

Laparoscopic Liver Resection

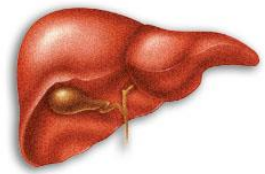
Ten year experience in one center

Tran Cong Duy Long MD.

Nguyen Hoang Bac MD.

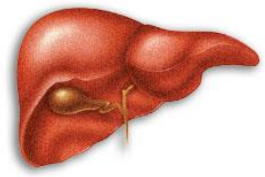


University Medical Center Ho Chi Minh City Vietnam



Laparoscopic Liver Resection in UMC Ho Chi Minh City Vietnam

- *The development progress*
- *Surgical techniques*
- *Short and long-term results*



Laparoscopic Liver Resection

Surgical techniques

Technical demanding in liver resection

Inflow control

Total inflow control

Selective inflow control

Outflow control

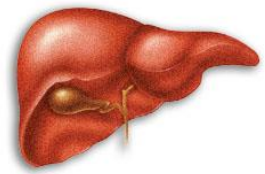
Low CVP (Anesthesiologist assistance)

IVC Clamping

Parenchymal transection

Surgical instrument, energy devices,,...

Surgeon experience, skill...



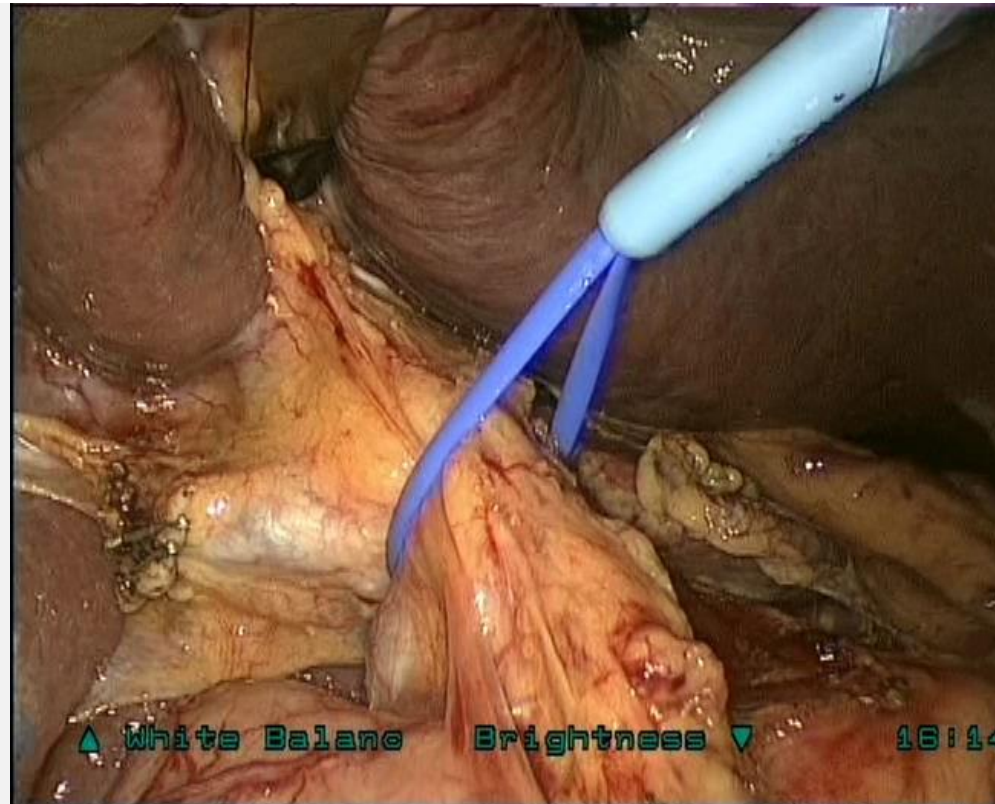
Total inflow control - Pringle maneuver

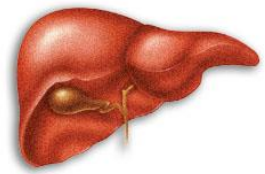
Decrease blood supply

Minimize bleeding

Total liver ischemia

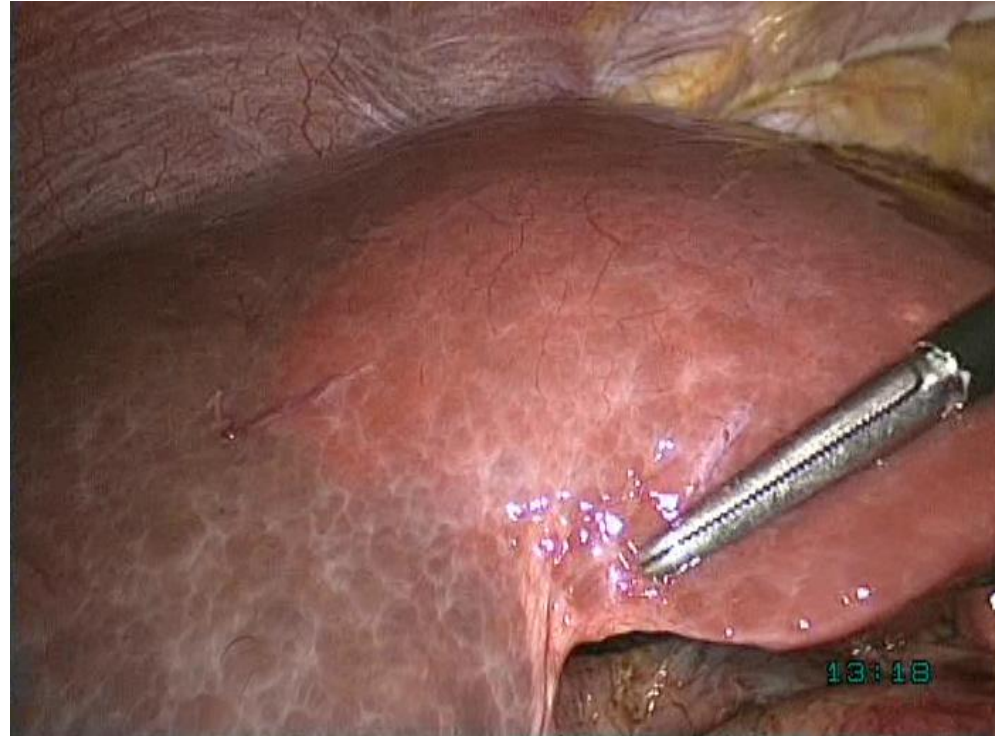
Non-anatomic liver resection





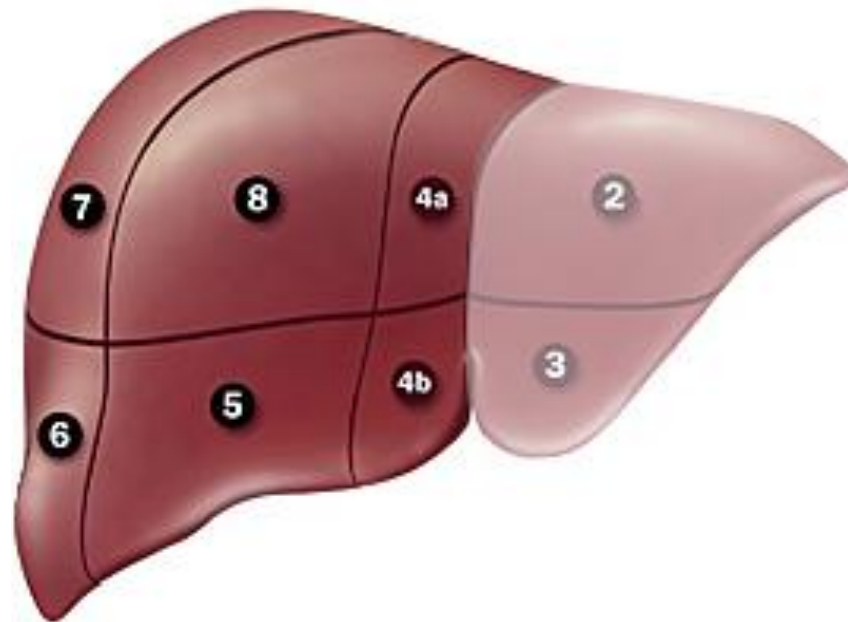
Hemi inflow control

- No dissection in liver hilus
- Decrease post-op ascites
- Selective inflow control
- Minimize remnant ischemia



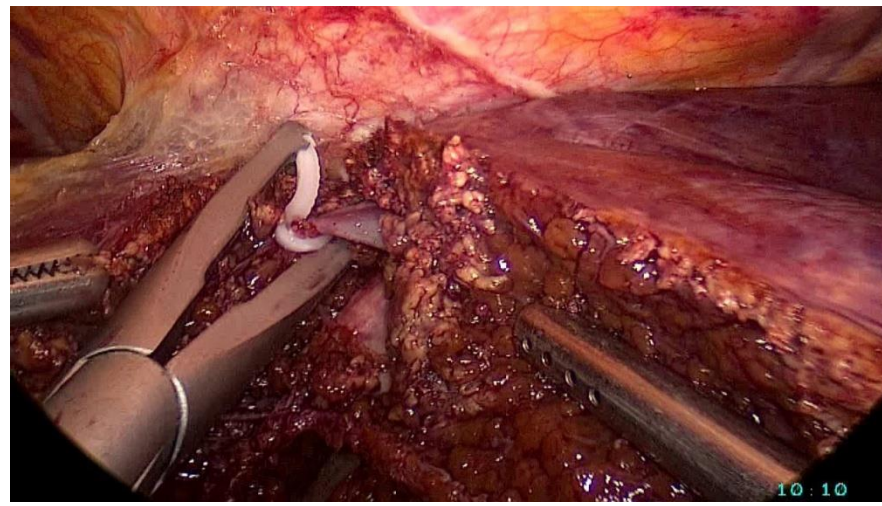
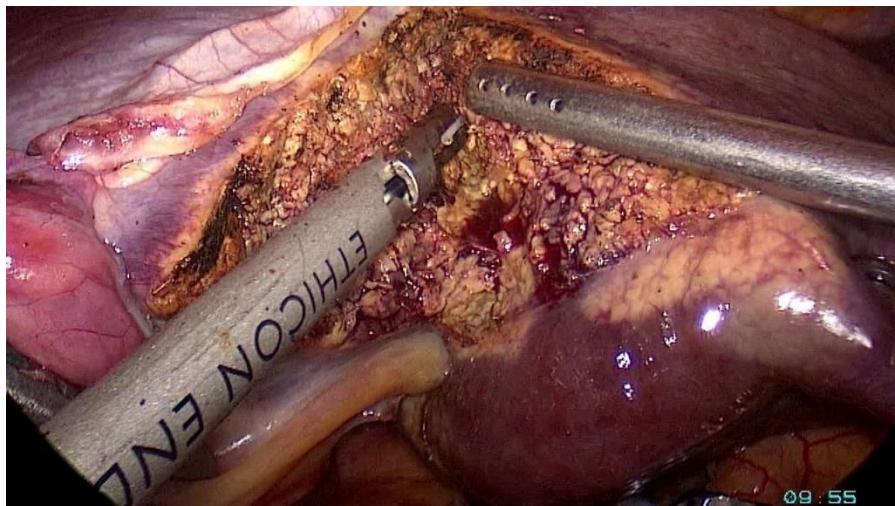
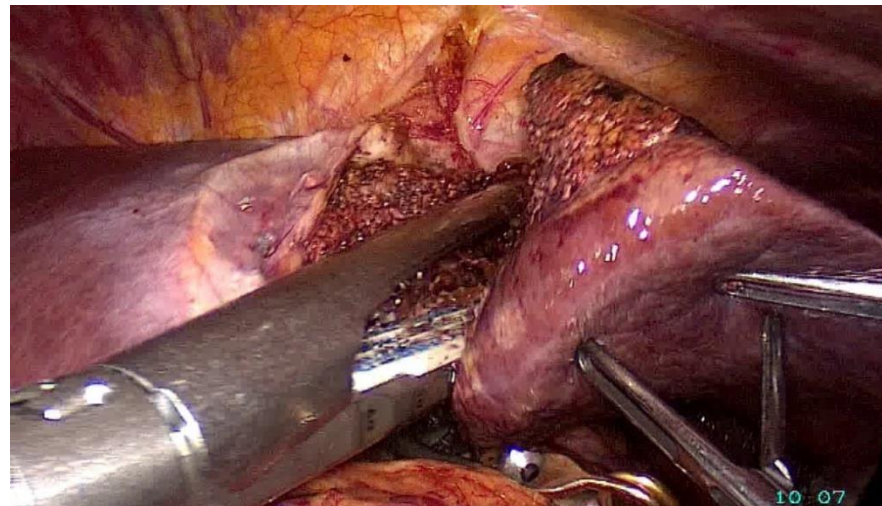
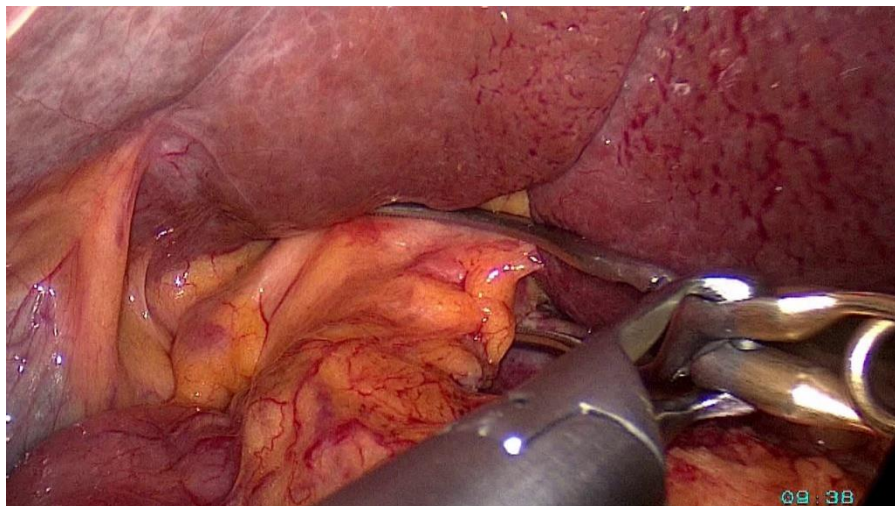
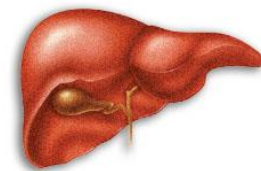
Simple and effective
for right side segmentectomy in cirrhotic liver

