestions and best practice according to research groups, management for specific subspecialties, medical education, telemedicine.

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1. Introduction

The COVID-19 pandemic has modified world assessment, in economic, social and health areas. It fell like a hurricane on all areas of medicine, from accidents and emergencies to cardiology, from intensive care to sensory specialties, such as ENT (ear, nose and throat), dentistry and ophthalmology.

Physicians and all healthcare givers have been called to face the responsibility of providing care and of protecting themselves, as well as the risk of becoming vector of the disease. The surgical specialties were then called upon to re-evaluate the urgent or deferrable concepts, reconsider the procedures and the times for those, create specific strategies followed by tight instructions on preoperative patient tests and on the use of personal protective equipment (PPE) by surgeons and staff, and to decide when it is no longer feasible to offer assistance.

Many health facilities abruptly blocked their activities, others have quickly reorganized the systems, and others have chosen the way of critical conscience and common sense, supported by the search for scientific knowledge, facing criticities for which nobody spent a word of steering. Furthermore, in Ophthalmology subspecialties, although vision must always be preserved, it has faced different levels of urgency, as it also necessary to face the great risk of contracting and spreading the infection due to being in close proximity to the patient.

While the available information on the presence and contagiousness of the SARS-CoV-2 in tears and conjunctiva can be contradictory [1], and scientific certainties have not yet been achieved and even, we are all looking for reference points. An online survey launched at the beginning of their lockdown assessed its effect on the ophthalmic practice of 1260 ophthalmologists and on patient care in India: the survey showed that ophthalmologists who still saw patients belonged to ophthalmic institutes, government and municipal hospitals, while private practice was for the greatest part nullified. Emergencies such as trauma, retinal detachment, and endophthalmitis accounted for 82% of surgery performed, and approximately 77.5% of the respondents had begun telephonic, e-mail, or video consultations or consultations over social media applications; elective surgery was practically suspended. Among the same respondents, 63% said they were unaware of the screening strategy or precautionary approach applied before resuming surgery and were waiting for guidelines.[2]

Many papers and websites addressed the characteristic of ocular involvement in SARS-CoV-2 infection [3-5] but the aim of this paper is to evaluate different managerial approaches all around the world in the field of ophthalmology triggered by the COVID-19 emergency.

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2. Methods

We analysed literature and on line documents, approaching PubMed, MedScape, ONE® Network, Google, Google Scholar; key words for the research were SARS-CoV-2, COVID-19 and ophthalmology, or ophthalmologist, eye, guidelines, and their combinations.

From PubMed we selected 358 papers with the keywords COVID-19 and ophthalmology, but most of them were related to clinical aspects of the disease, ophthalmology manifestation or treatment. Then “guidelines”, “prevention”, “management”, “organization”, “precaution” were added individually and in association among them to the string of research and 15 papers were selected. The research on the browser was improved adding “guidelines”, “prevention”, “management”, “organization”, “precaution”, and the recommendations of official scientific societies registered at the International Council of Ophthalmologists (ICO) were also revised.

Only abstracts and web site in English/French/German were reviewed and retrieved: when relevant, publications cited in the selected articles were also retrieved.

3. Results

From the vast selection of links, the most relevant entries were the allocated according to the criteria of each topic, as described in the following paragraphs.

Guidelines from authorities

Guidelines and behavioural recommendation from the national or official ophthalmology society came from the American Academy of Ophthalmology (AAO) [6], the French Society of Ophthalmology (SFO) [7,8], the Royal College of Ophthalmology [9], the American college of Surgeons [10], the Spain Society of Ophthalmology [11], the Canadian Ophthalmological Society [12]. All of them responded by means of precise and specific recommendation to ophthalmologists both in the general field of staff protection, such as the use of self-protective equipment and disinfection of instruments, and about recommended tracks and management of patients in specific subspecialties (cataract, glaucoma, vitreoretinal surgery as well as uveitis and retinopathy of premature etc.), namely AAO and SFO, provided specific indications, for example regarding vitreoretinal surgery for COVID-19 positive patients, sometimes written by national subspecialty societies [13-16]. In addition to measures for prevention of infection for staff and patients, these societies addressed all the issues concerning the taking charge of patients and assuring them the correct treatment. The main problem faced by ophthalmologists in clinical practice was in fact the limitation for office examination and surgical treatment for nonurgent cases. Therefore, in many fields such as glaucoma or intravitreal therapies for macular neovascularization or macular edema, the effect of not treating and mainly not evaluating has probably led or will result in serious and potentially irreversible visual loss. Ophthalmologists from different countries without a specific recommendation may also find suggestions for practice and self-protection on the reported website and this also offers the opportunity to compare different approaches.

