

WHAT SHOULD WE KNOW BEFORE STARTING MINIMAL INVASIVE LIVER RESECTION ?

Pr O. Detry

Department of Abdominal Surgery & Transplantation,
CHU Liege, University of Liège, Belgium

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 !!!

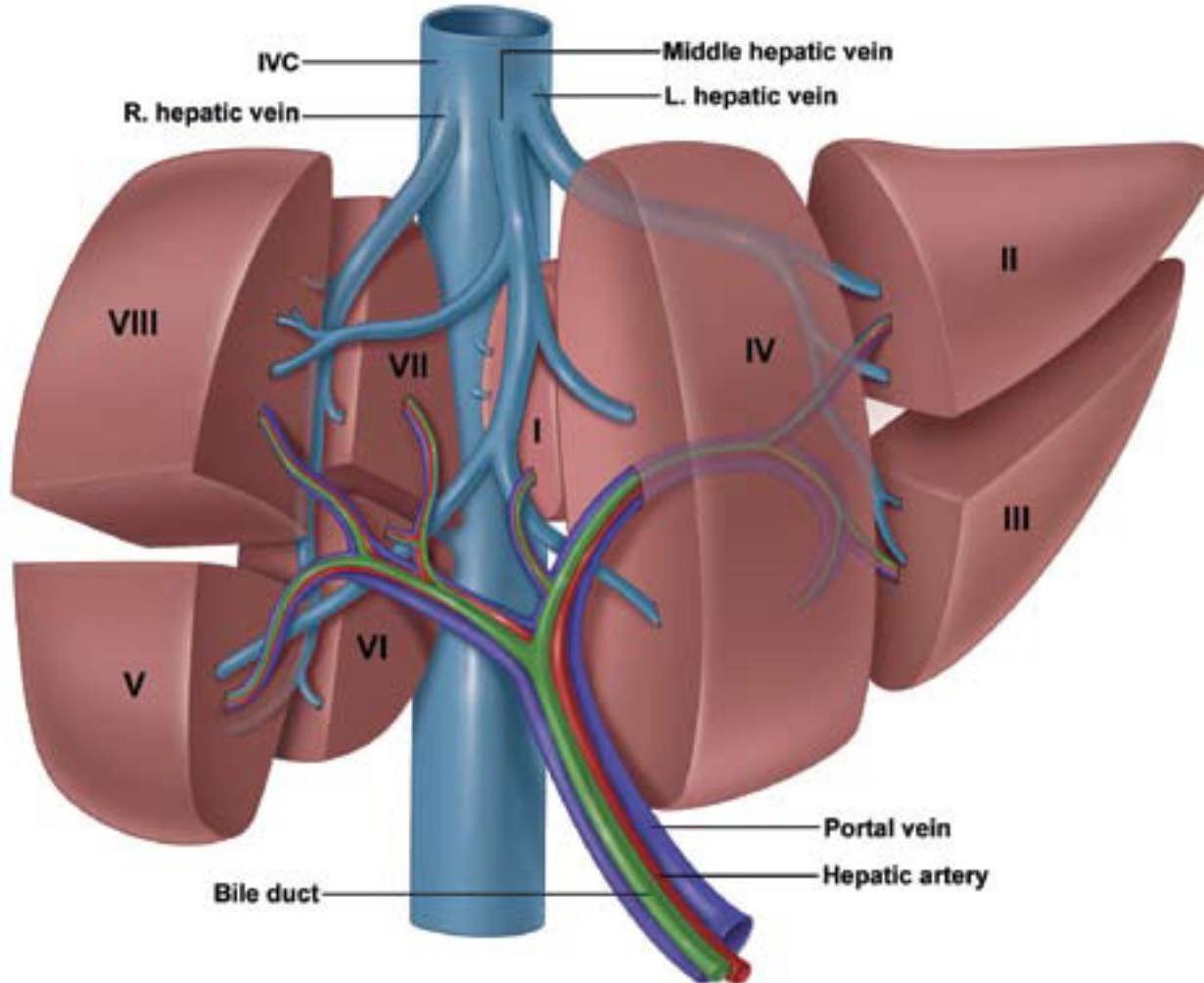
- Laparoscopic ultrasonography

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?

