Obstructing spontaneous major shunt vessels might not be mandatory to maintain adequate portal inflow in living donor liver transplantation

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List of all abbreviations:

BRTO: balloon-occluded retrograde transvenous obliteration

LDLT: living donor liver transplantation

PV: portal vein

We read with great interest the article by Ikegami et al. [1], who report the necessity of obstructing spontaneous major shunt vessels in living donor liver transplantation (LDLT). Since 2000, all identified major (≥10 mm) portosystemic shunt vessels have been ligated during LDLT in order to maintain an adequate portal inflow. Good outcomes in managing portal vein (PV) hemodynamics in LDLT support this concept. However, regardless of the size of the portosystemic shunt, we do not always obliterate them during LDLT if there is sufficient portal flow into the graft after reperfusion.

Since 1997, we have performed 187 LDLTs in our hospital. Since we have digital data of imaging studies on computed medical chart which made us to be possible to measure the diameter of the vessels accurately beginning in 2005, 137 LDLT cases were available for retrospective analysis. Of these, 45 patients had major spontaneous shunt vessels (diameter, ≥10 mm on computed tomography). Of these 45 patients, 8 underwent intraoperative ligation of spontaneous shunt vessels, and 1 was excluded from the analysis because the patient underwent anastomosis between the collateral shunt vessel and the PV. Of 36 unligated patients, 8 were postoperatively complicated: 2 with portosystemic encephalopathy, 1 with decreased PV flow and increased ammonia, 2 with PV thrombosis, 2 with stenosis of PV anastomosis, and 1 with decreased PV flow. Unfortunately, 1 patient died at postoperative day 67 due to decreased PV flow with subsequent graft dysfunction. Another 7 patients were treated as follows: 1 relaparotomy due to PV thrombosis; 3 effective balloon-occluded retrograde transvenous obliterations (BRTOs) for 2 patients with hepatic encephalopathy and 1 with decreased PV flow and increased ammonia; 2 angiographies with stent placement for patients with stenosis of the PV anastomosis, and 1 retransplantation due to PV thrombosis with subsequent liver failure.

Of our 36 unligated patients, 27 experienced no complications due to major shunt vessels after LDLT. Therefore, we believe that it is not always necessary to expose the patient to additional risk due to the ligation of major shunt vessels during LDLT, if there

is sufficient portal flow into the graft after reperfusion. Despite new technical approaches, ligation is not always easy, and sometimes even still dangerous, especially for patients who have previously undergone the several abdominal surgeries that have likely led to the formation of severe intra-abdominal adhesions. It should also be noted that even after shunt vessel ligation during LDLT, there is still a chance of recurrence after surgery and this procedure might be ineffective [2].

It remains controversial whether a portosystemic shunt detected before liver transplantation should be occluded during liver transplantation. A portosystemic shunt could decrease PV flow after liver transplantation, leading to the subsequent formation of PV thrombosis, graft dysfunction and/or other serious consequences [3, 4]. On the other hand, the presence of a shunt can have a positive effect on liver perfusion in cases with relative portal hypertension in the early postoperative period, especially after LDLT [3, 5].

As Ikegami et al. also described in their study, BRTO has recently been reported to be a less invasive treatment for portosystemic shunt complications after LDLT [6, 7]. The effectiveness of BRTO treatment for patients after LDLT with gastric varices and liver dysfunction, including hyperbilirubinemia and/or hyperammonemia, and without hepatic encephalopathy caused by prolonged portosystemic shunts has also been reported [7]. One patient analyzed in the present study was complicated with decreased PV flow and high ammonia, and underwent BRTO for a splenorenal shunt at day 6 after LDLT. BRTO therefore seems to be effective, regardless of the interval between the development of complications due to the portosystemic shunt and LDLT. Even if the complication occurs due to a major shunt vessel after LDLT, it can be managed with a less invasive treatment strategy.

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