Across countries there is a general agreement about the need to distinguish between urgent and not urgent procedures and to postpone or cancel non urgent ones; however, no clear and complete consensus is in place on what is urgent or elective.

Some societies also address the issue of ocular symptoms and manifestations directly related to SARS - CoV - 2 infection [9,17]; a complete overview is presented by Nguyen et al. [16].

The Indian Ophthalmological Society published two documents as preferred practices in the field of eye banking[18] and paediatric ophthalmology strabismus and neurophthalmological [19].

In Italy, the Society of Ophthalmology published on its web site general information about minimal requirements for practice. No guidelines or recommendations regarding clinical decision that could also offer support in a possible legal dispute [20]. The Society entrusted video messages from its president to inform members about the use of contact lenses, legal matters, provision of FFP2 masks and patient care.

In the Italian Society of Glaucoma (SIGLA) web site we found recommendations for performing visual field and ophthalmic imaging tests[21].

Guidelines by authors

Some authors highlighted the COVID 19 emergency on web sites that listed precautionary tips for medical staff and patients as well as managing the location and times for examination or of contact lens use [22-24].

The experience of the staff from the hospital in Bergamo, the epicentre of the COVID-19 in Italy enriched with knowledge from literature was offered to clinicians in order to recommend Ophthalmology practice to be reorganized in order to tackle COVID-19 [25]. The authors recommendation is mainly concerning non-pharmaceutical interventions, hygienic and personal protective equipment with the suggestion to postpone of non-urgent cases, and perform a triage for ophthalmic outpatient clinics. Lim et al reported their experience in Singapore in the only ophthalmology department supporting the National Centre for Infectious Diseases (NCID); they told us about the prevention of infection and management of COVID-19 positive and negative patients, but mainly they discussed the organization of their department from all the points of view, healthcare staff protection, management of the general population that is reliant upon to the hospital, offering workflows for suspected COVID-19 patients and inward and outward patients, communication and social distances, resilience and well-being of health care workers in such stressful situation[26]. Safadi et al. faced the consequences of a COVID 19 epidemic in the clinical practise of an eye hospital in Israel, starting from a personal contagion experience of one ophthalmologist and eventually actualizing to a practice behavioural protocol [27]. This paper is of interest from a practice point of view: it elaborates suggestions about personnel protective equipment, office and environmental devices, administrative procedures as specific survey and triage, organization of spaces and areas for personals and activities. It also provides protocols for specific services such as paediatric ophthalmology, neurophthalmology, retina, cornea, uveitis, cataract, glaucoma, optometry, oncology and oculoplastic.

Management of specific subspecialties

Surgical activities in this crisis were initially adapted for the lock-down policy and therefore reserved for urgent cases only, later towards a slow reopening of surgical rooms in those realities where lockdown was eased.

Many complaints have been raised about the possible consequences of postponed surgeries for unpredictable times; delays in treating sight-threatening conditions such as wet age-related macular degeneration (wAMD) and diabetic macular edema, but also glaucoma and in some cases cataract too, will give the bill in the near future. On the other hand, none of the ophthalmological societies have been able to give coherent and clear suggestions; the result is sometimes a misleading and potentially conflicting indication, causing pragmatic difficulties in every day practice [28]. Ethical and moral concerns and legal liability; as already said, preferred practice or guidelines would help health personnel to reassure themselves about additional causes of stress and guide practice on a scientific-funded path.

WAMD is a hot topic for the high effectiveness of available treatments and their indispensability in a pandemic emergency; the high volume of office examinations and injections is the major risk of this clinical issue and on web site and scientific literature the problem is extensively addressed.

