



Intrahepatic Segmental Portal Vein Thrombosis After Living-Related Donor Liver Transplantation

K.-S. Jeng, C.-C. Huang, C.-K. Lin, C.-C. Lin, and K.-H. Chen

ABSTRACT

Background. Intrahepatic segmental portal vein thrombosis after living-related liver transplantation (LRLT) is uncommon. The cause remains unclear.

Methods. After providing written informed consent, 25 recipients receiving LRLT at our institution from January 2011 to September 2013 were enrolled in this study. We performed triphase computerized tomographic (CT) study of the liver graft of each recipient 1 month after LRLT. The patencies of hepatic artery, portal vein, and hepatic vein were evaluated in detail. The triphase CT scans of the liver of each donor before transplantation also were reviewed. Thrombosis of the intrahepatic segmental portal vein was defined as the occlusion site of the portal vein being intrahepatic. Extrahepatic portal vein thrombosis was excluded in this study.

Results. Among the 25 patients, 2 (8%) developed thrombosis of intrahepatic segmental portal vein. One 47-year-old man received LRLT for hepatitis B viral infection-related liver cirrhosis (Child-Pugh class C) with 3 hepatocellular carcinomas (total tumor volume <8 cm). Another 53-year-old man received LRLT for alcoholic liver cirrhosis (Child-Pugh class C). Both had developed progressive jaundice and cholangitis 1 month after surgery. Intrahepatic biliary stricture was found on the follow-up magnetic resonance images. However, liver triphase CT study demonstrated occlusion of intrahepatic portal vein of segment 8 in each patient. Radiologic interventions and balloon dilatation therapy via percutaneous transhepatic biliary drainage route improved the symptoms and signs of cholangitis and obstructive jaundice for both.

Conclusions. Thrombosis of intrahepatic segmental portal vein is not common but is usually associated with complications of intrahepatic bile duct. Early detection is important, and follow-up CT study of liver is suggested.

EXTRAHEPATIC portal vein thrombosis after liver transplantation has been discussed [1,2]. Intrahepatic segmental portal vein thrombosis after living-related donor liver transplantation (LRLT) is uncommon. Among a series of 25 patients after LRLT, we found 2 patients with such a problem. The possible etiology remains unclear.

PATIENTS AND METHODS

After providing written informed consent, 25 recipients receiving LRLT at our institution from January 2011 to September 2013 were enrolled in this study. We routinely performed triphase computerized tomography (CT) study of the liver graft of each recipient 1 month after LRLT. The patencies of hepatic artery, portal vein, and hepatic vein were evaluated in detail. The triphase CT scans of the

liver of each donor before transplantation were also reviewed. Thrombosis of the intrahepatic segmental portal vein was defined as the occlusion site of the portal vein being intrahepatic. Extrahepatic portal vein thrombosis was excluded in this study.

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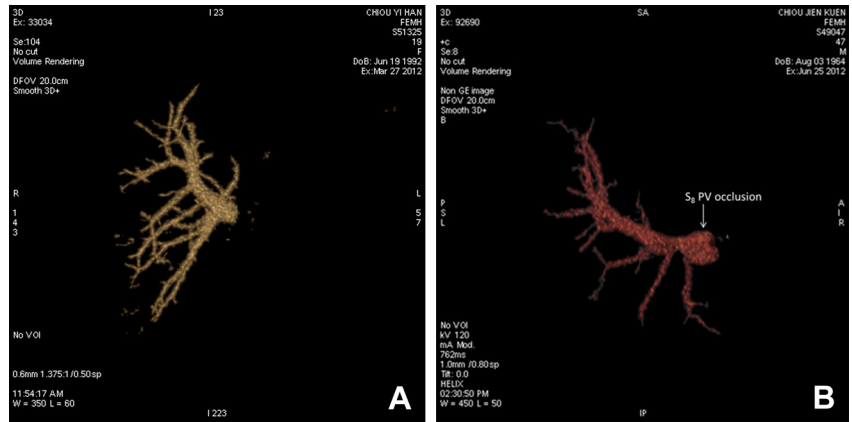


Fig 1. (A) The intrahepatic portal veins of all segments of liver of the donor before transplantation were intact. **(B)** Computerized tomographic scan of recipient (patient 1) 1 month after surgery showed thrombosis of intrahepatic segment 8 portal vein.

