Editorial

Too much or insufficient information for anatomical right posterior sectionectomy?

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Anatomical right posterior sectionectomy (ARPS) has been considered as the most difficult procedure in both laparoscopic and open liver resection (1). Therefore, it is essential to accurately identify the resection line during surgery. Conventional approaches to demarcation consist of occluding the vascular supply of the region of interest using a selective and arterial branch or using a Glissonean pedicle transection as first described by Takasaki *et al.* (2,3). However, the main drawback of the conventional demarcation techniques is that the impossibility to recognize intersegmental/intersectional boundaries during parenchymal transection. Therefore, Zhang *et al.* objectively analyzed the relationship between the aberrant demarcation of the right posterior portal territory and the portal venous variation, and developed a comprehensive framework of the right posterior section for ARPS (4). In this study, the morphological framework of the right posterior section was classified into four types; normal (type I), caudal-redundant (type II), cranial-deficient (type III), and combined (type IV). This study will be helpful for preoperative planning for the safety and accuracy of ARPS or other alternative anatomical liver resection. So far, there have been studies on the variation of the right portal vein (5,6), but little is known about the portal vein variations associated with the aberrant right intersegmental plane between right anterior lobe and the right posterior lobe.

However, the demonstration of the hepatic vein was also important to achieve accurate ARPS. The right hepatic vein (RHV) can serve as an anatomical landmark in the right anterior sectionectomy or APRS. Besides, the inferior RHV (IRHV) can change the course of the RHV. IRHV affects the drainage of the right interior port of liver, mainly segment 6 and the inferior part of segment 5 (7). As a result, it changes the drainage area of the RHV, leading to mismatch between the RHV and the right intersectional plane (8). Hwang *et al.* demonstrated that the overall exposure frequency of RHV reached 72.5% during APRS in the absence of IRHV. However, in the presence of the IRHV, the frequency of full exposure of the RHV decreased to 26.7%, and there were frequent cases where RHV was not encountered despite following the demarcation line (7). According to Fang *et al.*, not only the IRHV but also the anatomical variation of the middle hepatic vein (MHV) may affect the drainage of RHV (9). Therefore, for the safe implementation of ARPS, it is necessary to understand the structure of the hepatic vein.

The authors proposed a tailored surgical procedure for safe ARPS according to the morphological framework for the right posterior section. They recommended ARPS combined with dorsal subsegment 8 resections oriented by the right posterior portal territory in the caudal part and the course of RHV in the cranial part for cases with poor lesion margin in type III and IV to achieve clear resection margin. And parenchyma-sparing ARPS to preserve variable ventral-P6 is suitable in cases of type II and IV with poor liver function. Parenchymal-sparing ARPS combined with subsegment 8 resection instead of ARPS is recommended for type IV cases with poor liver function

and insufficient resection margin. This recommendation for safe ARPS are detailed. However, on the other hand, these surgical strategies proposed by the authors was regarded as technique that only specialized liver surgeons could perform. In some cases, it would be better to receive the right hemihepatectomy, so it would be good to suggest the surgical strategy a little more easily. Moreover, the main results of this study could be too much information to not experts in advanced liver surgery.

As noted by the authors, we expect that the clinical usefulness of this framework will increase if they expand the sample size and conduct multi-center clinical trials to validate proposed framework in further studies.

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