

Optimal trocar selection/placement and patient positioning

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Laparoscopic hepatectomy is generally performed with a four- or five-trocar technique. The placement of trocar in laparoscopic surgery is extremely important because it is directly related to the difficulty of the surgery. The patient's position and trocar placement are decided on the basis of the location of the tumor.

For right hepatectomy, the procedure was performed under general anesthesia with the patient placed in a 30° semi-lateral position with the lower limbs apart. The surgeon stood between the patient's lower limbs. After creating an 12 mm umbilical port, pneumoperitoneum was established and maintained below 13 mmHg. A flexible laparoscope was used in all procedures. The main working port of 12 mm size of trocar for the devices that are needed for parenchymal transection and stapler is placed to the subcostal area just lateral rectus muscle. Five mm of another trocar for surgeon's left hand is placed in far lateral are of middle axillary line (This trocar site will be used for drain insertion after completion of surgery). One more 11mm of trocar for assistance's right hand is usually placed near to epigastrium for fan retractor. Last trocar for assistance left hand is placed in anterior axillar line for grasper or suction. The most important main working port placement should be adjusted to the size of patient body cavity.

For left hepatectomy, all trocars should be moved slightly left compared to right hepatectomy. For simple left lateral sectionectomy, supine position will be enough and 12mm of main working port will be placed near to midline of abdominal cavity parallel to stapler line.

It was reluctant to perform laparoscopic postero-superior segmentectomy of the liver due to poor visual field, and difficult parenchymal dissection. But additional ports inserted upper field can secure supplementary working area. Two additional intercostal ports were placed at the 7th and 9th intercostal space (Fig. 1a,b). Surgeons should be careful to insert intercostal trocars at the center of the intercostal space to avoid intercostal vessel bleeding.

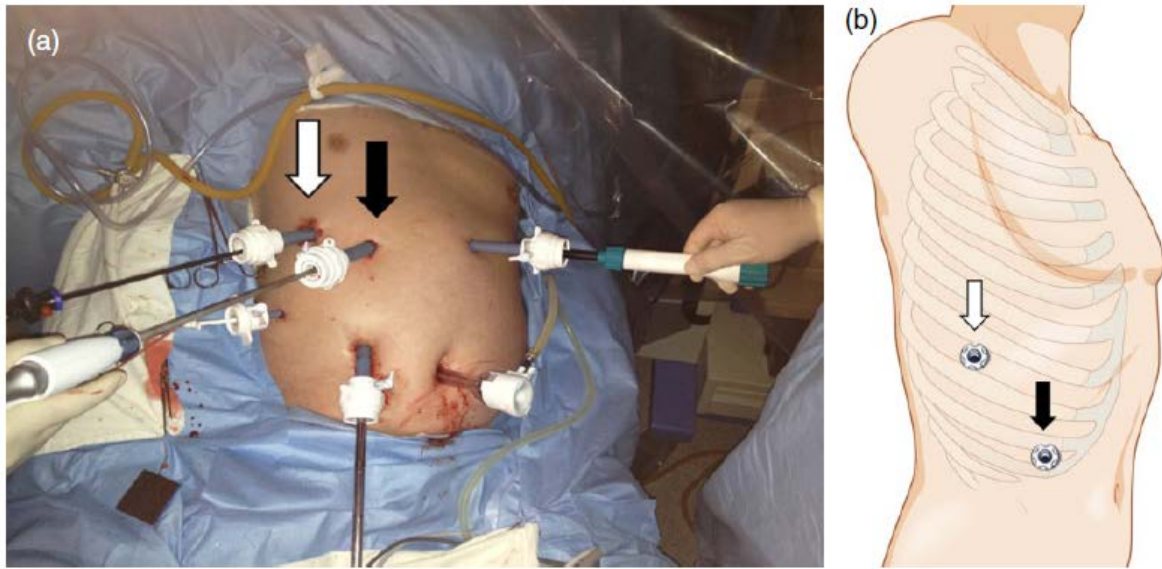


Fig. 1 Trocar placement at the 7th or 9th intercostal space (white arrow, 7th intercostal trocar; black arrow, 9th intercostal trocars)