LETTERS

Comment on: Remote corneal suturing wet lab: microsurgical education during the COVID-19 pandemic

We read with great interest the article by Pasricha et al. In this study the authors described the distance wet lab surgical training module for residents, which is appreciable. The training of residents has been affected the most during the COVID-19 pandemic.

In this study, the authors mentioned the use of porcine eyes during training. But how was the safety of the porcine eyes ensured, as there are reports about the transmission of the SARS-CoV-2 virus also from animal sources. We believe that using indigenous practice models in this pandemic can be a safe and effective wet-lab training model for residents. Corneal suturing at our center is practiced on Styrofoam, which can also help develop hand-eye coordination for the residents more simply and feasibly (Figure 1).

After trial 2 in this study, there was no statistically significant difference between the 2 groups despite 1 group receiving inputs during trial 1. Was this attributed to a decreased amount of surgical practice (only one previous monitored session)? It requires constant practice to master the technique of suturing, especially with the free corneal button rather than linear corneal perforations.

Although suture depth received the lowest scores by both residents and attendings, how was the depth of the sutures assessed by the attendings? It is difficult to assess the depth at which the residents passed the needle during remote learning and to guide or give feedback to the residents on the depth. The authors provided a video of the remote feedback trials.

One attending rated the external view of hand positioning less effective, which could be improved by adding an additional camera from another angle to provide a profile view of the resident. This is a very valid point for assessment. The view of the wrist, fingers, and instrument-holding position and movement needs to be visualized during the passage of suture. This could be achieved by attaching a camera between the objective part of the microscope and the resident.

The residents were passing only 4 cardinal sutures. Increasing the number of sutures in the same setting could help for better practice and assessment as well.

Gunjan Saluja, MD, Mohamed Ibrahime Asif, MD
New Delhi, India

Corresponding author: Mohamed Ibrahim Asif, MD, Dr. Rajendra Prasad Centre for Ophthalmic Sciences, AIIMS, Ansari East, New Delhi, India. Email: mohamedasif1991@yahoo.co.in.

REFERENCES

Disclosures: None reported.

Reply: Remote corneal suturing wet lab: microsurgical education during the COVID-19 pandemic. We thank Saluja and Asif for their insightful comments. Finding new and practical ways to provide the most optimal surgical training for ophthalmic residents while maintaining everyone’s safety requires a collaborative discussion.

The authors raise concern about the safety of using porcine eyes for corneal suturing given the possibility for transmission of SARS-CoV-2 virus. This is a valid concern, but it seems the risk of SARS-CoV-2 virus transmission from corneal tissue, including human corneal tissue, is debatable. One study by Bayyoud et al. reported no detectable SARS-CoV-2 RNA in ocular tissue from COVID-19–positive patients, whereas another study by Sawant et al. reported a 13% (17/132) positivity rate for COVID-19. More research is needed to fully understand the risk of transmission from corneal tissue.

Figure 1. Resident trainee practice sutures (10-0 nylon monofilament) on Styrofoam, from a wet-lab session.
SARS-CoV-2 RNA in ocular tissues from COVID-19—positive, surgical-intended donors. Regardless of the actual SARS-CoV-2 virus transmission risk, we agree that wet-lab tissue, whether porcine or human corneas, should be handled with all proper personal protective equipment, as performed in our study. Using a dry-lab model, such as the simple and cost-effective use of Styrofoam by the authors, is a potential alternative to the wet-lab model; however, Styrofoam is feebler than actual corneal tissue. Similarly, we have experience with the KERATO (Bioniko Models) dry-lab, penetrating keratoplasty corneal suturing model; however, it is more rigid than actual corneal tissue and may be cost-prohibitive at $100 for 5 models.

In this study, no statistically significant difference was noted between the 2 groups for trial 2 likely because of the high level of practice needed for corneal suturing mastery that cannot be provided in a single remote-guided trial. Increasing the number of sutures passed beyond the 4 cardinal sutures could indeed aid in both corneal suture practice and assessment. The authors are correct in noting the difficulty in assessing suture needle depth live during each suture pass, either remotely or in-person. Using microscope-integrated optical coherence tomography could assist with assessing suture depth in real-time, as shown in some of our previous work, but we did not have access to this technology for this study. For this study, suture depth was only assessed at the conclusion of the trials by blinded graders using calipers and forceps. Finally, we agree with the authors that an external camera providing a view of the surgeon’s wrists, fingers, and instruments would be a welcome addition to our described remote wet-lab setup.

REFERENCES

Supported in part by the Research to Prevent Blindness Unrestricted Grant to the University of California San Francisco, Department of Ophthalmology, San Francisco, California.

Disclosures: G.D. Seitzman is a consultant for Dompé Pharmaceuticals. J.M. Schallhorn is a consultant for ZEISS and Vanda Pharmaceuticals. The other authors have no conflicts of interest or financial disclosures.

Corresponding author: Saras Ramanathan, MD, University of California San Francisco, 10 Koret Way, San Francisco, CA 94131. Email: Saras.Ramanathan@ucsf.edu.