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**Table 1—Continued**

Question	Residents, n	%
23. I worry that my clinical skills will deteriorate owing to the shutdown.		
• Strongly agree	2	2.0
• Agree	32	31.4
• Neutral	28	27.5
• Disagree	28	27.5
• Strongly disagree	12	11.8
24. I worry that my surgical skills will deteriorate owing to the shutdown.		
• Strongly agree	24	23.5
• Agree	34	33.3
• Neutral	19	18.6
• Disagree	9	8.8
• Strongly disagree	0	0.0
• Not applicable	16	15.7
25. For senior residents: I am worried about finding a job/fellowship owing to COVID-related shutdowns.		
• Strongly agree	18	34.6
• Agree	14	26.9
• Neutral	12	23.1
• Disagree	8	15.4
• Strongly disagree	0	0.0
26. I will get sufficient training to become a competent ophthalmologist by the end of my residency.		
• Strongly agree	28	27.5
• Agree	56	54.9
• Neutral	12	11.8
• Disagree	3	2.9
• Strongly disagree	3	2.9
27. I am concerned that I will have to repeat rotations owing to lost time during the pandemic.		
• Strongly agree	5	4.9
• Agree	27	26.5
• Neutral	25	24.5
• Disagree	37	36.3
• Strongly disagree	7	6.9
28. I expect that clinical and surgical volumes will be significantly increased by the end of summer, to the point where lack of exposure will not affect my training.		
• Strongly agree	10	9.8
• Agree	34	33.3
• Neutral	24	23.5
• Disagree	27	26.5
• Strongly disagree	7	6.9

PPE, personal protective equipment.

the pandemic, owing to reduction in surgical exposure caused by shutdowns in elective surgery, the travel restrictions for international fellowships, job stress, and the postponed Royal College examinations. Importantly, most residents stated that they did not have adequate availability of surgical simulation or access to a wet lab to maintain their surgical skills. We recommend that this should be rapidly explored further by individual programs and rectified given the indeterminate timeline of the pandemic.

Thankfully, despite the added stressors and changes brought by the pandemic, there was guarded optimism among residents, with the feeling that they would have adequate training and be competent ophthalmologists by the end of their residency.

The 47.0% response rate, although high for national resident surveys,<sup>3,4</sup> represents half of all residents, which limits generalizability of the results. As with most survey studies, information is subject to recall bias. There was more representation from larger programs in cities that had a larger prevalence of COVID-19.

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## Footnotes and Disclosure

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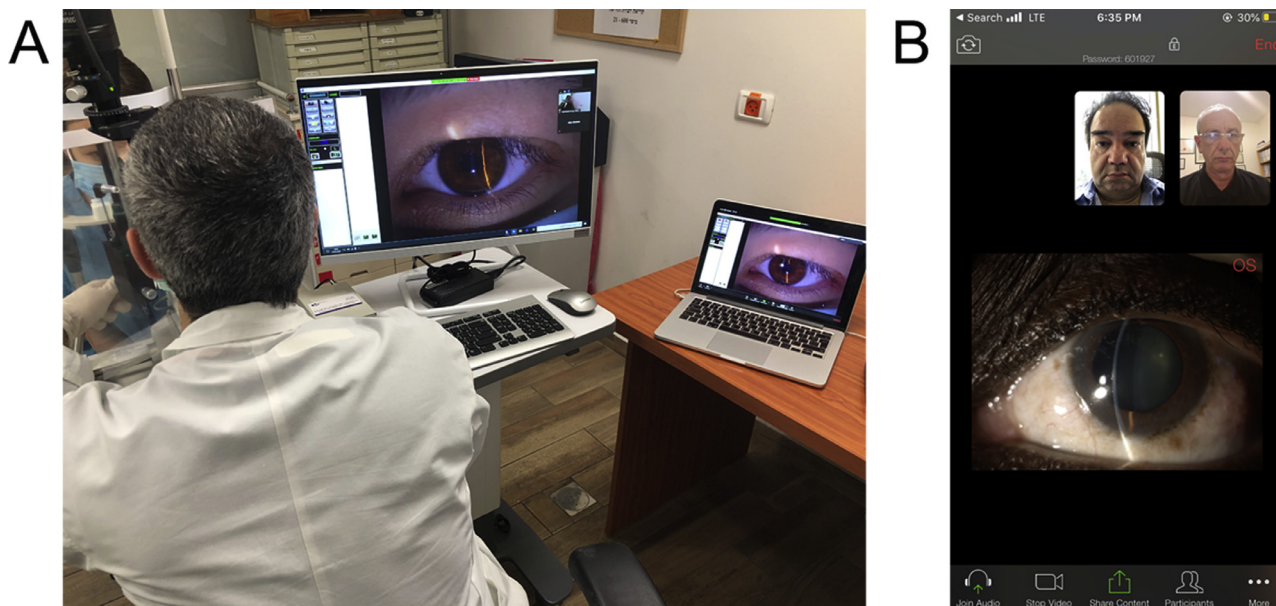
The authors have no proprietary or commercial interest in any materials discussed in this article.

