



# CURSO CONTINUADO EM VIDEOCIRURGIA DO HU-UFPI MÓDULO 1: VIDEOCIRURGIA PARA RESIDENTES

**TEÓRICO E PRÁTICO**

**20 e 21  
AGOSTO**

**Hepatectomia laparoscópica**

**Orlando Jorge M Torres  
Professor Livre-Docente - UFMA**

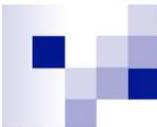
# Hepatectomia laparoscópica

Gagner M, et al.

Laparoscopic partial hepatectomy for liver tumor.

Surg Endosc. 1993;6:99.

- 
- Experiência em cirurgia de fígado**
  - Treinamento em videocirurgia avançada**



# Profundo conhecimento da anatomia do fígado

Go Wakabayashi



### □ Tumores

Benignos

Malignos

**Primários**

Fígado normal

Cirrótico

**Secundários**

### Cirurgião

Falta de experiência

Equipamento inadequado

### Tumor

Doença benigna assintomática

Tumores grandes

Invasão vascular/extra-hepática

### Localização

Central

Segmentos posteriores

### Paciente

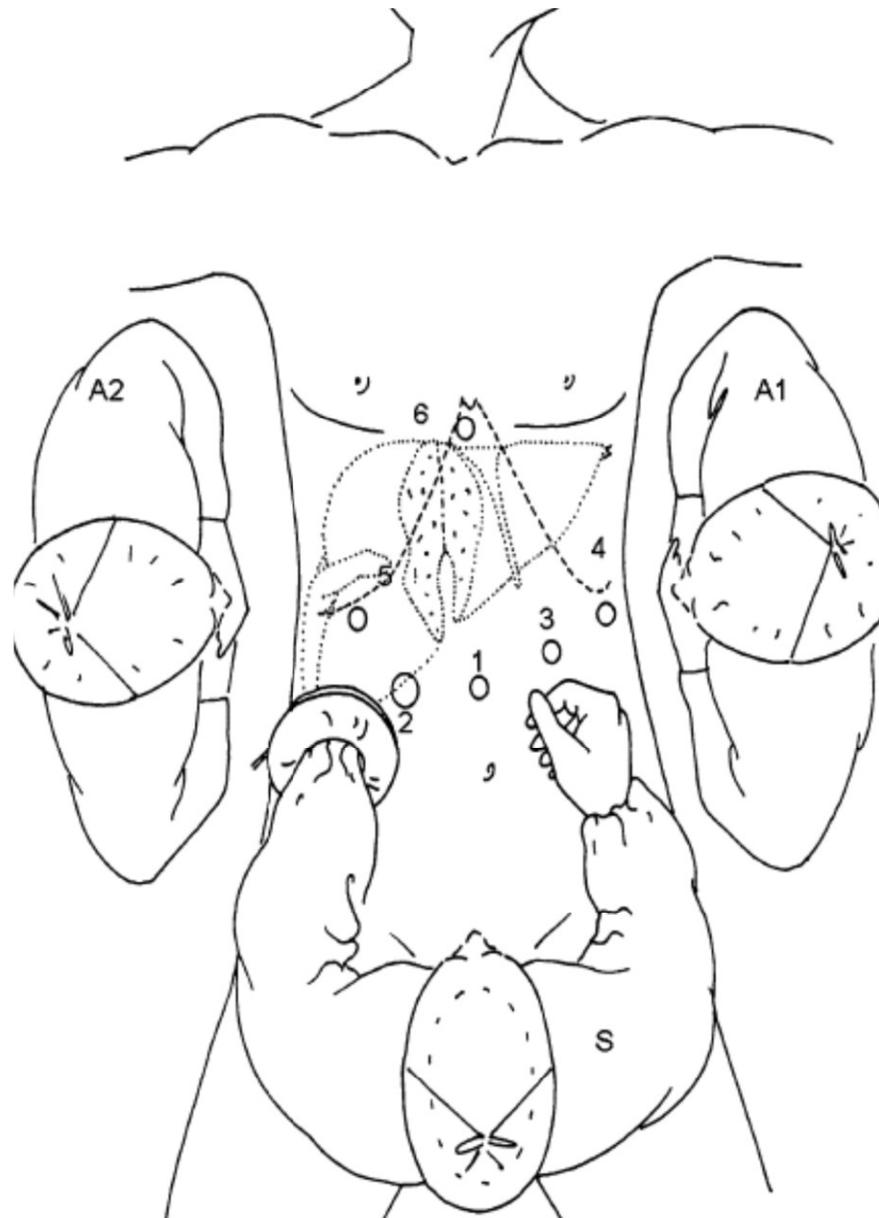
Anestesia

Coagulação

# Hepatectomia laparoscópica

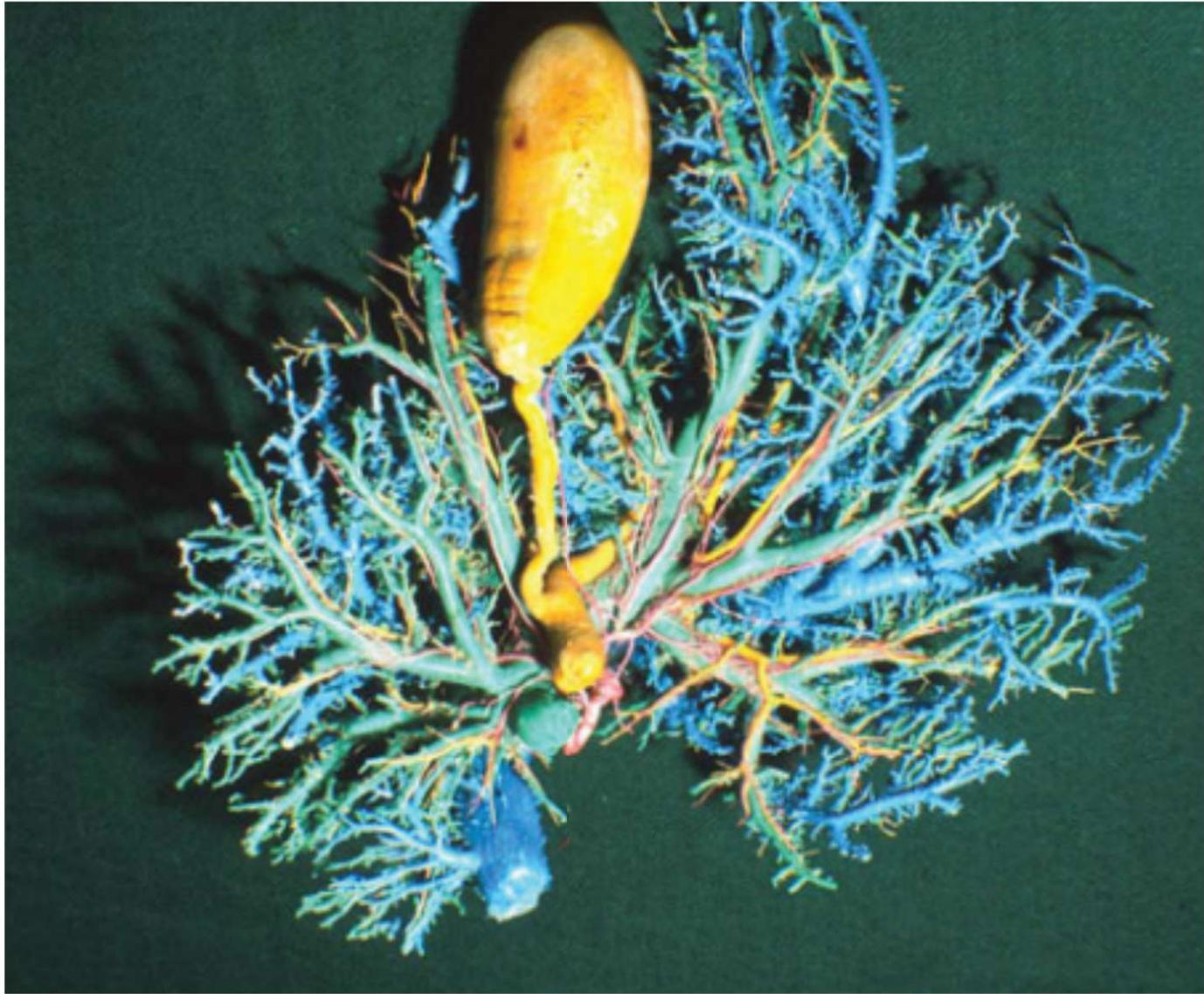
- Hepatectomia pura
- Hand-assisted
- Híbrida
- Robótica

