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Hepatic venous outflow obstruction after living donor liver transplantation managed with ectopic placement of a foley catheter: A case report



Mohamed Abdel Wahab^a, Ahmed Shehta^{a,*}, Hosam Hamed^a, Mohamed Elshobary^a, Tarek Salah^a, Ahmed Mohamed Sultan^a, Omar Fathy^a, Ahmed Elghawalby^a, Amr Yassen^a, Usama Shiha^b

^a Liver Transplantation Unit, Gastroenterology Surgical Center, College of Medicine, Mansoura University, Egypt

^b Radiology Department, Gastroenterology Surgical Center, Mansoura University, Egypt

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ABSTRACT

INTRODUCTION: The early hepatic venous outflow obstruction (HVOO) is a rare but serious complication after liver transplantation, which may result in graft loss. We report a case of early HVOO after living donor liver transplantation, which was managed by ectopic placement of foley catheter.

PRESENTATION: A 51 years old male patient with end stage liver disease received a right hemi-liver graft. On the first postoperative day the patient developed impairment of the liver functions. Doppler ultrasound (US) showed absence of blood flow in the right hepatic vein without thrombosis. The decision was to re-explore the patient, which showed torsion of the graft upward and to the right side causing HVOO. This was managed by ectopic placement of a foley catheter between the graft and the diaphragm and the chest wall. Gradual deflation of the catheter was gradually done guided by Doppler US and the patient was discharged without complications.

DISCUSSION: Mechanical HVOO results from kinking or twisting of the venous anastomosis due to anatomical mismatch between the graft and the recipient abdomen. It should be managed surgically by repositioning of the graft or redo of venous anastomosis. Several ideas had been suggested for repositioning and fixation of the graft by the use of Sengstaken–Blakemore tubes, tissue expanders, and surgical glove expander.

CONCLUSION: We report the use of foley catheter to temporary fix the graft and correct the HVOO. It is a simple and safe way, and could be easily monitored and removed under Doppler US without any complications.

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1. Introduction

Vascular complications after liver transplantation represent a diagnostic challenge and a serious source of morbidities and mortality [1]. The early hepatic venous outflow obstruction (HVOO) is a rare but serious complication causing acute Budd–Chiari syndrome, which may result in graft loss [2].

Early HVOO is mostly caused by technical problems as tight anastomosis, twisting of hepatic veins, intimal flaps, and

malpositioning of the graft. The keypoint in management of this form of obstruction is the early diagnosis which allows proper treatment to prevent graft dysfunction or graft loss [3].

We report a case of early HVOO after living donor liver transplantation using right hemi-liver graft, which was managed by ectopic placement of foley catheter to maintain adequate outflow of the graft.

2. Case presentation

A 51 years old male patient with end stage liver disease due to chronic hepatitis C virus infection received a right hemi-liver graft from his brother. Prior to transplantation, the donor was evaluated by hepatic angiography; to outline the anatomy of the portal vein, hepatic artery and hepatic veins, magnetic resonance cholangio-pancreatography; to assess of the anatomy of the biliary system, and liver volumetry. In this case, the donor had single hepatic

Abbreviations: HVOO, hepatic venous outflow obstruction; MHV, middle hepatic vein; IVC, inferior vena cava; US, ultrasound; AST, aspartate aminotransferase; ALT, alanine aminotransferase.

* Corresponding author at: Gastroenterology Surgical center, Gehan Street, Postal code: 35516 Mansoura, Egypt. Tel.: +20 50 2254558/103 814 174.

E-mail addresses: ahmedshehta@mans.edu.eg, dr.ahmedshehta@yahoo.com (A. Shehta).