Laparoscopic Left lateral sectionectomy



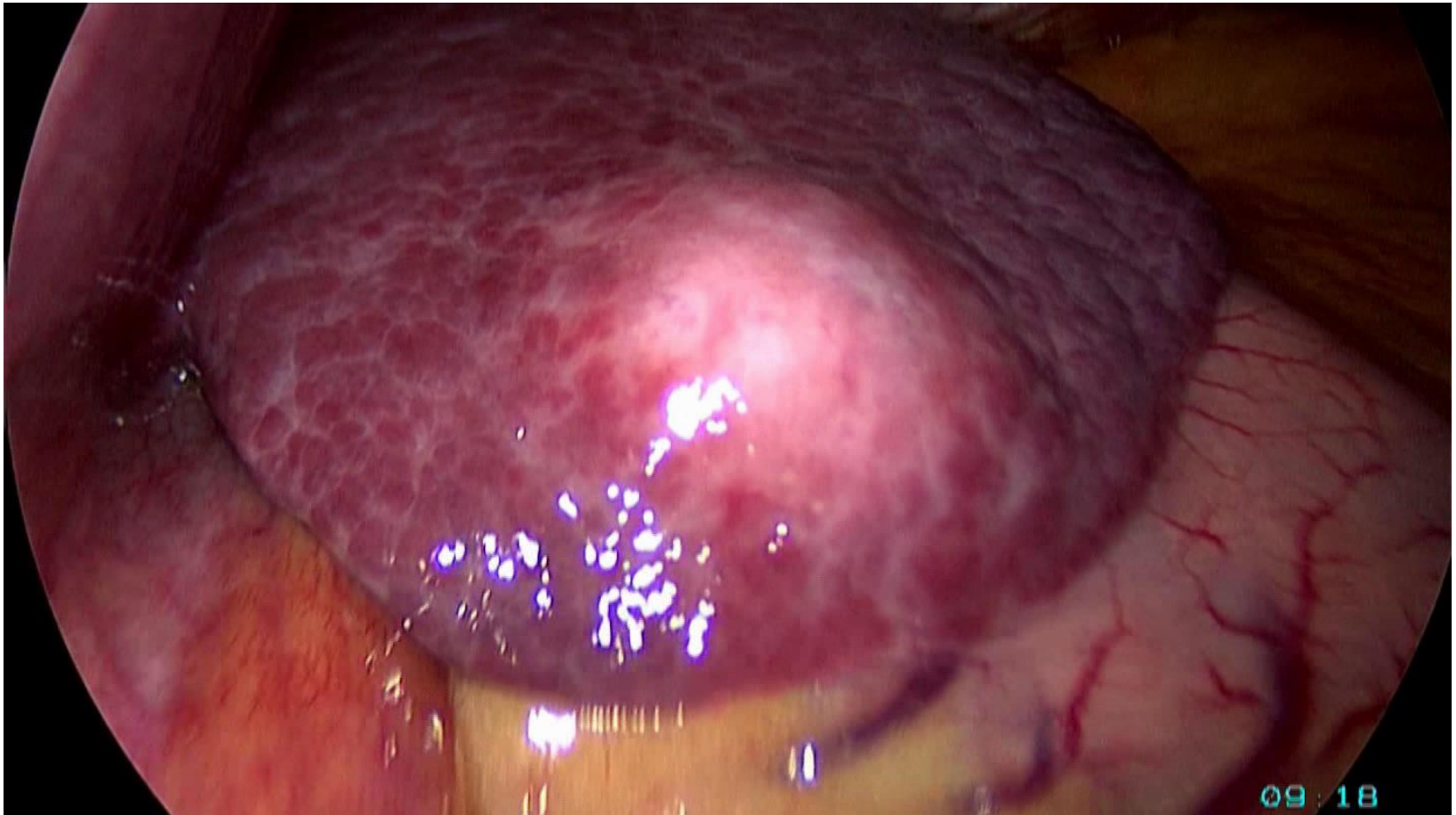
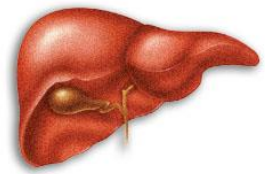
Innovation in the technique

Left lateral Sectionectomy



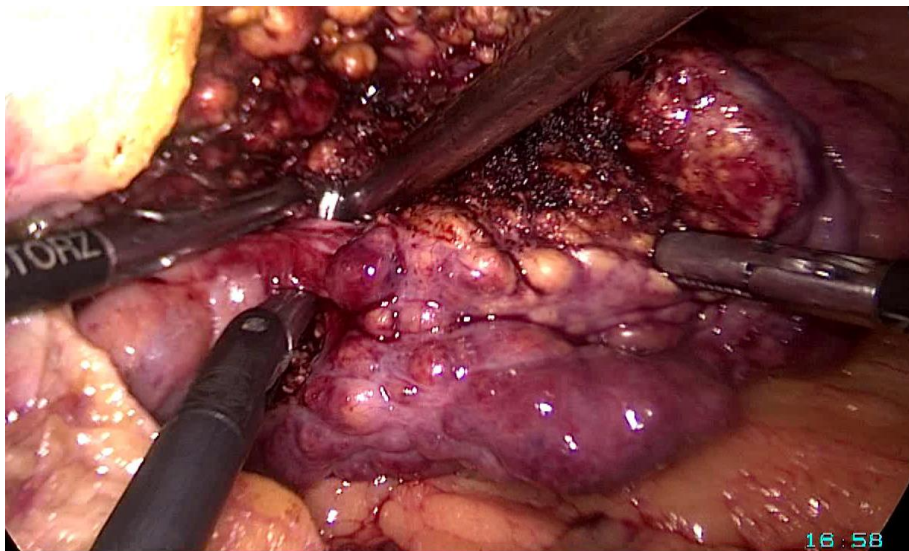
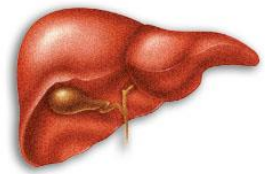
Technical innovation