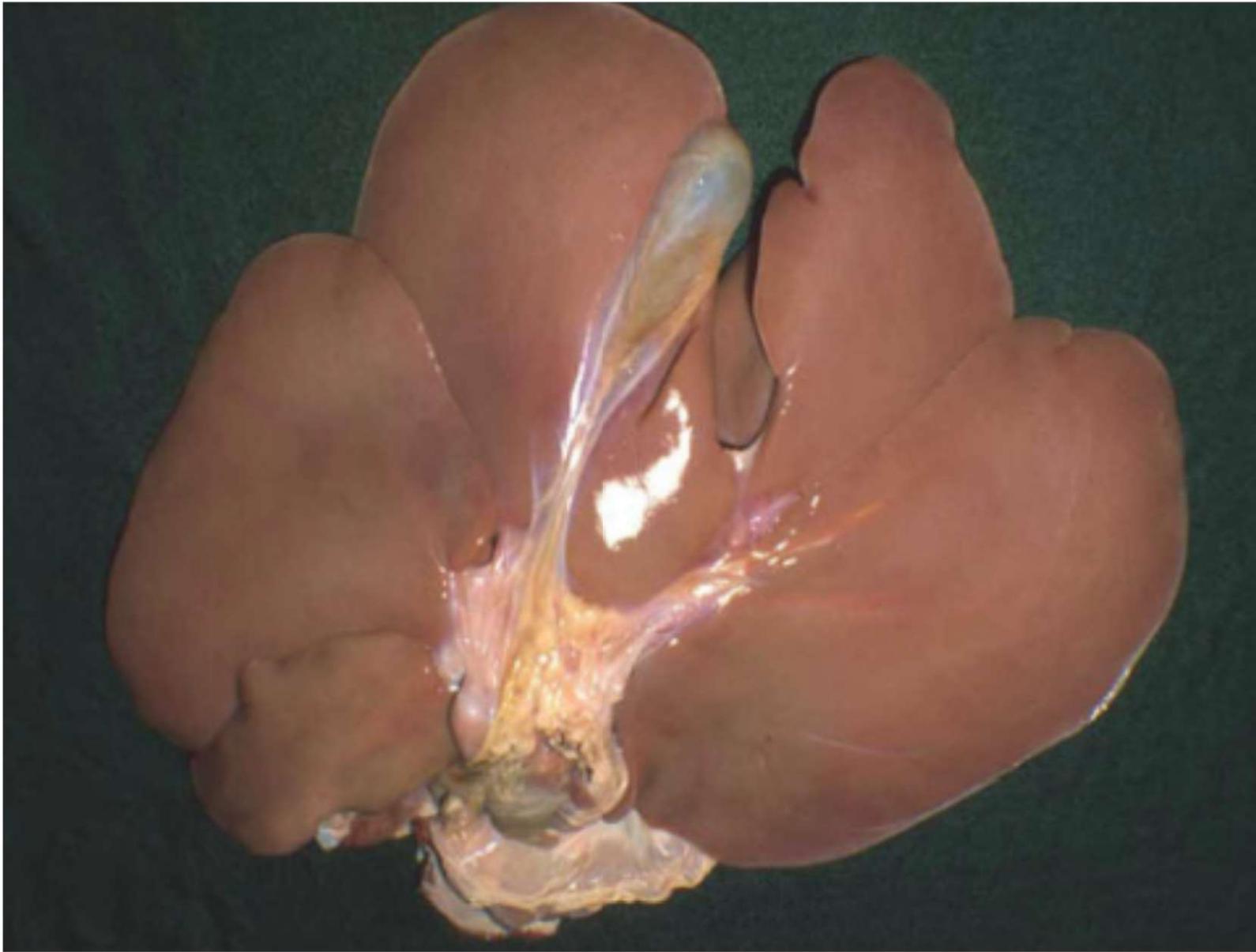
# Hand-assisted

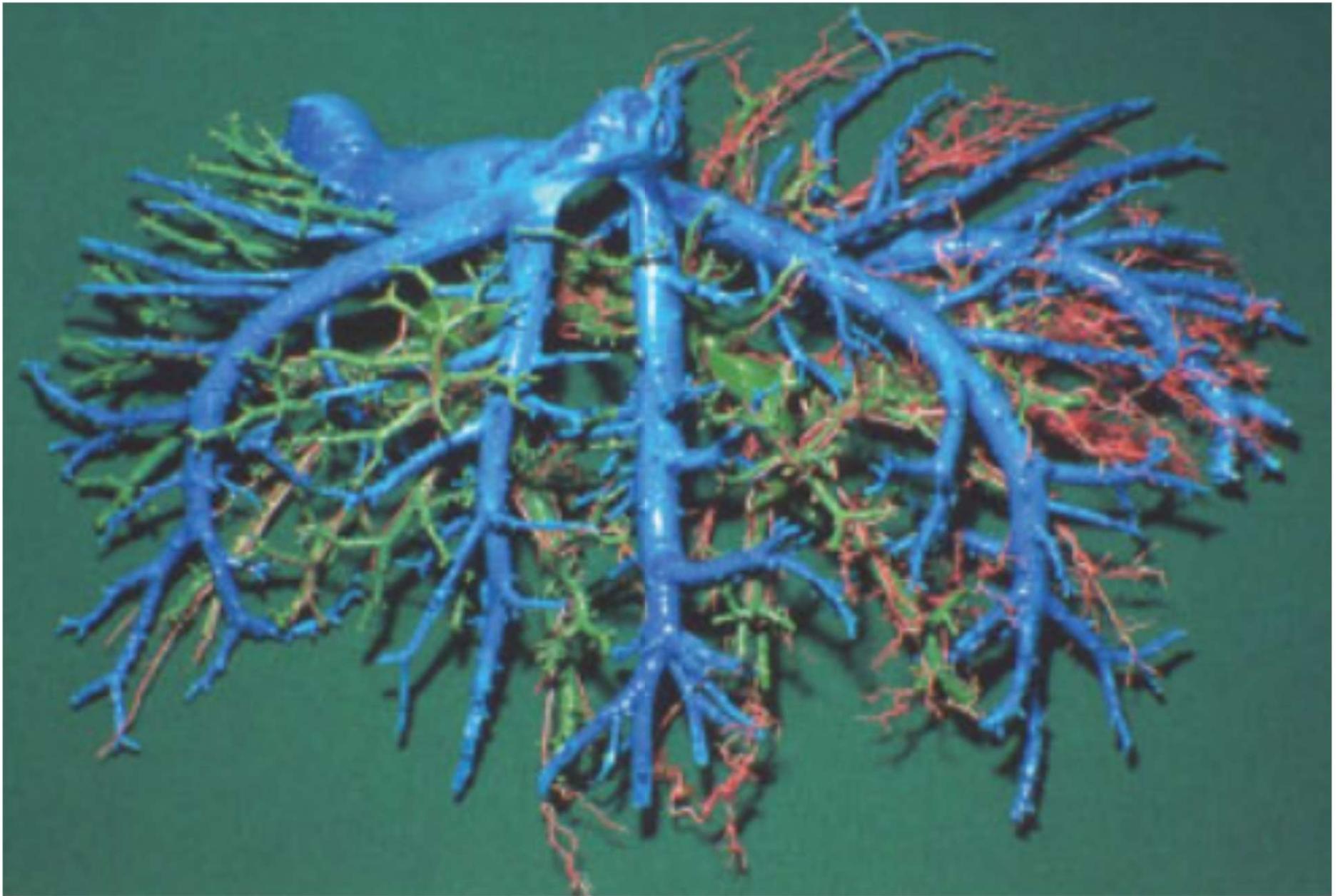


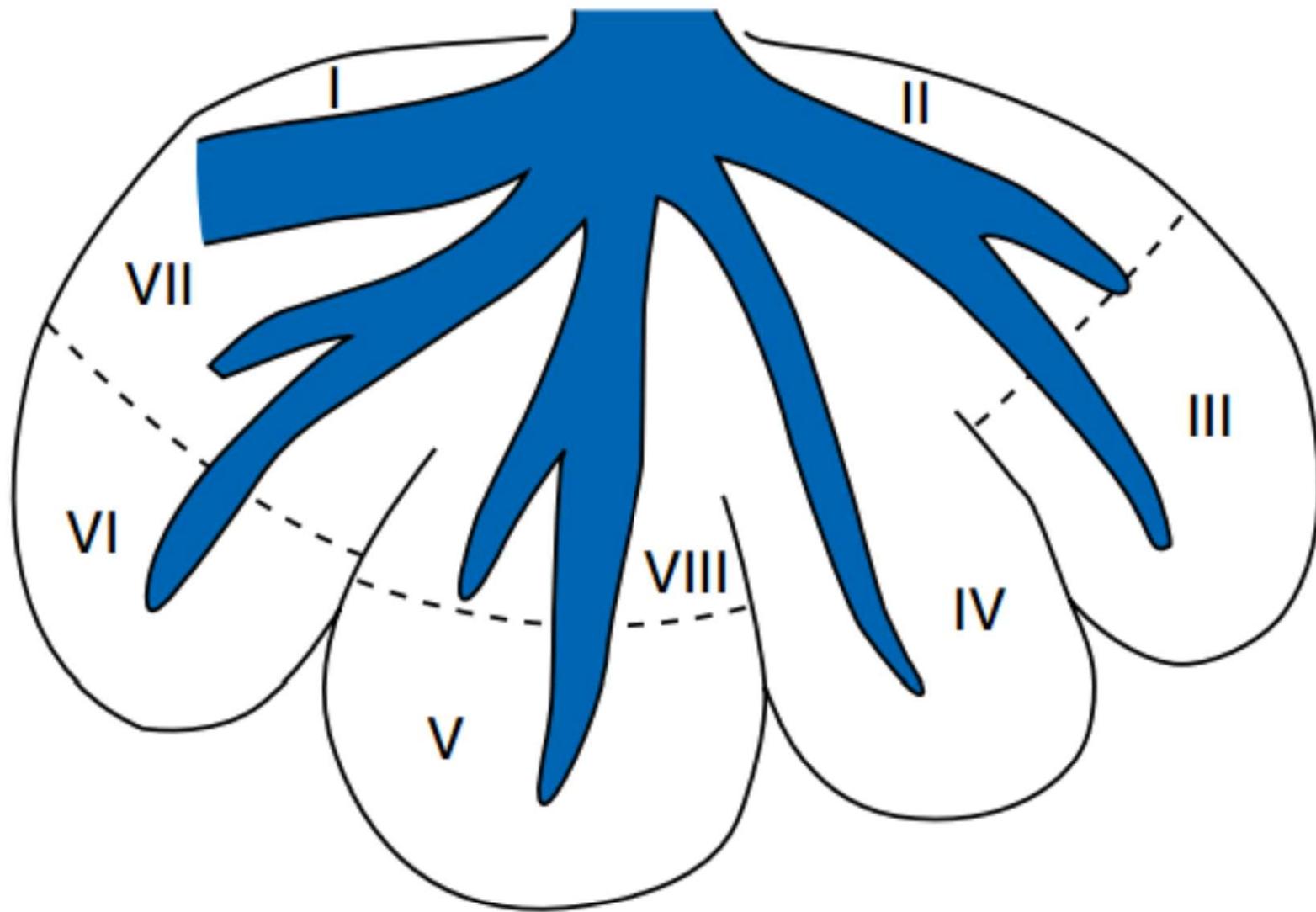


# MODELOS EXPERIMENTAIS

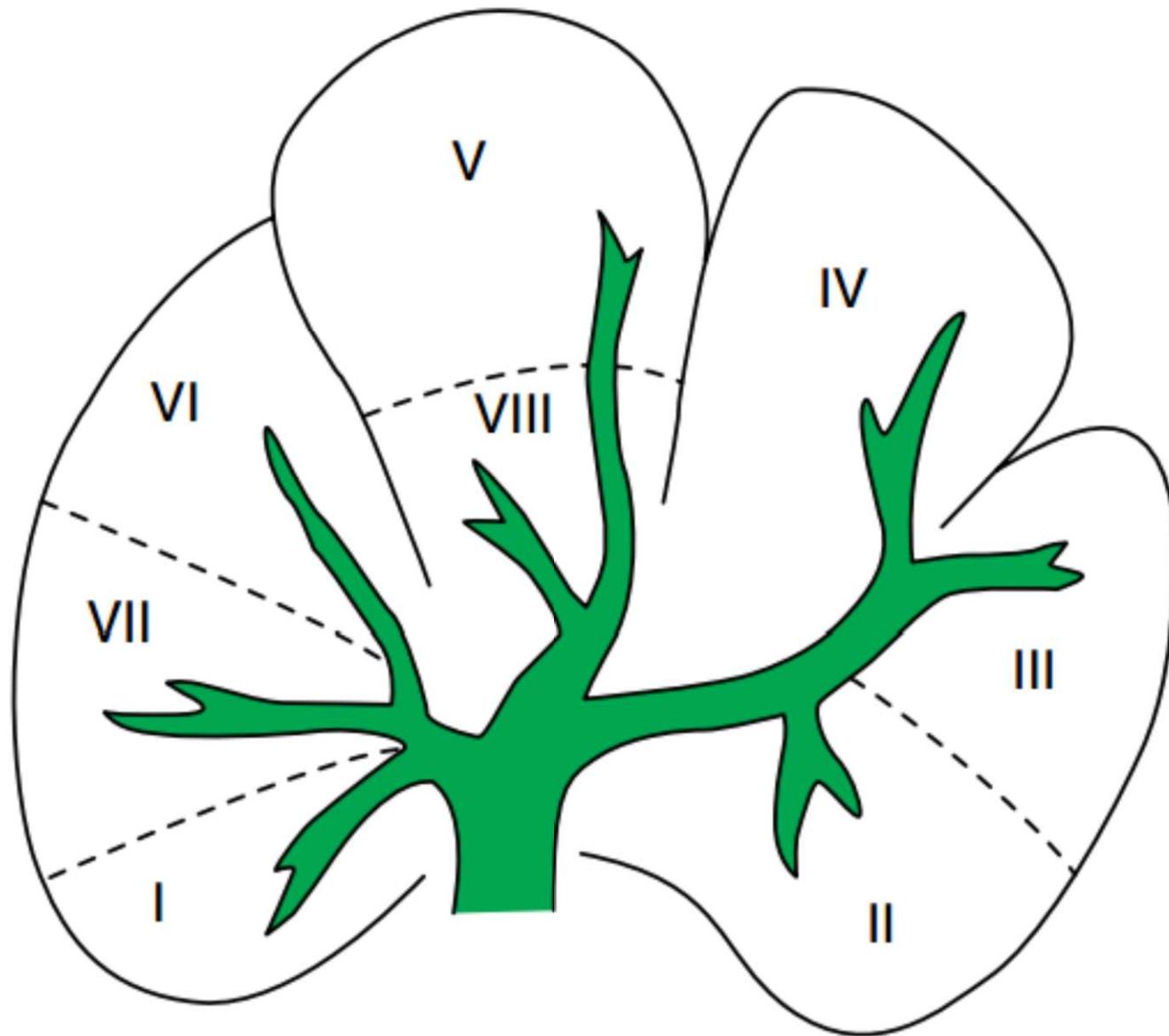


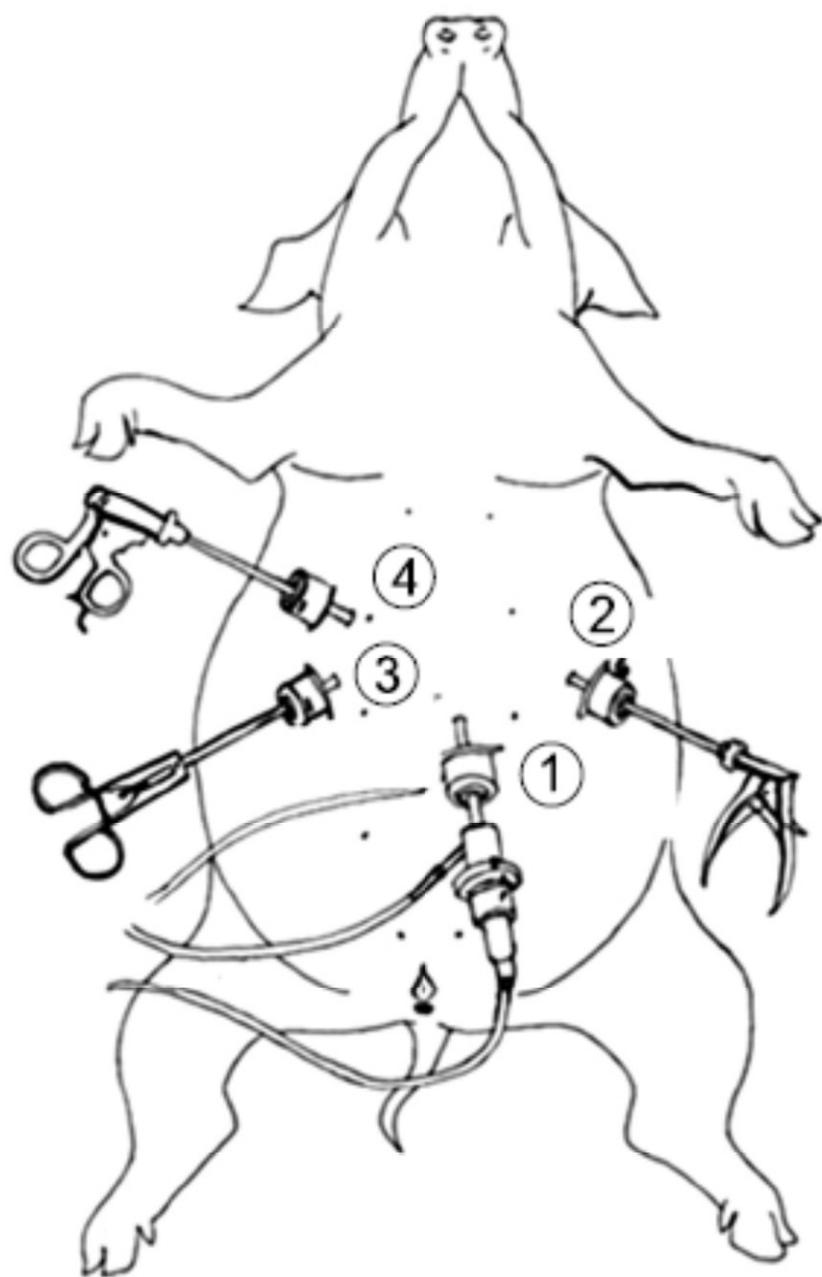


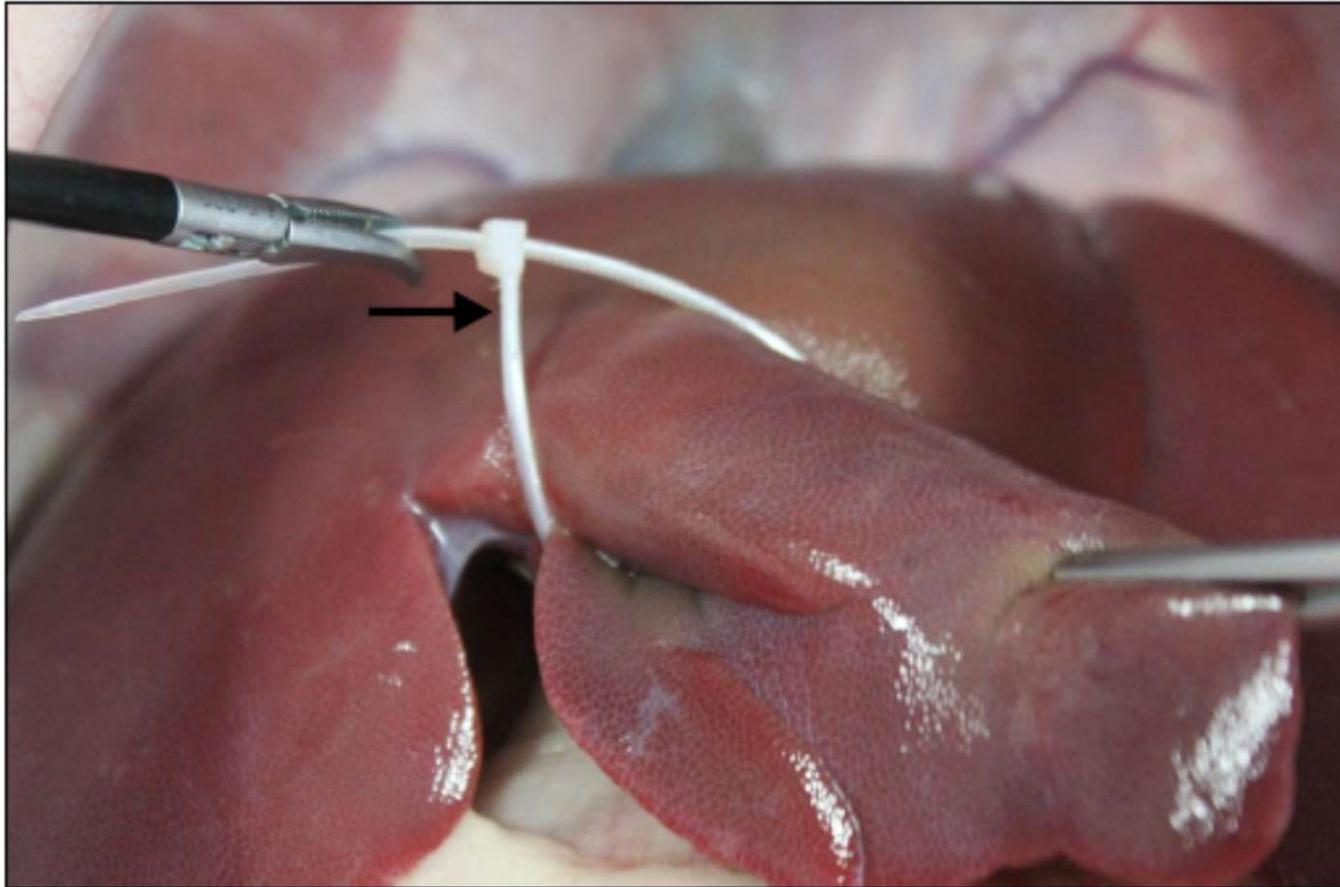


