

Type 2 Portal Vein Branching Anomaly Repaired with Porcine Pericardial Tissue Graft During Living Donor Liver Transplantation

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ABSTRACT

Anomalous portal vein branching poses a technical challenge by means of venous reconstruction in live donor liver transplantation. However, given the scarcity of deceased donor organ pool, liver transplantation surgeons should be familiar with the management of this issue. This study, represents the first case of living donor liver transplantation with type 2 anomalous portal vein branching, which was managed utilizing a Y shaped tubular graft constructed from porcine pericardium.

KEYWORDS: Portal vein branching anomaly; Porcine graft; Living donor; Liver transplantation

INTRODUCTION

Living donor liver transplantation (LDLT) is an established approach in the treatment of end-stage liver disease. In LDLT, the right lobe is usually preferred because it provides a larger amount of graft tissue. However, in the right lobe, anomalous portal vein branching (APVB) is encountered more commonly (approximately 13%) compared to the left lobe [1].

Although these anomalies constituted an impediment for transplantation formerly, nowadays transplantations are successfully performed with advanced anastomosis techniques [2]. In this study, we present the first case of LDLT with type 2 (trifurcation) APVB, which repaired with a tubular Y graft obtained from porcine pericardium.

CASE PRESENTATION

A 43 years-old male with a diagnosis of alcohol-related liver cirrhosis was referred to our center for LDLT. On admission, he had grade 3 hepatic encephalopathy and diffuse ascites with a history of recurrent esophageal varices bleeding. The patient, who had a Child-Turcotte-Pugh class B and model for end-stage liver disease score of 29, was scheduled for LDLT. A type 2 APVB was detected in his donor during the routine pre-transplantation work up. As the distance between the anterior and posterior portal vein branches was measured to be 3 cm, a venous reconstruction utilizing a Y-graft was planned. Following the right hemiliver donor hepatectomy, a porcine pericardial tissue graft (BioLab® Xenopericardial Prosthesis, 10x12 cm, Moscow) was used to construct a tubular Y shaped conduit in the back table. This Y shaped conduit was utilized as an interposition graft between the graft liver and recipient's native veins to provide a single portal vein anastomosis (Fig 1). The patient was followed up in the intensive care unit for 2 days after the operation and no early postoperative complications were observed. Doppler ultrasonography confirmed a

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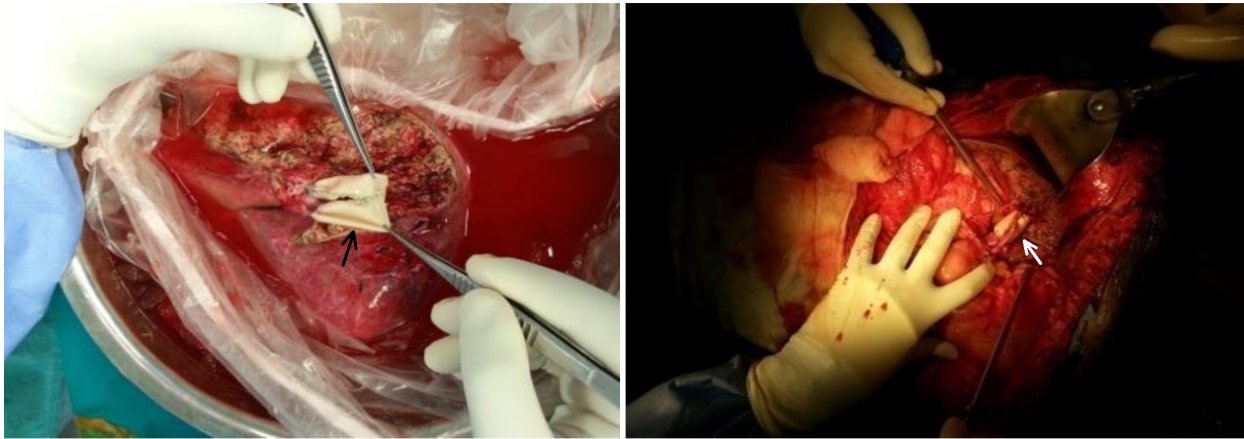


Figure 1: The surgical application of porcine pericardial tissue graft to get single portal vein anastomosis.

normal flow in the portal vein. The postoperative immunosuppressive protocol included methylprednisolone, tacrolimus, and mycophenolate mofetil. The INR level was kept in the range of 2-3 with anticoagulant treatment. However, 15 days after warfarin use, the patient suffered from a rare complication of warfarin-induced skin necrosis. Afterwards, warfarin was switched to clopidogrel, and the patient was discharged on the 22nd day after the operation.

DISCUSSION

APVB was first classified by Cheng in 1996 [3]. The presence of APVB creates additional technical challenges during right lobe LDLT. Especially in countries with limited number of deceased donor organ pools, being familiar with the management of venous reconstruction in the event of APVB may be life-saving. Different techniques such as primary closure, ovarian vein patch-plasty, Y-graft interposition with cadaveric iliac vein have all been described for the reconstruction in case of APVB [4]. To the best of our knowledge, the presented case is the first case in which a porcine pericardial graft was utilized for the venous reconstruction of a liver graft with APVB. The patient was followed up with immunosuppressive and antiplatelet therapy, and there were no complications such as portal vein thrombosis, anastomotic leak, or organ rejection was encountered during the 3 years

follow up. Xenografts could be considered more practical than synthetic grafts by means of ease of availability, excellent biocompatibility, and low infection risk [5]. Although it is difficult to establish the usability of the procedure with a single case report, this case may lead the way for future studies.

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