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Graft harvest of right posterior segment for living-donor liver transplantation

Tomohide Hori*, Fumitaka Oike, Yasuhiro Ogura, Kohei Ogawa, Shinji Uemoto

Department of Transplant Surgery, Kyoto University Hospital, Kyoto, Japan

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ABSTRACT

INTRODUCTION: Right posterior segmental graft (RPSG) is an alternative procedure for living-donor liver transplantation (LDLT). Although the first case of RPSG was reported in 2001, it has not been disseminated because of the lack of popularity, technical concerns, and surgical difficulties.
PRESENTATION OF CASE: A 37-year-old man with primary sclerosing cholangitis. His spouse was the only transplantation candidate, although she was ABO incompatible. Preoperative investigations revealed that left-lobe graft was insufficient for the recipient and that right-lobe graft was accompanied by donor risk. In RPSG, estimated graft-to-recipient weight ratio (GRWR) and estimated ratio of liver remnant were reasonable. In the donor operation, the right hepatic vein (RHV) and demarcation line were confirmed, and intraoperative cholangiography was performed. The cut line was carefully considered based on the demarcation line and RHV. The RPSG was harvested. Actual GRWR was 0.54. Unfortunately, this recipient showed a poor course and outcome after LDLT.
DISCUSSION: Segmental branches of vessels and biliary duct may be not suitable for reconstruction, and surgeons must exercise some ingenuity in the recipient operation. Segmental territory based on inflow and that based on outflow never overlap completely, even in the same segment. The selection of RPSG based only on liver volume may be unfeasible. Liver resection should be carefully considered based on preoperative imaging, and demarcation line and RHV during surgery.
CONCLUSION: RPSG is a useful tool for LDLT. However, detailed studies before surgery and careful consideration during surgery are important for RPSG harvest.

1. Introduction

Living-donor liver transplantation (LDLT) is widely performed for end-stage liver diseases. Adult-to-adult LDLT is successfully performed, when appropriate preoperative evaluations, surgical procedures, and postoperative management techniques are established.[1] Graft volume is one of the key factors for both donor safety and recipient survival. In adult-to-adult LDLT, the size of the left-lobe graft is frequently insufficient, and the size of the right-lobe graft usually satisfies the liver volume. However, the donation of right-lobe graft has a higher risk to the donor than that of left-lobe graft.

Right posterior segmental graft (RPSG) has been introduced as an alternative graft procedure to increase safely the number of donor candidates.[2,3] RPSG is a partial liver graft of Couinaud's segments 6 and 7 with the right hepatic vein (RHV). The first LDLT procedure with an RPSG was reported in 2001.[2] However, RPSG has not been widely used because of the lack of popularity of RPSG and technical concerns.[1] Here, we report a case of an RPSG donor for adult LDLT. Preoperative evaluation and detailed surgical procedures are presented.

2. Case report

Here, we report a 37-year-old man with primary sclerosing cholangitis. Model for End-Stage Liver Disease score was 33 points, and he was registered in the LDLT program. His body weight was 72 kg. Donor candidates were limited in this case, and his 36-year-old spouse was the only candidate, although she was ABO incompatible. Preoperative investigation including volumetric computed tomography was performed. Segmental territories of portal and hepatic veins were also analyzed, and liver volume was calculated as measured liver volume (mL) × 0.91 (MeVis software; MeVisLab, Bremen, Germany). Estimated whole liver volume was 922 mL. Estimated graft volume, estimated ratio of liver remnant, and estimated graft-to-recipient weight ratio (GRWR) were evaluated in grafts with left lobe, right lobe without middle hepatic vein (MHV), and posterior segment (Table 1). In posterior segmental

* Corresponding author at: Department of Transplant Surgery, Kyoto University Hospital, 54 Shogoinkawara-cho, Sakyo-ku, Kyoto 606-8507, Japan.
Tel.: +81 75 751 3111; fax: +81 75 751 3106.
E-mail address: horit@kuhp.kyoto-u.ac.jp (T. Hori).

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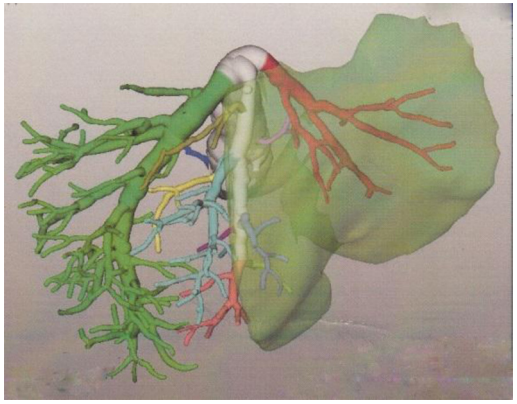
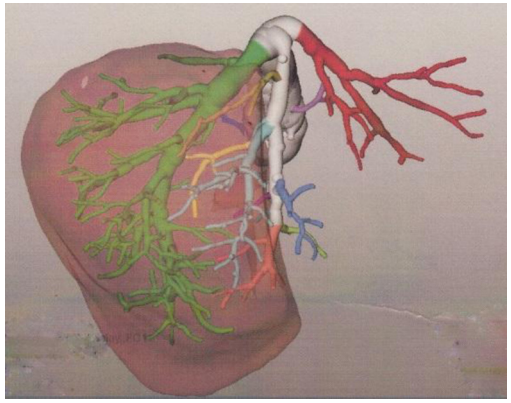
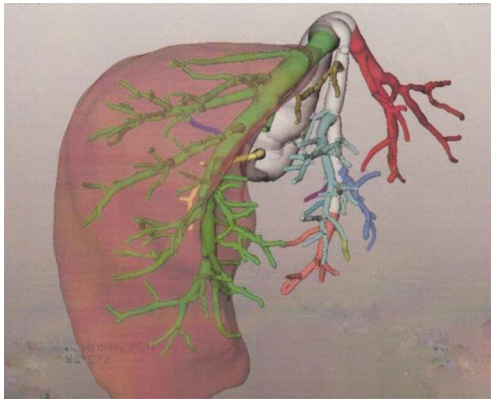
Table 1
Preoperative volumetric assessment of liver grafts.

Graft type	Left lobe	Right lobe without MHV	Posterior segment
			
Estimated graft volume (ml)	206	708	469
Estimated graft/whole liver	0.22	0.77	0.51
Estimated liver remnant/whole liver	0.78	0.23	0.49
Estimated GRWR	0.286	0.983	0.651