## Continuity of ophthalmology education during a pandemic by combining video conferencing application with a slit-lamp camera



The on-going coronavirus disease 2019 (COVID-19) outbreak has dramatically changed the way of work and

communication in health care. As of March 22, 2020, public hospitals in Israel have ceased to provide nonurgent office-based visits and surgeries, and the presence of faculty and residents is kept to a minimum. Clinical departments' staff is commonly divided into separate teams, to diminish their vulnerability in case of exposure to COVID-19 carriers. Worldwide, quarantine and social distancing regulations have now put new barriers between ophthalmologists, their patients, and their colleagues.<sup>1,2</sup>



**Fig. 1—Slit-lamp examination transferred via video conferencing application. (A)** The screen of a slit-lamp camera computer is shared as seen in the adjacent laptop. The examiner can speak with a consultant using the computer speakers, while adjusting the slit lamp to show the area of interest. **(B)** Slit-lamp video feed as seen via Zoom video conferencing application. The examiner and 2 consultants are online.

As a result of COVID-19 epidemic, video conferencing tools have become crucial for remote worker collaboration, as well as for social and family communication. In Israel, physicians are currently using video conferencing applications for the purpose of conducting country-level professional tele-conferences and department- and hospital-level staff meetings. We report a technique that allows sharing high-resolution real-time slit-lamp video with multiple viewers simultaneously, by combining a slit-lamp camera with a video conferencing application.

The free version of Zoom cloud meeting application<sup>3</sup> (Zoom Video Communications, Inc, San José, CA), which allows meetings of up to 100 attendees, was installed in 2 different ophthalmology departments in university hospitals in Israel, onto standalone computers with WiFi capability, connected to Righton MW50D LED slit-lamp (Right group, Tokyo, Japan) and to the Elite SL9900 slit-lamp (CSO, Florence, Italy) cameras. The screen sharing option in the application allowed remote viewers to see a real-time high-resolution video feed using a desktop computer or a smartphone, which displays the slit-lamp ophthalmic examination. Importantly, it enables the remote viewers to guide the examiner in adjusting slit-lamp properties (focus, magnification, location, slit aperture, etc.) to produce a desired image of the area of interest (Fig. 1 and Video 1).

The technique is currently used by residents in 2 different university hospitals in Israel for the purpose of conducting consultations with one or more remote-based specialists. In our experience, this technique allows a much more reliable presentation of the clinical status than verbal description or static compressed smartphone pictures sent via WhatsApp application (Facebook, Inc, Menlo Park, CA). This

technique can also allow the presentation of special and difficult cases by senior ophthalmologists to their peers, in lieu of specialist clinical meetings and grand rounds that are now impossible to perform. Additionally, video conferencing applications can be combined with smartphone-based examination using smartphone directly or with an adapter, for the basic examination of patients in corona-dedicated wards.<sup>4</sup>

Naturally, the acquired video is limited by the optical properties of the imaging device, and although this technique allowed us to produce superb video images of the anterior segment, images of the posterior segment were of lower quality, contained reflections even with dilated pupil, and demonstrated a relatively small area of the ocular fundus. We believe that the same technique can be applied to fundus cameras better suited for this purpose, as well as to optical coherence tomography or other imaging devices. That being said, with clear media, and a small slit aperture, the optic nerve and the posterior pole could reliably be seen even through a nonmydriatic pupil (Video 2).

