Solid-organ transplant surgeries in era of COVID-19 pandemic: How to go about it?

To the Editor, World Health Organization on March 11, 2020, declared the current spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection as coronavirus disease (COVID-19) pandemic. The virus is known to be a highly contagious one, spreading by aerosols, fomites, and fecal–oral transmission. The first case was detected in India on January 30, 2020, and the disease started spreading gradually. The government of India adopted a policy of “complete lockdown” on March 25, 2020, which led to cessation of all elective surgeries including elective solid-organ transplantations.

Organ transplantation surgeries are the treatment of choice for patients with end-stage organ diseases, but such recipients are obliged to remain on immunosuppression for the rest of their lives. The immunocompromised state in the early perioperative period makes them highly susceptible to any microorganism including SARS-CoV2. At Montefiore Medical Centre, New York, the kidney transplant recipients affected with COVID-19 had a mortality of 28% at 3 weeks as compared to 1–5% mortality seen in the general population. A few long-term liver transplant recipients in Italy have shown rapid deterioration in clinical condition and demise after acquiring SARS-CoV2. There is a dilemma for carrying out these surgeries but in certain conditions like acute liver failure, acute on chronic liver failure, and the sudden availability of deceased organs, these surgeries are lifesaving. In patients with end-stage renal disease, an urgent situation arises when all access to dialysis is lost or sessions of dialysis are no longer tolerated.

The transplant physicians will have to choose one of the two evils: initiating immunosuppression in recipients and potentially accepting detrimental outcome if they develop COVID-19 versus delaying transplant surgeries and deal with waitlist complications or mortality.

In a nationwide analyses using data on COVID-19 diagnoses from two federal agencies, the National Organ Procurement Agency in France and the United Network for Organ Sharing in the USA, they have shown a strong temporal association between the increase in COVID-19 infections and a striking reduction in overall solid-organ transplantation procedures in France (90.6%) and USA (51.1%), mainly for kidney transplantation, but also for heart, lung, and liver transplants.

There is evidence that children are less impacted by COVID-19, but pediatric kidney transplants are equally affected as an adult. For heart, lung, and liver transplants, there is higher waiting-list mortality with no or minimal alternative treatment, continuing transplant program is a need. For liver transplant, waiting-list patients with model for end-stage liver disease >20 require urgent transplantation and delaying or postponing can increase mortality. The Indian Society of Organ Transplantation (ISOT) and Indian Council of Medical Research have laid down certain guidelines in this regard. ISOT on April 28, 2020, has advised on restarting the routine transplantation program after assessing the epidemiology of COVID-19 in the area and feasibility of carrying transplant surgeries. There are some good reports about heart transplantations. In one report of two positive cases of COVID-19 after heart transplant suggested no hyperinflammation stage of COVID-19, and it had a similar manner of disease as in general population, with recovery in both cases. In another study over 3 months involving 87 heart transplant recipients social distancing, proper sanitization, and hygiene resulted in zero COVID-19, or allograft-related complications. In an online search of 19 societies’ recommendation bulletins for organ transplant during COVID-19 pandemic, there is a high degree of consensus for temporarily suspending nonurgent transplantations, especially living donation programs. Systematic RT-polymerase chain reaction (PCR)-based testing of donors and recipients was broadly recommended. Such urgent surgeries are to be carried out only in centers which have facilities for handling an infection with SARS-CoV2 and preferably not in designated COVID-19 treating hospitals. All the staff involved in taking care of both donor and recipient should be kept separate and not be given duties in additional areas. Entirely two separate teams including intensivists and anesthesiologists should be involved in the management of both donor and recipient in case of living donor transplantations. Appropriate consent should be taken both from recipient of organ and live donor regarding risk of hospital-acquired SARS-CoV2 in era of pandemic.

All personnel involved, either deceased or living related donor, recipients of organ, as well as health-care providers, are to be specifically screened epidemiologically, for travel history and any contact with COVID-19 patients in past 21–28 days and clinically for the presence of symptoms like fever >38°C, malaise, sore throat, respiratory problems, or anosmia, before surgery. Besides, both PCR of nasopharyngeal swabs and
if possible serological testing of donor and recipient duo are to be done within 24–72 h before the surgery.\\[8\\]

Health-care workers involved in managing such transplants in the operating room and intensive care units should use appropriate personal protective equipment at all times. Tracheal intubation, extubation, and postoperative mechanical ventilation if needed are all highly aerosol-generating procedures and require all precautions to be taken. Use of intubation boxes is helpful. The living donor and the recipient have to be taken care of maintaining strict isolation until discharge. Distant monitoring can be utilized to effectively implement it. In the current ongoing COVID-19 pandemic, the anesthesiologist of these transplant teams must be fully aware of national and international guidelines on surgery, postsurgery ICU management, and managing posttransplant patients if at any point of time they contracted SARS-CoV2.

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**References**

1. Gu J, Han B, Wang J. COVID-19: Gastrointestinal manifestations and potential fecal-oral transmission. Gastroenterology 2020;158:1518-9.

2. Akalin E, Azzi Y, Bartash R, Seethamraju H, Parides M, Hemmige V. Covid-19 and Kidney Transplantation. N Engl J Med. 2020. doi: 10.1056/NEJMc2011117.

3. Bhoori S, Rossi RE, Citterio D, Mazzafferro V. COVID-19 in long term liver transplant patients: Preliminary experience from an Italian transplant centre in Lombardy. Lancet Gastroenterol Hepatol 2020;5:532-3.

4. de Vries AP, Alwayn IR, Hoek RA, van den Berg AP, Uitree FC, Vogelaar SM, et al. Immediate impact of COVID-19 on transplant activity in the Netherlands. Transpl Immunol 2020;61:101304.

5. Loupy A, Aubert O, Reese PP, Bastien O, Bayer F, Jacquelinet C. Organ procurement and transplantation during the COVID-19 pandemic. Lancet 2020;395:e95-6.

6. ISOT COVID-19 Guideline. Available from: https://isot.co.in/file/ISOT_COVID_V1_March_26.pdf. [Last accessed on 2020 May 04].

7. ISOT Position Statement for Transplantation in Era of COVID-19. Available from: https://isot.co.in/file/ISOT_V2_28_April_2020.pdf. [Last accessed on 2019 May 04].

8. Guidelines for Liver Transplantation and COVID-19 (dated 13/04/2020). ICMR Available from https://www.icmr.gov.in/cctechdocad.html. [Last accessed on 2020 May 04].

9. Woolley AE, Mehra MR. Dilemma of organ donation in transplantation and the COVID-19 pandemic. J Heart Lung Transplant 2020;39:410-1.

10. Ritschl PV, Neerven V, Wiering L, Wu HH, Moroder P, Brandl A, et al. Solid organ transplantation programs facing lack of empiric evidence in the COVID-19 pandemic: A by-proxy society recommendation consensus approach. Am J Transplant 2020. doi: 10.1111/ajt.15933.