Left lateral Sectionectomy

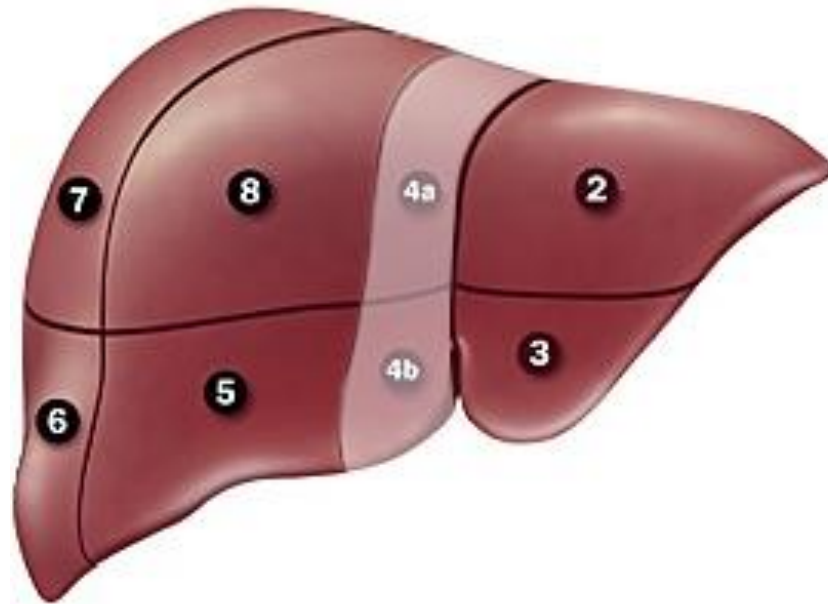


Innovation in the technique

Segmentectomy 3

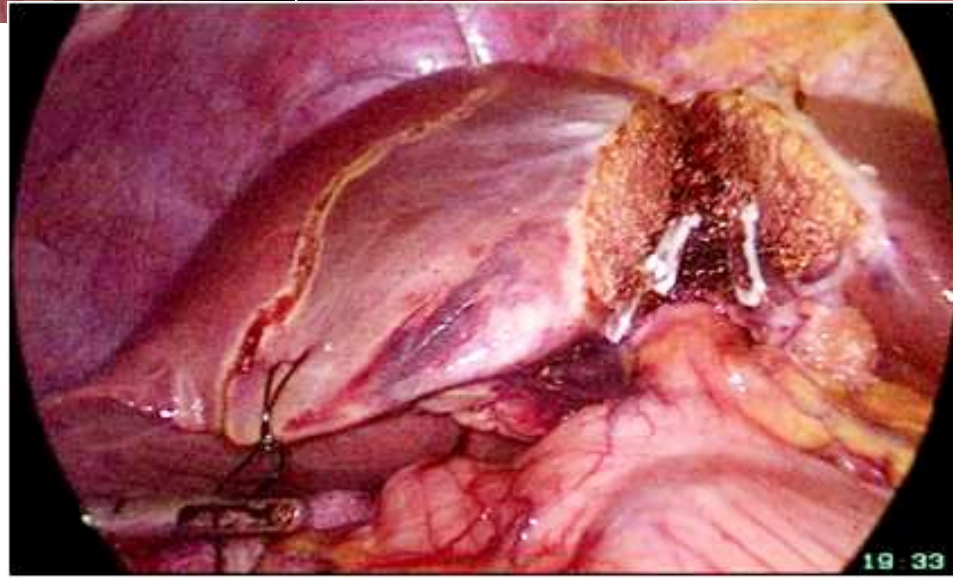
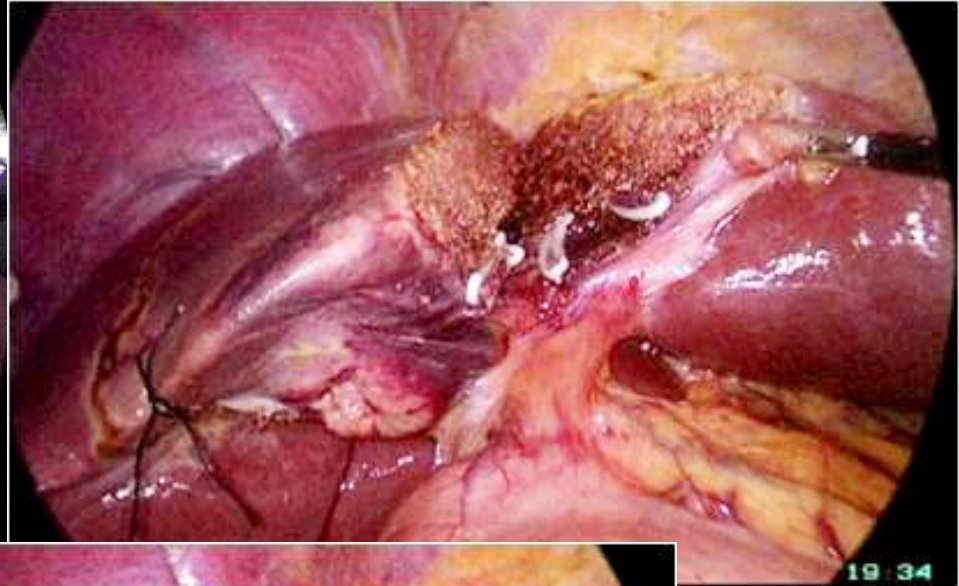
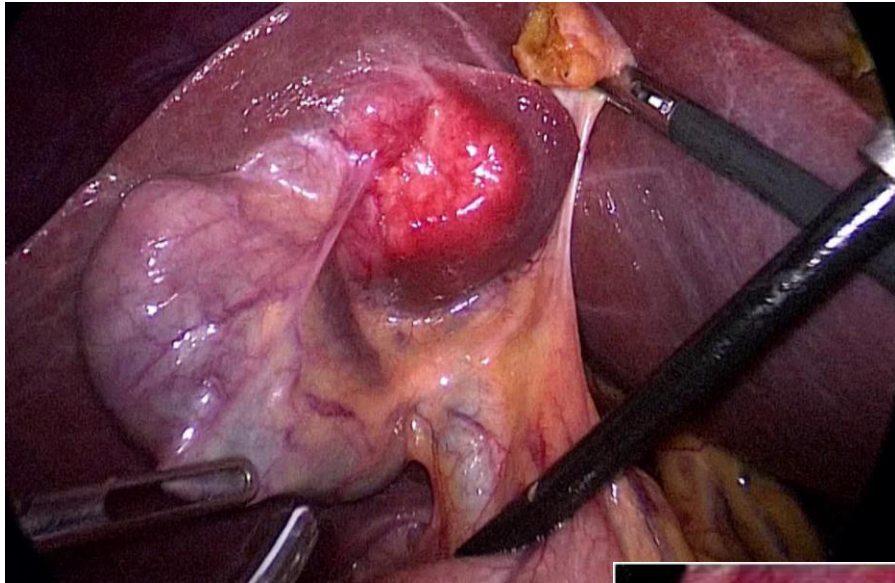
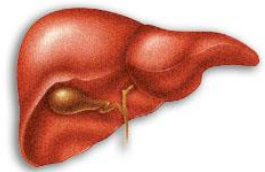


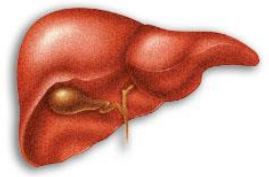
Laparoscopic Left medial sectionectomy



Technical innovation

Left Medial Sectionectomy



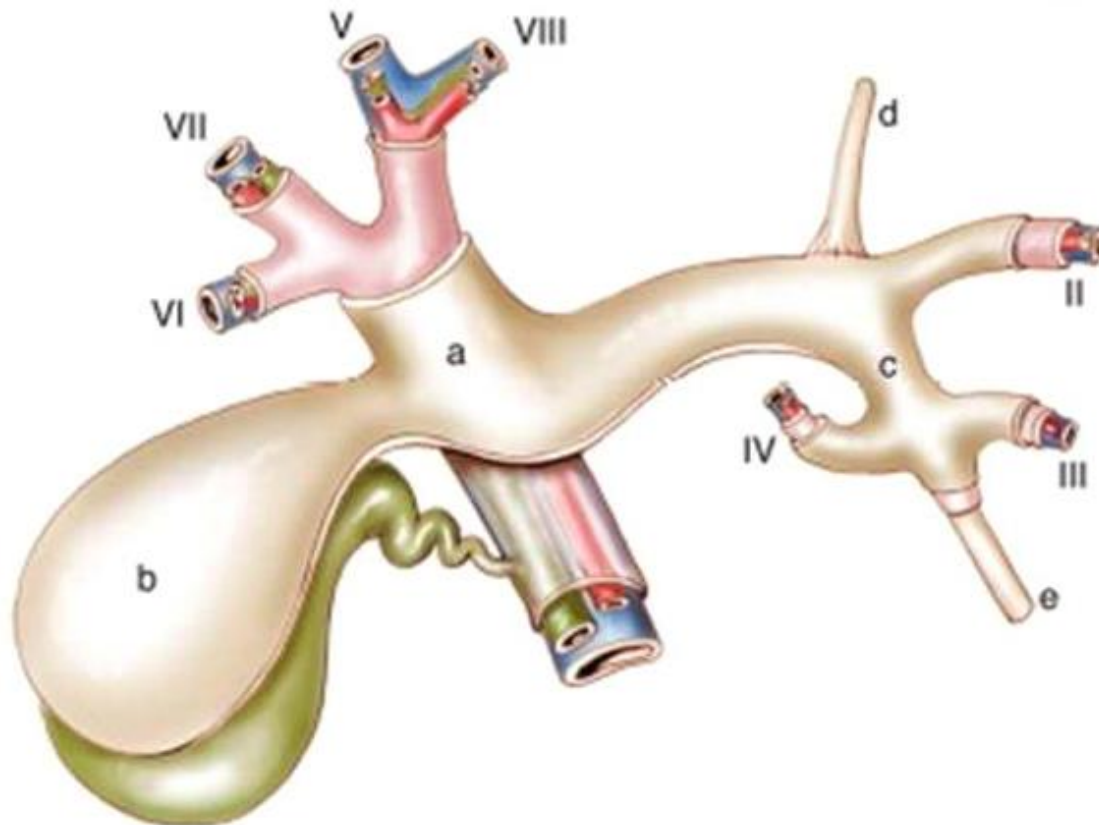


Laparoscopic Major Hepatectomy...?

Liver hilar dissection

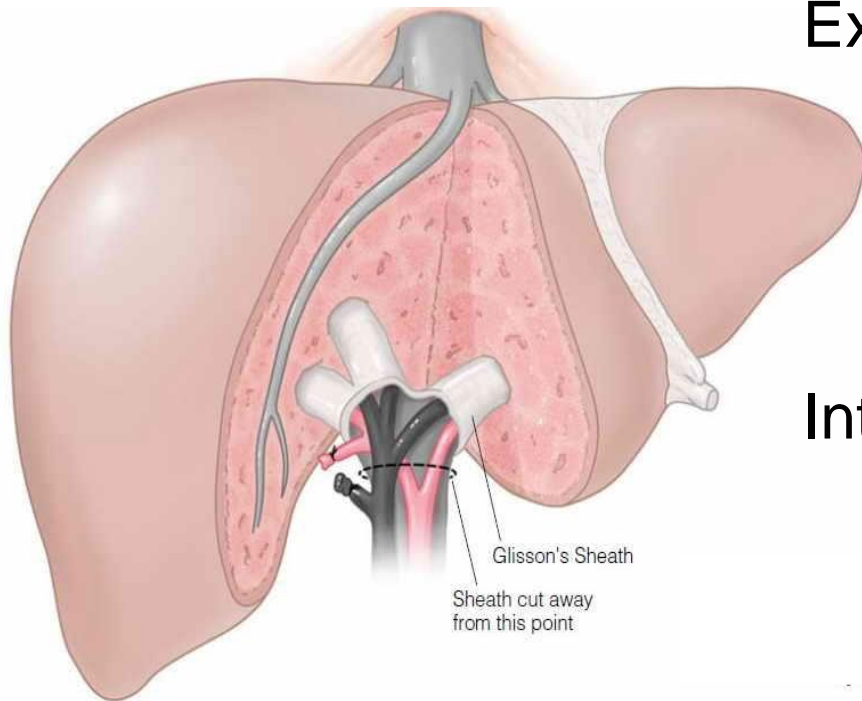


Glissonean structures



Technical innovation

Liver Hilar Dissection



Extrahepatic Approach

Intra Glissonean Dissection

Individual ligation

Intrahepatic Approach

Extra Glissonean Dissection

How's ... in laparoscopic techniques ?

Intra Glissonean Dissection Individual ligation

Isolating Portal Vein, Artery and Bile duct

Time consuming

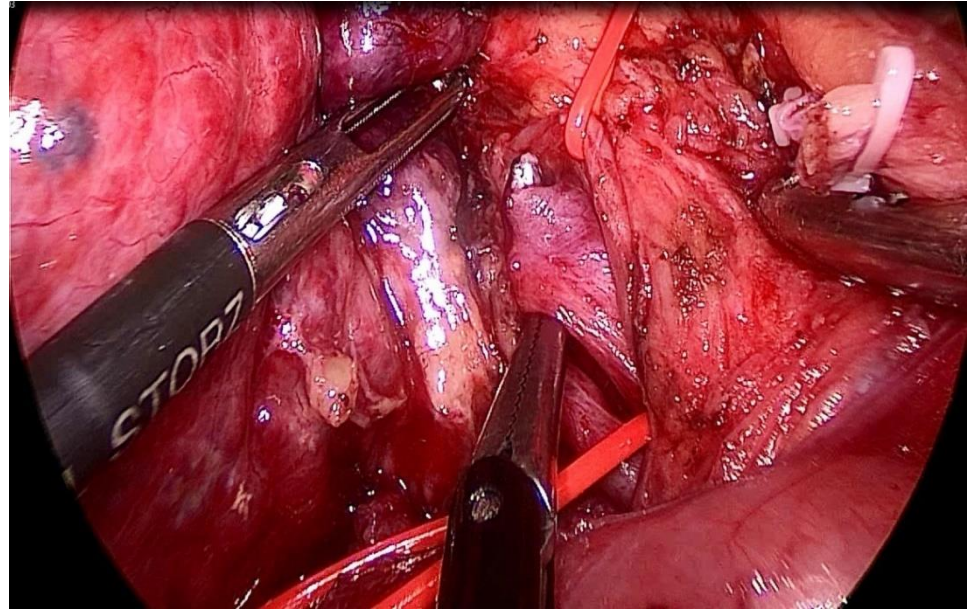
Avoiding complication

(Abnormal variation)