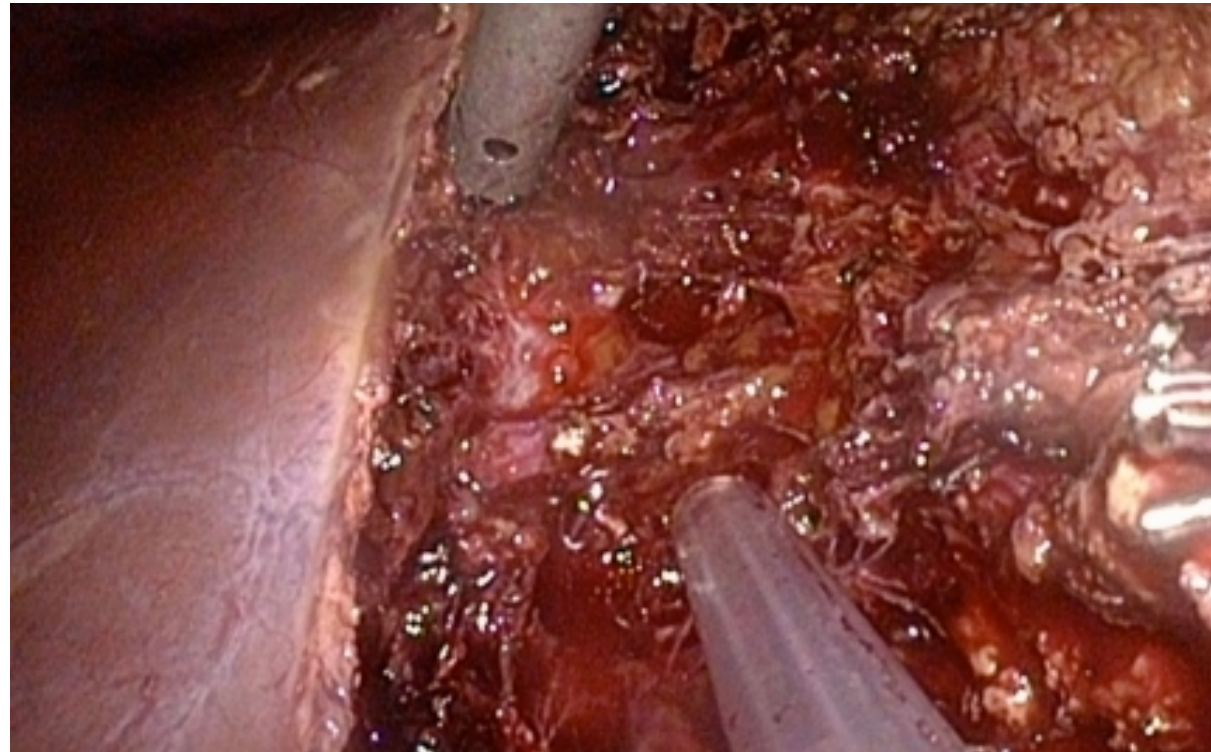
Risks

- CO2 embolism
- Hemorrhage
- Oncologic surgery

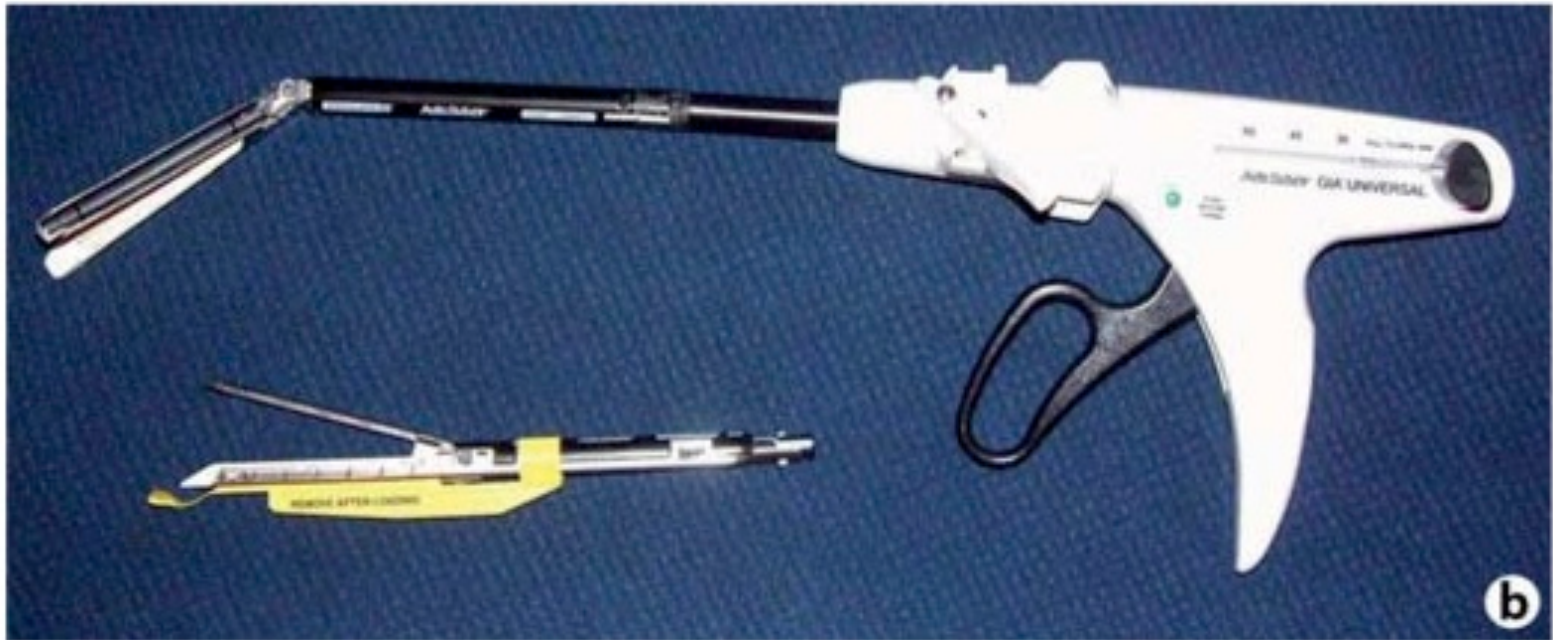
Transection device