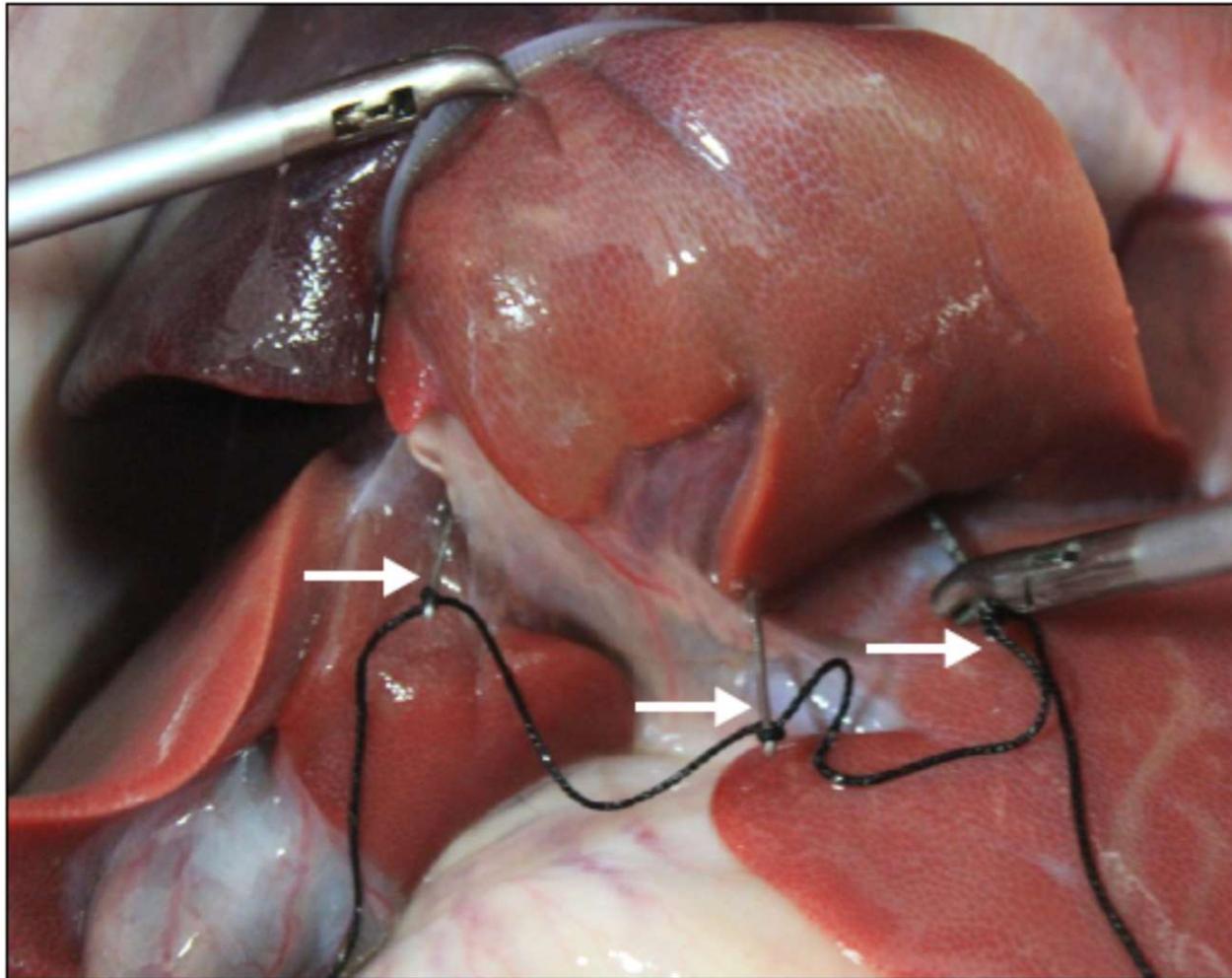


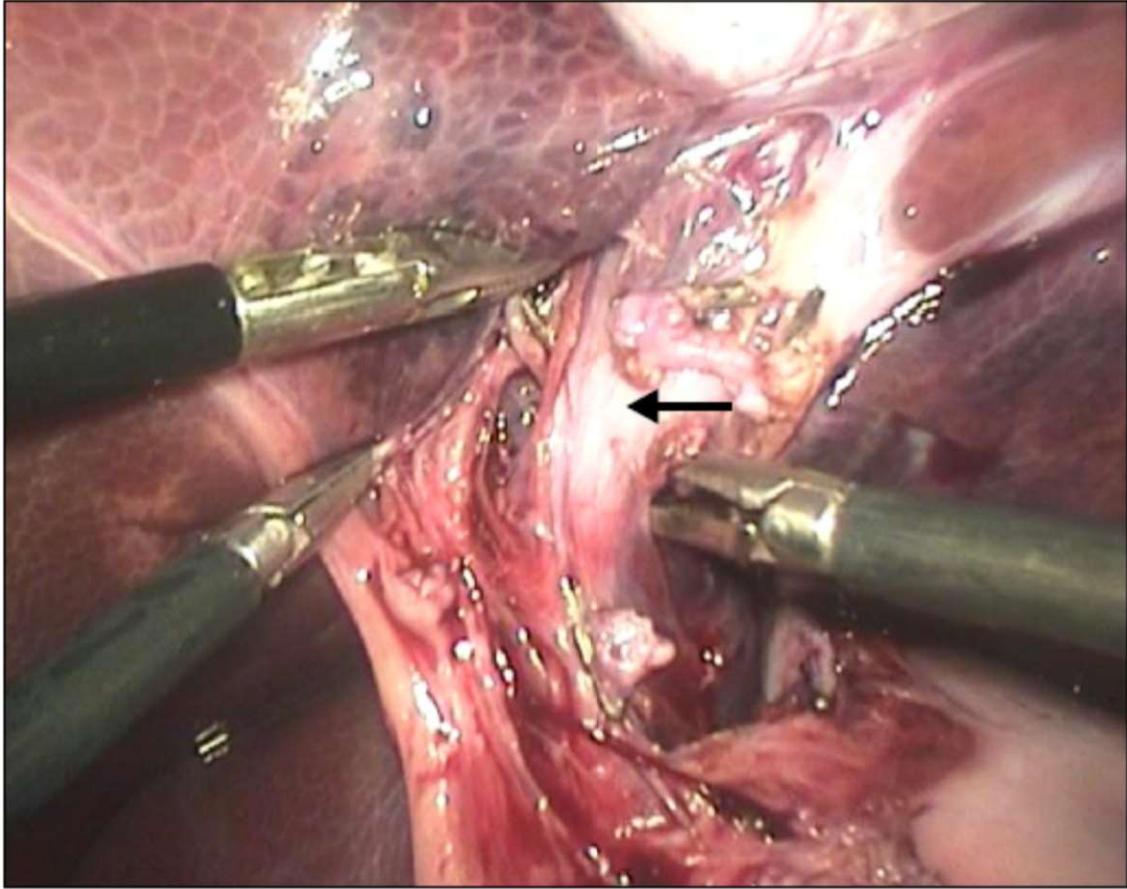


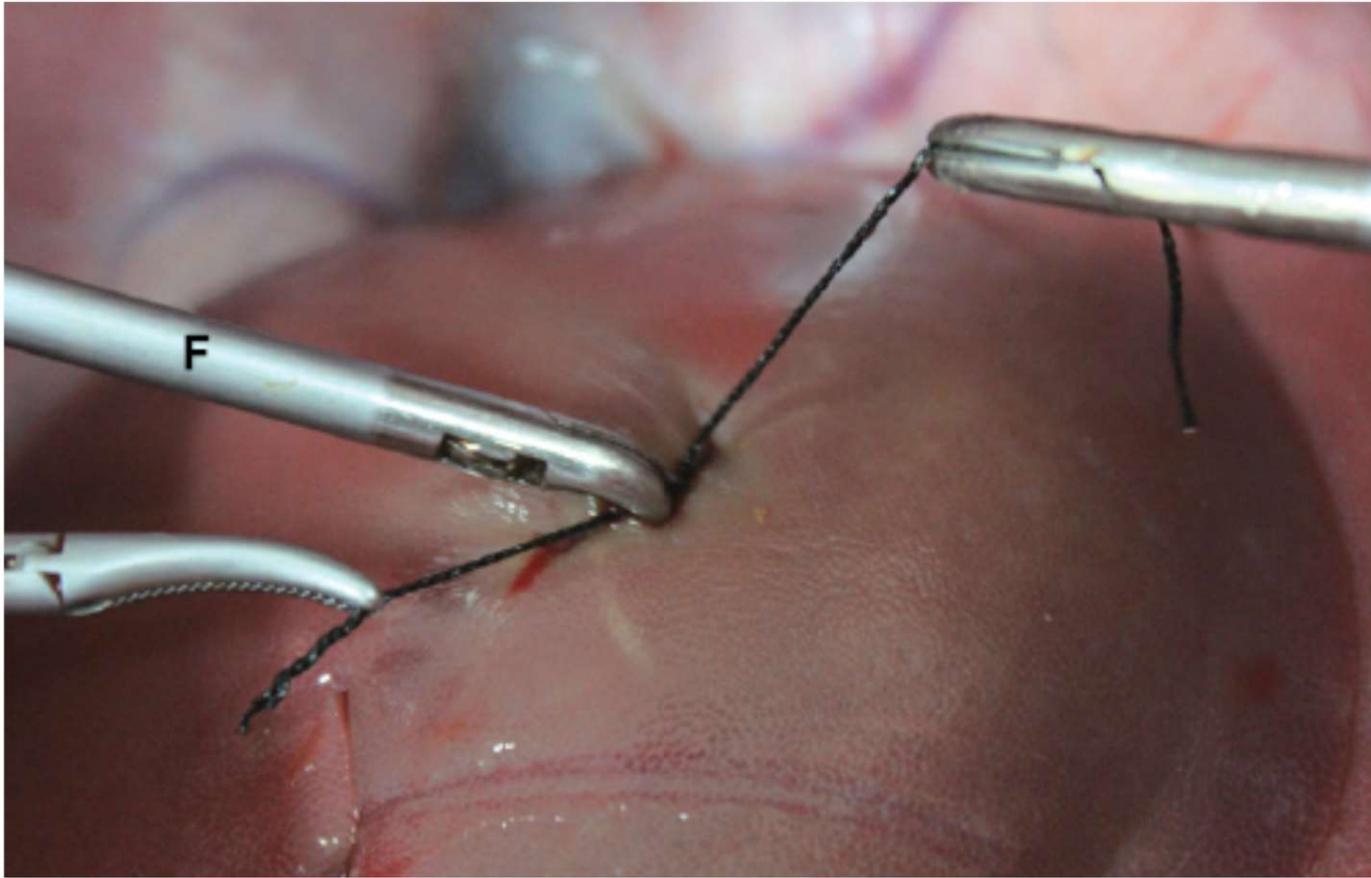




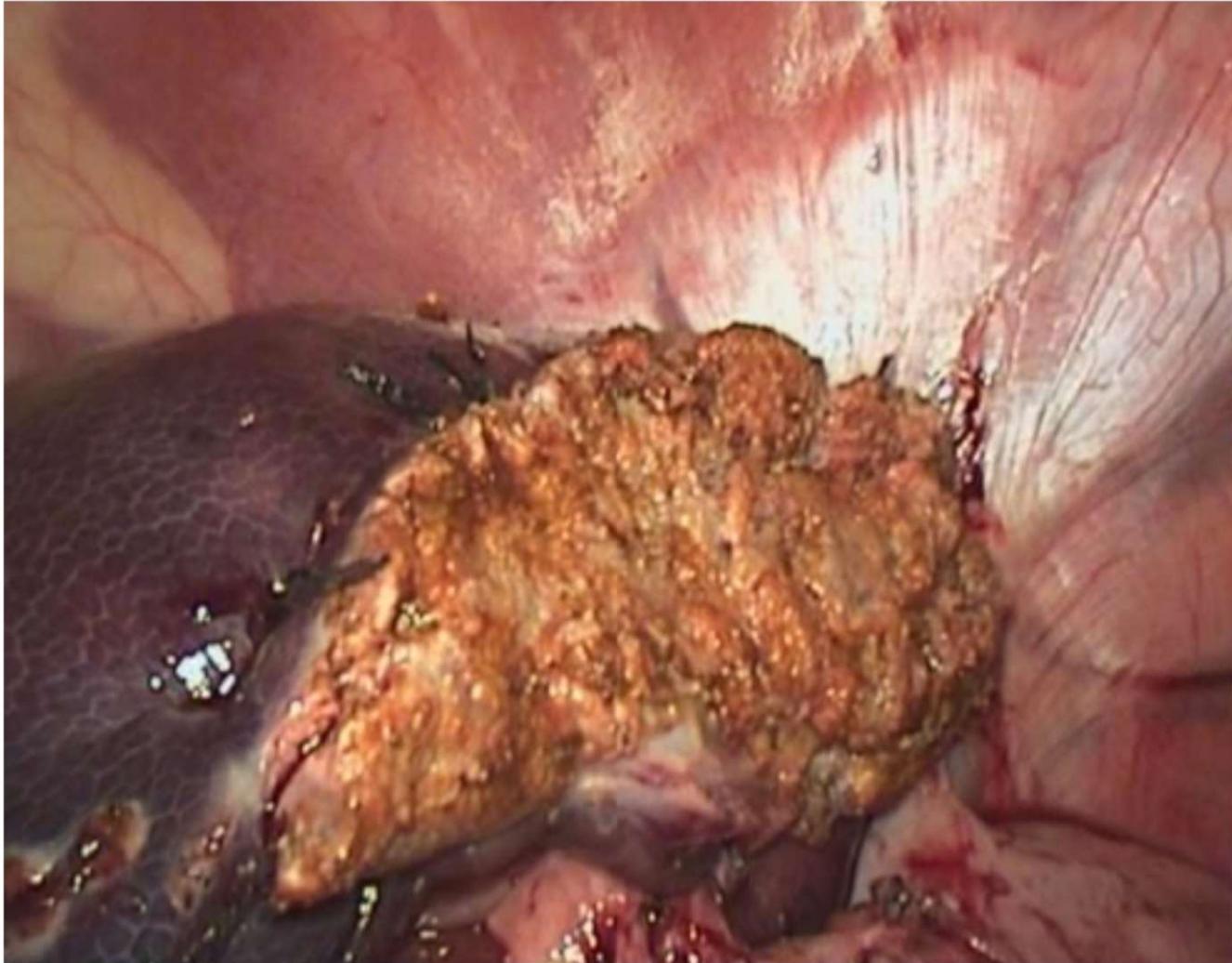








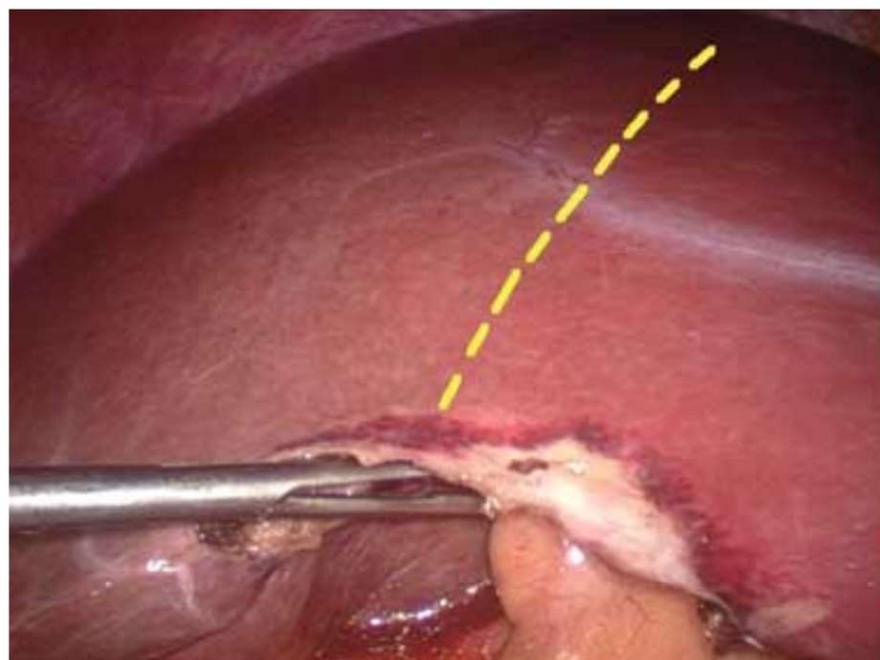
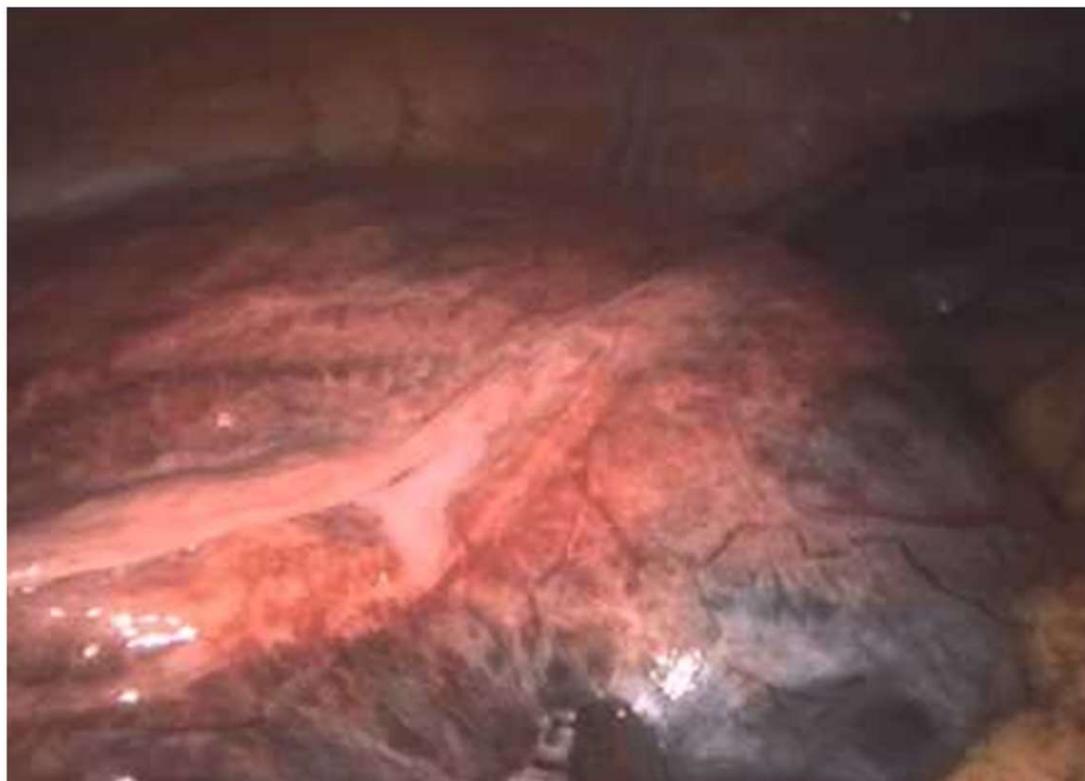
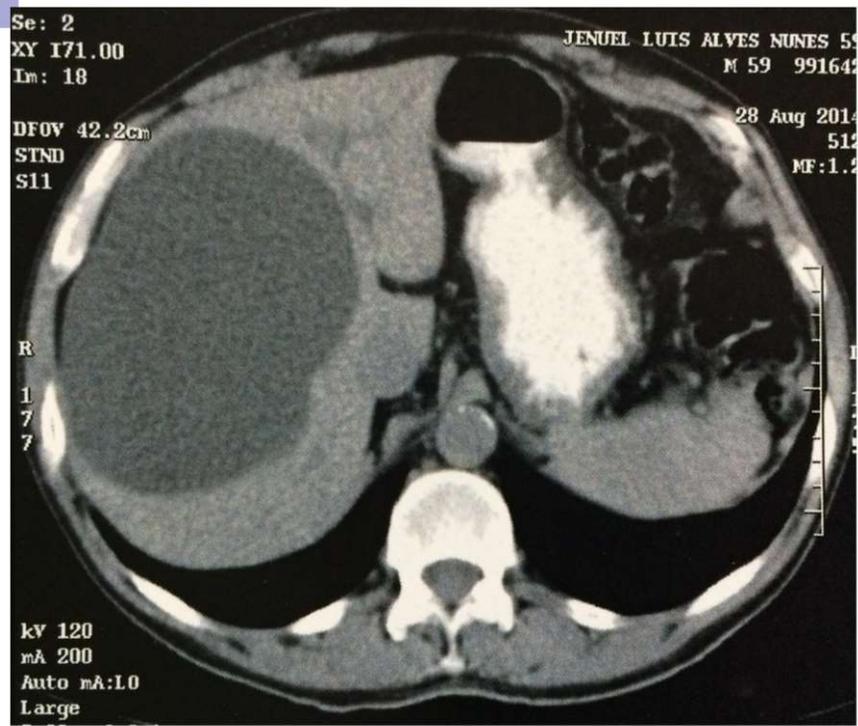