Increasing ascites

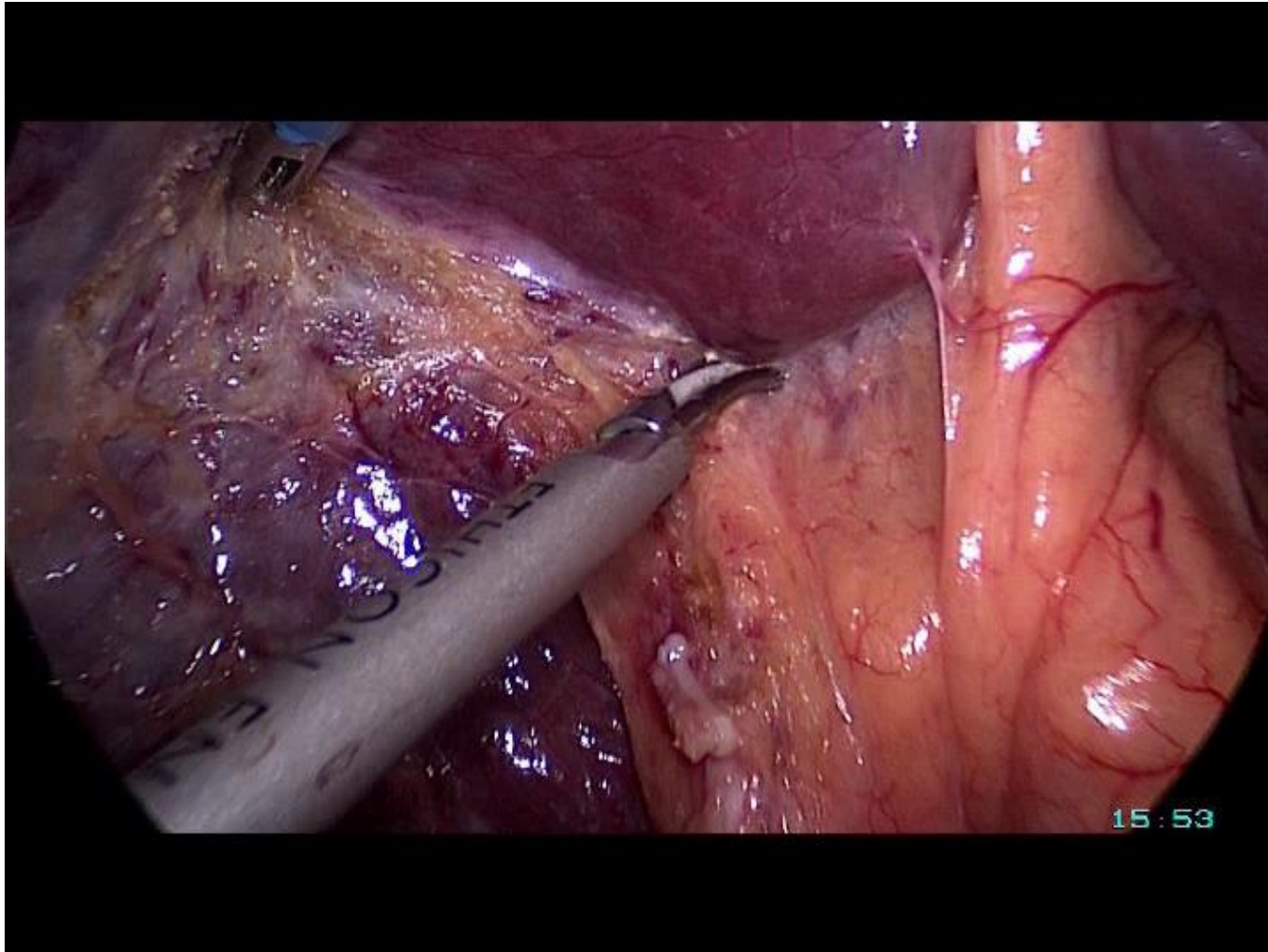
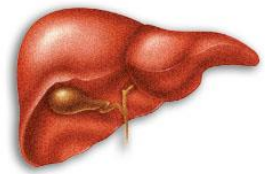
Anatomical *Sectionectomy* ?

Segmentectomy ?

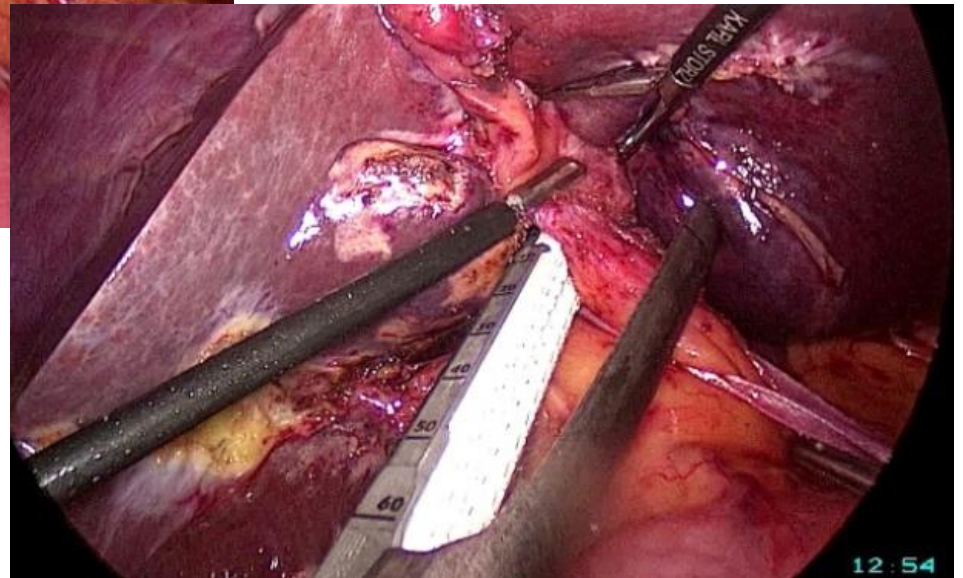
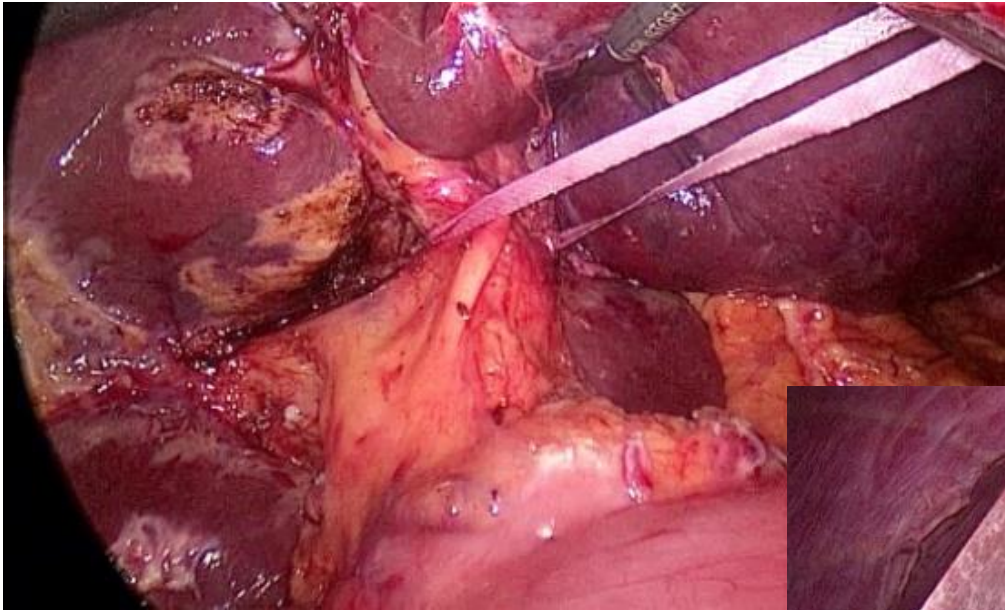