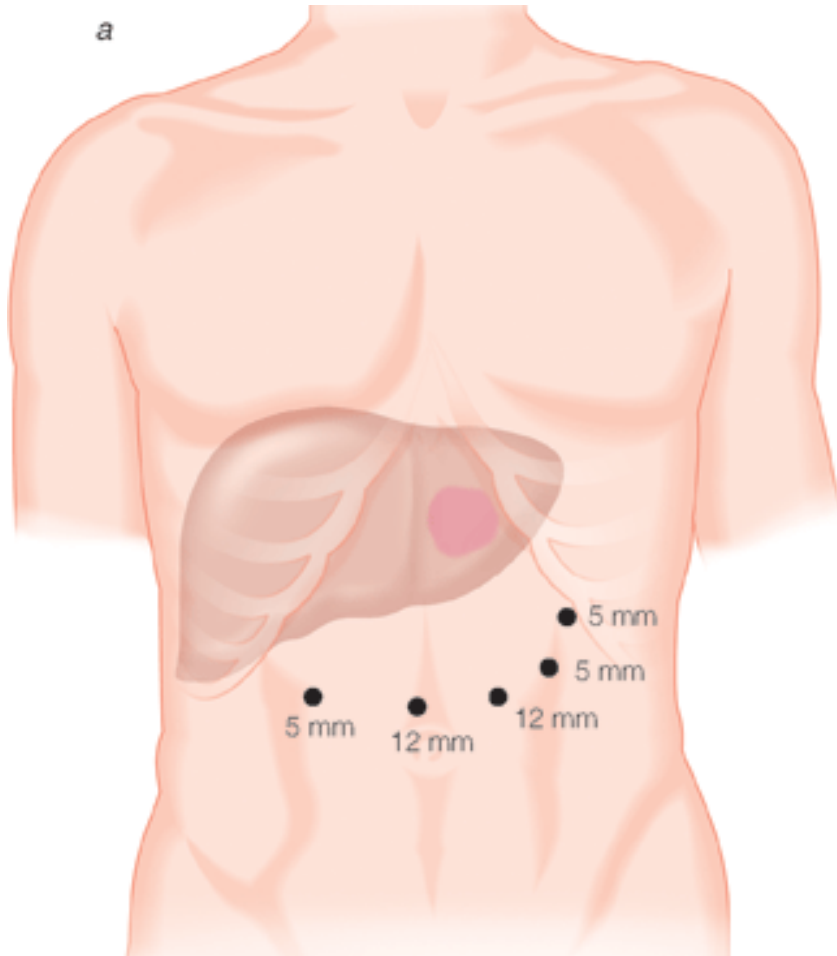
Laparoscopic CUSA



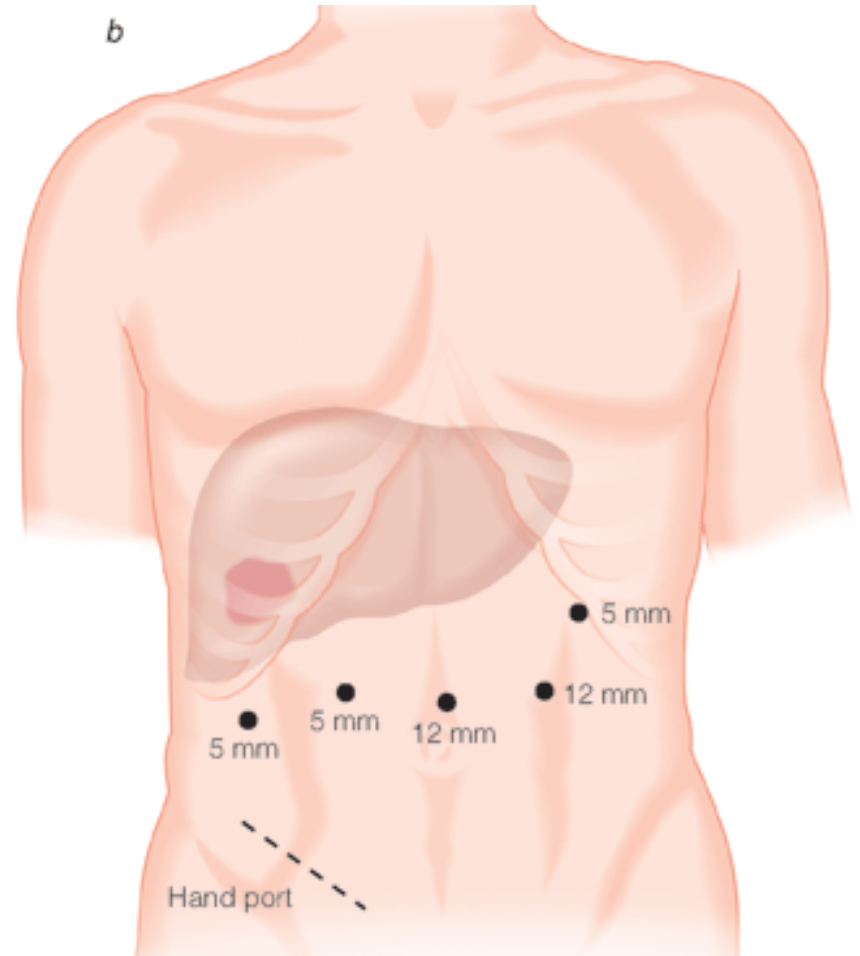
Vascular Endo GIA



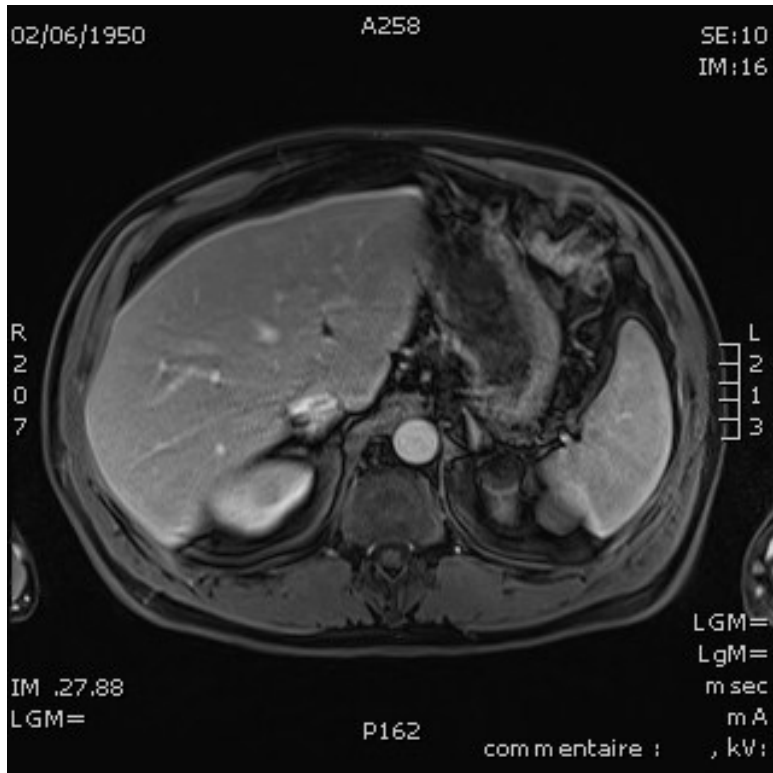
