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LETTER TO THE EDITORS

# Domino liver transplantation as a valuable option

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Dear Sirs,

As a comment to Reichman *et al.*, Professor Ohdan nicely reviewed the comparison of complications and outcome between living donor liver transplantation (LDLT) and deceased donor liver transplantation (DDLT) [1,2]. However, one group of potential living donors was not commented on namely, transplantation using grafts from patients with metabolic liver diseases such as familial amyloidotic polyneuropathy (FAP) [3–5]. This domino liver transplantation (DLT) represents a significant relief to organ shortage in several regions in the world. The Familial Amyloidotic Polyneuropathy World Transplant Register (FAPWTR; http://www.fapwtr.org) holds 1039 DLT performed in 21 countries until the end of 2011.

The advantage of DLT is clear; DLT is LDLT with a full-size liver. This means that DLT has the advantages of living donation as Prof. Ohdan mentioned reduction in waiting time mortality and reduction in cold ischemic time to mention two. At the same time, DLT has the advantage of a whole liver graft, similar to DDLT with larger vessels and bile duct for the anastomosis as well as the sufficient graft volume compared with LDLT.

The surgical technique of DLT is well established. DLT grafts often have very short supra-hepatic vena cava, necessitating reconstruction of the venous outflow using a vein graft. A single center analysis revealed that DLT recipients had no difference in the rates of acute rejection, vascular complications, and biliary complications compared with DDLT and lower rate of biliary complication compared with LDLT [6]. In countries with severe donor shortage such as Japan, the explanted liver can be split for two recipients. In such a case, the postoperative complication might be same as for LDLT. Outcome of DLT depends on the original disease of recipients and their medical conditions, and excellent result is observed for noncancer domino recipients.

The only major disadvantage of DLT is that there is a risk of transmitting the metabolic/FAP disease by the transplanted liver. The FAP genetic disorder has a relatively low penetration rate [3,7]. Native FAP patients do not present symptoms before the age of 15 and often much later. It was therefore anticipated that transmission of disease in a DLT recipient would not appear earlier than 10–15 years after the DLT and only in a small number of the transplanted patients. However, it is obvious from the FAPWTR that the disease may manifest itself earlier than was theoretically expected in the domino recipients [3,8]. Therefore, the typical criteria for the DLT recipient are as follows: (i) Patient with hepatocellular carcinoma, (ii) Patient >60 years of age, (iii) Patient >40 years of age with hepatitis-C cirrhosis, and (iv) Late retransplantation. In these situations, other causes of graft/patient failure is much more likely than transmission of disease and the domino procedure can be justified.

In conclusion, DLT is a rare but good option for specific patient groups, it reduces the waiting time similar to living donor operation, has the same technical complication rate as DDLT, and with the good outcomes reported should not be forgotten as a valuable variant of living donation.

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## Conflicts of interest

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