Suitable for Right or Left Anatomic Hepatectomy

Extra Glissonean Approach Right hepatectomy

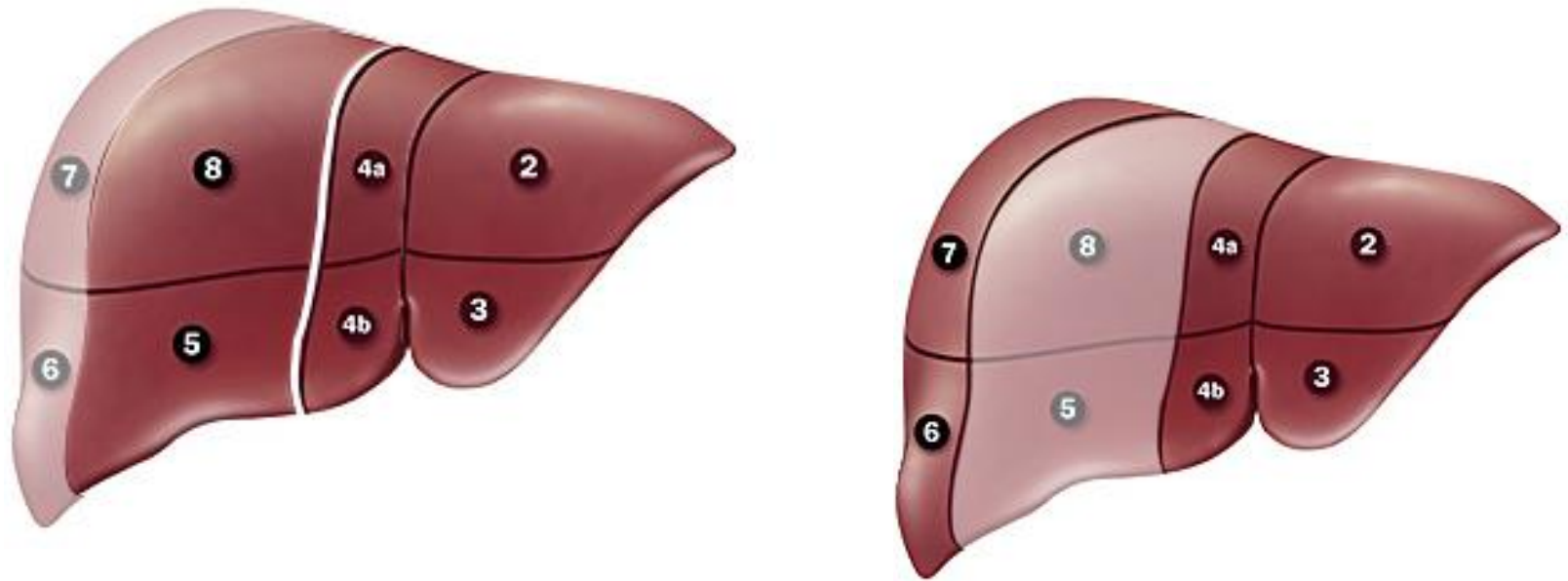


Laparoscopic Left Liver Resection

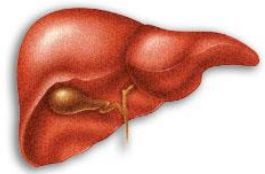


Parenchymal-sparing liver resection

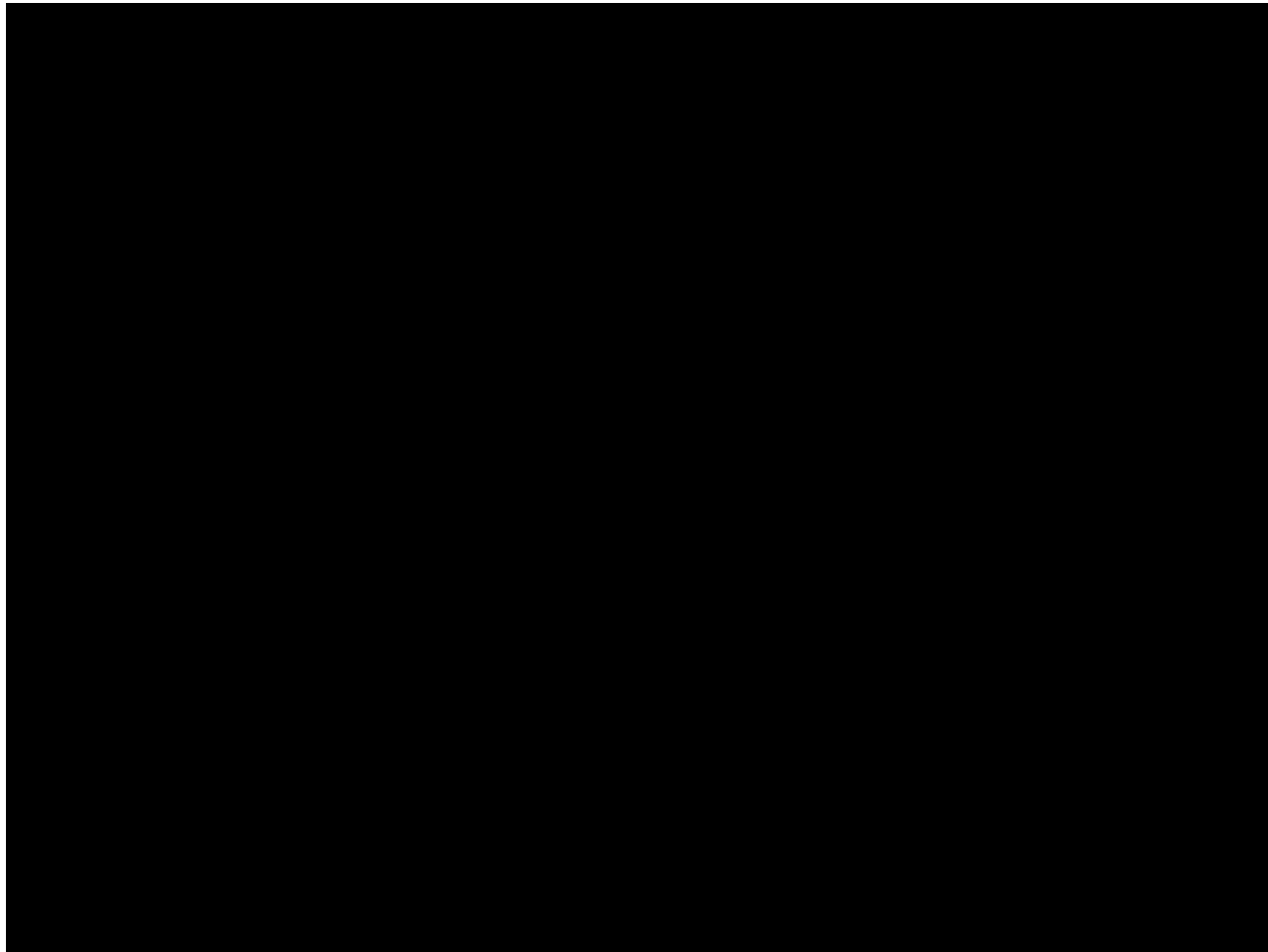
Laparoscopic Anatomic Sectionectomy



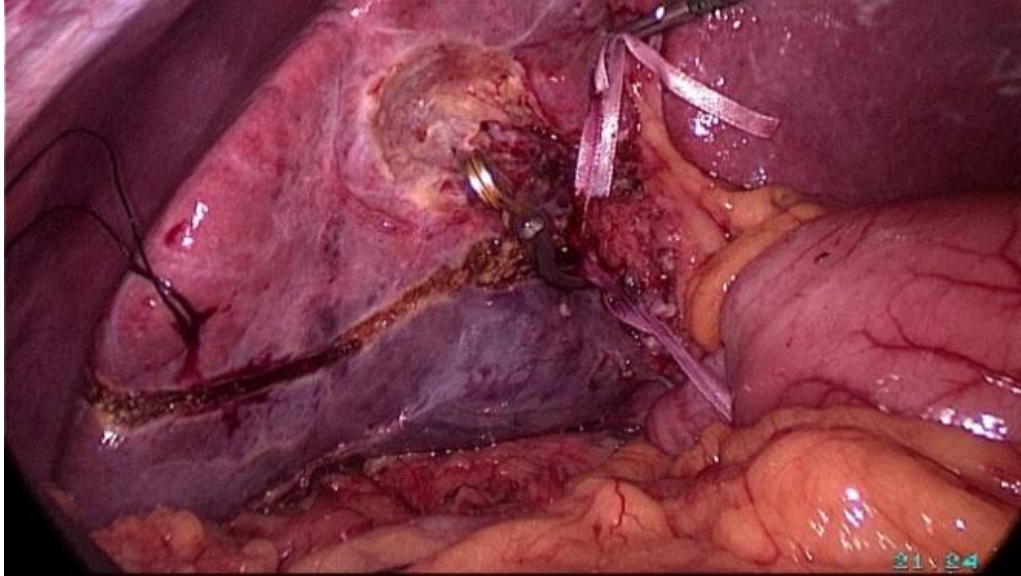
Technical innovation



Right Anterior Sectionectomy

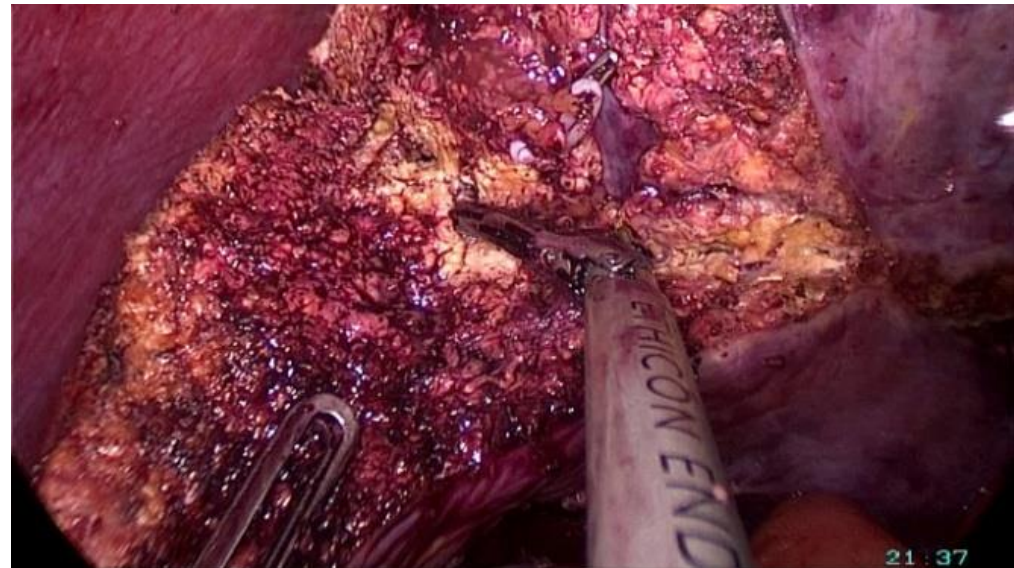


Laparoscopic right posterior sectionectomy



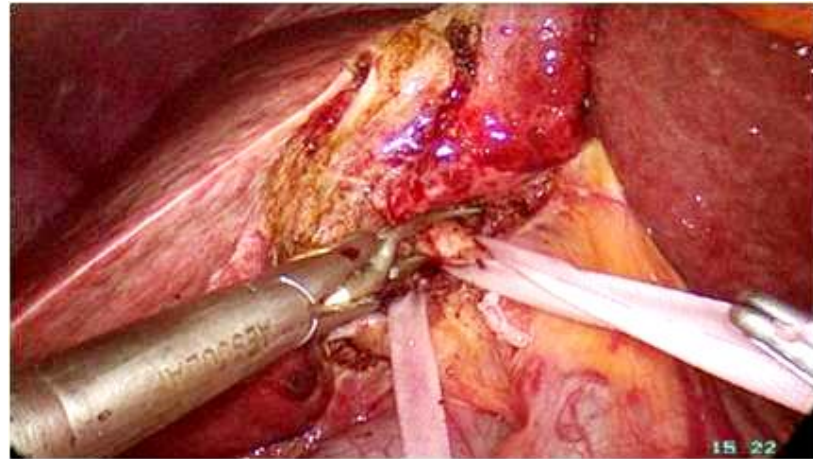
***Right posterior Glissonean
pedicle clamping***

Anatomical transection plane



Laparoscopic liver resection

Extra Glissonean Dissection



Minimizing liver hilus dissection

Decreasing ascites

Avoiding complication (Anatomic variation)

Selecting inflow control

(Sectors Glissonean pedicles)

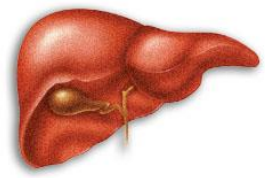
Identifying sector limitation

Performing Anatomic Resection

Minimize bloodloss

Better oncologic results

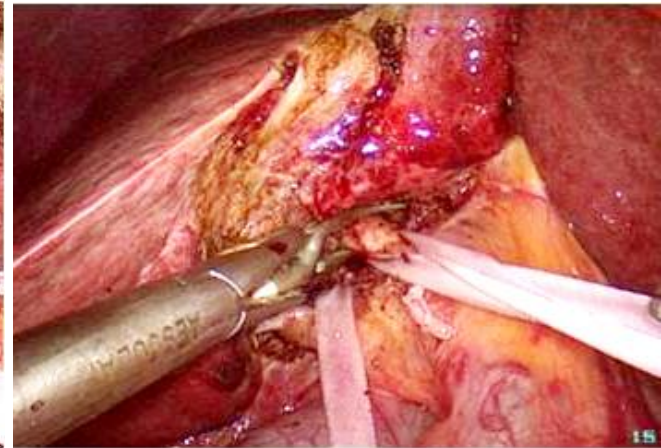
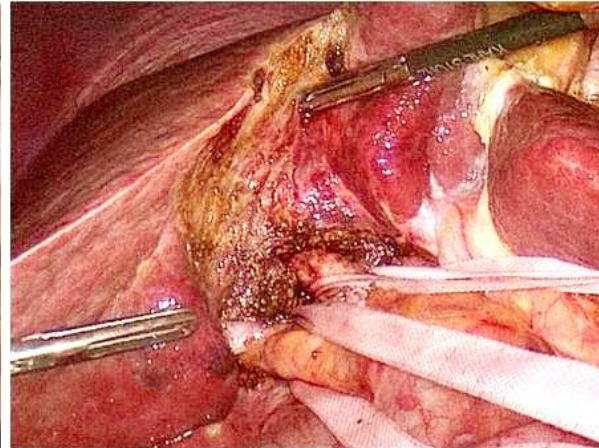
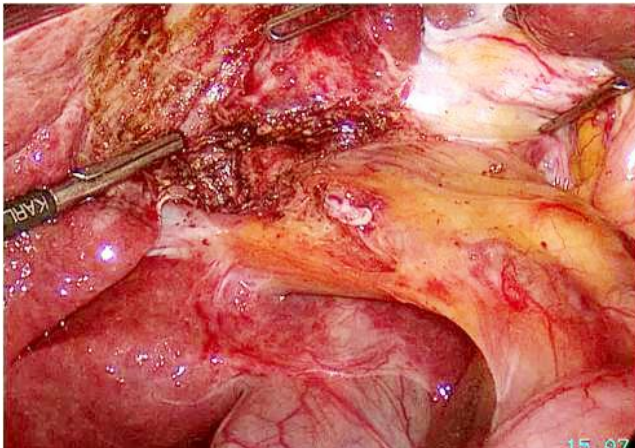




Extra-Glissonean Approach

Feasible and effective

in laparoscopic liver resection technique



How to do

Liver parenchymal transection

Criteria steps of technique

- Selective Glissonian pedicle controlled
- Low CVP controlled
- Anatomic transection

Intersegmental plane

- Caudate approach

Laparoscopic liver resection

Caudate approach

“...to the liver hilum and IVC”



(Source: Wakabayashi et al)

How to do liver parenchymal transection...

