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## LETTER TO THE EDITOR

# Living donor liver transplants for sick recipients during COVID-19 pandemic—An experience from a tertiary center in India

To The Editor,

The recent outbreak of the coronavirus disease 2019 (COVID-19) has brought elective surgeries including liver transplantation to a standstill. The concerns in living donor liver transplant (LDLT) were that immunosuppressed recipients and healthy donors would be exposed to nosocomial severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection.<sup>1</sup> However, as patients began to suffer and die, Liver Transplant Society of India revised its guidelines<sup>2</sup> and allowed LDLT for those who were very sick, or had just recovered from a life-threatening decompensation (high Model for End-Stage Liver Disease/Child-Turcotte-Pugh [MELD/CTP] score) or had malignancy. More than 90% of transplants in India are from live donors because we have a very low donation rate. Our center is the largest LDLT center in India and performs an average of 250 adults/pediatric transplants per year. In the ongoing pandemic, most Western centers have stopped LDLT and therefore our experience in this pandemic may allay some of the concerns.

Nine blood group-compatible LDLTs were performed during March 24 to April 29, 2020 and 1 case could not be done because the asymptomatic donor tested positive and her recipient continues to be in our ICU as the transplant was deferred. LDLT was carried out when 2 tests for SARS-CoV-2 were negative (1 test was done immediately before the transplant). All team members were also tested for SARS-CoV-2 before reinitiation of LDLT, and only those who were negative were part of the operating room (OR) team. In the OR, all hospital-directed precautions were taken during aerosol-generating procedures.<sup>3</sup> Postoperatively, similar precautions were taken in the ICU and throughout the stay at the hospital. No alteration was made in the immunosuppressive protocol and all patients received a standard 3-drug regimen (Table 1).

The basic demographic and clinical details and reasons for transplant are given in Table 1. The median  $\pm$  interquartile range MELD/Pediatric End-Stage Liver Disease (PELD) score at the time of admission was  $21 \pm 8$  and CTP score was  $10 \pm 2$ . LDLT was carried out on  $3 \pm 3$  days after admission. The pretransplant total bilirubin was  $8.9 \pm 18.7$  mg/dL and international normalized ratio was  $1.5 \pm 0.9$ . None of the recipients/donors had any intraoperative complication. The immediate posttransplant course for all patients was uneventful

and followed a normal course. Case 2 developed late hepatic artery thrombosis and underwent surgical revision but continues to have a bile leak. Five of 9 patients were discharged on average  $17 \pm 3$  days while the remaining 4 are awaiting discharge. All donors recovered well. No one developed COVID-related symptoms posttransplant, in keeping with the low rate of infection in our hospital. Over ten thousand tests have been done at our center, and the positivity rate was  $<1\%$  in asymptomatic cases.

In countries such as ours where LDLT is the predominant form of transplant, once the donor workup has been completed, the recipient undergoes transplant within 6 weeks. During this period, 21 patients have had their transplant deferred and remain on medical therapy. In summary, LDLT can be carried out safely with extra precaution during this pandemic.

## DISCLOSURE

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TABLE 1 Baseline demographic of recipients/donors who underwent LDLT during COVID-19 pandemic

Serial number	Age (y)	Sex	Cause	Reasons for transplant	MELD/PELD score/CTP	Date of transplant	IS regimen	Complications	Status	Donor age/sex	Relation to recipient
Case 1	55	F	HCV with HCC	Malignancy with recent AV embolization	24/10 C	24.3.2020	CNI + MMF+steroid	None	Discharge	31/M	Son
Case 2	15	M	ALF	Acute liver failure	31/14 C	2.4.2020	CNI + MMF+steroid	HAT	In patient	41/F	Mother
Case 3	54	F	HBV	Early chronic rejection	16/9 B	6.4.2020	CNI + MMF+steroid	None	Discharge	61/M	Husband
Case 4	49	M	NASH	hyperbilirubinemia with recurrent HE	28/12 C	8.4.2020	CNI + MMF+steroid	None	Discharge	44/F	Wife
Case 5	65	M	NASH	Multiple admissions for HE	27/13 C	10.4.2020	CNI + MMF+steroid	None	Discharge	35/M	Son
Case 6	56	M	HBV + ethanol	Intractable pruritus	26/10 C	13.4.2020	CNI + MMF+steroid	None	Discharge	28/F	Daughter
Case 7	1.5	M	Hepatoblastoma	Malignancy	30/5 A	22.4.2020	CNI + MMF+Steroid	None	In patient	30/F	Mother
Case 8	2	M	Biliary atresia	Hyperbilirubinemia/ recurrent cholangitis	18/10 C	24.4.2020	CNI + MMF+steroid	None	In patient	37/M	Uncle
Case 9	0.9	F	Biliary atresia	Hyperbilirubinemia/UGI bleed	19/11 C	29.4.2020	CNI + MMF+steroid	None	In patient	30/F	Mother

Abbreviations: ALF, acute liver failure; AV, arteriovenous; CNI, calcineurin inhibitors; COVID-19, coronavirus disease 2019; CTP, Child-Turcotte-Pugh; HAT, hepatic artery thrombosis; HBV, hepatitis B virus; HCC, hepatocellular carcinoma; HCV, hepatitis C virus; HE, hepatic encephalopathy; IS, immunosuppressive regimen; LDLT, living donor liver transplant; MELD, Model for End-Stage Liver Disease; MMF, mycophenolate mofetil; NASH, nonalcoholic steatohepatitis; PELD, Pediatric End-Stage Liver Disease; UGI, upper gastrointestinal.

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