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Hepatic arterial reconstruction with a short-term patency by using micro T-tube in rat liver transplantation

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Letter to Editor

The reconstruction of hepatic artery (HA) is important in the rat orthotopic liver transplantation (OLT), and can provide reliable and relevant data. However, rat OLT model without HA reconstruction became standard, because end-to-end anastomosis of HA requires advanced skills.

Institutional surgical procedures for rat OLT have been described (1,2). A soft polyurethane tube (Polyurethane Catheters, Access Technologies, Skokie, IL) was used for hepatic arterial reconstruction (Figure 1A). In the donor operation, the harvested graft was accompanied by an adequate length of aorta graft. In the recipient operation, the aorta from the left renal vein to the inferior mesenteric vein was skeletonized. The micro T-tube was inserted to the aorta (Figure 1B), then the graft aorta was fixed to the micro T-tube.

Operative times required for HA reconstruction with hand-suture and micro T-tube techniques were compared in ten donor and recipient operations. Also, we determined the patency rate of the reconstructed HAs at 6, 12 and 24 hours after OLT in ten cases. The donor operation by micro T-tube technique was prolonged compared with that by hand-suture technique. The recipient operation by micro T-tube technique was significantly shorter when compared with that by hand-suture technique. The hand-suture technique

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guaranteed a high patency rate (90%) at each time point, but this rate decreased over time in OLT with micro T-tube technique (90%, 60% and 20%, respectively).

Onset of graft injury related to reperfusion occurs at least several hours after OLT (3,4). Patchy and/or focal necrosis is a key finding in shear stress and reperfusion injury resulting from reduced liver volume and graft recirculation after cold ischemia, which is observed several hours after OLT (3,4). Some researchers focused on the research at several hours after OLT (5,6). The technique of using a micro T-tube for HA reconstruction may be helpful for study of the early stage of OLT.

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Fig. 1.

(A) A soft polyurethane tube was used as the micro T-tube. The inner diameter was 0.6 mm and outer diameter was 0.9 mm. Extensions of the T-tube in each direction were all 3 mm in length with beveled ends.

(B) The micro T-tube was inserted into aorta, and fixed to the aorta.