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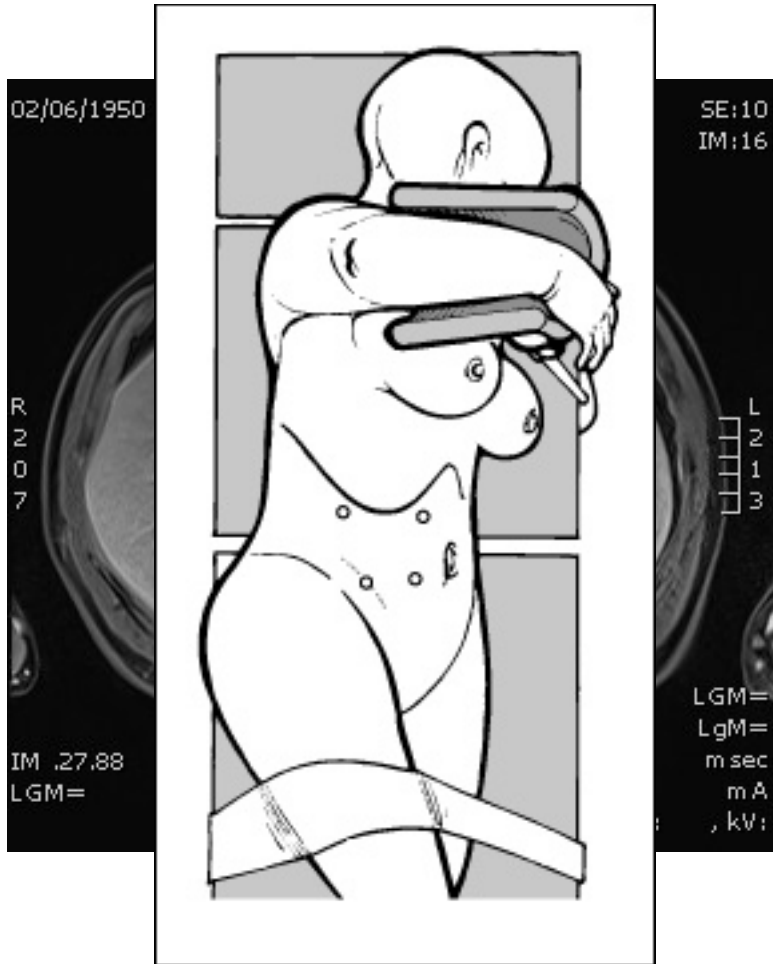
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Case 1: Man, 66 y-old