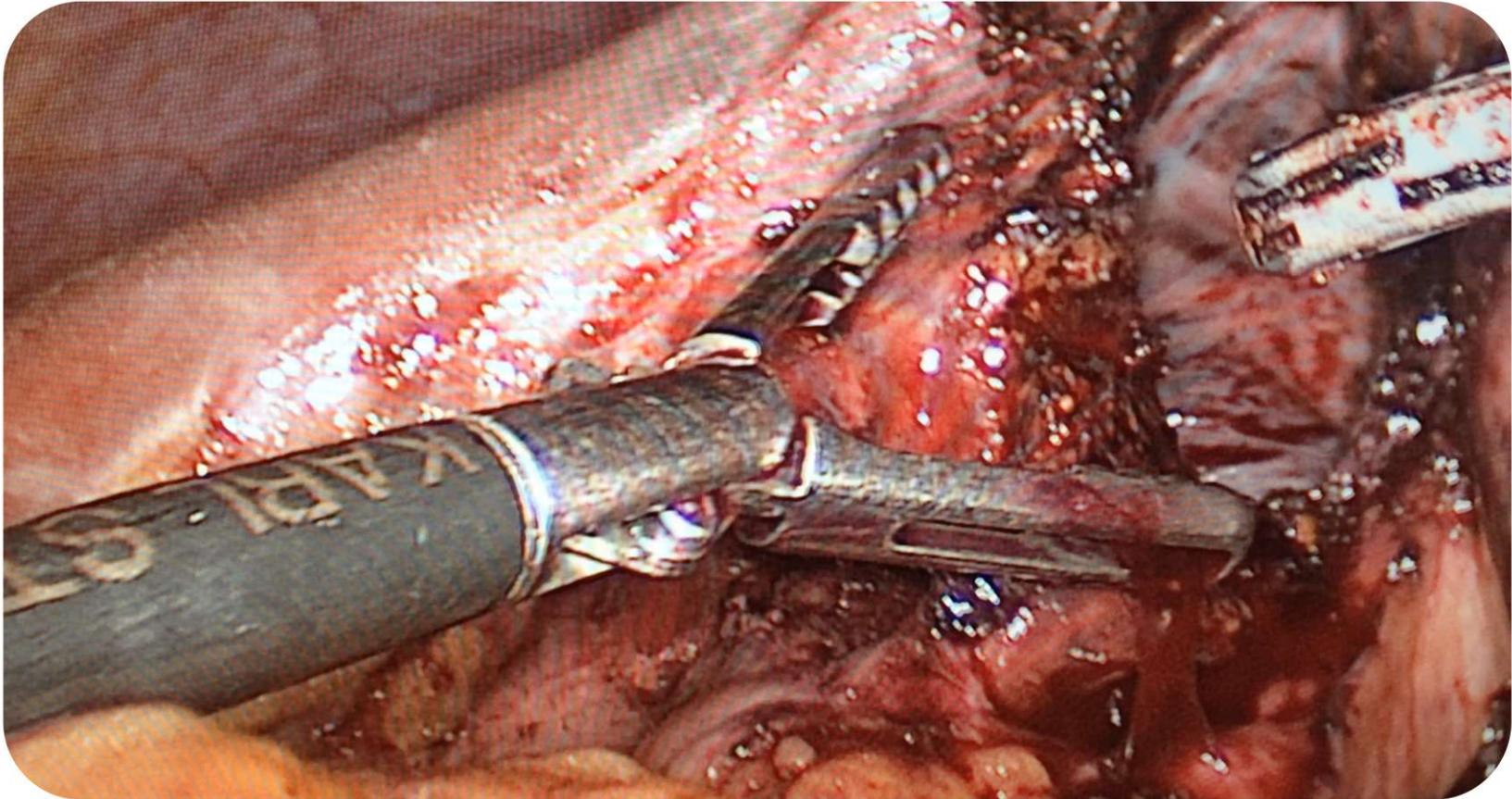
# Hepatectomia laparoscópica

## Procedimentos iniciais

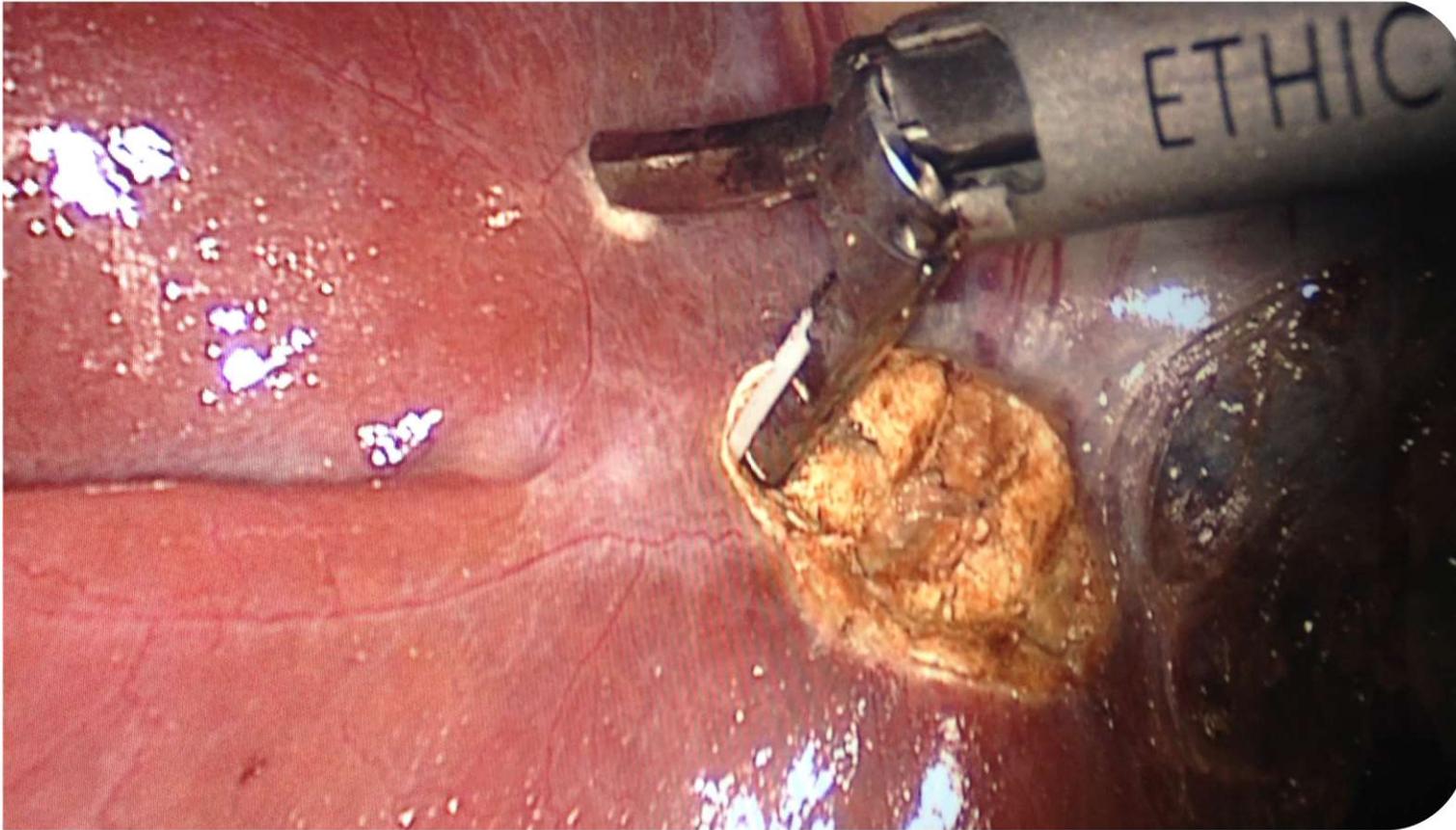
- Cistos hepáticos
- Abscessos
- Ressecções em cunha
- Doenças benignas
- Avaliação para aberta

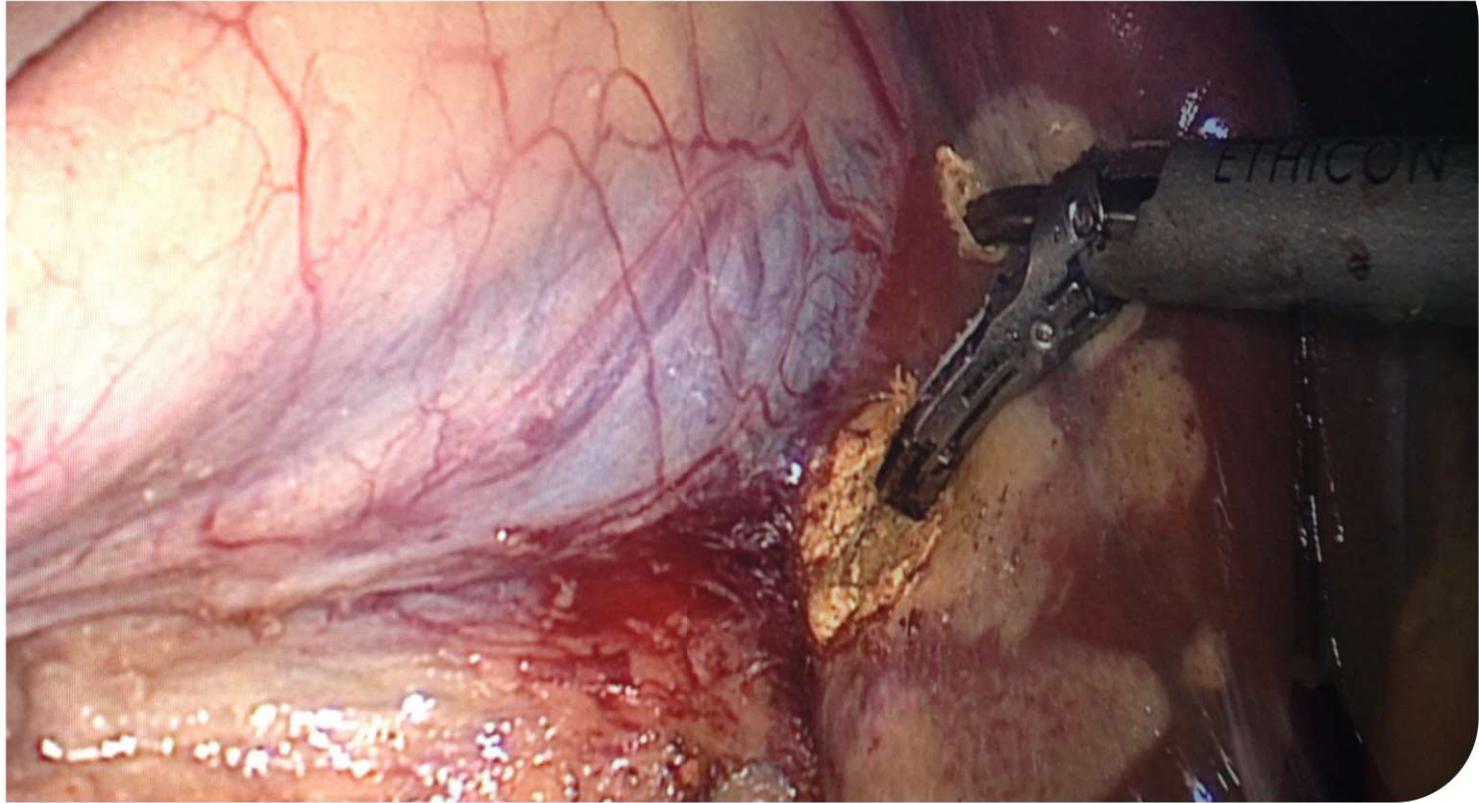


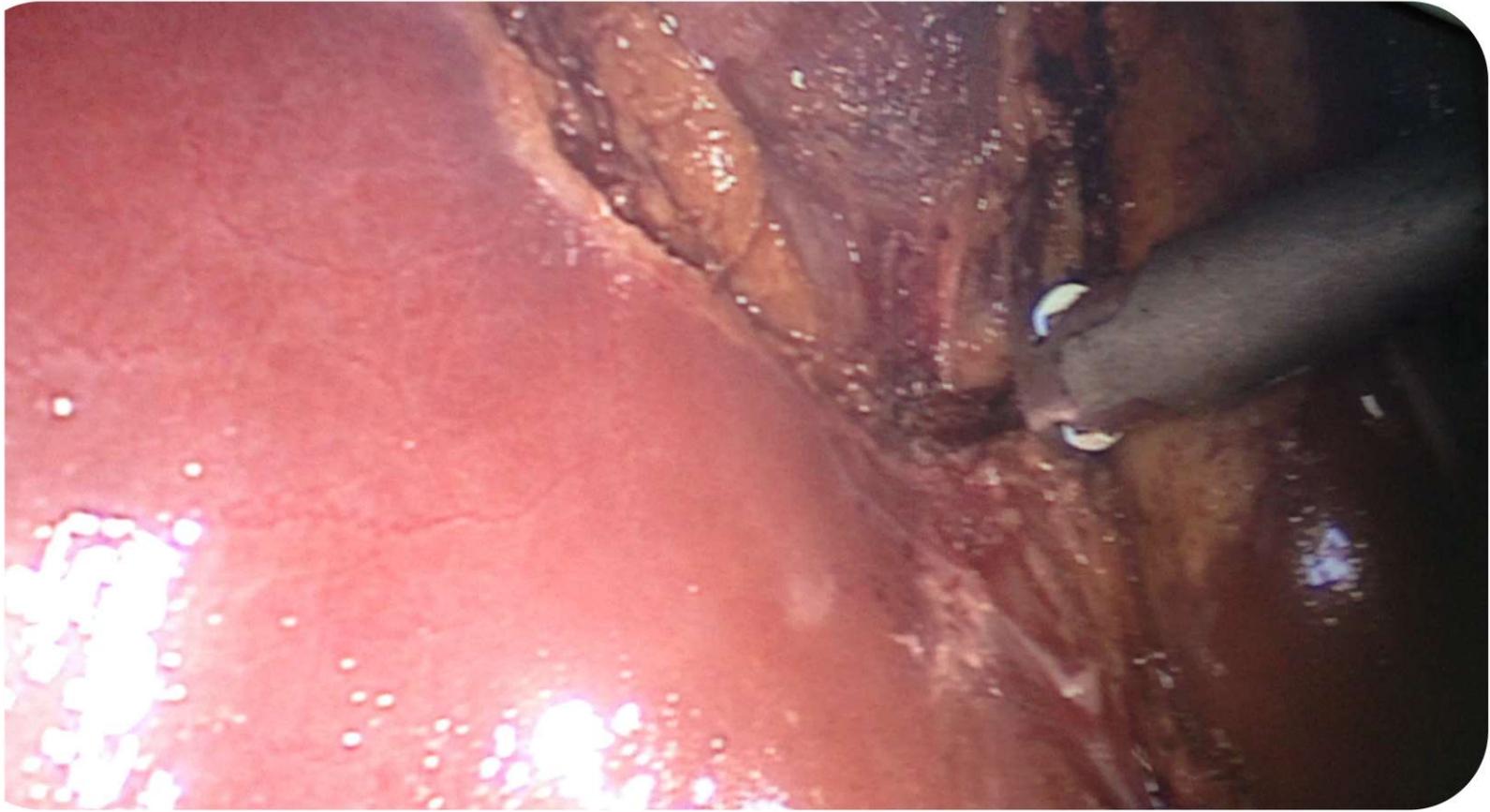
# Cisto hepático

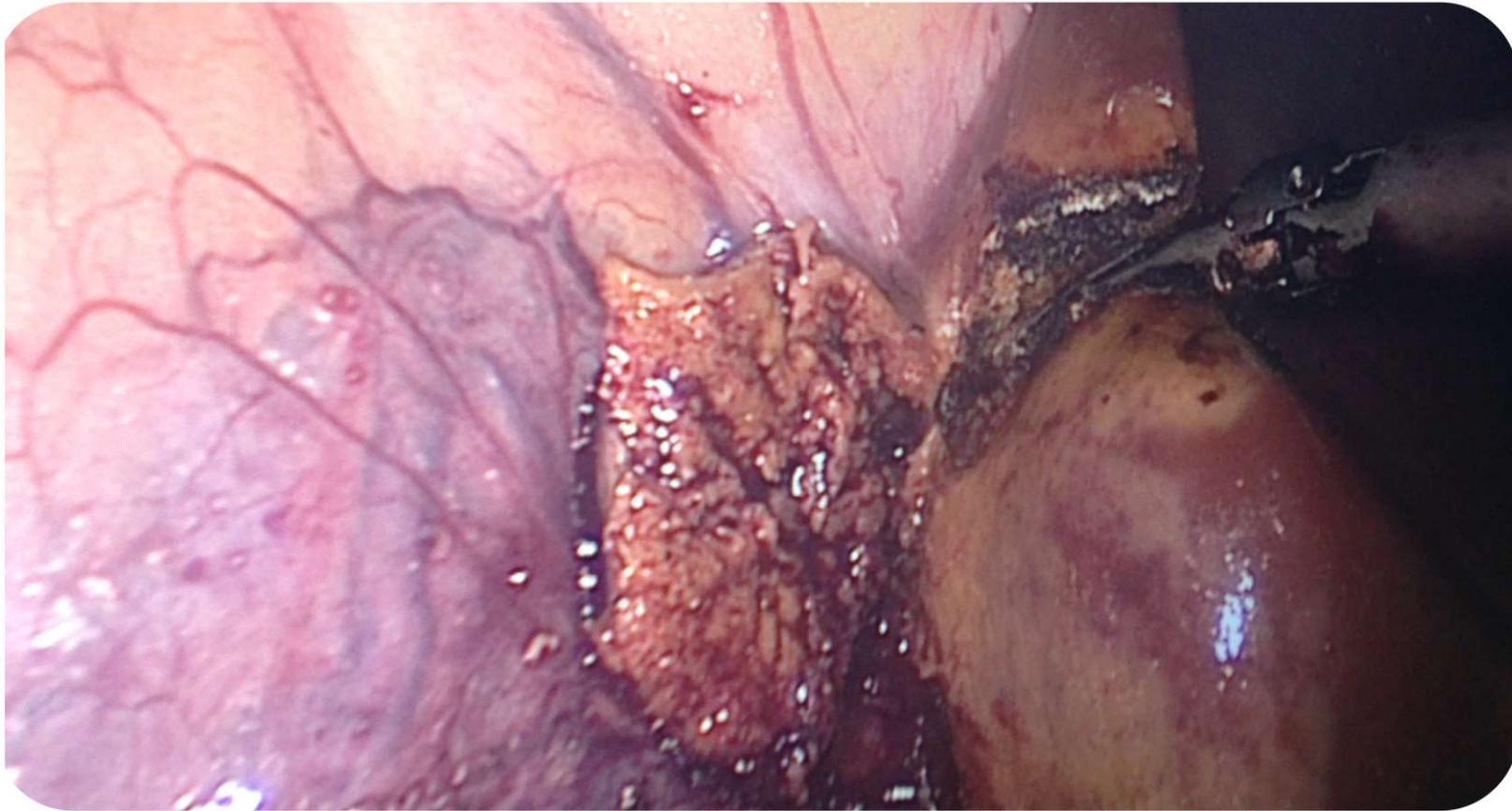
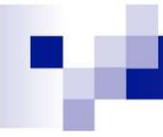