- Instruments

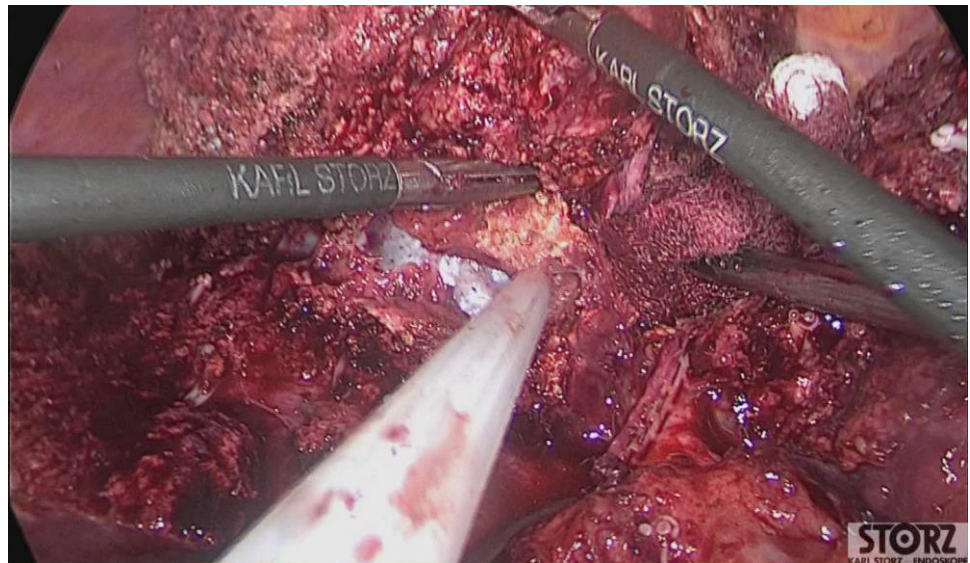
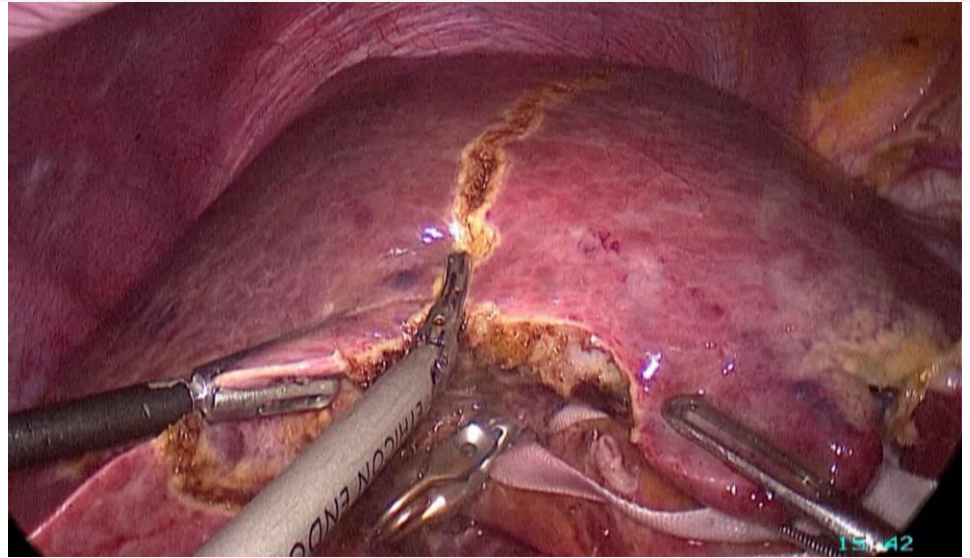
Harmonic scalpel

CUSA

Bipolar

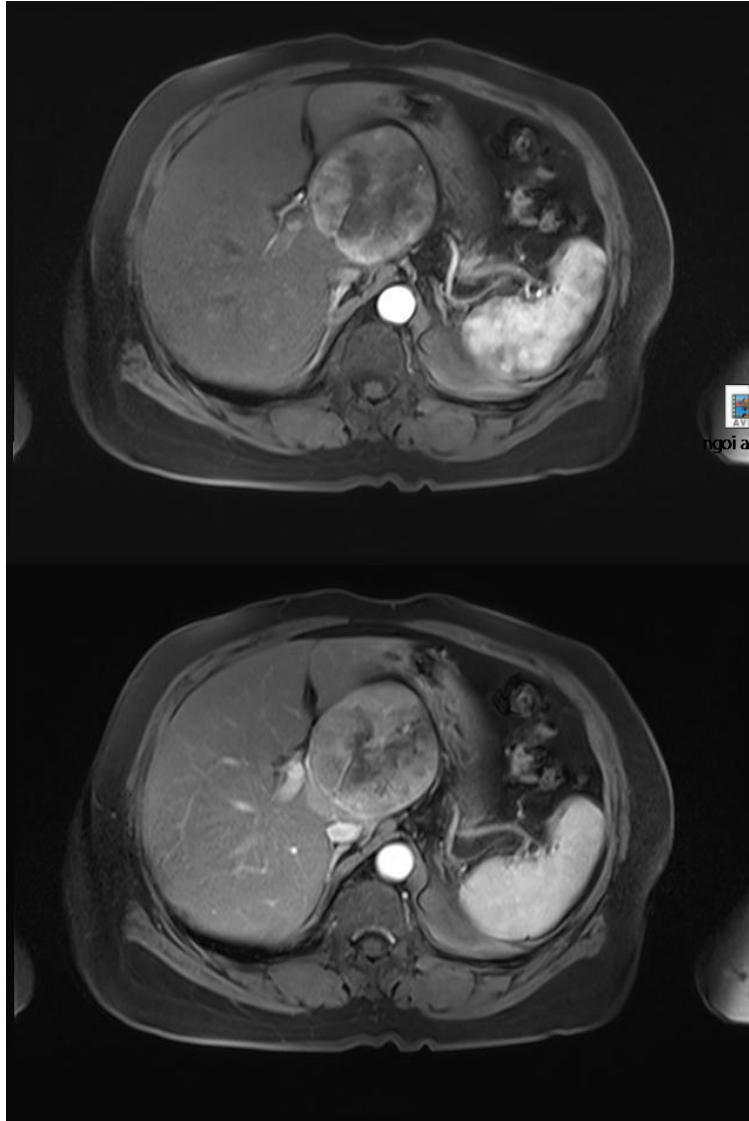
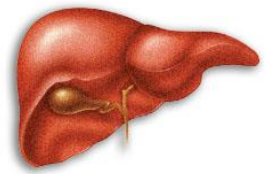
Hem o lok

Stapler

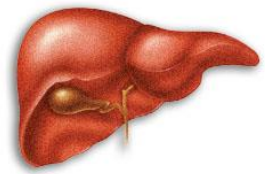


Recent cases...

with a tumor located in caudate lobe

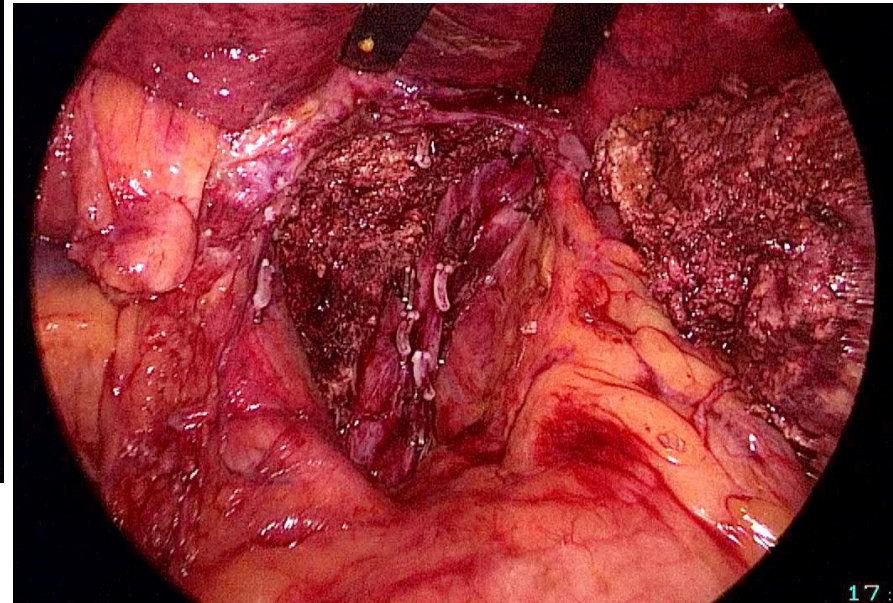
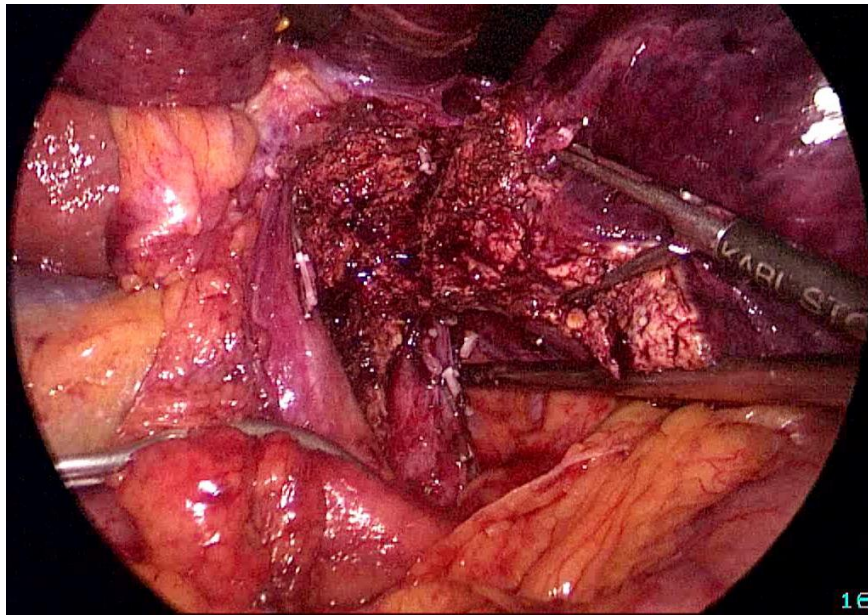
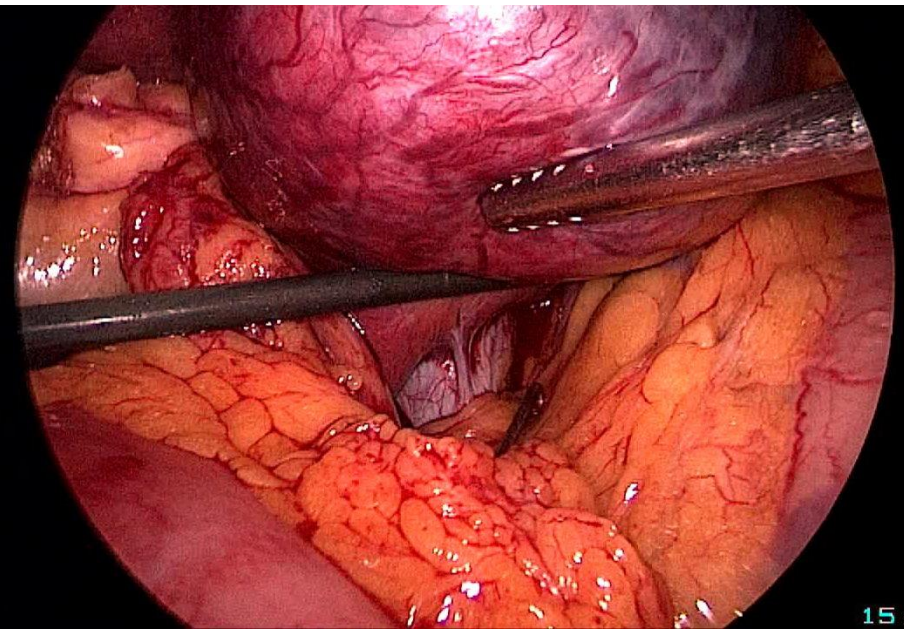


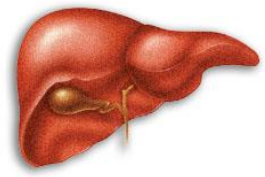
ngoi aravi



Recent cases...