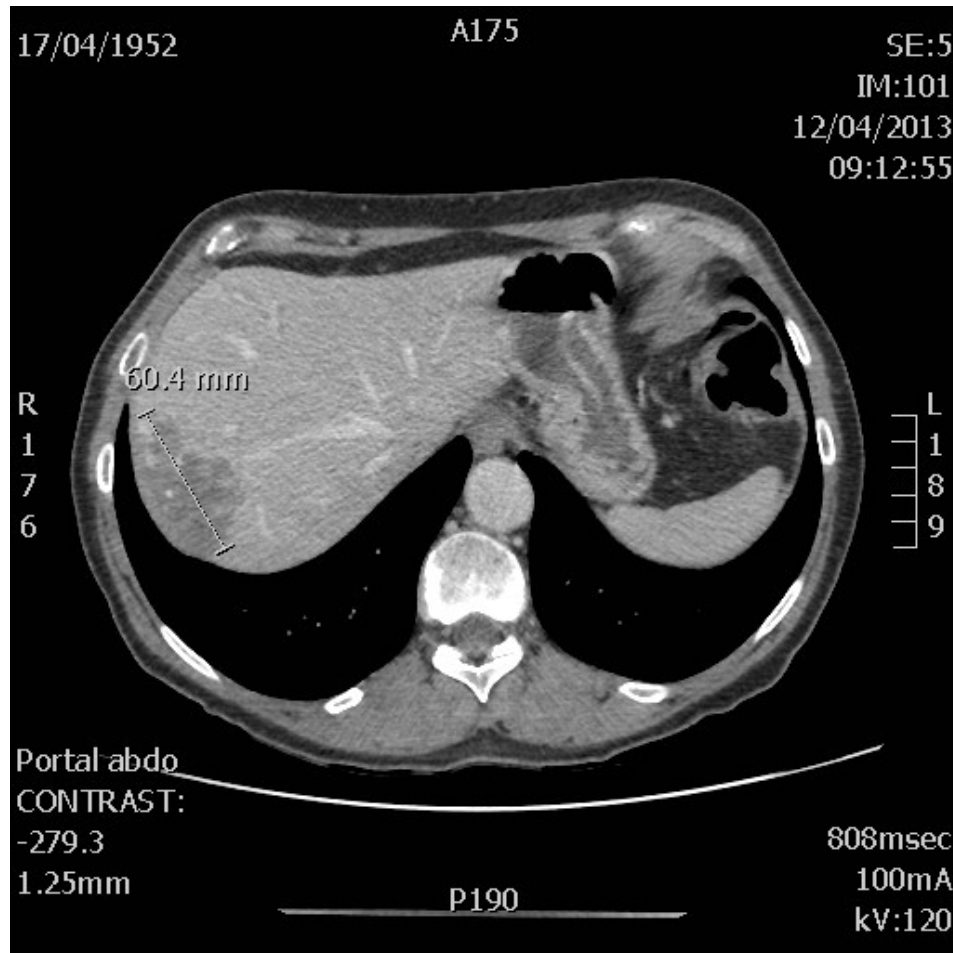


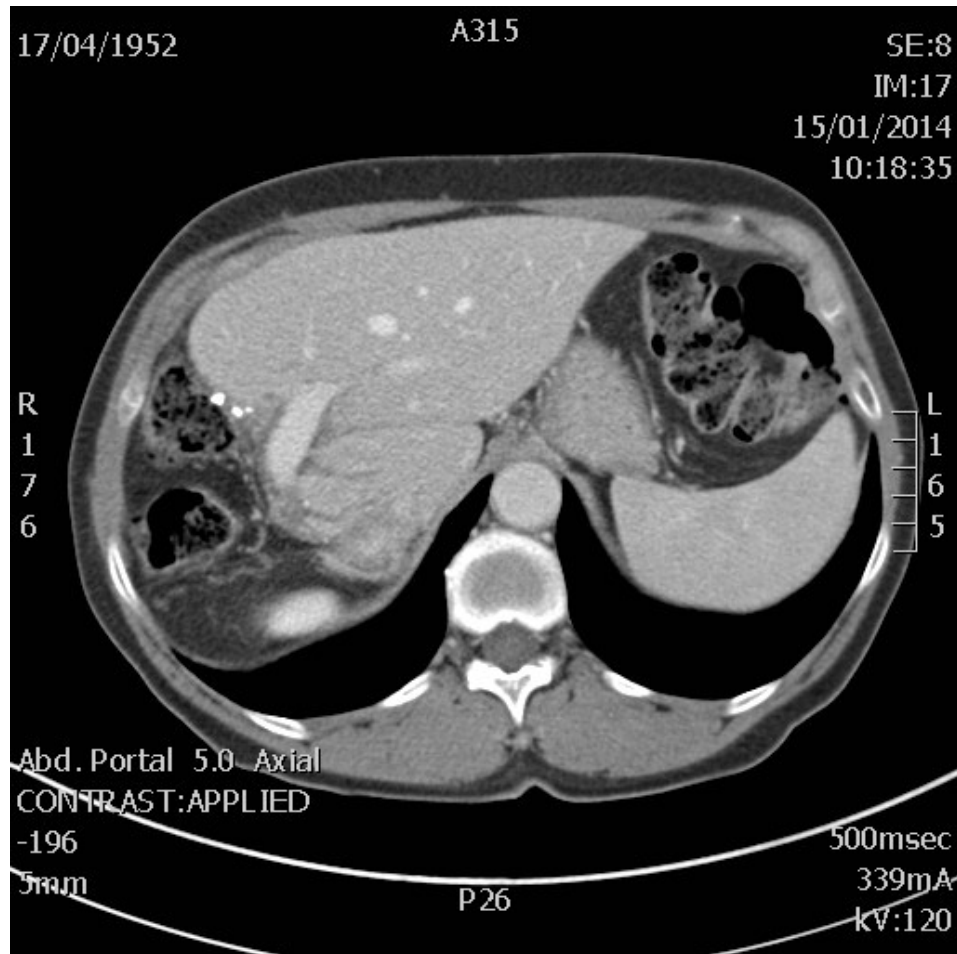
Case 1: Man, 66 y-old

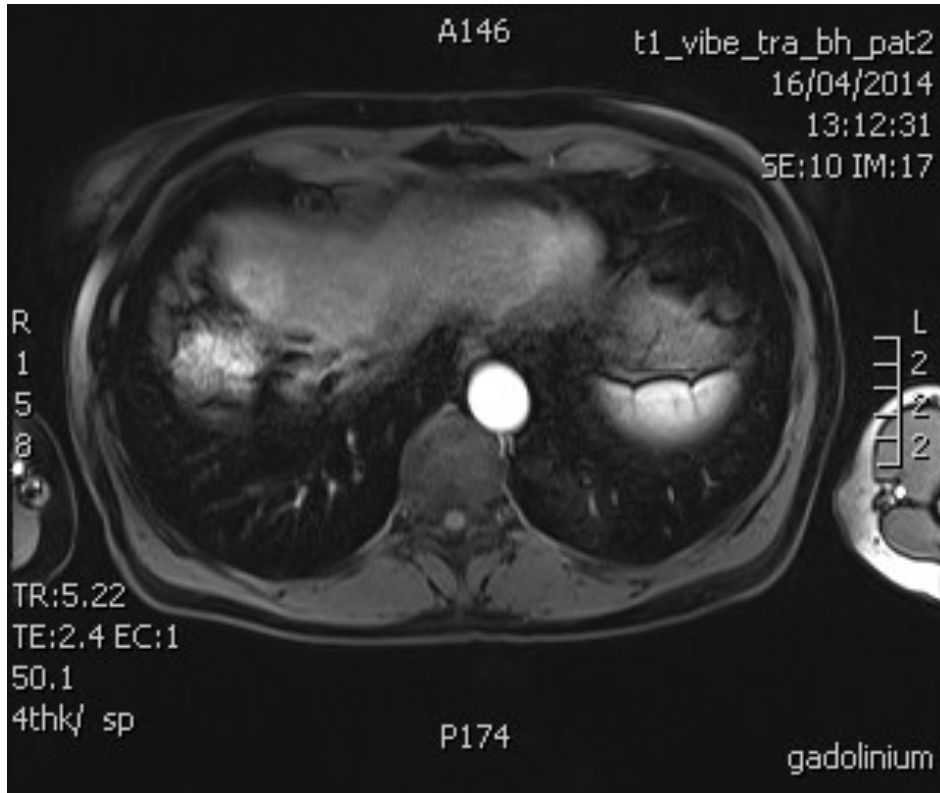


Case 2: Woman 55 y-old

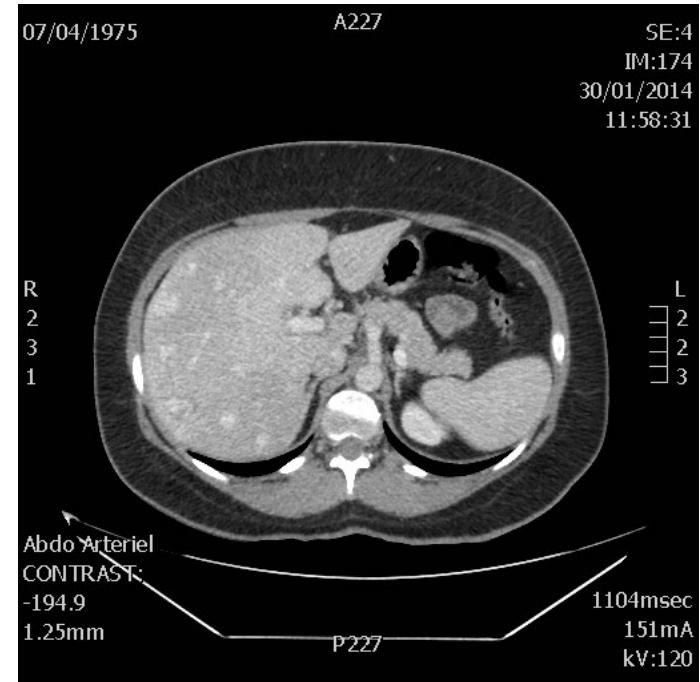
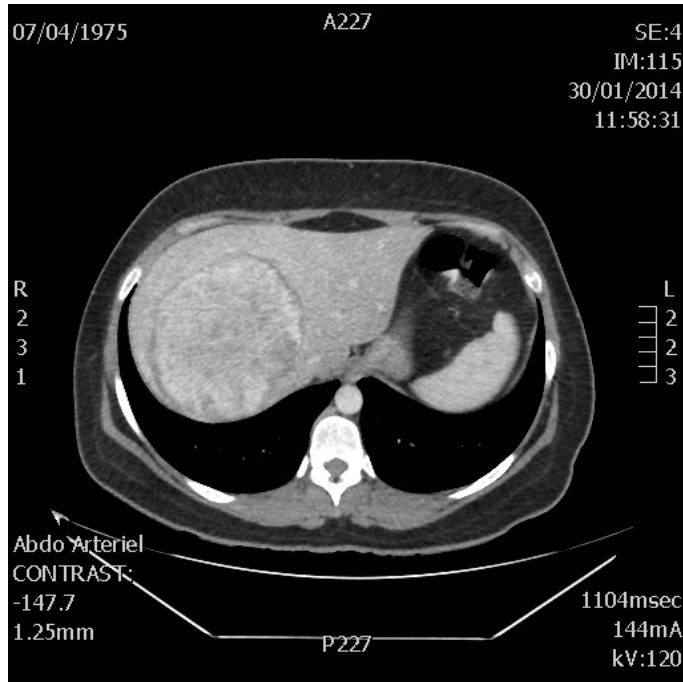








Case 3: woman, 39-y old



