

Left Side Living Donor Hepatectomy

Seoul National University

Nam-Joon Yi

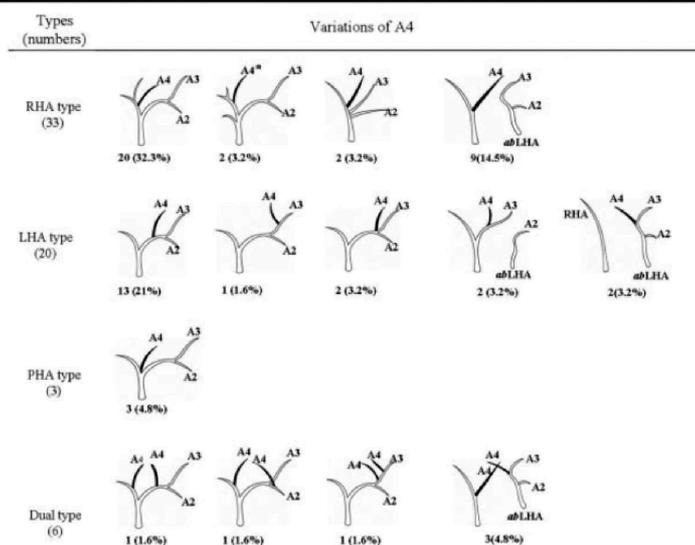
During living donor hepatectomy, a donor surgeon must be careful to preserve the both sides anatomical structure as well as enough volume of the both sides of the donor and recipient. Therefore, in this report, I focus on the pitfalls of surgery of donor left hepatectomy according to the types of left sided graft; left hepatectomy, left lateral sectionectomy and reduced or monosegment procurement.

Left Hepatectomy

1. Vascular anatomy

A left hemigraft is usually used for a small sized adult patient or adolescent. Left hepatic artery and portal vein is usually well visualized and dissected.

However, in more than a half of the Korean patient, the middle hepatic artery (or A4) is arising from right hepatic or proper hepatic artery. Therefore hepatic arteries are usually more than double (Fig. 1). (1) After identification of the resection line according to transient hemiside ischemia, parenchymal division can be made using a CUSA or other instruments. The decision of procurement of the MHV should be made considering the following factors; graft to recipient weight ratio, and existence of the draining vein on the both sides of the donor and graft resulting in the liver congestion (Fig. 2). (2) Another decision making point is to whether the segment 1 (S1) is required or not as a graft which is dependent of graft size. If so, full mobilization of S1 from the IVC and preservation



Abbreviations: A2, segment 2 artery; A3, segment 3 artery; A4, segment 4 artery; A4*, dangerous type of segment 4 artery variation; abLHA, aberrant left hepatic artery; LHA, left hepatic artery; PHA, proper hepatic artery; RHA, right hepatic artery.

Fig. 1. Variation of the segment 4 artery (A4) in Korean.

of A1 and P1 is mandatory. But if the S1 is not procured, parenchymal division can be guided using the hanging maneuver.(3)

2. Biliary anatomy

Most common variation of the bile duct anatomy (Fig. 3) is trifurcation (type B) and right anterior duct open to the common hepatic duct (type C1). If considering the type D, more than 20% of donors have bile duct variation. Therefore a donor surgeon must be careful about these biliary variations.

Left Lateral Sectionectomy

A procurement of the left lateral section in a living donor involves procurement of the S2 and S3 dissecting the parenchyma along a section running to the right of the round ligament. After the parenchyma dissection, the left branch of the bile duct, the hepatic artery, the portal vein, and the left hepatic vein are quickly clamped and dissected. The middle hepatic artery (A4) is sometimes divided (especially in LHA type, Fig. 2). If so, the remaining S4 becomes totally ischemic. In type E bile duct variation, although it is rare, a donor surgeon must be careful not to miss the B3 and B4.