General precautions were widely suggested in order to minimize the exposure of patients and healthcare staff to COVID-19, but the major topic is reducing the number of direct examinations (slit lamp, optical tomography, ocular angiography) and choosing protocols of treatment that reduce the burden of injections such as strict bimonthly treatment or steroids in low sustained devices [14, 29-36].

Lanni et al. reported their experience and suggestion in the management of ophthalmoplasty as operative protocols for the identification of priorities, tasks for patients and medical equip risk assessment, and recommendations for operating theatres [37].

Considerations about changing the approach to the management of choroidal melanoma is offered by Damato [38].

The procedure used for glaucoma offer us reasons for reflection and cues for adopting a conceptual and operative revolution in our working attitude [39].

Medical education

The epidemic changed educational methods and practice for medical students and residents: lessons and didactic were discontinued, as well as clinical grand rounds and clinical rotations, working time was cut to reduce exposure to the virus, surgical training was penalized for the elective procedures that accounts for the major part of our practice. Research was halted and laboratories closed.

In some countries residents were deployed to non-ophthalmic departments for taking care of COVID-19 positive patients or as substitutes for COVID-19 positive physicians [40].

Therefore, another challenge to be tackled is the relaunch of care expertise, education and research. Telemedicine and at-distance decision making can offer new strategies to educate and develop skills: video education as well as on line interactive lessons and calendar adaptation are already modifying academic scenarios in schools and at the university institution [41], which have to adapt with foresight and flexibility.

However, the educational proposal for residents is of great importance and they cannot forget the skills of practicing “how to do”, especially for surgical competences. The “culture of professionalism” [41] should be expanded on and must take into consideration the effects of altruism as potentially dangerous actions, regarding potential vehicles of the disease, due to the lack of COVID-19 testing and limited availability of PPE.

The Royal College of Ophthalmologists website in Great Britain dedicates a large amount of space to the issues of trainees and support strategies for recovery due to halted progression [42].

An interesting tool is offered by AAO [43]: a webinar about learning in Ophthalmology is presented and a document is linked with many other websites according to the topic of interest.

Telemedicine

Telemedicine, originally developed for reaching patients in rural or unreachable areas, is enforcing its importance mainly because of the social distancing measures; patients and payers have asked for a wider coverage and it demonstrated its effectiveness in those countries where traditionally it has been already implemented such as in Israel [27].

In COVID-19 scenarios it is ubiquitously recommended. Some societies dedicated a lot of space to this recommendation [6,9,27]. Saleem et al [44] examined the telehealth pathway of an ophthalmological patient. It showed to be of great help in the administrative area, in digital check-in and insurance procedures; although it is not simply applicable to all subspecialties, authors encouraged its use in oculoplastic, neuro-ophthalmology, paediatrics and retinal diseases.

Bowe et al reported on three-years of experience in telemedicine in paediatric ophthalmology and adult strabismus; they also included a table with their suggestions to enlarge such practice in more subspecialties, with specific items [45].

It is however clear to the ophthalmologist community that in our practice we need proximity and physical “in presence” examination of the patient [39] which in many circumstances is unavoidable.

Miscellaneous

More general information and even peculiar topics such as personal experience of the disease [46] or the role of leadership in crisis time [47] can be found on in several websites.

4. Discussion

The COVID-19 pandemic led to international communities having to face different aspects of the infection, from specific ocular involvement to managerial and organizational aspects to guarantee medical staff and patients’ safety [48].

Some of the national ophthalmological societies provided recommendations to guide ophthalmologists in their practice [3, 49]. Practice in ophthalmology has been severely tested by the COVID-19 epidemic [50].

While some countries are still overwhelmed with the spread of these emergencies and have to deal with primary care needs, other countries may now begin to think about a reorganization of services. Some aspects of clinical practice are probably changed forever: patients and medical staff demand less crowding in the office and waiting areas, shorter waiting times, more attention to hand, surface and medical devices sanitification, regular use of masks, face and breath shields especially during examination. Even insurance markets are expected to change after the pandemic [50].

In conclusion, COVID-19 era care paradigms will likely force us into new models of care that just months ago were not even imagined and would have been thought unthinkable: to rethink our care models requires creativity.

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