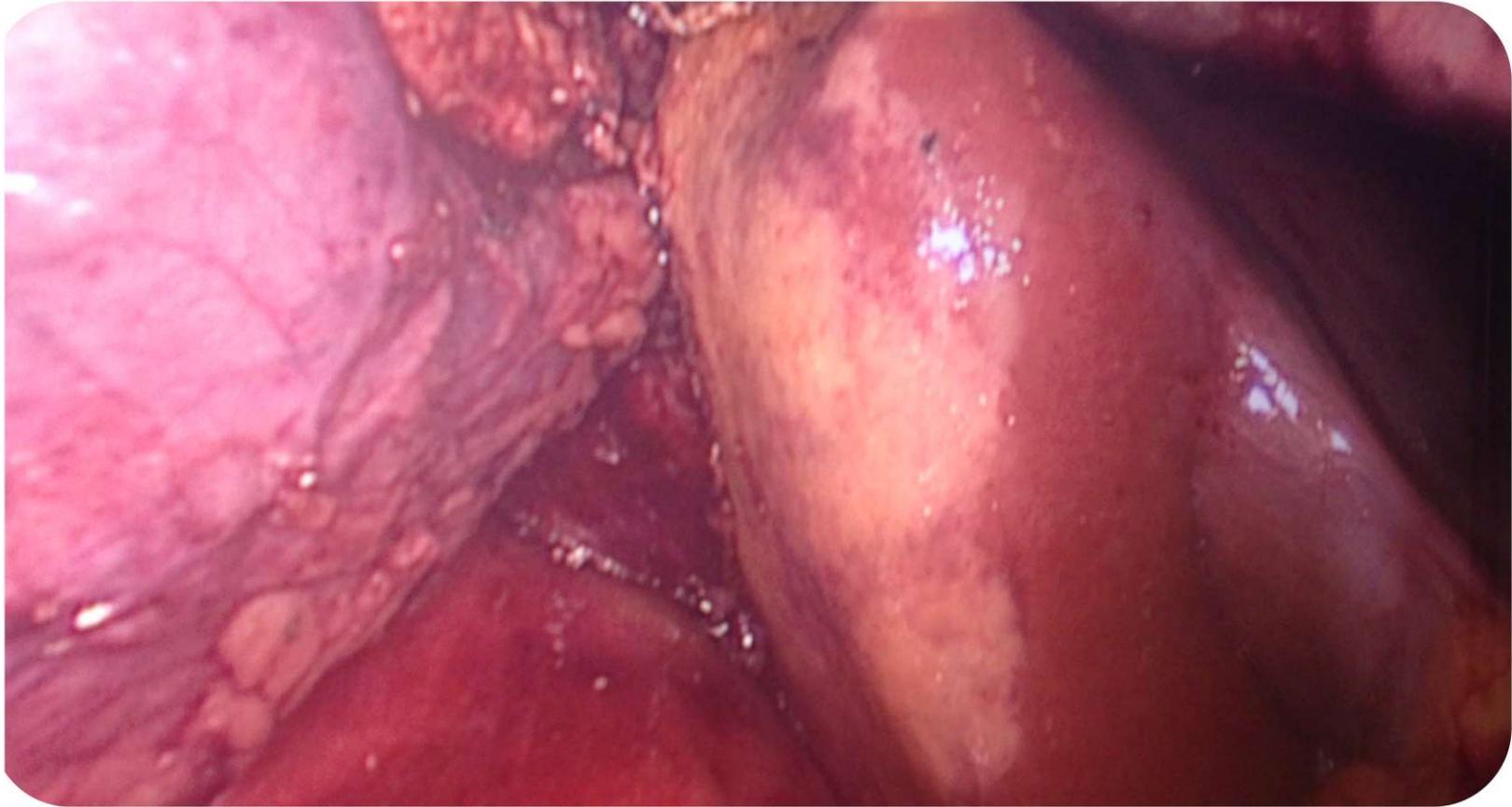
# Lesão polipóide > 20mm

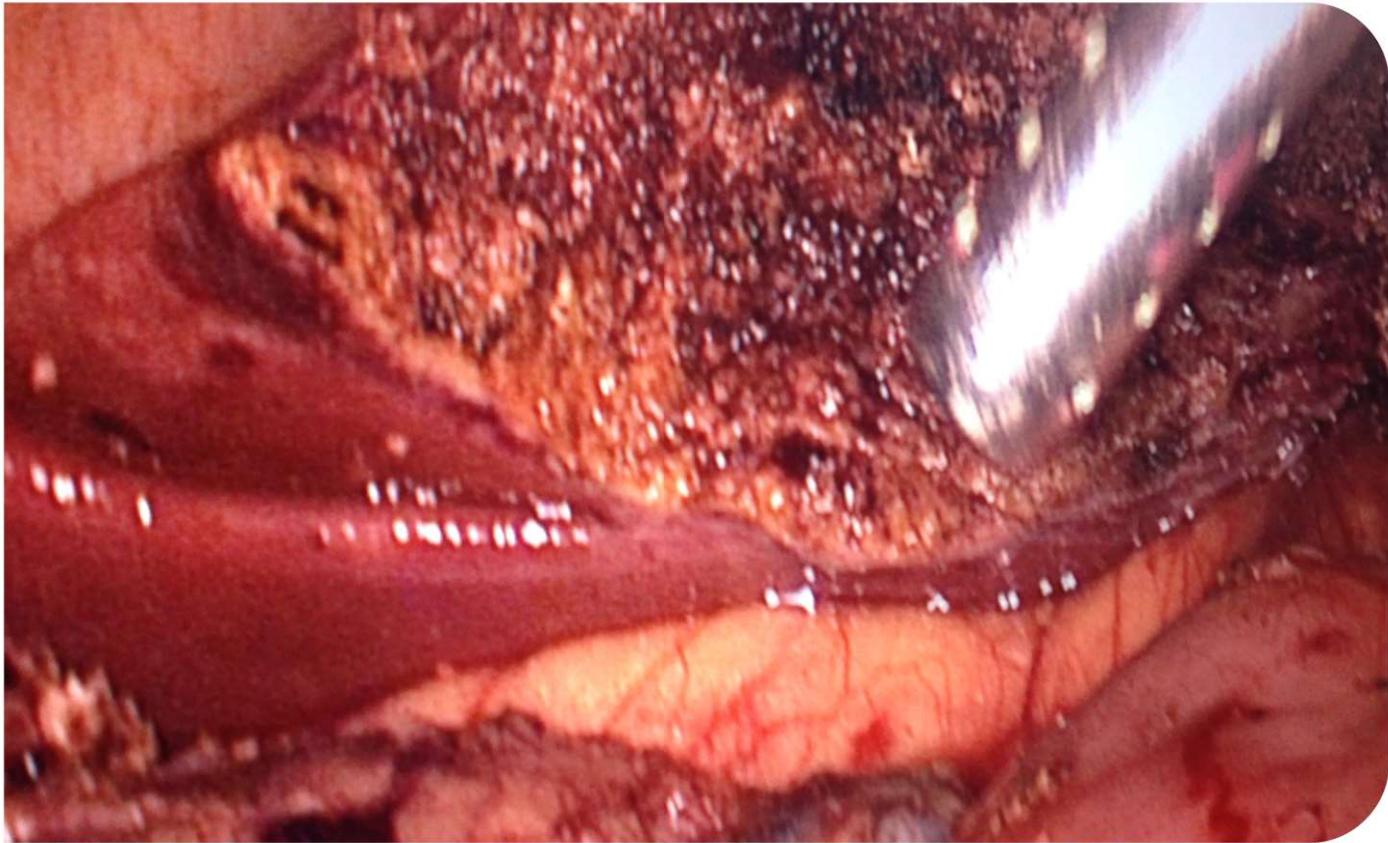


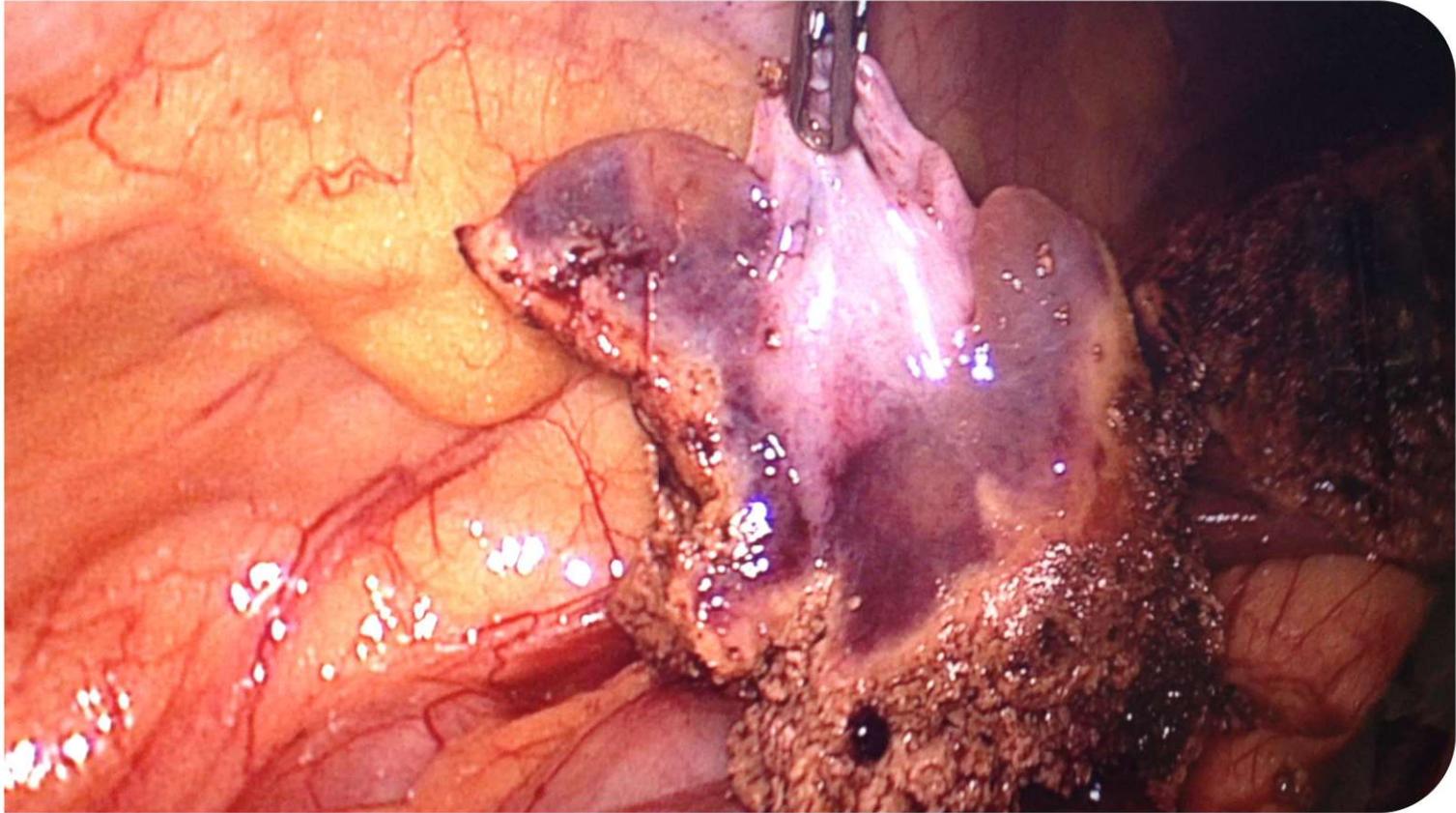




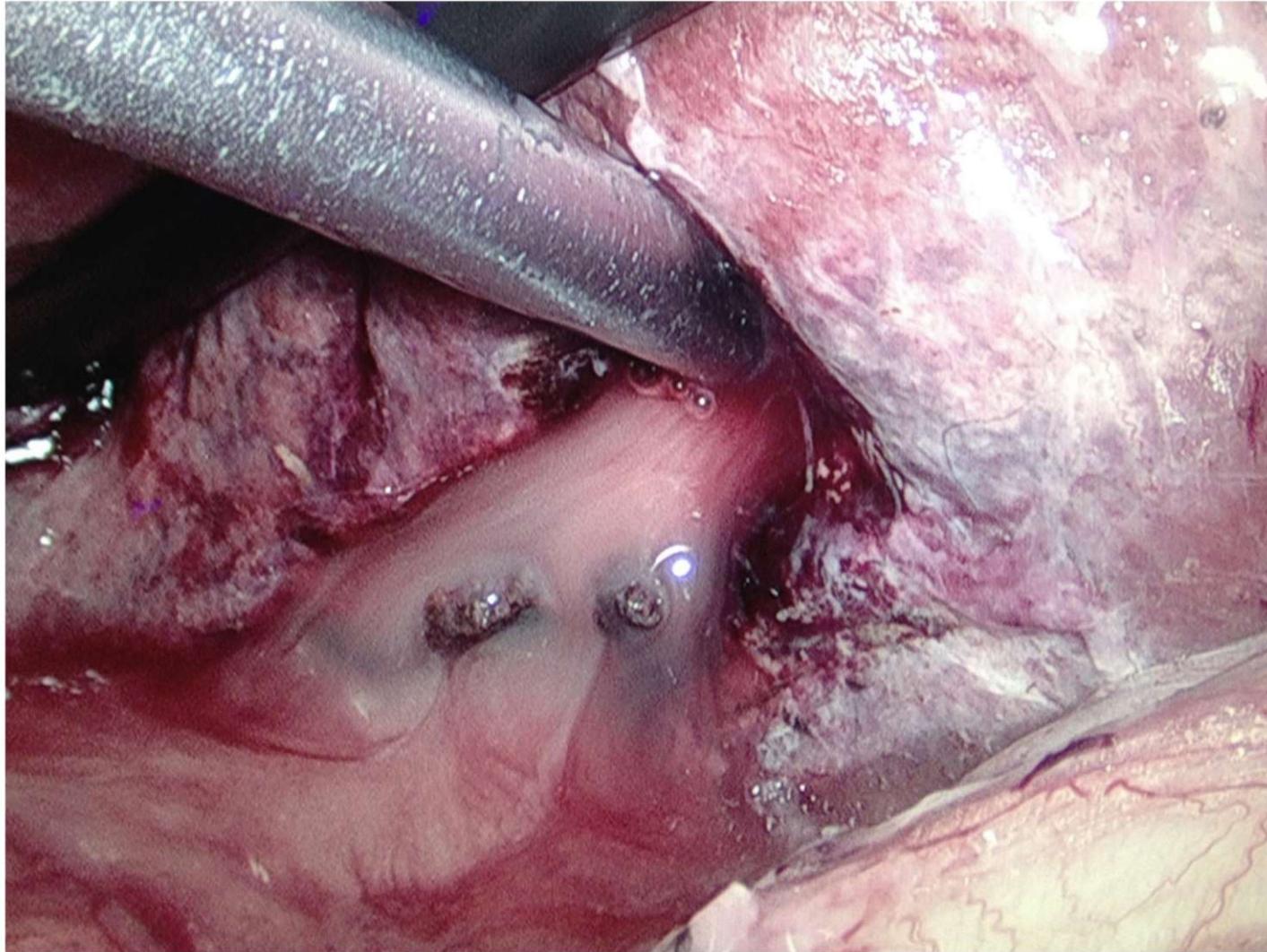








# Abscesso hepático





### **36.3.1 The Laparoscopic Operating Room**

- All laparoscopic equipment must be state of the art and in good working order
- Adjustable, remote-controlled electric split-leg table
- Monitors placed lateral to each shoulder of the patient, with a hanging monitor above the patient's head
- One to two carbon dioxide insufflators maintaining a pneumoperitoneum of 12 mmHg
- Ultrasound with B and D modes and a high-frequency laparoscopic transducer
- Energy vessel-sealing device
- Ultrasonic dissector device
- Set of readily available conventional open instruments.

