Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the editor

ABO incompatible living donor related liver transplant in COVID-19 pandemic: Challenges and outcomes

Manuscript

SARS-CoV-2 pandemic affected the world in unprecedented ways leading to morbidity and mortality in millions. Health care system became overwhelmed with COVID-19 patients that severely affected the management of patients with other diseases. Liver transplant programs throughout the word were also affected due to the pandemic. Marked reduction in solid organ transplant in pandemic resulted in loss of 48,000 patient life-years [1]. Liver transplant surgeries were being done only for the sick patients like acute liver failure and acute on chronic liver failure, who were likely to die without early transplant [2]. Availability of suitable organ donor was a significant issue during this period because of multiple factors like scarcity of deceased donor, travel and movement restrictions of potential living donor as well as risk of SARS-CoV-2 infections to living donors due to frequent hospital visits. Living donor related liver transplants (LDLT) continue to be the predominant form of liver transplant in India and other Asian countries because of limited availability of deceased donors. LDLT requires extensive planning and resource allocation, at the same time the need to ensure safety of donor is paramount. SARS-CoV-2 pandemic made things only worse. ABO incompatibility used to be a major barrier in liver transplantation but with use of newer immunosuppressive regimes and pretransplant desensitization protocols, its outcomes are comparable with ABO compatible LDLT. ABOi LDLT now comprises about 10–18% of all adult LDLT in major Asian countries [3]. For those patients who do not have suitable ABO compatible living donor or cadaveric graft, ABOi LDLT is a potentially lifesaving option. Here we are presenting our experience of ABOi LDLT done during COVID-19 pandemic. From January 2020 to August 2021, a total of 236 transplants were performed. Out of this 4 (1.69%%) were diseased donor liver transplant while rest of the cases were LDLT. Total 22(9.48%) ABOi LDLT (18 adult, 4 paediatrics) were performed during this period. All these patients had advance liver failure with average MELD and CTP scores of 24.8 and 10.6 respectively. All living liver donors were blood relative of their respective recipients. Strict COVID-19 protocols were in place for all patients and health care workers. Both donor and recipient were required to have a negative COVID-19 RT-PCR test 24 hour prior to surgery. Donors were advised to stay near to hospital to minimize contact with other persons and follow COVID-19 appropriate behaviour. Also, healthcare staff were vaccinated on priority basis once it became available. Donors were also vaccinated at least 4 weeks before planned surgery. If donor contracted SARS-CoV-2 before surgery, they were immediately isolated and managed as per protocol. A four-week period of observation after negative swab test for SARS-CoV-2 was mandatory before a donor could be considered suitable for surgery. In desensitization protocol at our centre, rituximab was given 2 weeks prior to transplant surgery followed by therapeutic plasma exchange or immunoadsorption to decrease the isohemagglutinins titres before the surgery. One or more sessions of therapeutic plasma exchange or immunoadsorption were done to achieve the isohemagglutinins (IHA) target titre of ≤1:8 twelve hours before the surgery. A standard triple drug regime consisting of steroids, CNIs and mycophenolate was used in post-transplant period. Any episode of acute rejection was managed with titration of immunosuppression and steroid pulse therapy. Patients with raised IHA titres received one or more sessions of plasmapheresis. Total 6 (27.3%) patients had an episode of acute rejection and were successfully treated except one adult patient who lost his graft and died. Baseline characteristics of adult and paediatric ABOi liver transplant recipients have been given in table 1. Two transplant recipients had SARS-CoV-2 infection with mild severity during follow-up and

Table 1
Showing characteristics of ABOi LDLT patient.

Parameter *n* = 22 Adult =18, Paediatric =4	Values
Age (Mean ±SD)	
Adult	49.5(±10.15) Years
Paediatric Median (IQR)	2(1–9.75)
Sex Male/Female	17/5
aetiology n (%)	
NASH	6(27.3%)
Alcohol	5(22.7%)
HBV	3(13.6%)
Cryptogenic	3(13.6%)
Biliary atresia	3(13.6%)
Caroli disease	1(4.5%)
PFIC	1(4.5%)
MELD (Mean ±SD)	24.8(±7.38)
CTP (Mean ±SD)	10.68(±1.86)
GRWR (Mean± SD)	1.01(±0.20)
Warm ischaemia time (Mean ±SD)	33.81(±7.82) minutes
Cold ischaemia time (Mean ±SD)	88.40(±33.67) minutes
Median ICU stay (IQR)	15(10–23) days
Median Hospital stays (IQR)	22.9(18–26) days
Post operative day of extubation n (%)	Day 0- 4(18.2%)* Day 1- 12(54.5%) Day 2- 4(18.2%)
Complications	
Bile leak n (%)	4(18.2%)
Acute rejection n (%)	6 (27.3%)
Hepatic artery thrombosis n (%)	0
Portal vein thrombosis n (%)	0
Hepatic vein thrombosis n (%)	2 (11.8%)
Sepsis n (%)	2(9.1%)
Biliary stricture	3(13.6%)
Survival at 6-month post-transplant n (%)	18 (81.8%)

* Two patients never extubated and died in early postoperative period.

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recovered. Total four patients died in first six months. One death was because of antibody mediated graft rejection. One patient died due complications related to multiple biliary strictures. Early graft dysfunction with sepsis and multiorgan failure was the cause of mortality in 2 patients. Despite having higher pretransplant MELD score 180 days survival was 81.8%. In conclusion, ABOi LDLT has optimal survival outcomes and is feasible in challenging times like COVID-19 pandemic.

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Author's declaration

Written informed consent from all patients was obtained for this research. Study was approved by institute ethical committee and was conducted in accordance to research ethics guidelines of 1975 declaration of Helsinki. Liver transplant program at our institute strictly follows the 2008 declaration of Istanbul of organ transplantation.

Authorship statement

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Declaration of Competing Interest

None of the authors has any financial, professional or personal conflicts that are relevant to the manuscript.

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