



Vitreoretinal surgery tip and tricks in the era of COVID-19

Claudio Iovino¹ · Tomaso Caporossi² · Enrico Peiretti¹ 

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Dear Editor,

The recent spread of coronavirus disease (COVID-19) represents an important public health problem worldwide and the potential for transmission by asymptomatic patients represents a major issue [1]. The global COVID-19 pandemic led many governments from different nations to adopt protective and strict measures to reduce its spread. As a consequence, a significant downsizing of non-urgent treatments is occurring in all medical fields including ophthalmology [2].

The final decision on what ocular disease to define as urgency is left to the ophthalmologist's judgment. Of course, many retinal disorders including retinal detachment (RD), ocular trauma, and vitreous bleeding or neovascular age-related macular degeneration in monocular patients are considered non-deferrable conditions.

In order to provide continuity of care, and to reduce the risk of contamination, series of protection measures have been proposed [3–5]. Particularly, Korobelnik et al. recently provided guidance for anti-vascular endothelial growth factor (VEGF) intravitreal injection procedures during the COVID-19 pandemic [3]. Personal protective equipment including gloves, masks (e.g., N95), goggles and face shields, and slit-lamp breath shields are mandatory [3].

Regarding the operating theater measures, reducing the surgical volume, minimizing staff presence, and reducing the time for each intervention have been also proposed (Fig. 1a) [6]. To achieve a reduction in the length of surgery, The Royal College of Ophthalmology recommended the most

experienced surgeons to perform surgical procedures, thus excluding training surgeons (with possible repercussion on their training courses) [7].

We hereby propose a series of additional measures that could help the vitreoretinal (VR) surgeons in performing the surgery and follow the patient with the minimum risk of contamination. First of all, the creation of a deferrable/non-deferrable VR patient list should be considered for a correct management of a Vitreoretina Unit during the COVID-19 pandemic.

For all patients undergoing VR surgery, a combined surgery including phacoemulsification should be taken into account in all patients already presenting lens opacities. A deferred phaco surgery in the next weeks/months would in fact expose the patient to further avoidable risks of exposure. The same applies for intravitreal injections of both steroid and anti-VEGF at the end of the surgery whenever required.

Three-dimensional (3D) heads-up display surgical visualization is an evolving technology demonstrating comparable efficacy to the standard operating microscope for macular surgery [8]. The use of 3D heads-up display systems in the COVID era can help in increasing the distance between surgeon and patient and also in improving ergonomics (Fig. 1b).

The choice of the endotamponade preferring air and silicon oil in eligible cases could minimize the number of follow-up visits required. Specifically, air is nowadays considered effective as gas tamponade in macular hole, pucker, and even in some retinal detachment surgeries, with less risks of intraocular pressure elevation in the postoperative course (that may require additional visits) [9, 10].

Moreover, different types of silicon oil allow the surgeon to choose the appropriate endotamponade for every single case, with a higher stabilization of the retina in the postoperative period [11]. This may further reduce the number of conventional follow-up visits for operated patients.

In selected cases, scleral buckling for RD could be eligible as a time-saving and fast recovery surgery. Nevertheless, despite the advantages of the ab-externo technique, VR surgeon has to cope with the disadvantages of using an indirect

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✉ Enrico Peiretti
enripei@hotmail.com

¹ Department of Surgical Sciences, Eye Clinic, University of Cagliari, Via Ospedale 48, 09124 Cagliari, Italy

² Department of Ophthalmology, Azienda Ospedaliera Universitaria Careggi, Florence, Italy

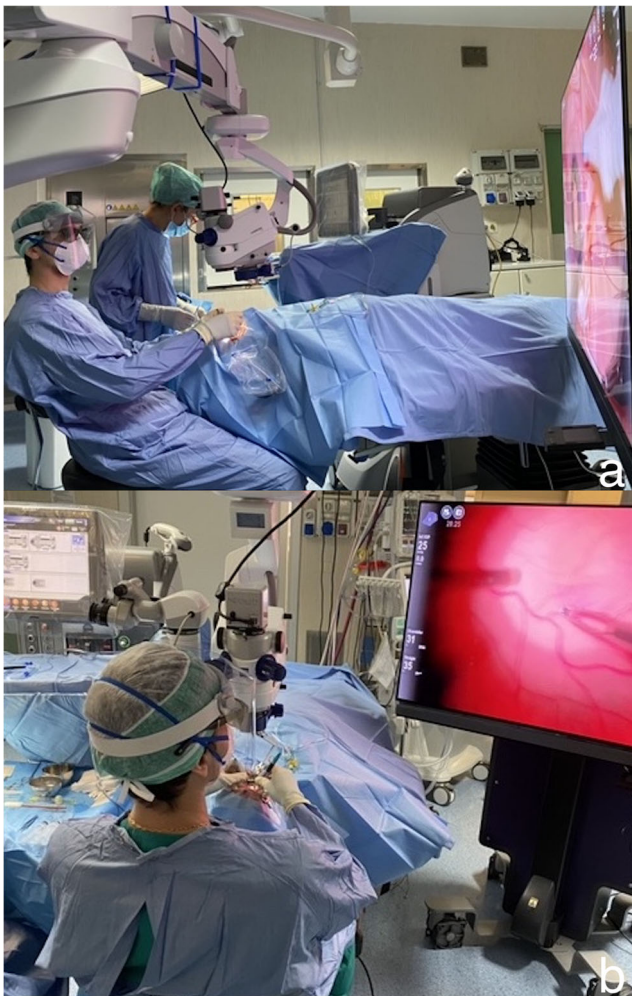


Fig. 1 Vitreoretinal (VR) operating theater during COVID-19 era. **a** The operating theatre staff is reduced including only the VR surgeon and the scrub nurse. **b** The use of 3D heads-up display system is helpful in increasing the distance between surgeon and patient and also in improving ergonomics. Moreover, personal protective equipment including masks and face shields are better tolerated from the VR surgeon using 3D heads-up viewing system

ophthalmoscopy with all personal protective equipment like goggles or face shields.

A wide-field viewing system paired with a chandelier endoilluminator can represent a valid aid for surgeons who opt for an ab-externo surgical approach.

We believe that these considerations could be useful for VR surgeons from all around the world especially those from

most affected countries, who will be under public health COVID-19 measures and restrictions for the next months.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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