

LETTER TO THE EDITORS

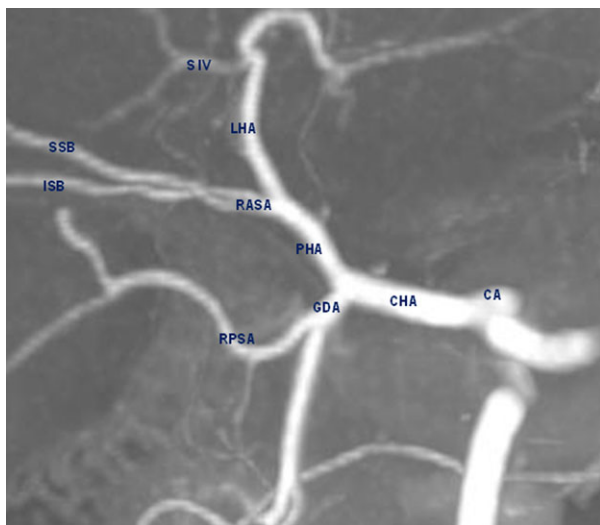
# Where angels fear to tread: donor bile duct division in living donor liver transplant

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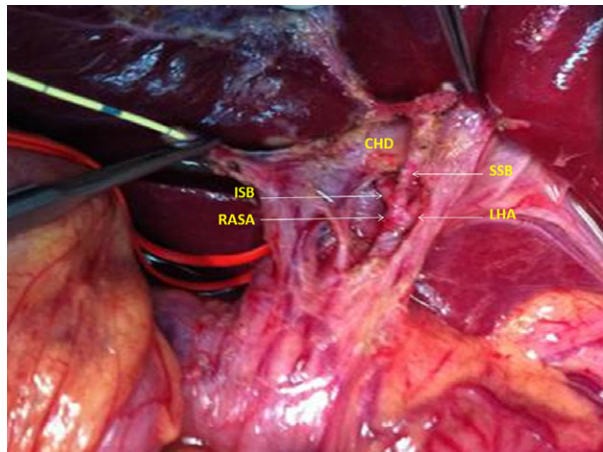
Dear Sir,

Conventional arterial and biliary anatomy is encountered in 65–70% cases of liver transplantation with preponderance in females [1,2]. In LDLT, reported rate of aborted donor hepatectomy is 1.2% and one-third of these are attributable to biliary and vascular variations [3]. Here, we discuss a living donor with a unique vasculobiliary anatomy that required common hepatic duct (CHD) division.

A 24-year-old healthy female underwent right hepatectomy as voluntary right liver lobe donor to her father. She was the only child and sole right lobe donor. She had nonconventional arterial anatomy on CT angiography as demonstrated in Fig. 1 while MRCP was normal. Intra-operatively, not only CT findings were confirmed, but also CHD was found sandwiched between superior seg-



**Figure 1** Arterial anatomy on CT angiogram. Proper hepatic artery (PHA) dividing into left hepatic artery (LHA) and right anterior sectoral artery (RASA). RASA branching into superior (SSB) and inferior segmental (ISB) branches. The right posterior sectoral artery (RPSA) originating from gastroduodenal artery (GDA).



**Figure 2** Intra-operative finding of common hepatic duct (CHD) sandwiched between segmental branches of right anterior sectoral artery (RASA).

mental (SSB) and inferior segmental branch (ISB) of right anterior sectoral artery (RASA) as shown in Fig. 2. This was a unique surgical challenge and represented something difficult to identify on preoperative imaging or intra-operative cholangiogram. We could opt for one of the following.

- 1 Abandon the procedure
- 2 Reconstruct 3 small arteries, that is, a) SSB of RASA b) ISB of RASA, and c) RPSA.
- 3 Divide donor's CHD as this would allow division of RASA stump. Thus, one less arterial reconstruction would be required.

LDLT represents a classic example where nonadherence to the Hippocratic precept of “do not harm” has been adopted in regions with decreased donor shortage. As donor resources are exhaustive in LDLT, abandoning the procedure would jeopardize our patient's probability of undergoing transplant. More than one arterial anastomoses and abnormal arterial anatomy are associated with worsened graft survival and hepatic artery throm-

bosis [4,5]. Performing three microvascular arterial anastomoses on small caliber arteries could multiply the risk of arterial complications potentially leading to graft failure/retransplant.

We proceeded with donor's CHD division. This was followed by a duct-to-duct, single-layer, interrupted, nonstented anastomosis with PDS sutures. It can be argued that this approach exposed a healthy donor to a potential biliary complication. However, no guidelines exist for such unique scenarios, and there is clinical equipoise between donor risks and recipient benefits in situations like this one. In this case, the operating surgeon was confident that CHD division and anastomosis could be performed with utmost safety. Both donor and recipient are doing well more than 1 year after the operation with normal liver enzymes. We certainly do not advocate routine division of donor bile duct just to ease out the donor operation. But in countries with nonavailability of deceased donors and stringent criteria for living donors would aborting the procedure in cases with complex anatomical variations serve best interests of the patient and donor? We also remain unaware of the impact of such a planned bile duct division on postoperative morbidity and the impact of taking informed consent or lack of it with reference to lifelong risk of biliary complications. Routine division of CHD certainly cannot be advocated and mentioned only to be discouraged but is it an acceptable option in exceptional circumstances?

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## References

1. Uysal F, Obuz F, Uçar A, Seçil M, Igci E, Dicle O. Anatomic variations of the intrahepatic bile ducts: analysis of magnetic resonance cholangiopancreatography in 1011 consecutive patients. *Digestion* 2014; **89**: 194.
2. Cucchetti A, Peri E, Cescon M, *et al.* Anatomic variations of intrahepatic bile ducts in a European series and meta-analysis of the literature. *J Gastrointest Surg* 2011; **15**: 623.
3. Cheah YL, Simpson MA, Pomposelli JJ, Pomfret EA. Incidence of death and potentially life threatening near-miss events in living donor hepatic lobectomy: a world-wide survey. *Liver Transpl* 2013; **19**: 499.
4. Uchiyama H, Shirabe K, Yoshizumi T, *et al.* Use of living donor liver grafts with double or triple arteries. *Transplantation* 2014; **97**: 1172.
5. Warner P, Fusai G, Glantzounis GK, *et al.* Risk factors associated with early hepatic artery thrombosis after orthotopic liver transplantation - univariable and multivariable analysis. *Transpl Int* 2011; **24**: 401.