- 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 laparoscopy induces increased liver ischemia compared to open PTC

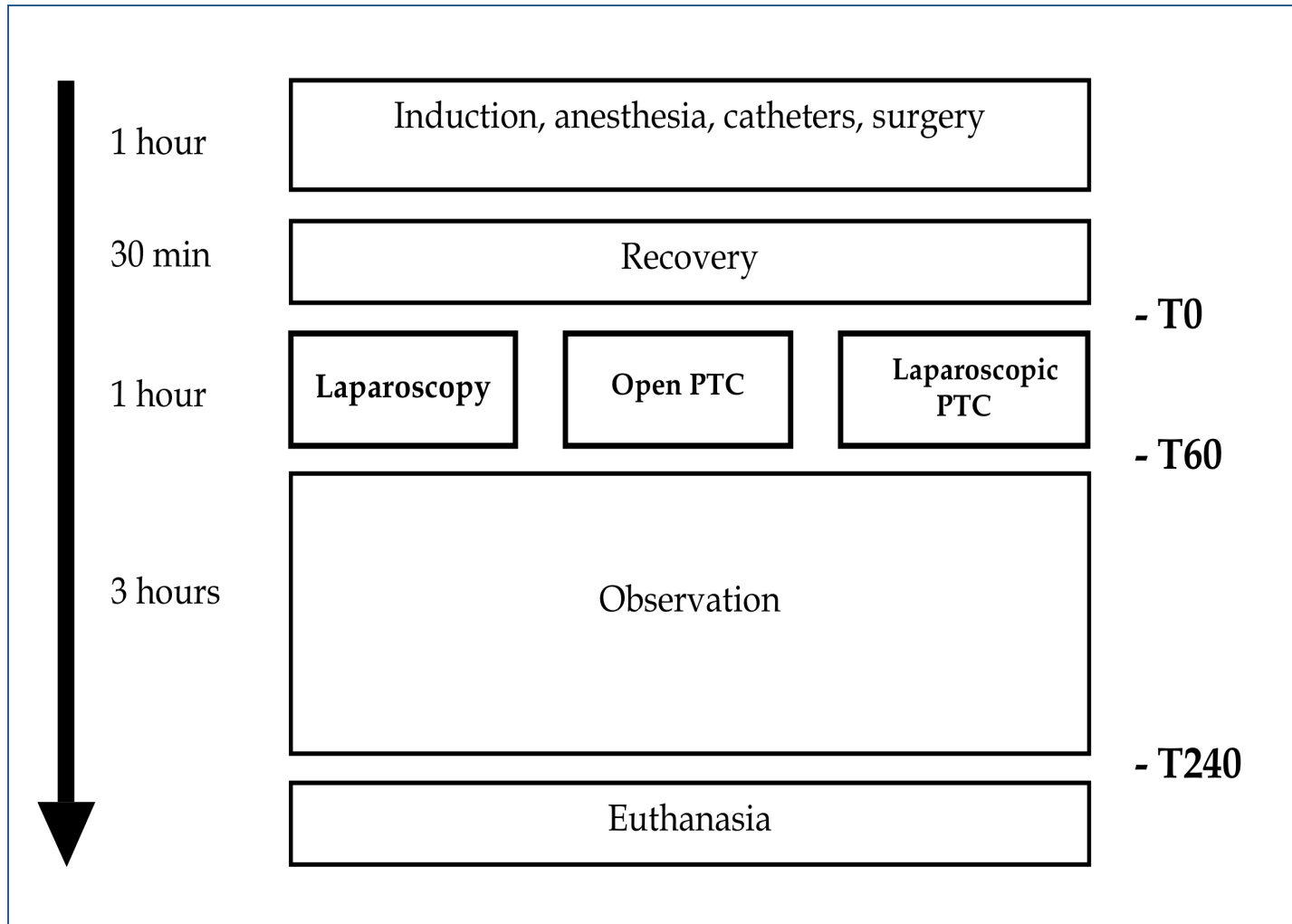
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Consequences of Pneumoperitoneum on Liver Ischemia During Laparoscopic Portal Triad Clamping in a Swine Model

