TRANSPLANT INTERNATIONAL

Transplant International ISSN 0934-0874

LETTER TO THE EDITORS

Auxiliary liver transplantation with a small deceased liver graft for cirrhotic liver complicated by hepatocellular carcinoma

doi:10.1111/tri.12173

Dear Sirs,

Liver transplantation (LT) is the treatment of choice for small hepatocellular carcinoma (HCC) in patients with chronic liver disease and portal hypertension [1]. One of the drawbacks of this treatment is the dropout rate of patients on the waiting list because of disease progression [2], related to a low MELD score and general organ shortages [3]. In the same way, certain small liver grafts (SLG) are not accepted because of the inadequate graft/recipient weight ratio (GRWR) with the risk of small-for-size syndrome (SFSS) and postoperative liver failure (POLF). A GRWR >0.8% is recommended [4]. Although the notion of auxiliary partial orthotropic liver transplantation (APOLT) is usually described for potentially reversible fulminant hepatic failure (auxiliary temporary aid by the graft), this technique has been also described in patients with chronic liver disease, metabolic diseases and small liver grafts for the opposite reason (auxiliary temporary or permanent aid by the native liver), with cadaveric [5,6] or living donor grafts [7,8]. According to our knowledge, this technique has never been described in patients with HCC.

A 43-year-old male patient was admitted for LT related to Child A5 alcoholic cirrhosis with steatohepatitis. HCC was 22 mm in diameter and located in segment VIII. LT was decided due to impaired liver function as assessed by a prothrombin time (PT) <60% and platelet count at 40 x 10^9/l and a Meld score at 8. HCC was treated successfully by arterial chemoembolization with complete tumour necrosis and alpha-fetoprotein levels decreased from 508 to 5.7 UI/ml. The patient's weight and height were 100 kg and 168 cm respectively (BMI 35.4 kg/m^2). The donor was a brain-dead 82-year-old man and the graft weighed 770 g (GRWR = 0.77%). The decision for APOLT was made to avoid both SFSS and waiting time for HCC patients. Surgical exploration found a single nodule and uneventful right trisectionectomy (removing segments IV–VIII) was performed. Piggyback caval anastomosis was performed. End-to-side portal anastomosis was performed with partial ligation of the native portal vein and end-to-end arterial anastomosis between the graft celiac trunk and the common hepatic artery. Biliary anastomosis was performed between the graft main bile duct and the recipient right bile duct with a biliary drain (Fig. 1d). The cold and warm ischemia times were of 540 and 55 min respectively. The graft was preserved with CELSIOR and surgery lasted 450 min without any transfusions. The postoperative course was uneventful and the liver function tests recovered rapidly with (PT = 91%; bilirubin = 13 μmol/l) and (PT = 87%; bilirubin = 16 μmol/l) on postoperative days (POD) 3 and 5 respectively. Immunosuppression consisted of glucocorticoid, Mycophenolate mofetil and tacrolimus. US Doppler evaluation showed a measured portal flow in the liver graft and native liver at 30–40 cm/s and 10–15 cm/s respectively. Scintigraphic and scannographic evaluation (Fig. 1a–c) showed progressive enhancement of the liver graft function, especially after ipsilateral native portal vein embolization, which was performed on POD 15 to enhance the hypertrophy of the liver graft. The pathology of the resected liver showed a 1-cm completely necrotic nodule with two small foci of well to moderately differentiated HCC on the periphery. The adjacent liver showed alcoholic cirrhosis with steatohepatitis. Left lateral sectionectomy was performed on POD 30 and Surgery lasted 150 min and the estimated blood loss was 250 ml. No nodule was found on the specimen. The patient was discharged home on POD 42. After a mean follow-up of 20 months, there is no tumour relapse, but the patient presented anastomotic biliary stenosis, which was successfully treated by endoscopic stenting. This case report shows that APOLT in the setting of HCC is a viable option. Although it is very difficult to anticipate the postoperative course if this SLG was not transplanted as an auxiliary graft, we can conclude that the present strategy was effective based on the excellent postoperative liver function, the uncomplicated removal of the native liver and the uneventful postoperative course. The number of