# Biópsias e estadiamento



# Hepatectomia laparoscópica

## Instrumental Laparoscópico

- Ótica laparoscópica de 10 mm 30°
- Pinça intestinal atraumática
- Pinça de energia (ultracision)
- Tesoura
- Afastador de fígado
- Pinça bipolar/Monopolar
- Irrigador/aspirador
- Fita umbilical/Vessel loop
- Clipe de Titânio
- Hemolock
- Grampeador vascular articulado linear
- Dissector curvo em ângulo reto
- Endobag
- Material completo de cirurgia aberta





E2700



E2701



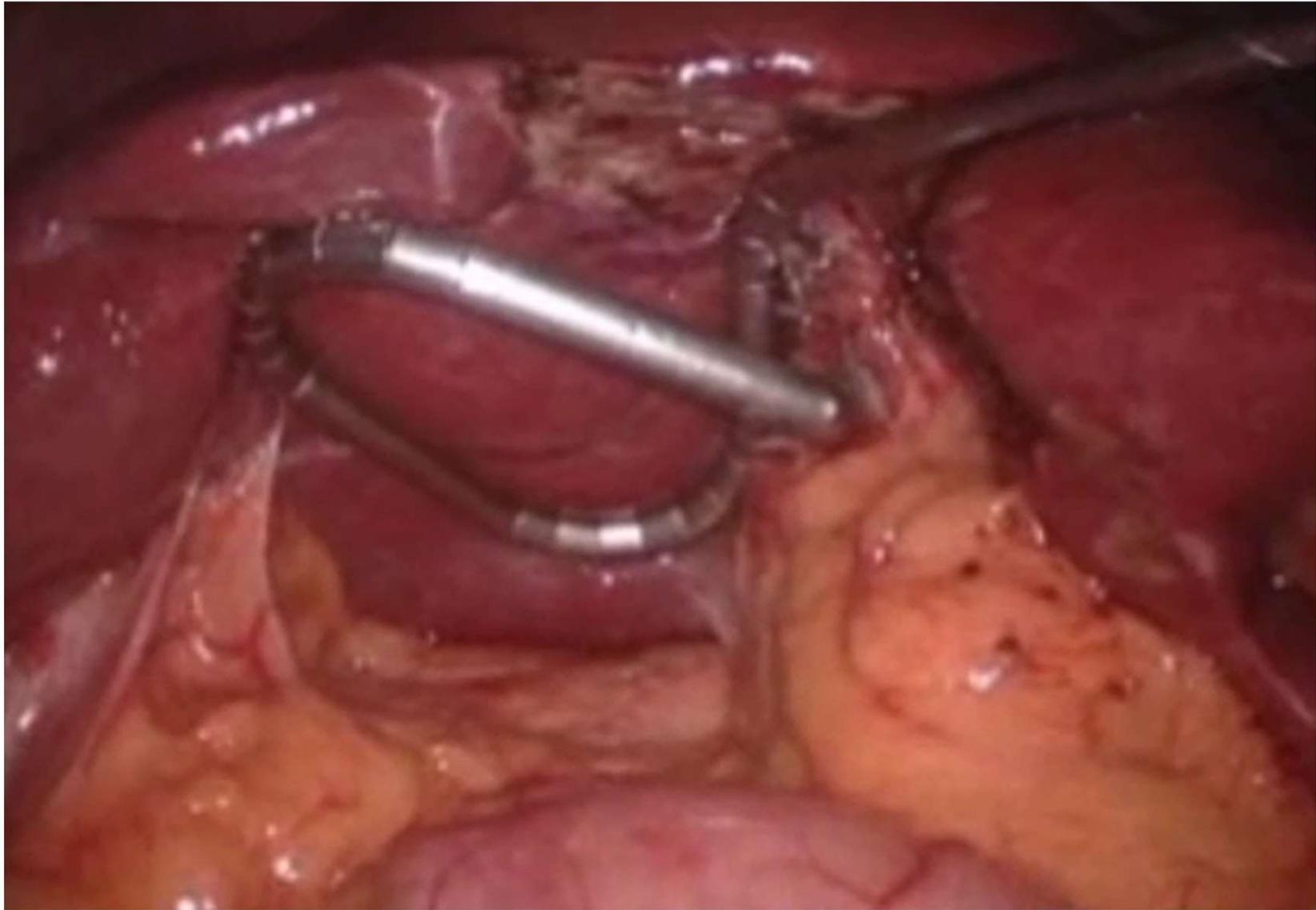
E2702



E2703

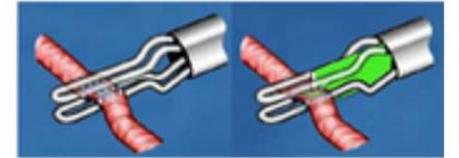


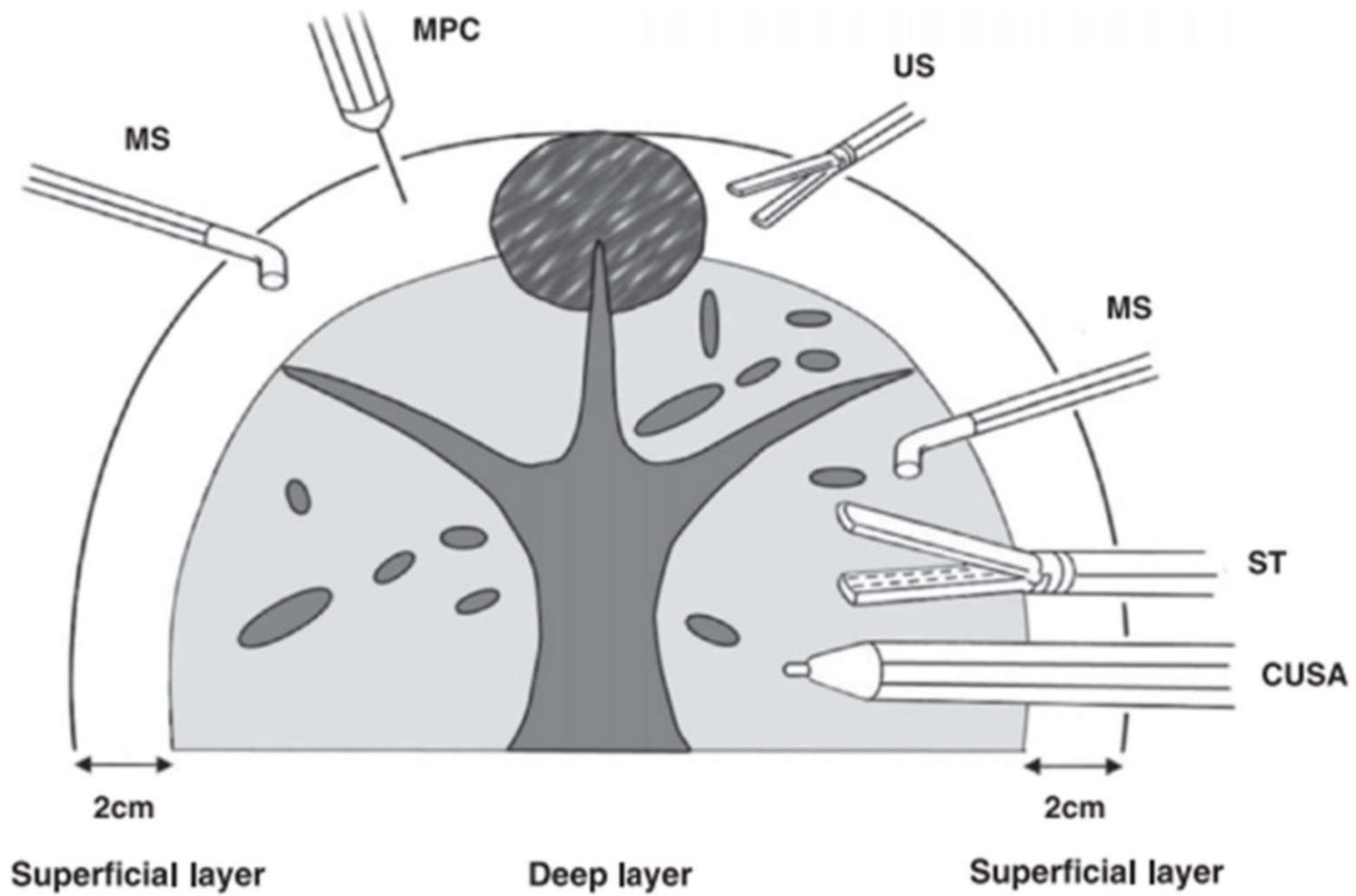
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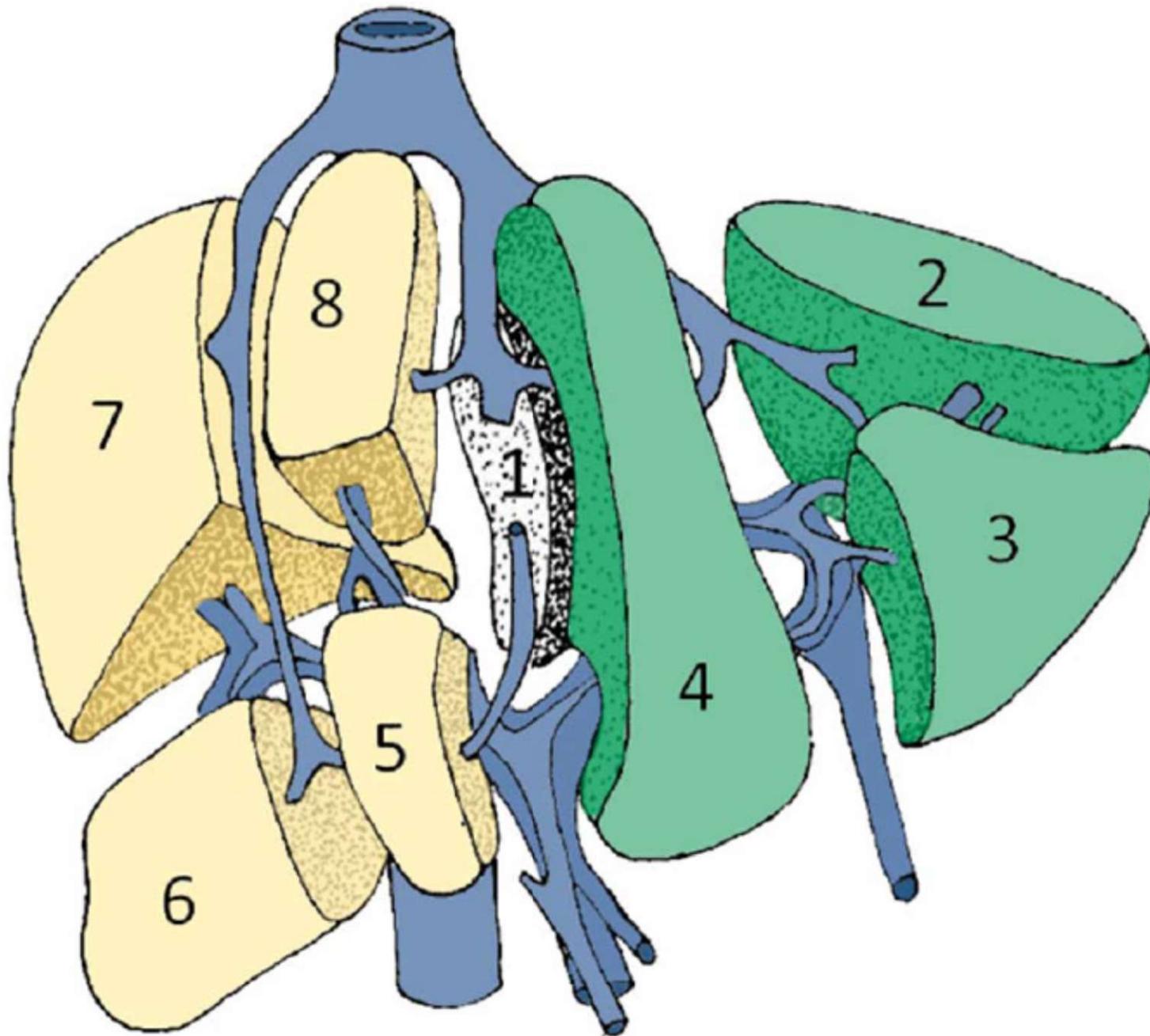




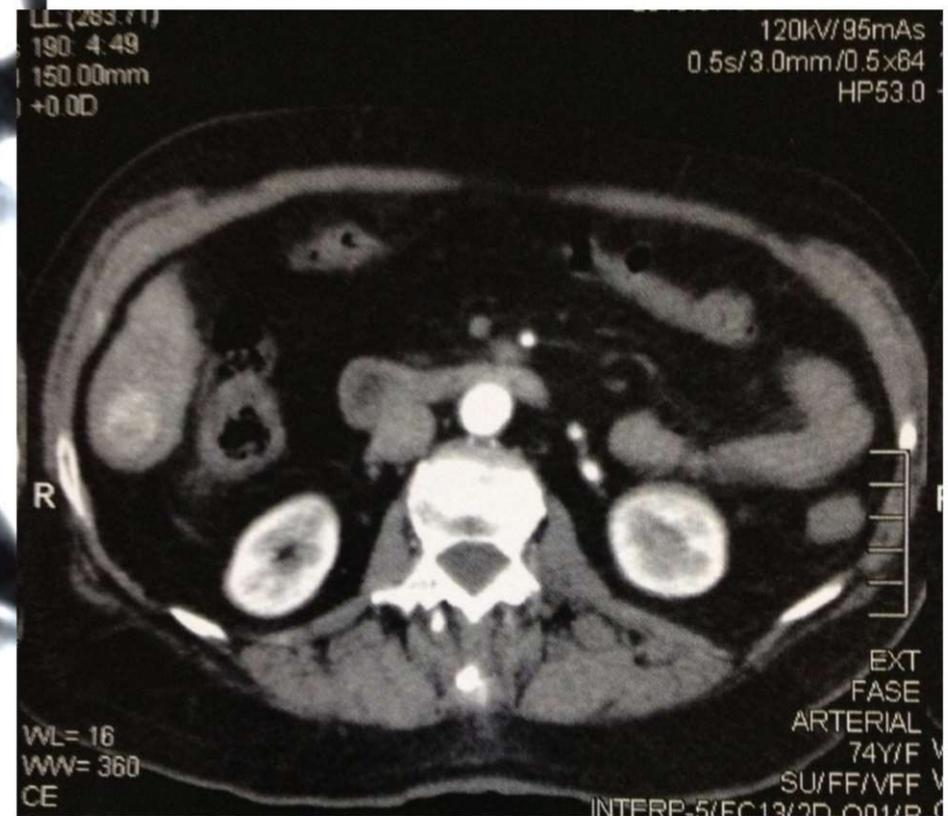
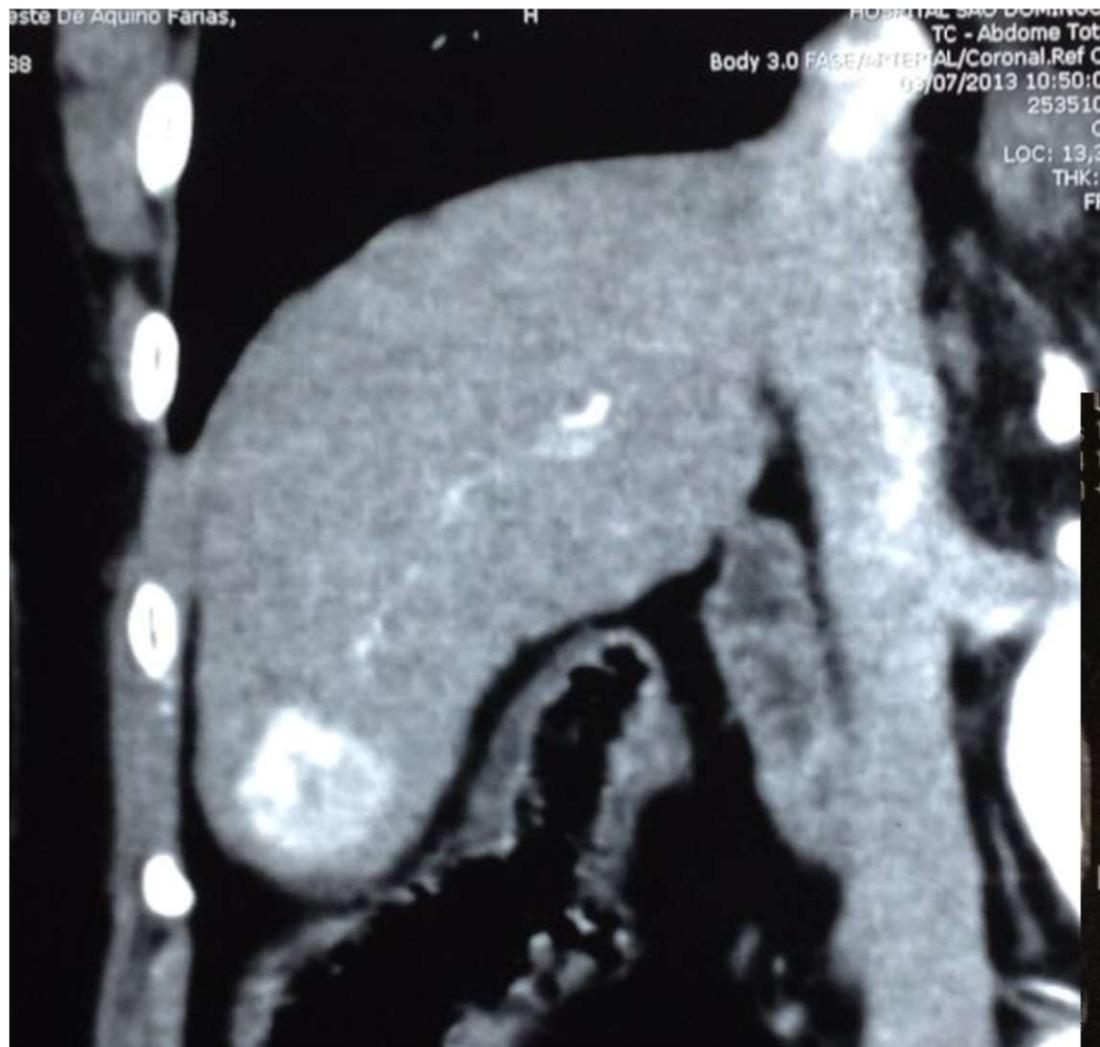