Lap caudate lobectomy

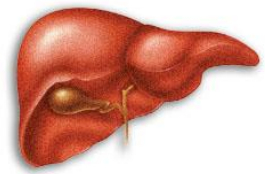




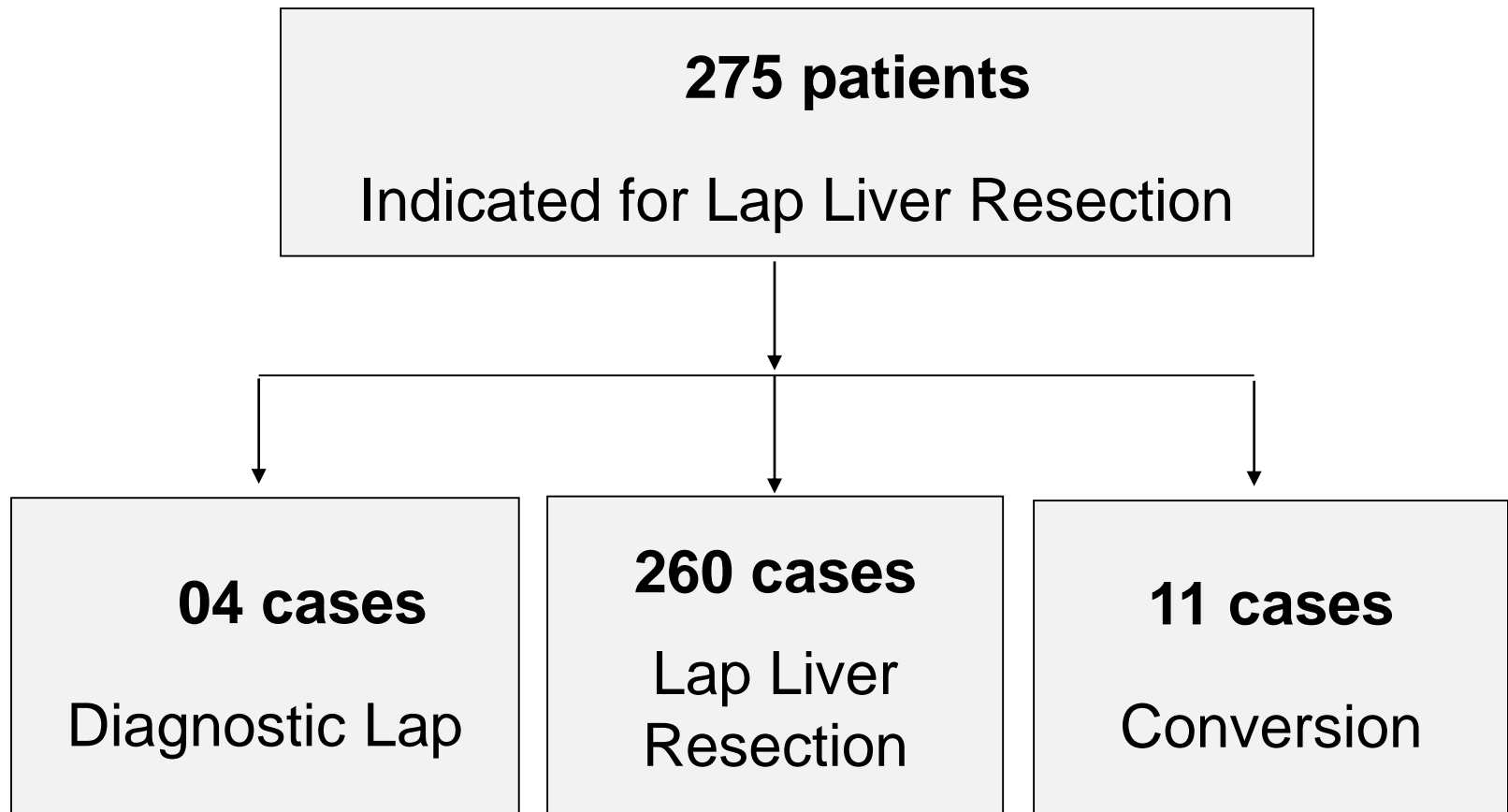
Laparoscopic Liver Resection

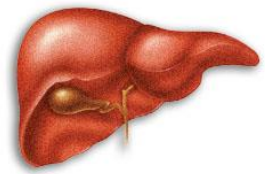
Short and long term results

Our result of Lap liver resection



From Jan, 2007 to Jun, 2014





Patients features

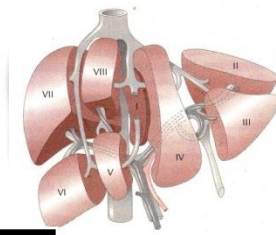
Tumor size

Mean tumor size: 3,85 cm.
(1 cm, 12 cm)

Stage of disease, BCLC classification

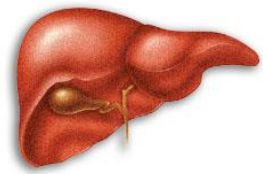
Very early	(BCLC 0):	13,8%
Early	(BCLC A):	65,0%
Intermediate	(BCLC B):	21,2%

Type of resection



Type of resection		Quantity	Percent
One segment	Segment II	11	4.2
	Segment III	11	4.2
	Segment IV	14	5.4
	Segment V	22	8.5
	Segment VI	51	19.6
	Segment VII	7	2.7
	Segment VIII	2	0.8
	Two segments	Posterior sector	9
Anterior sector		7	2.7
Segment V & VI		20	7.7
Left lateral sector		82	31.5
Three segments	Left liver	13	3.0
	Central hepatectomy	2	0.8
Four segments	Right liver	9	3.5
Total		260	100

Safety of laparoscopic liver resection



Overall complications: 13 patients (5 %)

Complications	Number	Percentage
None	247	95,0
Bile leakage	2	0,77
Ascites	4	1,54
Hemorrhage	2	0,77
Pneumonia	2	0,77
Pleural effusion	3	1,15
Total	260	100

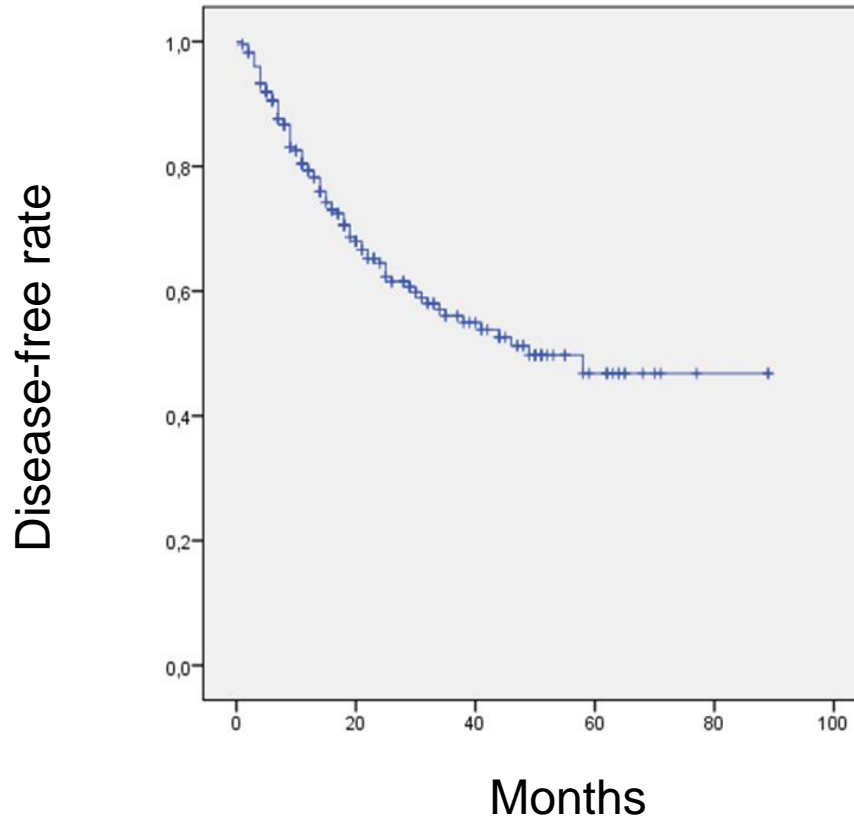
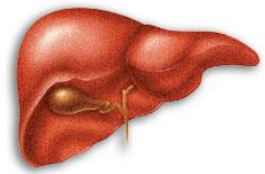
Clavien-Dindo Classification: I (8 patients), II (2 patients)

IIIA: 1 patient with pleural effusion → Thoracentesis

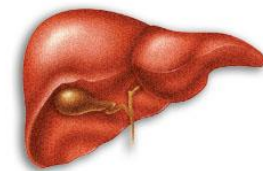
IIIB: 2 post op hemorrhage → Reoperation

No mortality

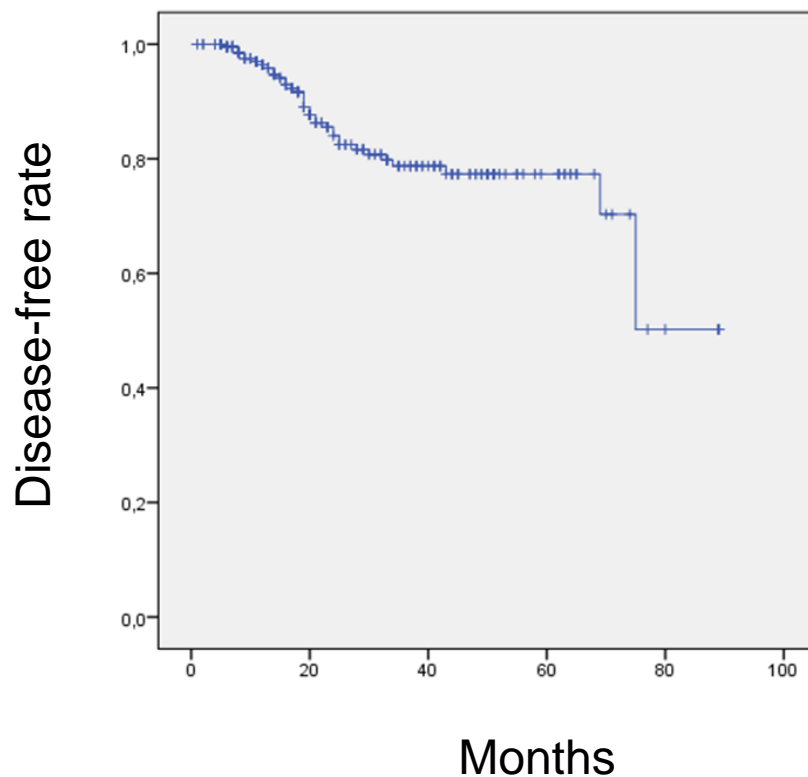
Disease-free survival



Time	1 year	2 year	3 year	4 year	5 year
Percent	79,3%	64,5%	56,0%	51,2%	46,8%



Overall survival



Time	1 year	2 year	3 year	4 year	5 year
Percent	96,4%	84%	78,7%	77,3%	77,3%

Summary

With experience in performing

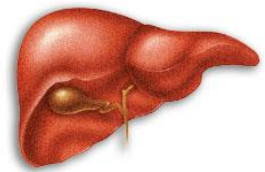
Laparoscopic liver resection

- *Feasible and safe*
- *Technique were standardized*

Extra Glissonean pedicle dissection

Caudate approach

- *Extended Indication: major, central liver resection*
- *Oncologic results: comparable with open surgery*

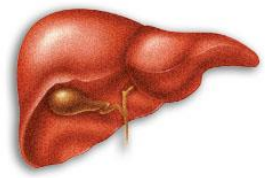


Liver Resection

Why we do ... lap surgery...?

Maybe...in near future...

Why we do ... open...?



Why...Laparoscopic Liver Resection?



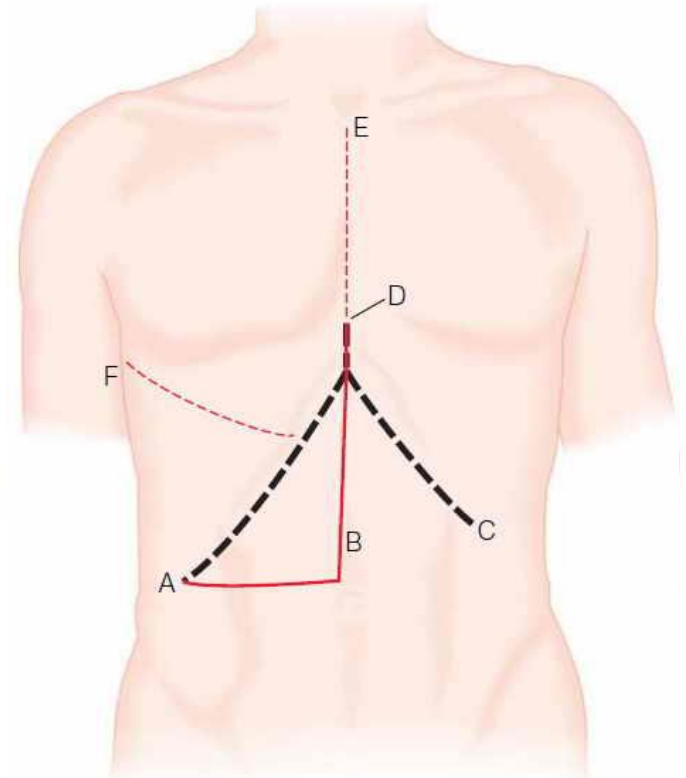
Liver resection

Liver

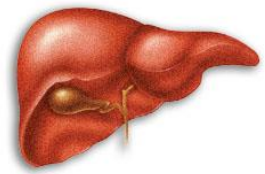
Special anatomic position

Liver resection

Highly invasive surgery



*Minimizing the invasion of treatment
most expected innovation in surgery*



Lap liver resection

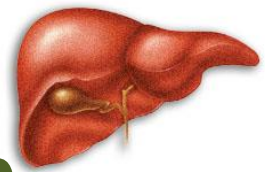
First performed by Gagner (1992)

Through a long journey of developing...