Although many video conferencing applications are available, notably the Zoom software offers HIPAA (Health Insurance Portability and Accountability Act)/PIPEDA (Personal Information Protection and Electronic Documents Act) compliant plans (priced at \$200 a month),<sup>5</sup> and use end-to-end encryption.

In conclusion, although escalating isolation and quarantine measures are implemented worldwide, and the end is nowhere to be seen, it is our hope that our initial experience with this simple and affordable technique can help ophthalmologists to communicate reliably and efficiently, while minimizing the exposure of patients and medical personnel to COVID-19.

**Supplementary Materials**

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jcjo.2020.10.008.

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**Telemedicine for postoperative consultations following vitrectomy for retinal detachment repair during the COVID-19 crisis: a patient satisfaction survey**



The most recent World Health Organization (WHO) report on the coronavirus disease 2019 (COVID-19) pandemic confirms a total of 4 013 728 cases, with a death toll of 278 993.<sup>1</sup> The staggering number of deaths has thrust us into embracing telemedicine within ophthalmology, with the increased use of video and telephone consultations, to

reduce the risk of virus transmission.<sup>2</sup> At our tertiary eye unit, we continue to provide a 7-day-a-week emergency retinal surgical service; however, our postoperative review has been modified to include telephone consultations, rather than face-to-face patient contact. As part of an ongoing plan to transform the vitreoretinal emergency service, we conducted a survey of patient perspective on the use of telephone consultations to replace routine postoperative review as a possible long-term plan.

We conducted a retrospective patient satisfaction survey of 53 consecutive patients who presented with a retinal detachment over a 6-week period since the beginning of the lockdown in United Kingdom on 23rd March 2020. All patients received a postoperative telephone consultation 2 weeks after

(A) **VITREORETINAL EMERGENCY SERVICE POST-OPERATIVE PHONE CONSULTATIONS Patient Satisfaction Survey**

We would like your opinion on our telephone consultation service during the Covid-19 crisis, in order to ensure we are meeting your clinical needs. Your responses to the questions will enable us to see if we are providing a satisfactory service and all answers will be used to further improve the emergency service, we provide

1. How did you feel about getting a phone consultation for your post-operative review, rather than attend a clinic appointment? (Please rate on a scale of 1 to 5 – 1 = very dissatisfied; 5=very satisfied)
2. Did the surgeon ring you at an appropriate period following the surgery? Yes or No
3. Were they able to answer any queries you had regarding the surgery/post-operative care? Yes or No
4. Did you feel the duration of the phone call was sufficient? Yes or No
5. Were you satisfied with the management plan at the end of the phone consultation? (Please rate on a scale of 1 to 5 – 1 = very dissatisfied; 5=very satisfied)
6. Were they clear in advising you regarding your medication? Yes or No
7. Did you know who to contact if you had a problem with your eye/when you should attend A&E? Yes or No
8. How satisfied were with the clarity of the telephone line? (Please rate on a scale of 1 to 5 – 1 = very dissatisfied; 5=very satisfied)
9. Overall, how satisfied were you with your phone consultation? (Please rate on a scale of 1 to 5 – 1 = very dissatisfied; 5=very satisfied)
10. Do you think this would be an appropriate platform to consult patients even after the Covid-19 crisis has settled? Yes or No
11. Do you have any further comments you would like to add?

(B)

Question	Mean Score (out of 5)
1. How did you feel about getting a phone consultation for your post-operative review, rather than attend a clinic appointment?	4.3
2. Were you satisfied with the management plan at the end of the phone consultation?	4.3
3. How satisfied were with the clarity of the telephone line?	4.9
4. Overall, how satisfied were you with your phone consultation?	4.3

**Fig. 1 – (A) Patient feedback questionnaire. (B) Survey questions with a 1–5 rating scale. (C) Pie chart to represent number of patients who answered yes or no to questions relating to telephone consultation.**