Berthier Nsadi, M.D.,* Nathalie Gilson, M.D.,† Emilie Pire, M.D.,† Jean-Paul Cheramy, MLT,‡§
Joel Pincemail, Ph.D.,‡§ Irène Scagnol, M.D.,|| Michel Meurisse, M.D., Ph.D.,†
Jean-Olivier Defraigne, M.D., Ph.D.,‡§ and Olivier Detry, M.D., Ph.D.†§¹

**Department of Abdominal Surgery, CUK, University of Kinshasa, Kinshasa, Democratic Republic of Congo; †Department of Abdominal Surgery and Transplantation, CHU Liège, University of Liège, Wallonia, Belgium; ‡Department of Cardiovascular Surgery, CHU Liège, University of Liège, Wallonia, Belgium; §Centre de Recherches du Département de Chirurgie (CREDEC), University of Liège, Wallonia, Belgium; and ||Department of Pathology, CHU Liège, University of Liège, Wallonia, Belgium*

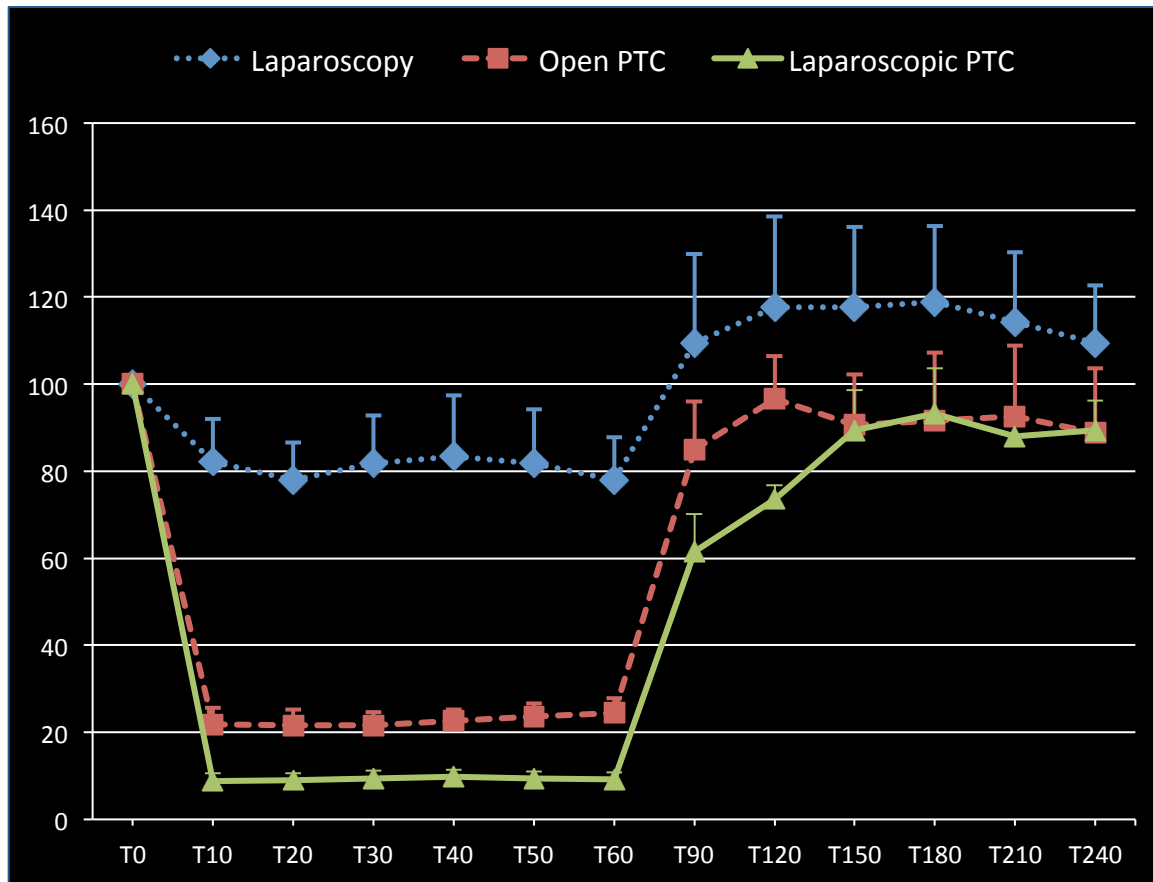
Material & Methods



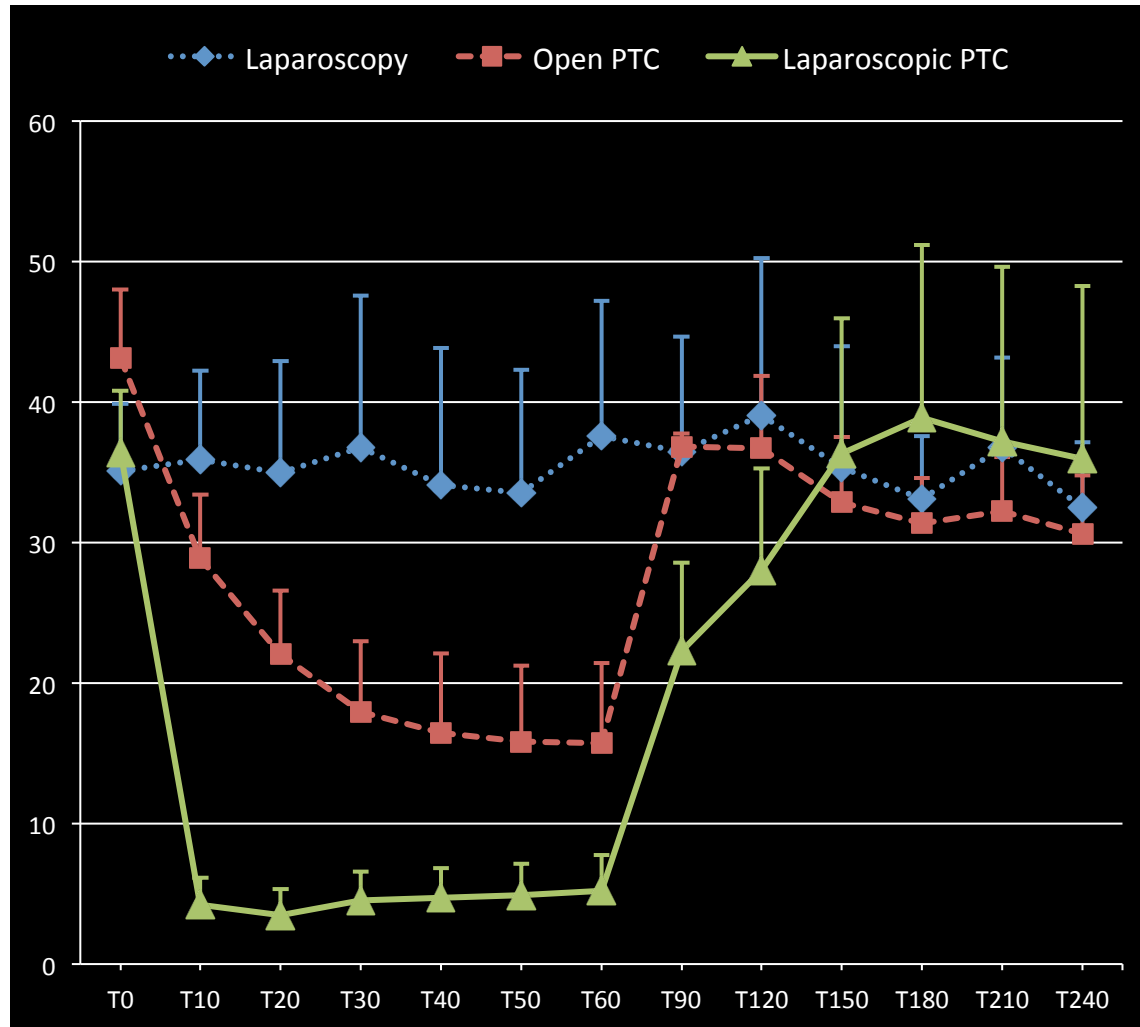
Material & Methods

- 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, TNF α
- Gluthation, Vit E, Vit C
- Histology

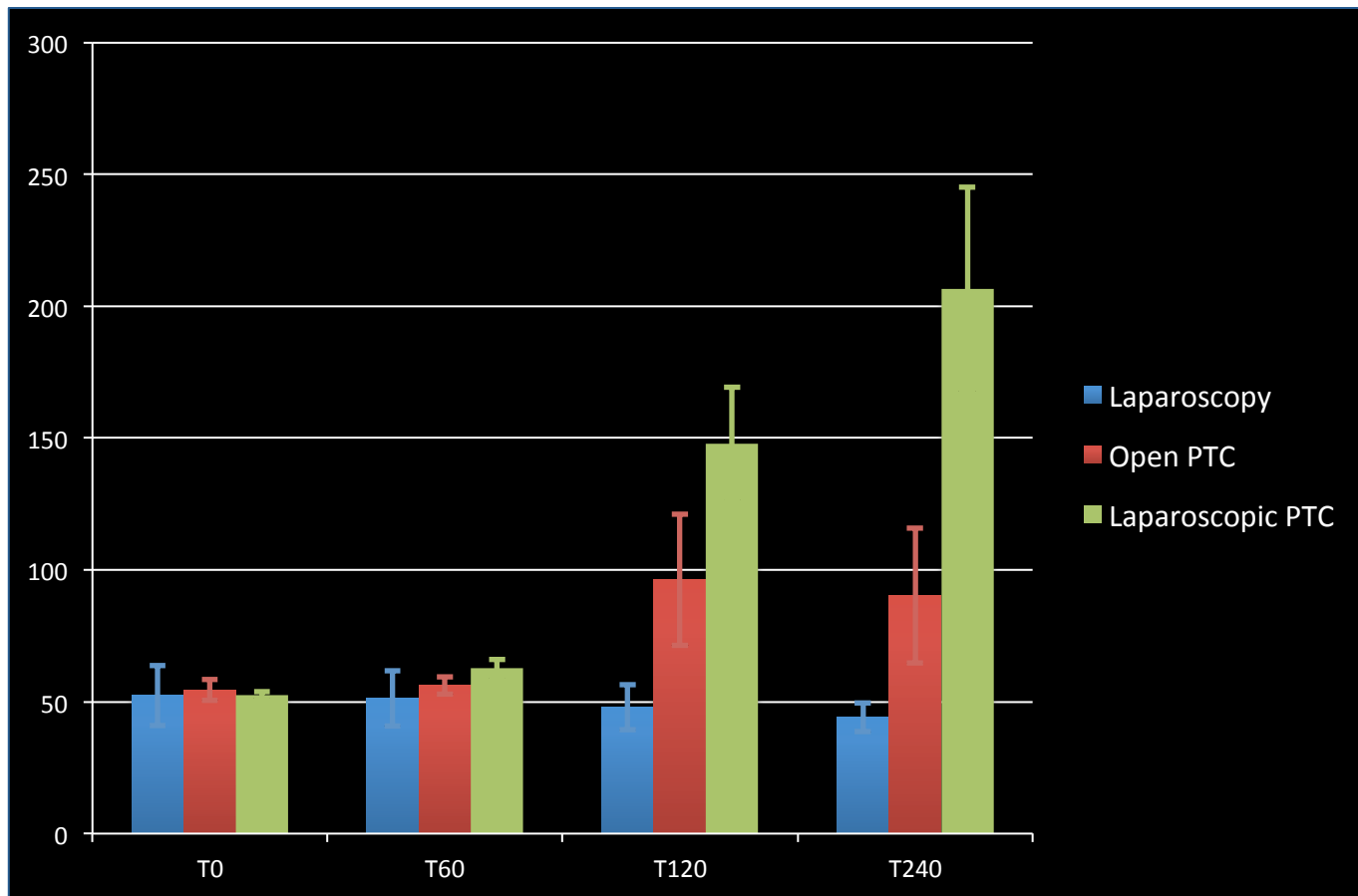
Results: Microcirculation (%)



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....