WHAT SHOULD WE KNOW BEFORE STARTING MINIMAL INVASIVE LIVER RESECTION?

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Minimal Invasive Liver Resection

• First report by Gagner (Surg Endosc 1992)
• First report of bisegmentectomy II-III by Azagra in 1993 (Surg Endosc 1996)
• First large series in 2000 (Cherqui, Ann Surg 2000)

• Minor >> major hepatectomies (> 3 segments)
Principles

• Same indications than open liver resection
• SAFETY
• ONCOLOGIC SURGERY !!!

• Laparoscopic ultrasonography
Principles

• Experience in hepatic surgery
• Experience in laparoscopic surgery

• Same indication than open procedure
  - first question: what is the best resection?
  - second question: open or scopy?
Indications of MILR

• Benign, cystic, parasitic, cancer lesions
• Ideal:
  - solitary lesion < 5 cm
  - peripheral or/and pedunculated segments III - IV b - V
• Standard for left lateral bisegmentectomy (II-III)
Relative contraindications

- Segments I, IVa, VI, VII, VIII
- Contact with large vessel
- Gallbladder cancer & hilar cholangiocarcinoma
- Previous abdominal surgery in the right upper abdomen
Advantages

• Less bleeding and less transfusion?
• Less pain
• Esthetics
• Less or no drain
• Shorten hospital stay

• But patient selection?
Risks

- CO2 embolism
- Hemorrhage
- Oncologic surgery
Transection device
Laparoscopic CUSA
Vascular Endo GIA
Case 1: Man, 66 y-old
Case 1: Man, 66 y-old
Case 2: Woman 55 y-old
Case 3: woman, 39-y old

- Multiple adenomas in the right liver
- Lap right hepatectomy
- Discharged at day 4
Laparoscopy

- CO2 pneumoperitoneum decreases splanchnic & hepatic blood flow
  - decreases bleeding during liver resection

- CO2 pneumoperitoneum decreases cardiac output

- Hilar clamping?
Hypothesis

• Pneumoperitoneum decreases the hepatic back-flow through the suprahepatic veins during PTC

• PTC during laparascopy induces increased liver ischemia compared to open PTC
Material & Methods

1 hour: Induction, anesthesia, catheters, surgery

30 min: Recovery

1 hour: Laparoscopy, Open PTC, Laparoscopic PTC

3 hours: Observation

- T0
- T60
- T240

Euthanasia
Material & Methods

• Continuous hemodynamic monitoring
• Continuous hepatic microcirculatory flow measurement (laser doppler)
• Continuous hepatic tissue O2 pressure (PtiO2) measurement (Clark electrode)
• Liver function (ASAT, INR, bilirubin)
• IL6, IL10, TNFα
• Gluthation, Vit E, Vit C
• Histology
Results: Microcirculation (%)
Results: PtiO2 (mmHg)
Results: ASAT (IU/mL)
Conclusions

• Laparoscopic hepatic resection is here to stay
• Clear potential advantages in expert hands with experience in liver surgery and in laparoscopy
• Team
• Randomized trials....