Response to comments on: Glycerol-preserved corneal tissue in emergency corneal transplantation: An alternative for fresh corneal tissue in COVID-19 crisis

Dear Editor,

We thank the readers for their interest in our study. The authors would like to clarify a few points raised in the manuscript By Soni D *et al*.[1] There is experimental evidence of the presence of antigen-presenting cells[2,3] but no clinical evidence of rejection in GPC. The study by lie *et al*.[4] showed that the GPC was acellular in the initial 2 weeks of transplant and later the dendritic cells and keratocytes appeared in the GPC seen on confocal microscopy, but clinically there was no rejection episode in the GPC group. They also commented that cryopreservation in glycerol theoretically prevents not only direct sensitization but also indirect sensitization to donor MHC class II antigens. Another prospective randomized clinical study by Chen *et al*.[5] compared GPC with fresh corneal tissue (FCT) in DALK showed that the rejection-free graft survival rate at 2 years was significantly higher in the GPC group as compared with the FCT group (100.0, 78.8%, respectively, P=0.006); however, the authors agree that further clinical studies should be done with a large sample size to prove this. A rejection reaction will ultimately lead to graft failure, which is a nonissue in GPC as it does not have a viable endothelium and will eventually fail.

Studies also suggest that preservation at -80° in glycerol is better as compared to 4°C with decrease antigenicity at a lower temperature,[2] which also has experimental evidence but not clinically proven. Since this facility is not available in all eye banks, there is no harm in preserving it at 4°C. We did not find any rejection episode in The GPC group, where the cornea in glycerol was preserved at 4°C. Further clinical studies can be done to compare the result of GPC transplanted cornea preserved at a different temperature to conclude.

The earlier study by the authors showed the anatomical success of GPC[6] which was done from October 2011 to December 2015, where the sample size of GPC was 34 eyes, and the present study did comparison of GPC with FCT[7] from October 2011 to August 2017, where the sample size of GPC is same (34 eyes). This is because we did only 2 transplants with GPC after 2015 to 2017 which did not complete 1 year follow up so these cases were excluded, which explains the same sample size. The eye bank had fresh corneas available due to increase donation so the requirement of GPC transplant decreased overtime.

Indication of use of GPC will always be tectonic or therapeutic transplants in an emergency situation when FCTs are not available. Most of the ophthalmologists are reluctant to use GPC for therapeutic corneal transplant as they are not aware of the results. Due to COVID 19 crisis, there is a shortage of tissues throughout the world, so it was imperative at this time to use GPC to save the eyes by doing the emergency corneal transplant. Ours is the only comparative study to show the outcome of GPC with FCT and a message to the ophthalmology community of possible usage of GPC during the COVID crisis when FCTs are not available.

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Conflicts of interest

There are no conflicts of interest.

Neeti Gupta[1,2], Renu Dhasmana[2], Amit Maitreya[2], Harsh Badahur[2]

[1]Department of Ophthalmology, All India Institute of Medical Sciences, Rishikesh, [2]Department of Ophthalmology, Himalayan Institute of Medical Sciences, Swami Ram Himalayan University, Jolly Grant, Doiwala, Dehradun, Uttarakhand, India

Correspondence to: Dr. Neeti Gupta, Department of Ophthalmology, AIIMS Rishikesh, Virbhadra Road, Near Barrage, Shivaji Nagar, Sturida Colony, Rishikesh - 249 203, Uttarakhand, India.
E-mail: neeti.oph@aiimsrishikesh.edu.in, drneetigupta@rediffmail.com

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