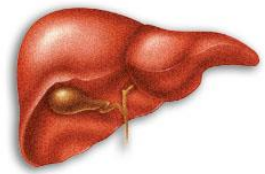
We have got great achievements

- Initial difficulties were overcome
- Surgical techniques were gradually standardized
- Indications were extended

Current status of Laparoscopic Liver Resection



- Challenging tumor location
 - Posterior, superior segments
- Major and difficult hepatectomy
 - Right or left hepatectomy
 - Central hepatectomy
 - Caudate lobectomy
- Anatomical resection
 - Better oncologic results
- Lap Donor Hepatectomy



- During the dissection of the liver parenchyma, there are no small branches of the Glissonian pedicle, but only branches of the hepatic vein across the
- cut surface
- intersegmental plane



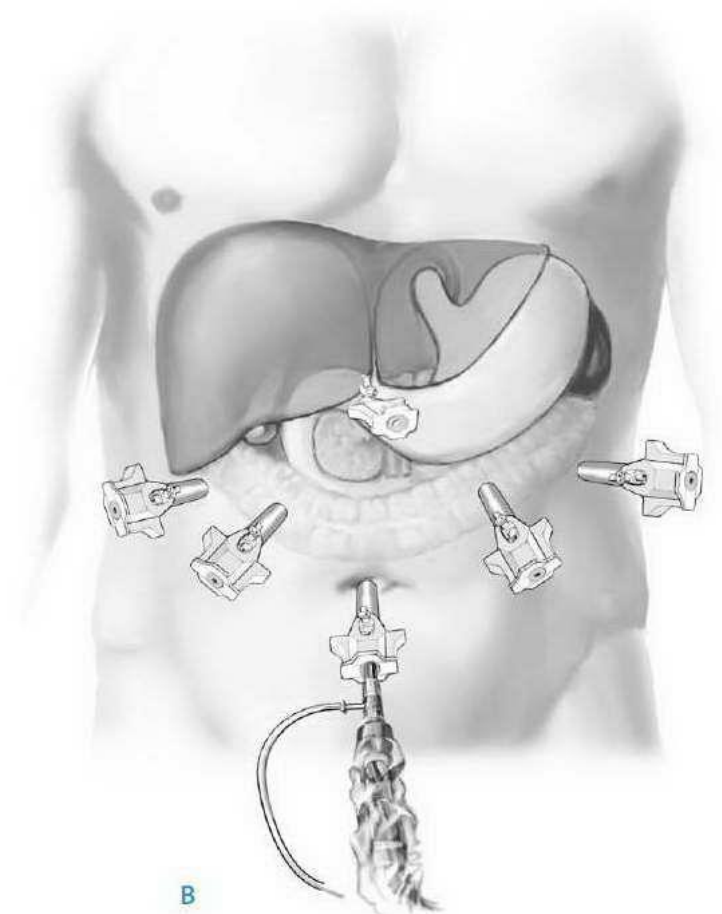
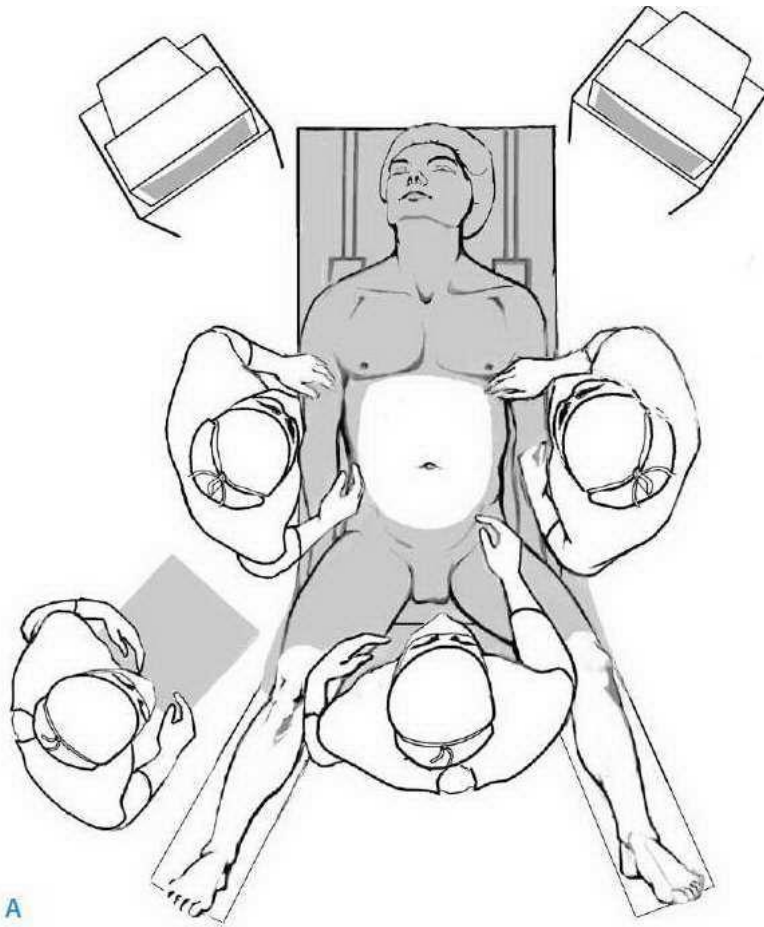
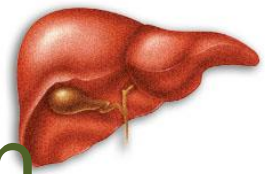
The International Position on Laparoscopic Liver Surgery

The Louisville Statement, 2008

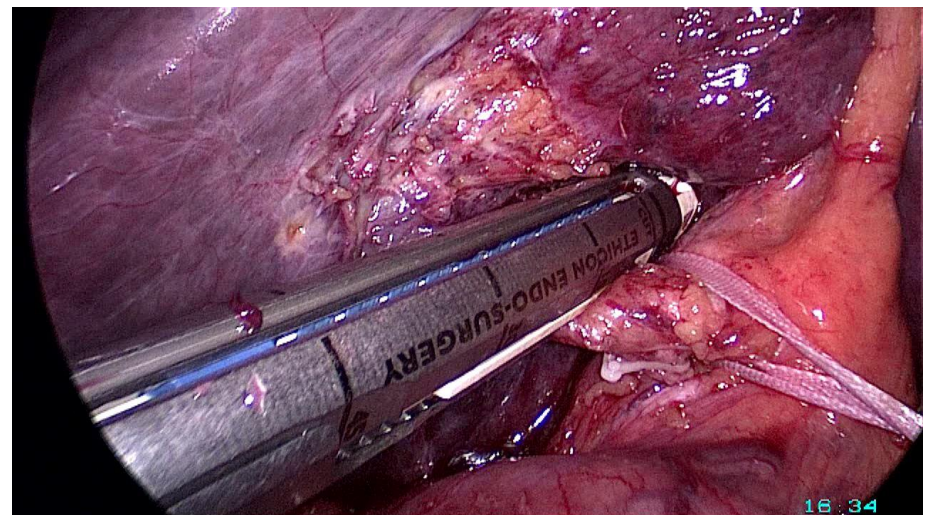
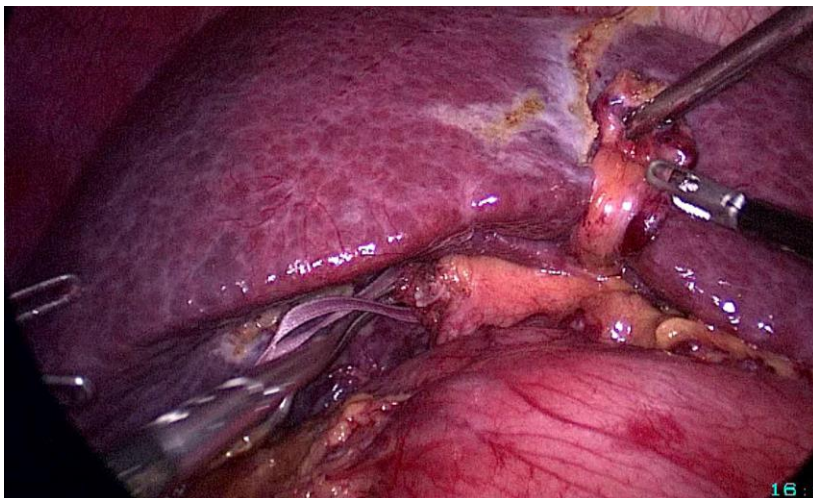
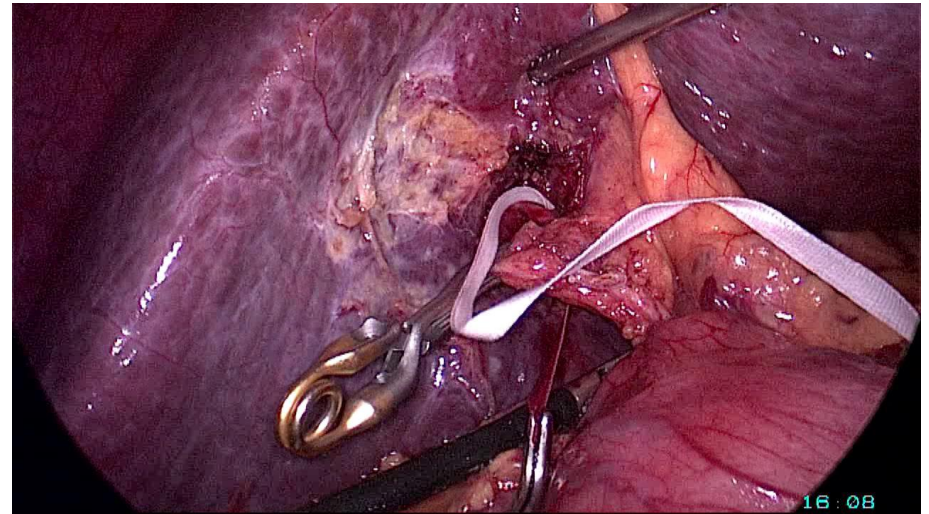
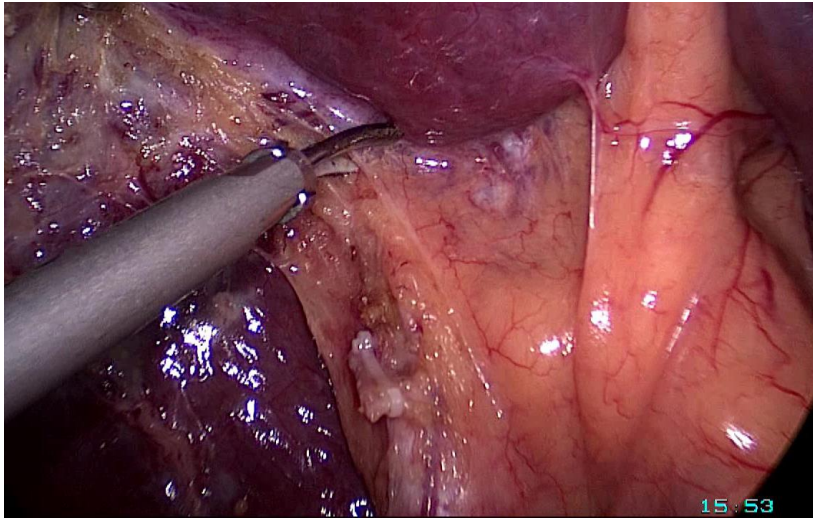
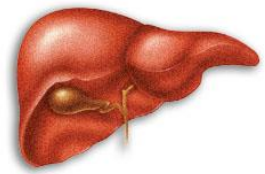


FACULTY
LOUISVILLE, KENTUCKY, USA
NOVEMBER 7 & 8 2008

Laparoscopic right liver resection



Extra Glissonean Dissection Right hepatectomy



Laparoscopic Right Liver Resection

