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Laparoscopic liver surgery An overview of the literature and experiences of a single centre



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In the past two decades there has been an enormous increase in laparoscopic liver surgery. There is a trend from limited to laparoscopic major resections and more centres are adopting laparoscopic liver surgery as a standard of care. Although no randomized clinical trials are published, different reports on minor and major hepatectomies and meta-analyses suggest (at least) equal outcomes and cost-effectiveness compared to open procedures.

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Introduction

Since the first laparoscopic hepatectomy reported in the early 1990's [1,2] there has been an enormous increase in laparoscopic liver surgery.

Although initial reports mainly describe left lateral sectionectomies or minor, anteriorly located resections, there is a moving trend towards laparoscopic major resections and formal anatomical hepatectomies.

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However, there are some differences in laparoscopic surgery compared to open procedures which need to be addressed.

In general, major hepatectomies are considered a resection of three or more Couinaud segments. But in laparoscopic surgery upper or posterior right bisegmentectomies (VI + VII or VII + VIII) are also considered major resections because of their difficult accessibility (Figs. 1 and 2).

Secondly, what is the definition of laparoscopic liver surgery? The Louisville's consensus meeting on laparoscopic liver surgery, held in 2008, defined three different techniques: (a) a totally (pure) laparoscopic procedure in which only a limited laparotomy is necessary for specimen extraction, (b) a hand-assisted procedure using a hand-port to facilitate the procedure; and (c) the hybrid technique beginning by a laparoscopic mobilization of the liver followed by an open resection through a mini-laparotomy, mainly used in living donor hepatectomies [3].

Indications for laparoscopic liver surgery

At the conference meeting in Louisville [3] there was consensus that the most favourable indications for laparoscopic resection was a solitary lesion (≤ 5 cm) located in segments II to VI. Agreement was obtained that in experienced hands for, left lateral sectionectomies, anterior segmentectomies and/or wedge resections, laparoscopy should be the standard approach. Although lesions located in the posterior segments (I, IVa; VII and VIII) and major liver resections (ie right; central or left hemihepatectomies) are resectable by the laparoscopic approach. But these are difficult resections and are not universally accepted as the standard of care and should be reserved for experienced laparoscopic surgeons.

Also stated in 2008, tumours which are either large (>5 cm), centrally located, multiple, bilateral or close to the liver hilum, major hepatic veins or inferior vena cava (IVC) were at that time not considered candidates for a laparoscopic approach in most centres.

In the current literature there is no consensus on the indications for laparoscopic liver surgery and most reports describe a heterogeneous selection. The two most frequently reported inclusion criteria are tumour size (≤ 5 cm) [4–8] and location (segment II–VI) [4–12].

A recently published review by Reddy et al reported that especially for malignant lesions strict criteria should be used for the employment of laparoscopic liver surgery [13]. In laparoscopic liver surgery there should be a great understanding of hepatic anatomy, use of intraoperative ultrasound (IOUS), extensive experience in open liver surgery and technical skill to control vascular and biliary structures [14]. The use of laparoscopic ultrasonography is of utmost importance to confirm the position, number and size of the lesions and to define the relationship with the hepatic vessels and biliary structures [4–15].

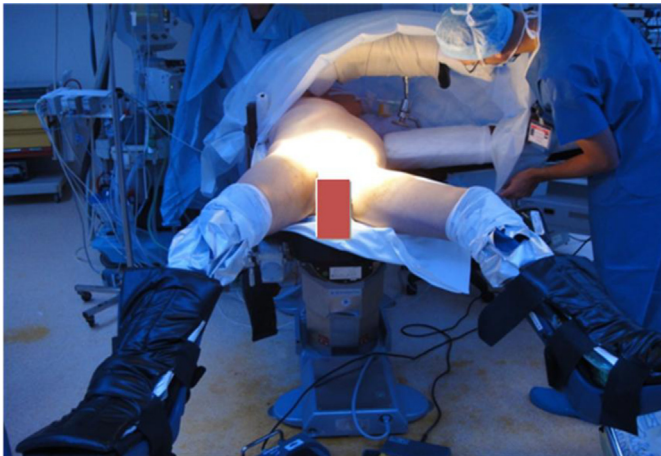


Fig. 1. Position of the patient for the segment VII or VIII.

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