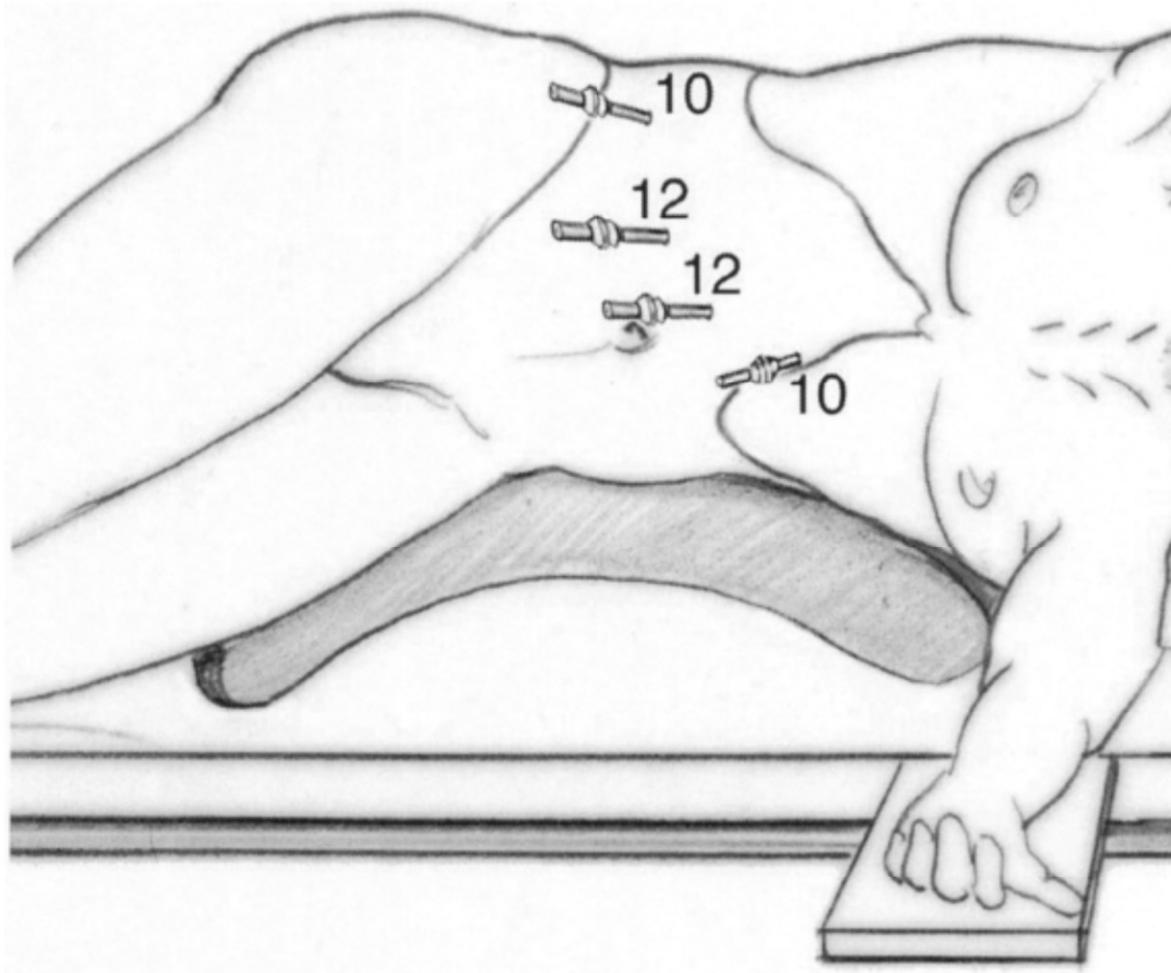


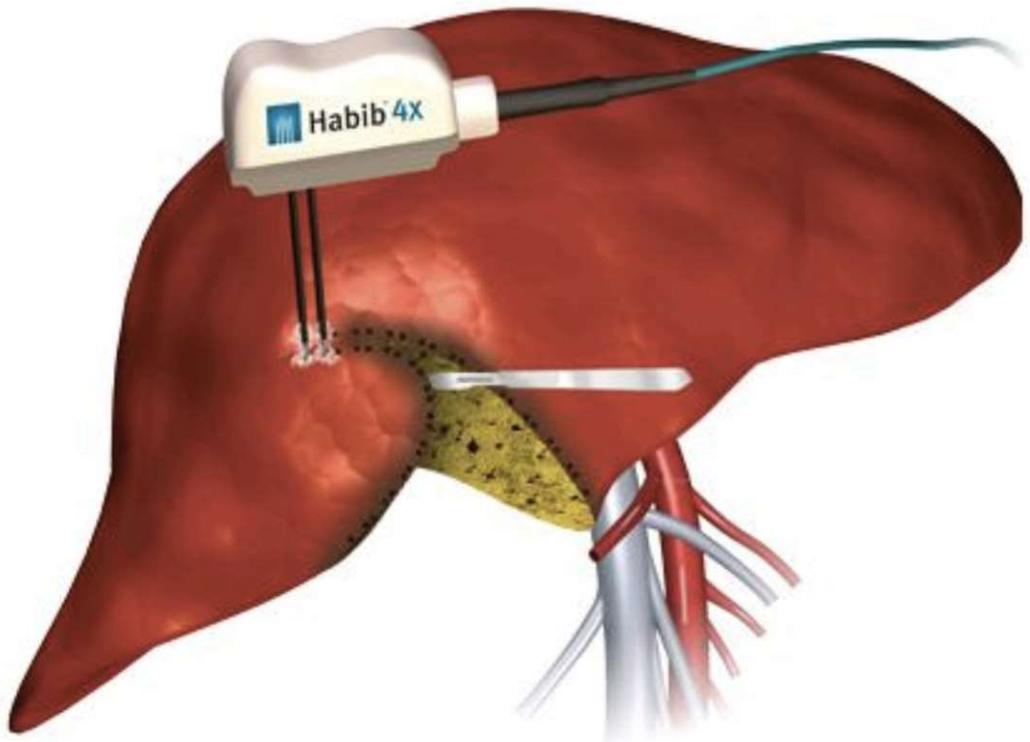
# SEGMENTOS LAPAROSCÓPICOS



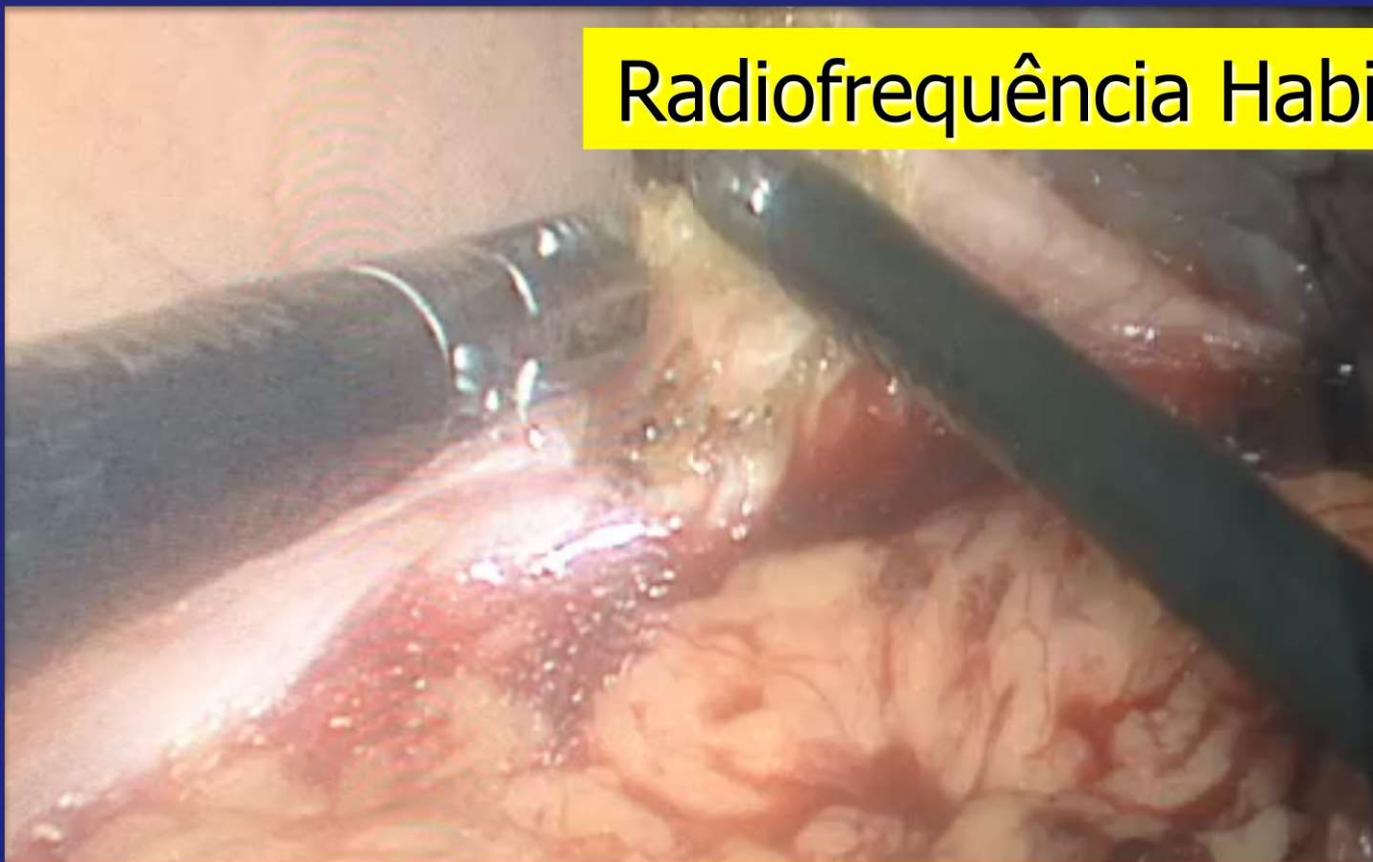
# Lesão no segmento VI



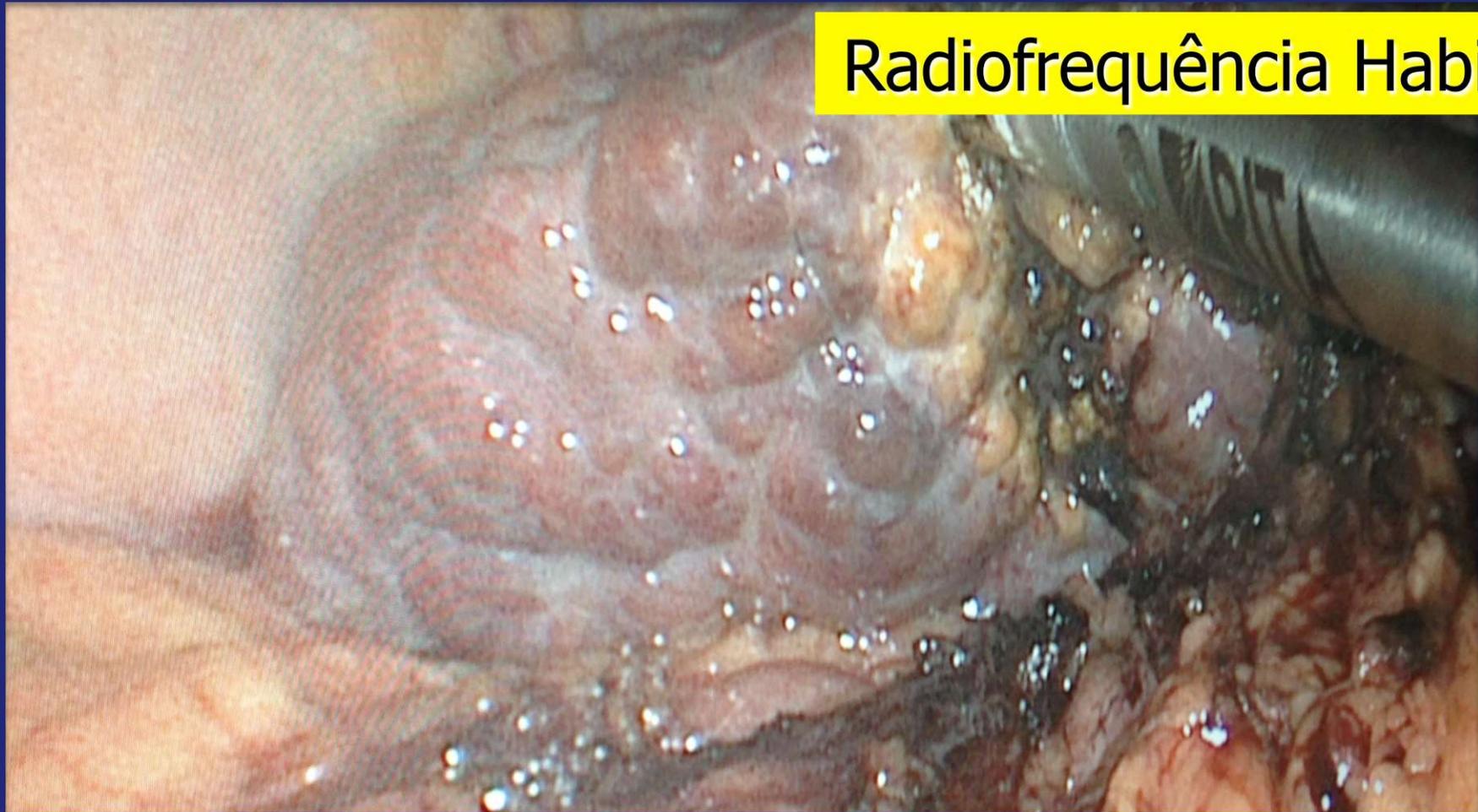




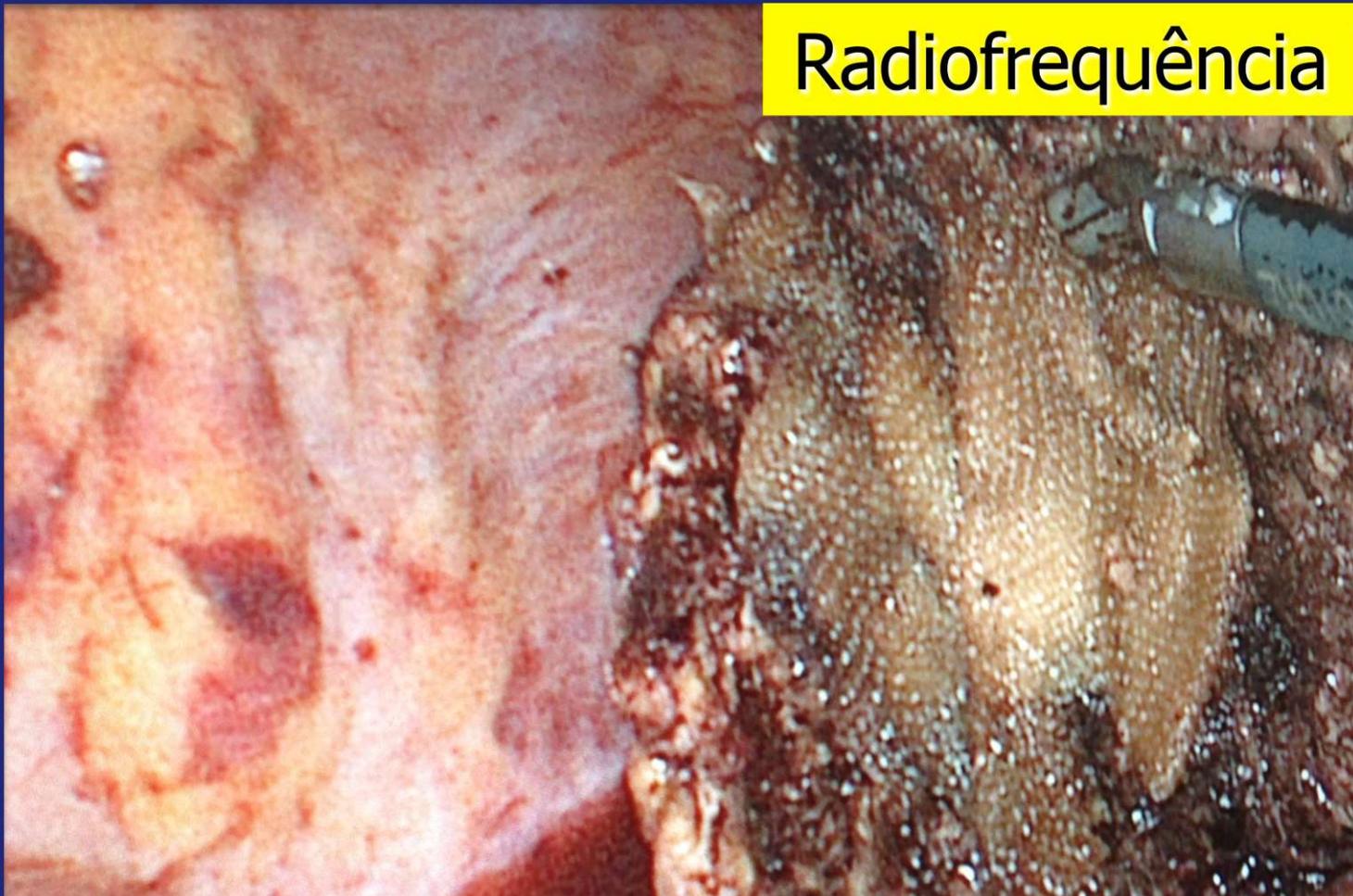