Monosegmentectomy or Reduced Left Lateral Sectionectomy

For small infants weighing less than 5 kg, problems

related to a large-for-size graft are sometimes encountered even when using the left lateral section graft. The main problems associated with large-for-size grafts are the small size of the abdominal cavity in the recipient and the inability to provide sufficient blood supply to the graft.(4) The reduced lateral section, monosegment, or reduced monosegment (hyper-reduced) grafts have recently been introduced to address these problems. Because the use of S3 is more convenient for implant the graft, the transaction of S2 can be performed via ligation of the Glissonian pedicle (Fig. 4).

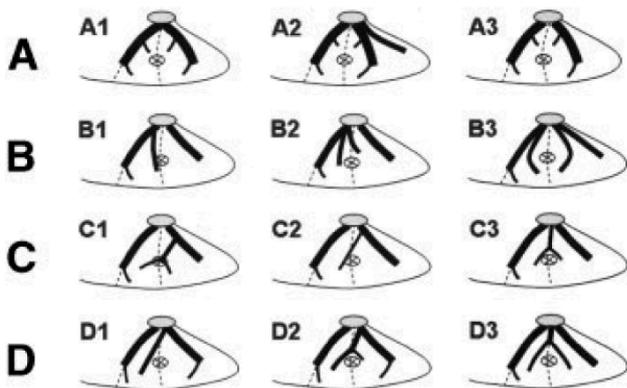


Fig. 2. The segment 4 hepatic vein variation in Korean. The incidences of the V4 subtypes in 328 donor livers were as follows: A1, n=79 (24.1%); A2, N=32 (9.8%); A3, n=31 (9.5%); B1, n=20 (6.1%); B2, n=18 (5.5%); B3, n=2 (0.6%); C1, n=36 (11%); C2, n=33 (10.1%); C3, n=23 (7%); D1, n=21 (6.4%); D2, n=19 (5.8%); D3, n=14 (4.3%).

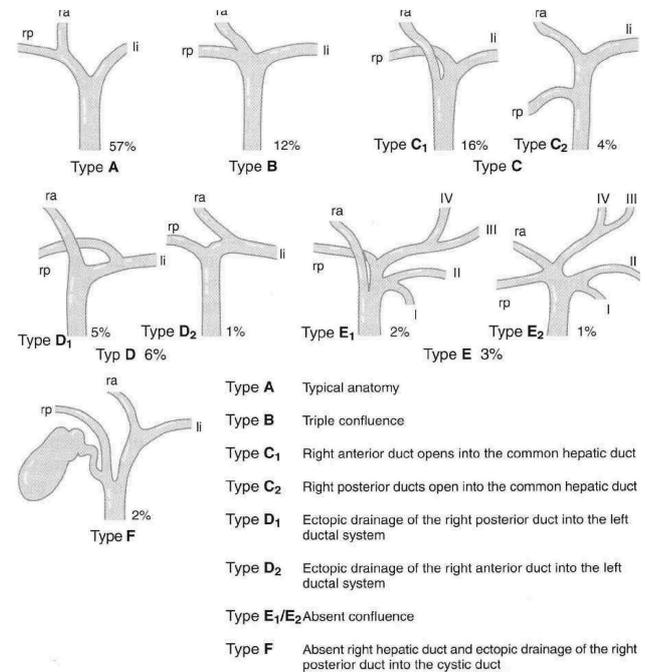


Fig. 3. Variation in the confluence of the extrahepatic bile ducts.

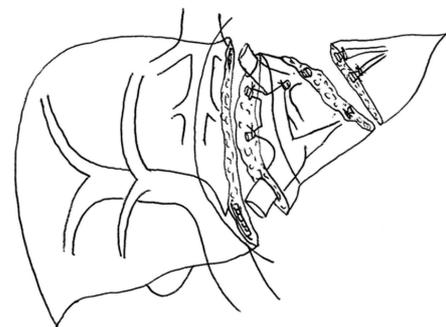


Fig. 4. Schematic drawing of the resection plane in monosegment graft of S3.

References

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