Laparoscopic Hepatectomy: Surgical Strategy – Right Posterior Sectionectomy or S7/8 Lesion Resection

Choon Hyuck David Kwon
Sungkyunkwan University

According to the Louiseville Statement, laparoscopic approach for liver resection was recommended for antero-lateral segments (segment 2-6) of the liver. The posterior-superior segments (segment 7/8) still remains a challenge and much technical expertise is required to perform this procedure. The main reason for this technical challenge is because the camera which is the "eye of the surgeon" is often inserted through the umbilical port which hinders the vision at the posterior-superior area. Also, due to the ribs, most working ports are inserted below the costal margin so all the ports work from the caudal side of the resection area. Different approach is thus necessary to overcome this barrier.

1. Position of the patient

The gravity is a very important tool surgeons must consider during operation. Placing the patient in left semi-decubitus or left decubitus position is important in order to drag the liver leftward for better vision and approach. Also a reverse-Trendelenburg position help position the liver more caudally.

2. Transthoracic port

Since all trochar ports are located below the costal margin, having a port approaching from the upper side will help the surgeon have a better angle during parenchymal dissection. From the left side, the sub-xiphoid port is used and from the right side an intercostal port – so call transthoracic port - placement may be necessary. The port is usually placed between 8-11 intercostal spaces and passes through the pleural space and through the diaphragm. The lung parenchyma usually lies 2~3 ribs above the penetration site so injury usually does not occur. Using a balloon trochar instead of a conventional trochar helps retain the diaphragm cephalad in case pneumothorax develops. Having 2 working ports at a superior level greatly improves the angle of approach so as to make parenchymal dissection easier.

3. Mobilization & retraction of the liver

Despite the placement of transthoracic port and the position of the patient, left-downward retraction of the liver is usually necessary to have good surgical view. Therefore, dissection of the right coronary and triangular ligament should be done before starting parenchymal dissection. The ligamentum teres and/or gall bladder is a great tissue to use for retraction.

4. Hanging maneuver

When performing a right posterior sectionectomy, not much traction is necessary during the initial half of the parenchymal dissection. However, when approaching the latter half, the field is often very deep and vision poor. Therefore, hanging maneuver using an umbilical tape helps retract the liver towards the camera and the surgical field vision is greatly enhanced. In addition, because most of the large branches of the right hepatic veins appears at the latter half of the division plane, much bleeding from hepatic veins may occur making operation difficult. The hanging procedure, due to the compression effect of the veins, greatly reduces the amount of bleeding from these veins and bleeding control is done much easier.

With the help of some of the tricks described above, laparoscopic right posterior sectionectomy may be done much easier. The operator should constantly try to improve the vision of the surgical field as well as the angle of approach in order to make a safer and more comfortable liver resection.