A New Technical Option for Domino Liver Transplantation

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In patients who underwent transplantation for familial amyloidotic polyneuropathy (FAP) type I, the explanted liver is normal except for the production of transthyretin met-30. In 1997, a new modality of liver transplantation was introduced: the sequential or domino liver transplantation. In this kind of transplantation, the FAP patients’ livers are used as grafts especially for recipients older than age 60 years. The obvious inconvenience is that the FAP liver will continue to produce variant transthyretin, with the potential for later development of neuropathy in the new recipient.

The original technique used for transplantation in FAP patients has been changed to promote sequential transplantation. During the hepatectomy of FAP patients, the inferior vena cava (IVC) is not preserved, and in many cases, the venovenous bypass is used. Some investigators also report that the pericardium may be sectioned to lengthen the vena cava stumps. Recently, some complications of IVC anastomosis in domino liver transplantation were reported. The Achilles heel of domino transplantation remains the IVC length for both patients, the FAP patient and the domino recipient.

In this case, we describe the success of using a technique that permits the FAP hepatectomy to be performed with IVC preservation, in which it is not necessary to use venovenous bypass nor to open the pericardium sac.

A 32-year-old man with FAP agreed to be the domino donor. A cadaveric graft became available and was harvested with standard technique. The inferior vena cava below the renal veins with both common iliac veins were taken to be used as vascular grafts. The native hepatectomy in the FAP patient was performed with IVC preservation, and venovenous bypass was not required. The cadaveric graft was implanted with laterolateral vena caval anastomosis. The pedicle element anastomoses were performed by the standard technique. The FAP patient did not require blood transfusion. The postoperative course was uneventful, and the patient was discharged on the eighth postoperative day.

The FAP liver as a domino graft was harvested without vena cava; with right, middle, and left hepatic veins (Fig. 1A); and was perfused on the back-table with Belzer solution. The middle and left hepatic veins were joined together (Fig. 1B), and the venous graft of both iliac veins with a common cuff of the caval vein was anastomosed with right hepatic vein and the new common trunk of the middle and left hepatic veins using 5-0 polypropylene running suture (Fig. 1C and 1D).

A 62-year-old woman with end-stage liver disease secondary to hepatitis C agreed to accept the FAP liver. The recipient’s hepatectomy was performed with preservation of IVC, and the liver was implanted in the standard piggyback fashion using the caval stump of the venous graft as the outflow from the FAP liver. The postoperative course was uneventful, and the patient was discharged on the 14th postoperative day. The Doppler hepatic vein waveform always showed triphasic waves, which means a good outflow from the FAP liver.

Pena et al described this new technique for domino liver transplantation. The vascular outflow anastomosis in the domino recipient is performed with an iliac/caval vein graft from the cadaveric donor. For this reason, some technical difficulties such as short vena cava stump, pericardial effusion, and bad outflow in both patients are avoided. This technique also avoids the necessity of the venovenous bypass or the hemodynamic changes after caval clamping in FAP patients.

In summary, this new technique may be considered...
as a strategy for avoiding the complications described in the domino scenario, especially in the FAP patient, and are in accordance with domino transplant philosophy.

References