RESULTS

Among the 25 patients, 2 patients (8%) developed thrombosis of intrahepatic segment 8 (S₈) of segmental portal vein. Both had developed progressive jaundice and cholangitis 1 month after surgery.

One 47-year-old man received LRLT with right liver graft from his daughter for hepatitis B viral infection-related liver cirrhosis (Child-Pugh class C) with 3 hepatocellular carcinomas (total tumor volume <8 cm). Intraoperative course was smooth. Cold ischemia time was 3 hours 10 minutes.

Reviewing the CT study of their donors before transplantation, all right segmental portal veins were patent and clearly demonstrated (Figs 1A and 2A).

However, biloma with enterococcus and *Pseudomonas aeruginosa* infection occurred 2 weeks later. Follow-up cholangiography with magnetic resonance imaging (MRI) showed intrahepatic biliary stricture at S₈. Percutaneous transhepatic biliary drainage (PTBD) was placed for the stenotic bile ducts. Biloma and intrabdominal infection resolved within 1 month after pigtail drainage of biloma and antibiotic treatment. Occlusion of S₈ segmental portal vein was found also on CT scan 1 month after surgery (Fig 1B).

He received subsequent balloon dilatation therapy of the stenotic segmental bile ducts. His cholangitis and jaundice subsided 2 months later.

Another 53-year-old man received LRLT with right liver graft from his daughter for alcoholic liver cirrhosis (Child-Pugh class C). Intraoperative course was smooth, and cold ischemia time was 4 hours. However, progressive hyperbilirubinemia (total bilirubin up to 7 mg/dL) developed within 1 month after surgery. CT scan showed stenosis of intrahepatic segmental bile duct of S₈. Occlusion of S₈ segmental portal vein was also found (Fig 2B). His jaundice improved gradually after PTBD for S₈. The stenotic ducts improved after subsequent dilatation therapy.

DISCUSSION

Extrahepatic portal vein thrombosis is a serious complication after liver transplantation [1,2], whereas the literature suggests that intrahepatic segmental portal vein thrombosis after liver transplantation is not common. Our study revealed an incidence of 8% among 25 recipients. Such an incidence may be attributed to 2 reasons. One is that the case number of this study is small. The other is due to the detailed analysis of

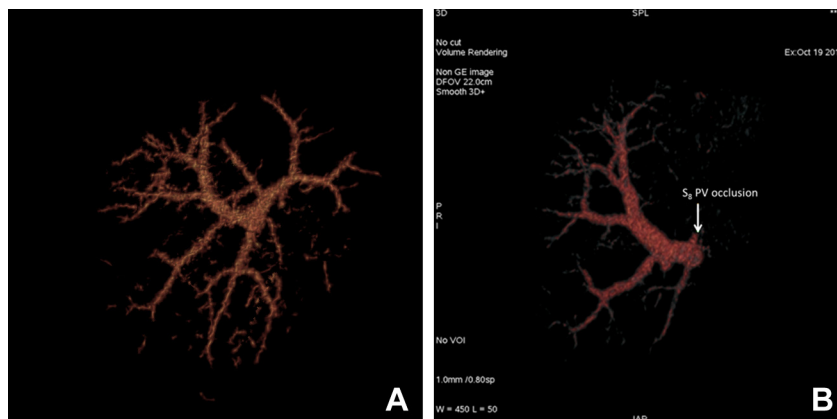


Fig 2. (A) The intrahepatic portal veins of all segments of liver of the donor before transplantation were intact. **(B)** CT scan of recipient (patient 2) taken 1 month after surgery showed thrombosis of intrahepatic segment 8 portal vein.

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