

Living donor liver transplantation using a left hepatic graft from a donor with a history of gastric cancer operation

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In some countries, because of the scarcity of cadaveric donation [1], liver transplants have been heavily dependent on living donation which has recently become an accepted procedure [2]. In such situations, selection of living donors is one of the most important matters, especially in donors with a history of an abdominal operation or malignancy [3–5]. Here we report a case of living donor liver

transplantation (LDLT) using a left hepatic graft from a donor with a history of gastric cancer operation.

A 60-year-old female was admitted to our hospital with decompensated hepatitis C-related cirrhosis to undergo LDLT. The preoperative Model for End-Stage Liver Disease score [6] was 18. Her husband, the only candidate living donor, was a 59-year-old man with a history

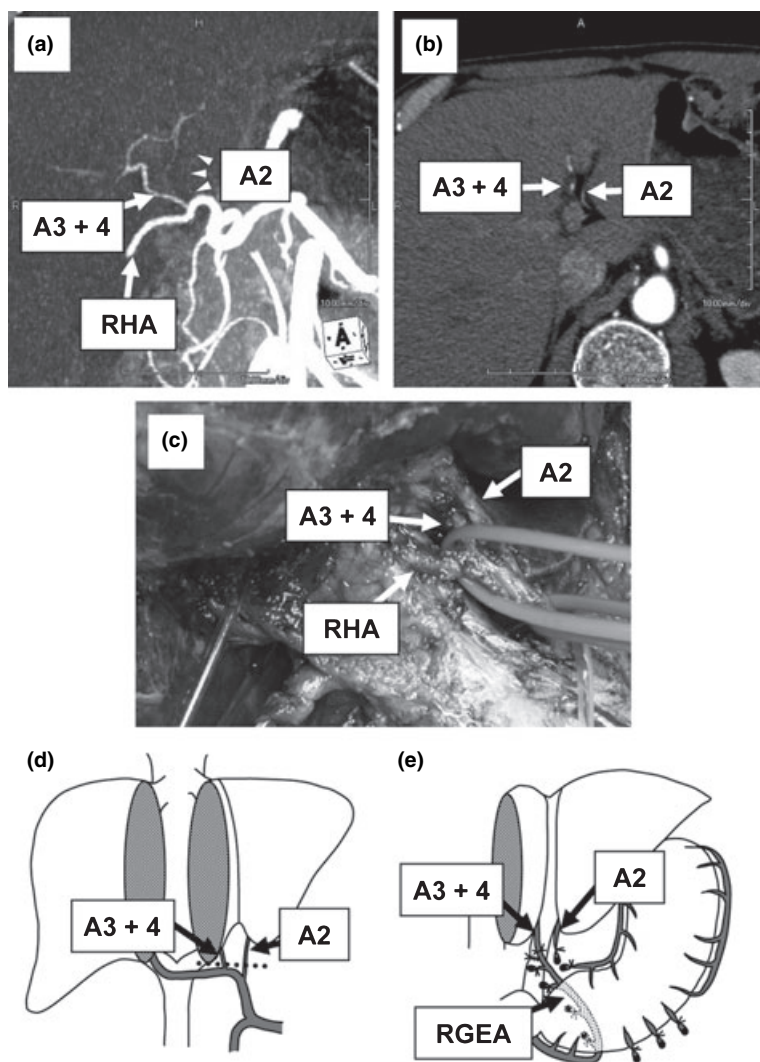


Figure 1 Hepatic arteries of the donor. (a) This maximum intensity projection CT image shows the small A3+4 artery. The tiny A2 artery can hardly be detected on this image (arrow heads). (b) The tiny A2 artery can be seen on this axial CT image. The estimated inner diameters of these arteries were 1.0 mm and 1.5 mm. (c) This operative photograph shows the A2 and the A3+4 arteries of the donor separated with the surrounding hard tissue. These arteries were thin in diameter as well as being fragile. (d) This schematic diagram shows that the left hepatic graft had two small arteries (A2 and A3+4) which individually originated from the proper hepatic artery. The dotted line indicates dividing points of the arteries. (e) This schematic diagram shows that the A3+4 artery of the graft was reconstructed using the right gastroepiploic artery of the recipient. The A2 artery was not reconstructed but ligated. RHA, right hepatic artery; RGEA, right gastroepiploic artery.

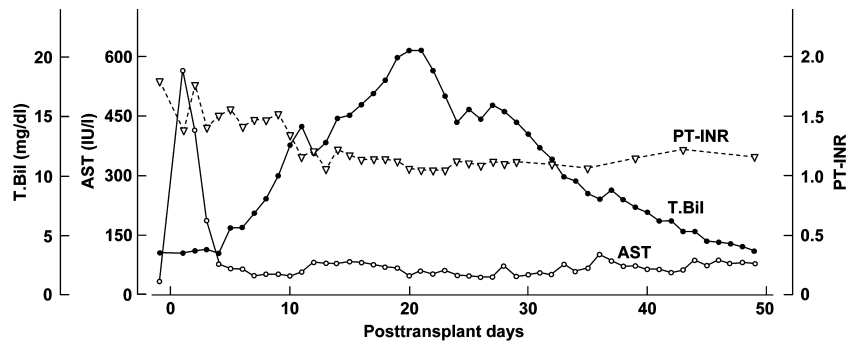


Figure 2 Kinetics of liver function tests after the transplantation. AST, aspartate aminotransferase; PT-INR, prothrombin time-international normalized ratios; T.Bil, total bilirubin.

of early gastric cancer operation 17 years ago. In reviewing the operation record at that time, the donor had undergone a conventional distal gastrectomy reconstructed by Billroth I method with lymphadenectomies. The possibility of disease recurrence 17 years after the gastrectomy was considered extremely low [7], which made us proceed with the LDLT. The preoperative volumetric estimation of the left hepatic graft was 431 cc and the graft-recipient body weight ratio was only 0.66%. Moreover, the left hepatic graft was expected to have two small hepatic arteries (A2 and A3+4), which individually arose from the proper hepatic artery (Fig. 1a–d). Because right hepatectomy was considered risky for this 59-year-old donor, we decided to use the left hepatic graft with the caudate lobe. Written informed consent was obtained from them. In the donor operation, there were dense adhesions between the lower surface of the liver and the remnant stomach. Because of the previous lymphadenectomies in the hepatoduodenal ligament, the ligament became hard, which made the separation of the hepatic arteries from the ligament difficult. By meticulously dissecting these adhesions, we managed to separate the A2 and the A3+4 arteries with hard surrounding tissues (Fig. 1c). Once we overcame these difficulties, we could perform the left hepatectomy and caudate lobectomy in our usual manners [8] because the hepatic hilum, the Spiegel lobe, the confluence of the middle and left hepatic veins were free from adhesions. The operation time was 452 min and the intraoperative blood loss was 300 cc. The two arteries of the graft were thin as well as being fragile. In the recipient operation, there were no suitable recipient's hepatic arteries that could be anastomosed to the graft's thin arteries. First, we reconstructed the A3+4 artery using the recipient's right gastroepiploic artery under a microscope (Fig. 1e). Because of the fragility of the A2 artery, we abandoned the A2 artery reconstruction. The postoperative course of the donor was uneventful. Although the recipient temporarily suffered renal insufficiency, prolonged hyperbilirubinemia (Fig. 2), and refractory ascites, she completely recovered.

Although we did not encounter adverse consequences in this LDLT, there may be a potential limitation of using a hepatic graft from a donor with a history of gastric cancer operation. Selection of such donors is a feasible option in LDLT. However, we have to face technical challenges when a graft is expected to have small arteries.

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