59. — WHAT YOU SHOULD KNOW BEFORE STARTING MINIMAL INVASIVE LIVER RESECTION. AN OVERVIEW.

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Laparoscopic liver surgery has evolved over the last 2 decades. Advancements in surgical technology, surgical technique, and postoperative care have aided in lifting barriers to laparoscopic liver resections (LLR). LLR might decrease morbidity and hospitalisation stay compared to open approach, and importantly in liver surgery, may decrease postoperative costal pain. However, in hepatic surgery as in all abdominal procedures, laparoscopic approach is a mean but not a goal. The possibility of LLR should neither modify indications for surgery nor the type of resection.

Physiologic modifications induced by CO2 pneumoperitoneum should be known by the surgical and anaesthetic team involved in LLR. Pneumoperitoneum decreases cardiac output, and this decrease could be worsened by the reverse Trendelenburg position and by hepatic hilar clamping. CO2 pneumoperitoneum decreases hepatic blood flow. This is a clear advantage for limiting blood loss during LLR, but this also might increase liver ischemia during Pringle liver hilum clamping, a manoeuvre that should be avoided in LLR. Low venous pressure might decrease blood loss by the small supra hepatic veins, but may also further decrease cardiac output.

Several devices may be used for liver section, without evidence of the superiority of one device compared to others. Endo GIA might be very helpful to control the major liver vessels, as branches of portal vein or suprahepatic veins. Significant CO2 embolism is a rare complication, and conversion to open approach for haemorrhage should be performed only if blood loss is controlled.

Up to now, there is no clear scientific evidence that laparoscopic approach provides any advantage compared to open approach. SILS, LESS or even robotic approaches should only considered as purely experimental. Current barriers to LLR will continue to fall in the future.

62. — OPEN OR LAPAROSCOPIC RIGHT HEPATECTOMY : THE PROSPECTIVE STUDY "ORANGE".

E.M. Wong-Lun-Hing, A. Laurent, I. Dagher, O. Scatton, O. Soubrane, U.P. Neumann, B. Topal, R. Troisi, L. Aldrighetti, N. O'Rourke, J.N. Primrose, M. Abu Hilal, G.J.P. Van Breukelen, C.H.C. Dejong, R. Van Dam, on behalf of the ORANGE II Study Group.
UMC Maastricht, Maastricht, The Netherlands.

Recent developments in liver surgery include the introduction of laparoscopic surgery and enhanced recovery programmes. Laparoscopic surgery and enhanced recovery programmes both focus on faster time to recovery and consequently shorter hospital length of stay. The added value of the laparoscopic hemihepatectomy compared to the open hemihepatectomy in an ERAS setting has never been studied in a randomised controlled setting. The multicentre international ORANGE II PLUS – Trial will provide evidence on the merits of laparoscopic compared with open hemihepatectomy.

Patients eligible for left or right hemihepatectomy will be recruited and randomised at the outpatient clinic. All randomised patients will be operated in the setting of an ERAS programme. The experimental design produces two randomised arms (open and laparoscopic hemihepatectomy) and a prospective registry. Patients ineligible for randomization can be included in the prospective registry. The primary endpoint of the ORANGE II PLUS trial is time to functional recovery. Secondary endpoints are hospital length of stay, intraoperative blood loss, operation time, resection margin, time to adjuvant chemotherapy initiation, readmission percentage, (liver specific) morbidity, quality of life, body image, reasons for delay of discharge after functional recovery, long term incidence of incisional hernias, hospital and societal costs during one year, overall five-year survival. We aim at a reduction in time to functional recovery by 2 days after laparoscopic hemihepatectomy. A sample size of 125 patients in each randomisation arm has been calculated to detect a 2-day reduction in time to functional recovery (power 80% and $\alpha = 0.04$ two-tailed in the final analysis, to adjust for interim analysis with $\alpha = 0.01$ halfway the trial).

The ORANGE II PLUS trial is a multicentre RCT that will provide evidence on the merits of laparoscopic surgery in patients undergoing hemihepatectomy within an enhanced recovery ERAS programme.

Orange II plus trial registration : Clinicaltrials.gov NCT 01441856.