

# Optimized recovery and minimally invasive liver surgery

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# Chapter 13

## Valorisation

## VALORISATION

### *INTRODUCTION*

Liver surgery can be performed for both benign and malignant tumours of the liver. Colorectal metastases are the indication for nearly 70% of all liver resections, and about 50% of all patients with a primary colorectal tumour will develop hepatic metastases. Primary and benign liver tumours account for 17% and 8% of indications for liver surgery in the Netherlands, respectively. Despite the worldwide interest in laparoscopic surgery, in 2014 the majority of all liver surgical procedures was still performed as an open procedure. Only 11% of all liver resections was performed completely laparoscopically. It is essential not only to offer patients the best surgical procedure, but also to provide patients the best evidence-based perioperative care to accommodate a good and quick recovery. The trend in the Netherlands, but also in the rest of the world, is towards further adoption of the laparoscopic technique and implementation of a structured perioperative care programme in liver surgery. With the still increasing healthcare spending in the Netherlands all new developments and treatments face scrutiny over costs. Laparoscopic liver resection itself may be more expensive, but if the combination with Enhanced Recovery After Surgery protocols leads to a shorter hospital length of stay, lower morbidity or better survival, the overall costs may be equivalent or even lower.

### *RELEVANCE OF SCIENTIFIC RESULTS IN THIS THESIS*

The results reported in this thesis may have both social and economical impact. Costs play an ever more pivotal role in modern (surgical) care. Not only do surgeons and other clinicians look for ways to optimize and shorten the duration of admission of patients, nowadays the government and insurance companies also look for ways to improve patient care and reduce costs. As described in this thesis, minimization of the delay between functional recovery and actual discharge could prove to be the easiest and most tangible way to reduce costs. The length of hospital stay can be reduced by implementation of an ERAS programme and may be reduced if patients are operated laparoscopically. Results presented in this thesis show a benefit of the ERAS programme. However, this thesis has failed to demonstrate a reduced time to functional recovery and associated length of stay after laparoscopic left lateral sectionectomy. Future studies could and should be focused on finding the added value of laparoscopy in liver surgery. If laparoscopy truly leads to a quicker recovery of the patient and cost-effectiveness analyses also confirm a benefit, laparoscopy is likely to become the preferred procedure for liver surgery. A one or two day reduction in length of hospital stay could prove to be of significant value regarding costs. Currently, laparoscopic procedures are still more expensive than open liver surgery. Equally, laparoscopic

procedures require more time in the operating room. This aspect of allocating more operating room time to liver resections, at a time where operating room capacity is scarce, may be important in future decision making. Waiting lists for cancer-related procedures may increase, if more procedures are done laparoscopically. If future studies fail to demonstrate a clinically significant difference in favour of laparoscopic liver surgery that also outweighs the costs, a situation could develop in which open liver surgery remains the standard. Laparoscopy may only be deemed beneficial in selected liver surgical procedures. Perhaps insurance companies will no longer compensate for laparoscopic procedures in the absence of evidence. However, there is another aspect to the comparison of open versus laparoscopic liver surgery: patient opinion. Patient-reported outcomes are being valued more and more. Evidence on patient-reported outcomes on open versus laparoscopic liver surgery is limited and future results of the ORANGE II trials on laparoscopic versus open liver surgery could provide additional leverage in the debate.

### *TARGET POPULATION*

Liver surgeons, other specialists involved in the care of patients diagnosed with liver tumours and patients themselves can benefit from the results presented in this thesis. It offers them new insights into expert opinions, developments, comparison of operative techniques and perioperative care strategies.

### *INNOVATION AND FUTURE*

Projects in this thesis have led to the development and design of new studies and collaborations. The multicentre international design of the ORANGE II Trials has resulted in a collaborating network of HPB-centres. A currently ongoing European multicentre study, the ORANGE II Plus – Trial, is a direct spin-off of the ORANGE II project. Through this spin-off, in which the merits of open and laparoscopic hemihepatectomy are compared, both surgeons and patients are likely to be presented with valuable new evidence. In the world of hepatic surgery this research has the potential to make a lasting footprint. The first results of this collaboration are to be expected in 2017. With a new network of expert HPB-centres in place, it seems inevitable that new multicentre research could get off to a flying start with broad European support.

In addition, based on results from this thesis and recent literature the Enhanced Recovery After Surgery (ERAS) programme for liver surgery is here to stay. There is robust evidence that should advocate implementation of a structured and evidence-based perioperative care programme. In the future this must also be further supported and controlled by the ERAS Society by the development and publication of official guidelines.