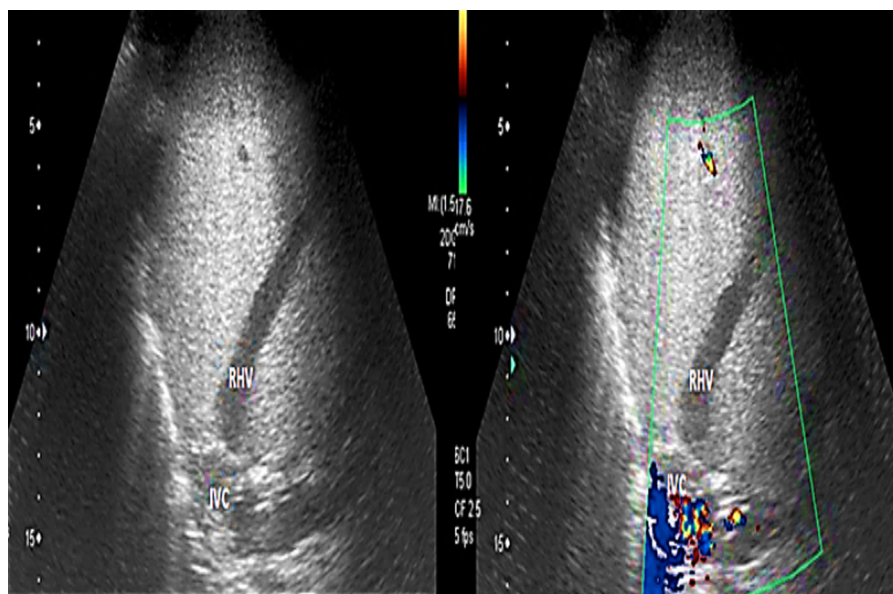


Fig. 1. Doppler ultrasound on the first post-operative day denoting absence of flow in the right hepatic vein (RHV: right hepatic vein, IVC: inferior vena cava).

artery, portal vein, and right hepatic vein and single large tributary from segment VIII to the middle hepatic vein (MHV). The liver graft weight was 900 g, and the graft to recipient weight ratio was 0.8%.

During back table preparation of the graft, we routinely reconstructed the tributaries of the MHV of more than 5 mm in diameter or draining significant liver volume depending on preoperative computed tomography and intraoperative ultrasound. The decision whether to reconstruct or occlude the vein was taken during the recipient surgery depending on the presence of significant graft congestion, the rate of flow in the graft, and occurrence of hemorrhage from the resection surface of the graft after graft reperfusion.

Right hepatic vein reconstruction was done by end-to-side anastomosis between donor right hepatic vein and inferior vena cava (IVC) using continuous 4/0 polypropylene suture with venoplasty. The right hepatic vein stomal diameter was 26 mm. Drainage of segment VIII vein was done to side of IVC using a gortex graft by continuous 4/0 polypropylene suture. Segment VIII vein was 8 mm in diameter. No severe graft congestion or massive bleeding from the transection surface noted at the time of reperfusion.

Doppler ultrasound (US) examination was done after completion of vascular anastomoses and at the end of operation which confirmed patency of all vascular anastomoses.

On the first postoperative day, the patient developed impairment of the liver functions (total serum bilirubin 8.8 mg/dl, serum aspartate aminotransferase (AST) 298 IU/ml, serum alanine aminotransferase (ALT) 223 IU/ml, and serum gamma glutamyl transferase 32 IU/L). Doppler US confirmed absence of blood flow in the right hepatic vein without thrombosis (Fig. 1). The decision was to re-explore the patient. On exploration, this condition was attributed to torsion of the graft upward and to the right side causing kink of the right hepatic vein because of size difference between the graft and the abdominal space.

The management was performed with a foley catheter, inflated by 50 cc normal saline, placed between the graft and the diaphragm and the chest wall. Gradual deflation of the catheter was started one week after insertion, and was gradually applied for another week guided by Doppler US to check adequate hepatic venous outflow (Figs. 2 and 3).

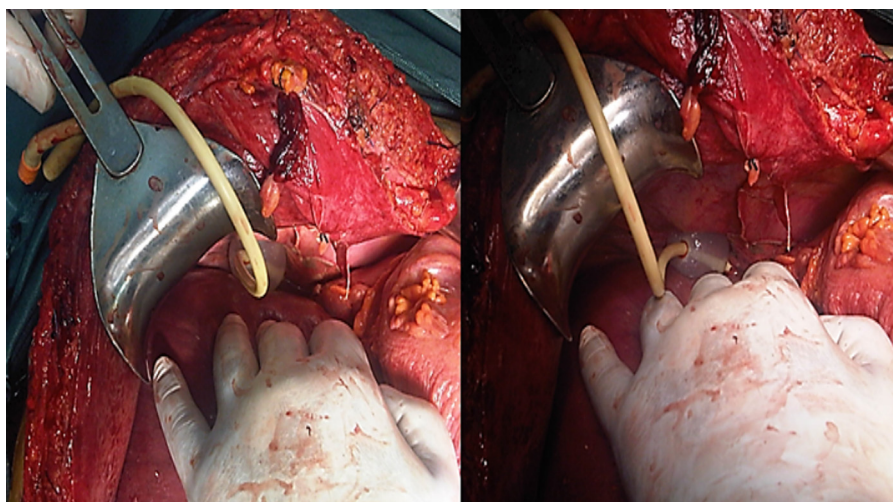


Fig. 2. Intraoperative photograph after inflation of the foley catheter between the graft and the diaphragm and the chest wall.

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