

## Approach to hepatocaval confluence during laparoscopic right hepatectomy: three variations on a theme

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### Abstract

**Introduction** Due to technical challenges and reduced pool of candidates, laparoscopic major hepatectomies remain relatively limited: In particular, right hepatectomy is technically more challenging than left since it requires liver mobilization, dissection of inferior vena cava (IVC) and hepatocaval confluence (HepCC), and section of right hepatic vein (RHV).

**Materials and methods** Among 53 laparoscopic right hepatectomies (San Raffaele Hospital; 2013–2015), the approach to HepCC was standardized by three techniques: (1) primary approach to IVC and RHV with complete mobilization of right hemiliver; (2) anterior approach with hanging maneuver without liver mobilization (partial anterior approach—PAA); and (3) anterior approach without hanging maneuver without liver mobilization of right hemiliver (total anterior approach—TAA). The technique was defined preoperatively based on tumor size/position, IVC/RHV compression, and HepCC dislodgement. Type of parenchyma and risk of lesion rupture were also evaluated.

**Results** *Primary approach to IVC and RHV* Before liver transection and after liver mobilization, IVC dissection is performed, and RHV is isolated and suspended on a vessel loop. RHV is sectioned after parenchymal transection. Indications: no compression by tumor of IVC/RHV,

no HepCC dislodgement, soft parenchyma, no risk of lesion rupture. *PAA* IVC and HepCC are dissected free before transection, without previous liver mobilization; a tape is positioned in front of the anterior aspect of IVC, to perform the hanging maneuver. RHV section is performed after parenchymal transection. Indications: huge masses without compression of IVC/RHV, no HepCC dislodgement, liver stiffness, risk of lesion/parenchyma rupture. *TAA* Both IVC and RHV dissections are performed at the end of parenchymal transection, without previous mobilization of right lobe. Indications: huge masses with compression of IVC/RHV, HepCC dislodgement.

**Conclusion** Different approaches are available for HepCC dissection during laparoscopic right hepatectomy: Liver parenchyma characteristics, tumor size, and relationship with HepCC should be considered in surgical planning, to achieve satisfactory outcomes.

**Keywords** Laparoscopy · Liver surgery · Right hepatectomy · Hepatocaval confluence · Anterior approach

### Compliance with ethical standards

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