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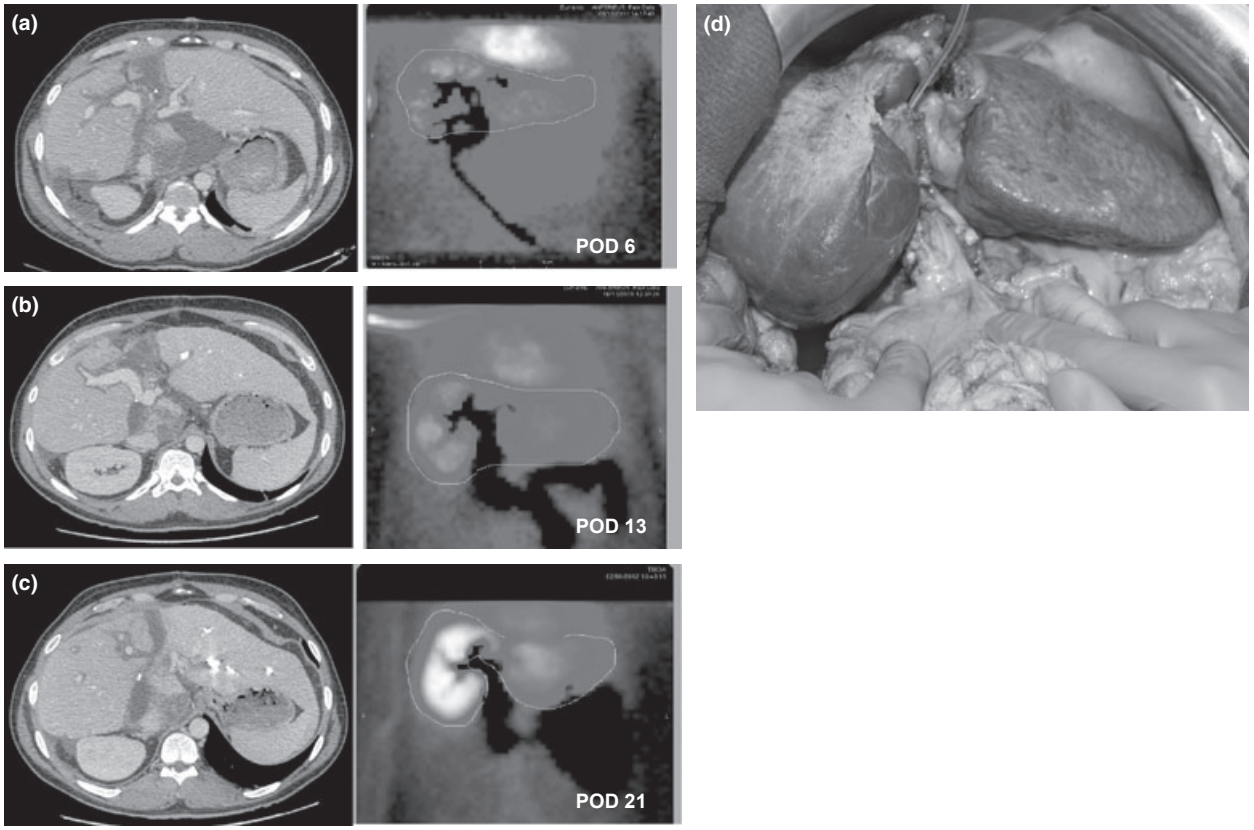

Figure 1 (a,b,c) Sequential hepatobiliary scintigraphies were performed at day 6, day 13 and day 21 post-transplantation. At day 6, the hepatic graft (on the right) is functional, with a rate of uptake of 70% of the whole liver. Biliary excretion of the graft progressively increased, from 12% of uptake at POD 6, to 30% at POD 13 and 46% at POD 21. (d) Intra-operative view of the right liver graft and left native liver.

HCC patients' candidates to LT is being increased [3] and efforts are being made to give priority to HCC patients by giving them special scores [9] and to increase the pool of liver grafts by including marginal [10], living donors [11] and cardiac death [12] liver grafts. SLG can be an option, but the risk of SFSS is a major problem with the increased risk of postoperative mortality and morbidity [13,14]. APOLT is a complicated surgical procedure because it requires partial native liver resection and difficult vascular anastomoses, especially when we know that is often used in critically ill patients with acute liver failure, coagulation disorders and multiple organ failure. Increased postoperative mortality and morbidity have been demonstrated in these patients in many studies [15]. Postoperative mortality and morbidity have been shown to be very high if this technique is used in complicated cirrhosis and living donor liver transplantation [7]. We feel that patients who have HCC with relatively preserved liver function and nonatrophic livers will probably benefit most from this strategy. In our case, surgical resection was safe, probably because the cirrhosis was partially related to steatohepatitis with a relatively soft liver parenchyma. Although APOLT was initially described with deceased donors [5,6,16], currently, it is mainly performed with living donors [7,8]. This strategy can also be applied with SLG from living or split deceased donors especially when we know that actually the tendency is to the use of left living donors [17] due to the high rate of complications encountered with right living donors [18]. In our opinion, there is no increased risk of HCC recurrence on the native liver if HCC is controlled or resected and the native liver remnant is removed within 1 month. In conclusion, this technique applied in selected patients, allows increasing the pool of liver grafts and decreasing the risk of small-for-size syndrome.

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Conflict of interest

All the authors state no conflict of interest for this manuscript.

Funding

All the authors state no funding source for this manuscript.

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