## Radiofrequência Habib

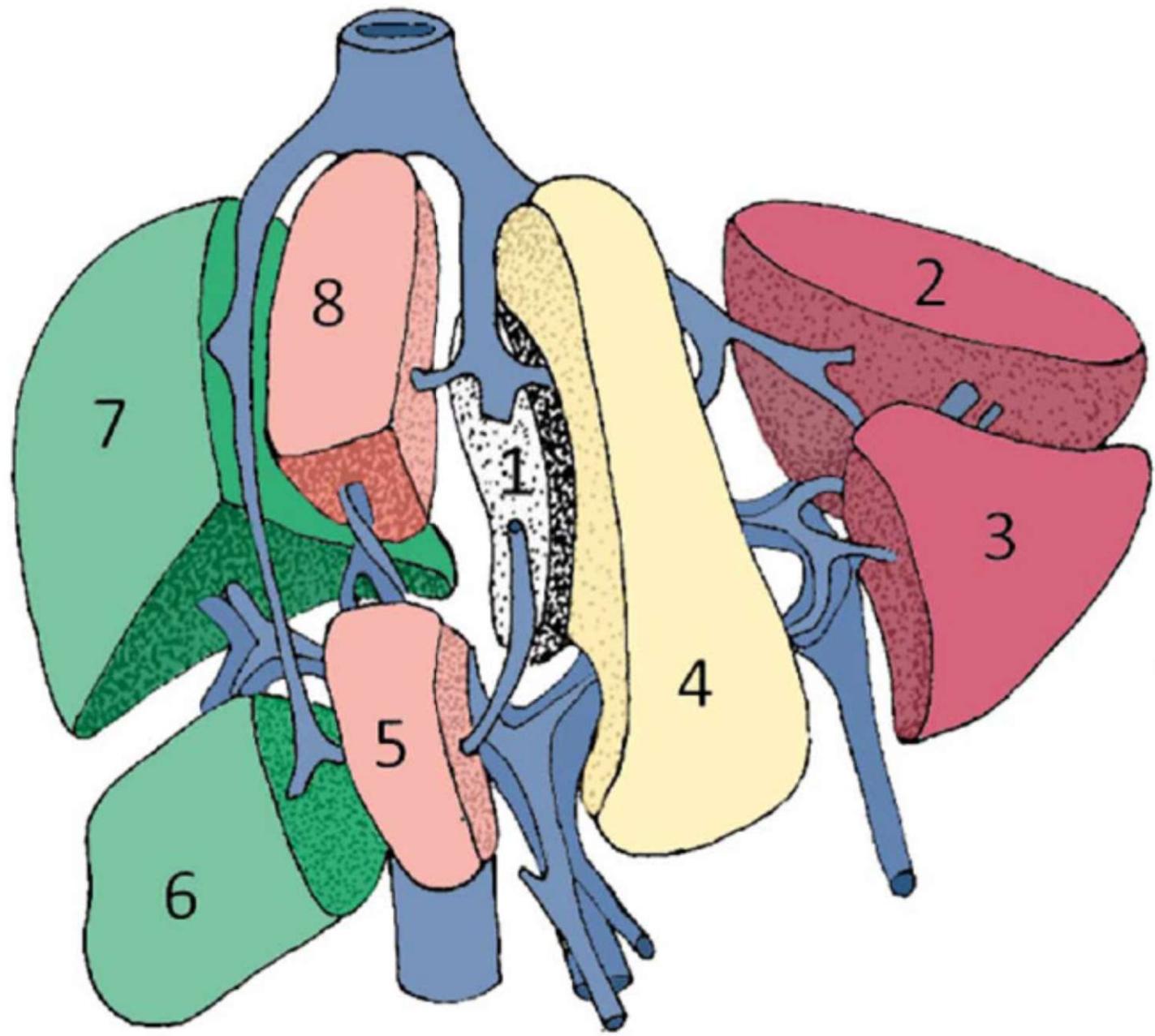


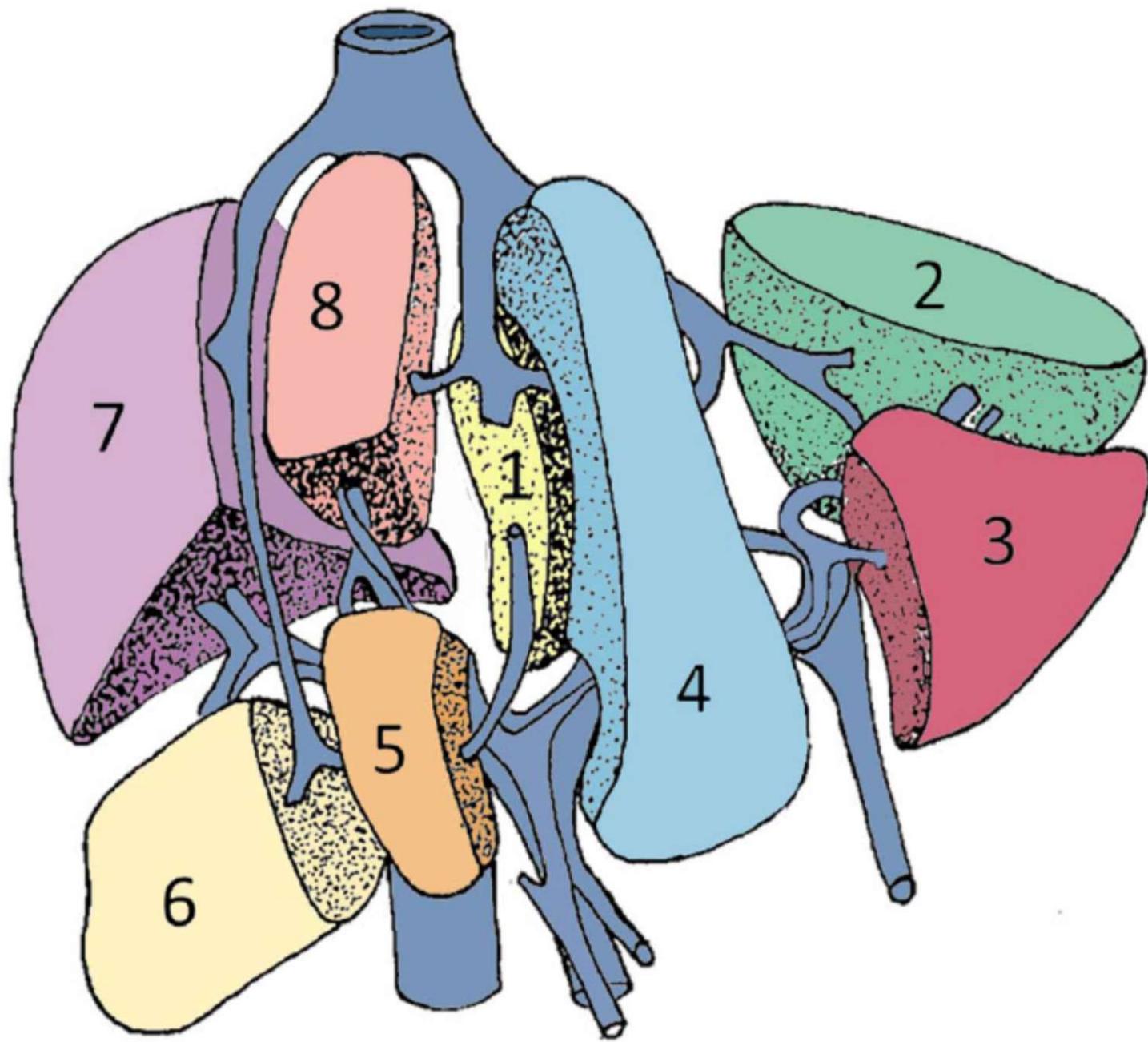
## Radiofrequência Habib

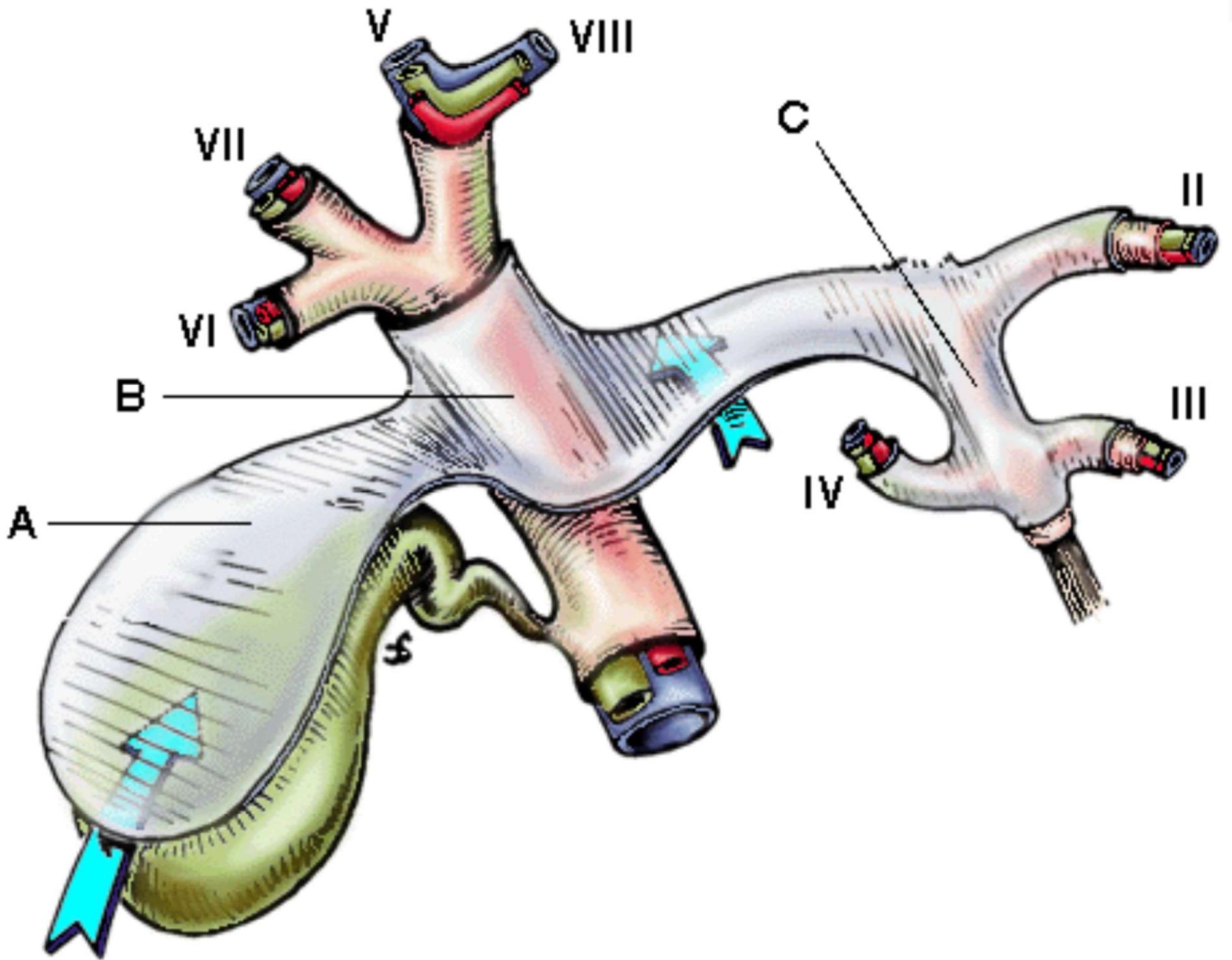


## Radiofrequência Habib

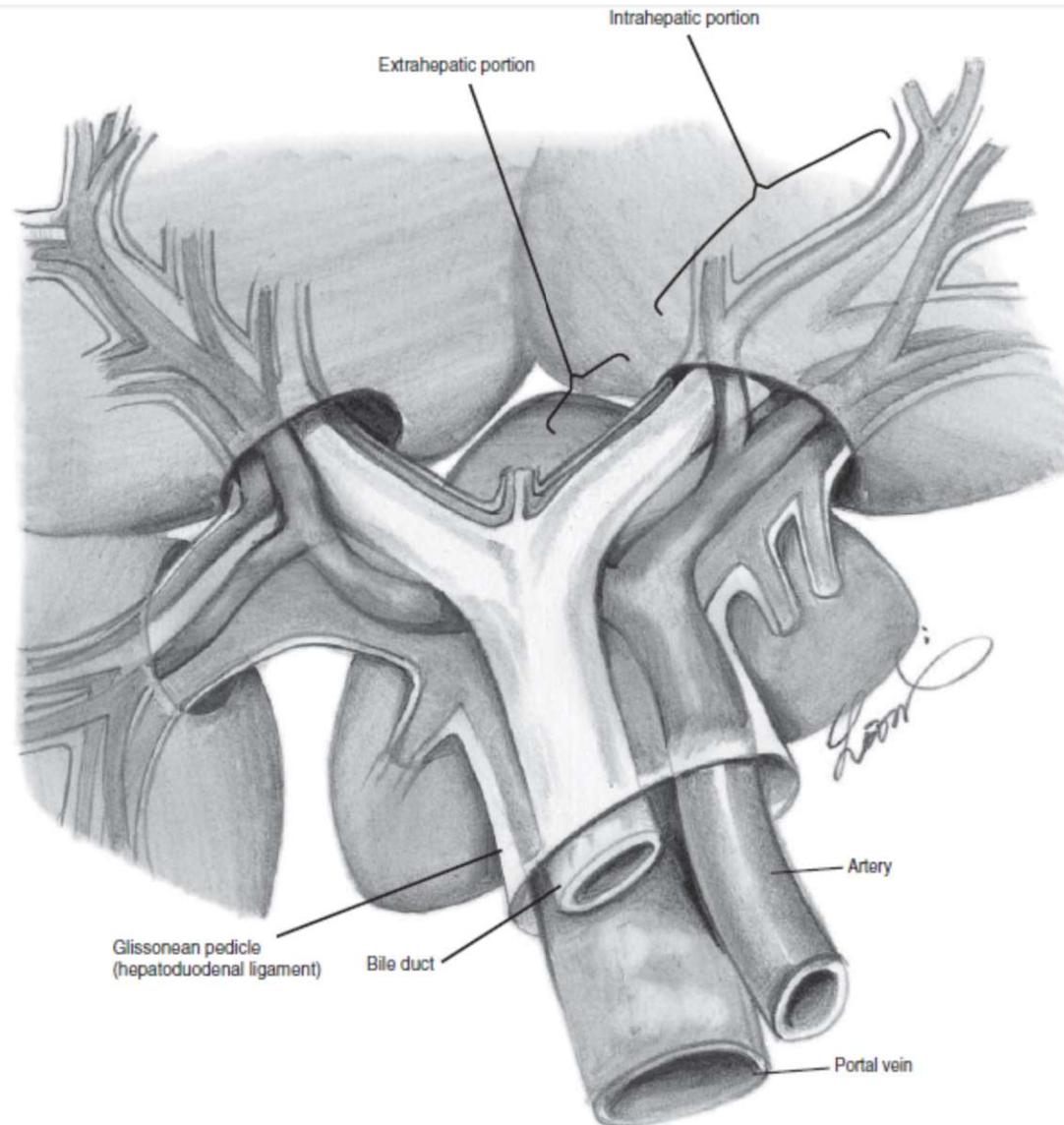




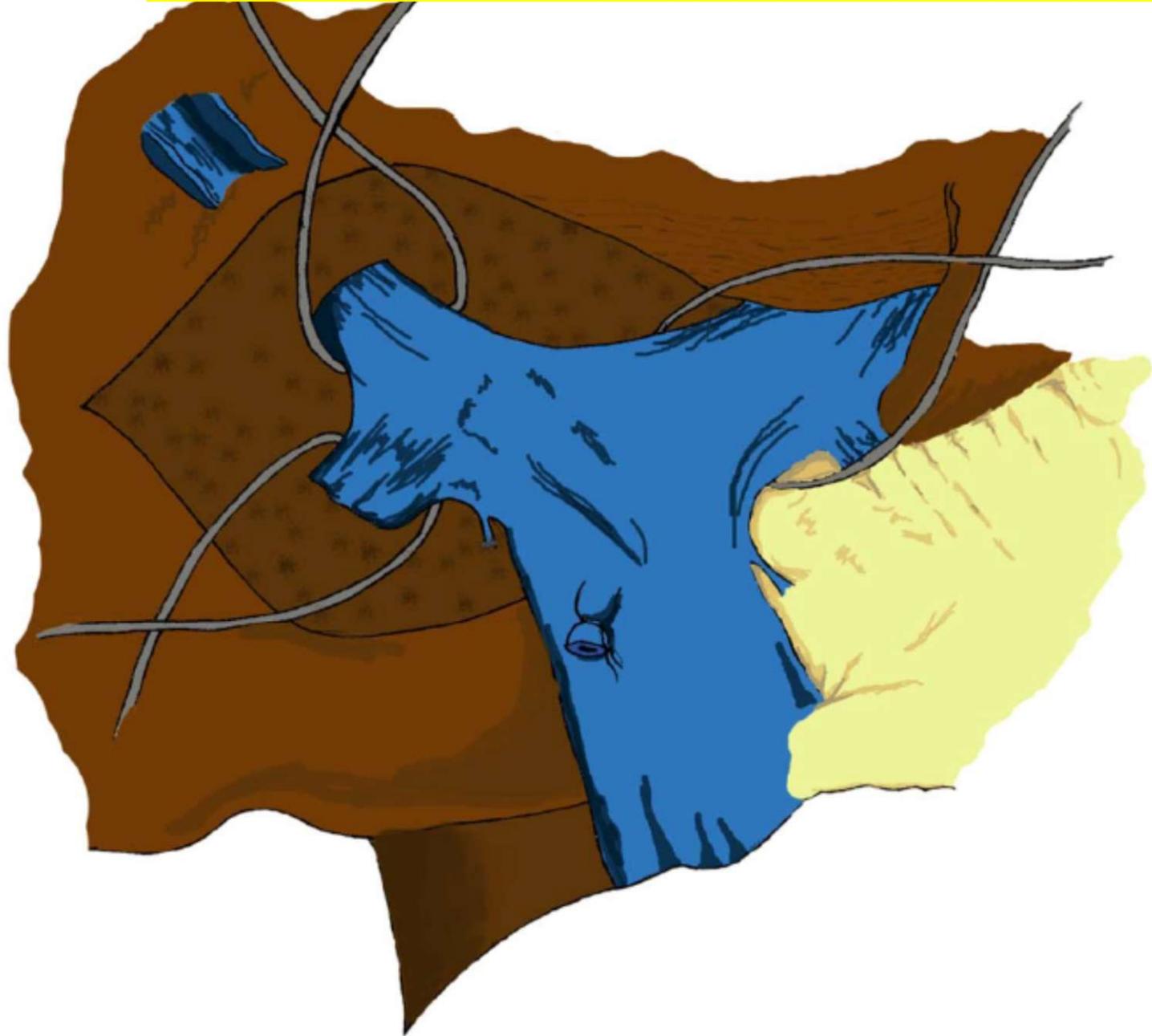


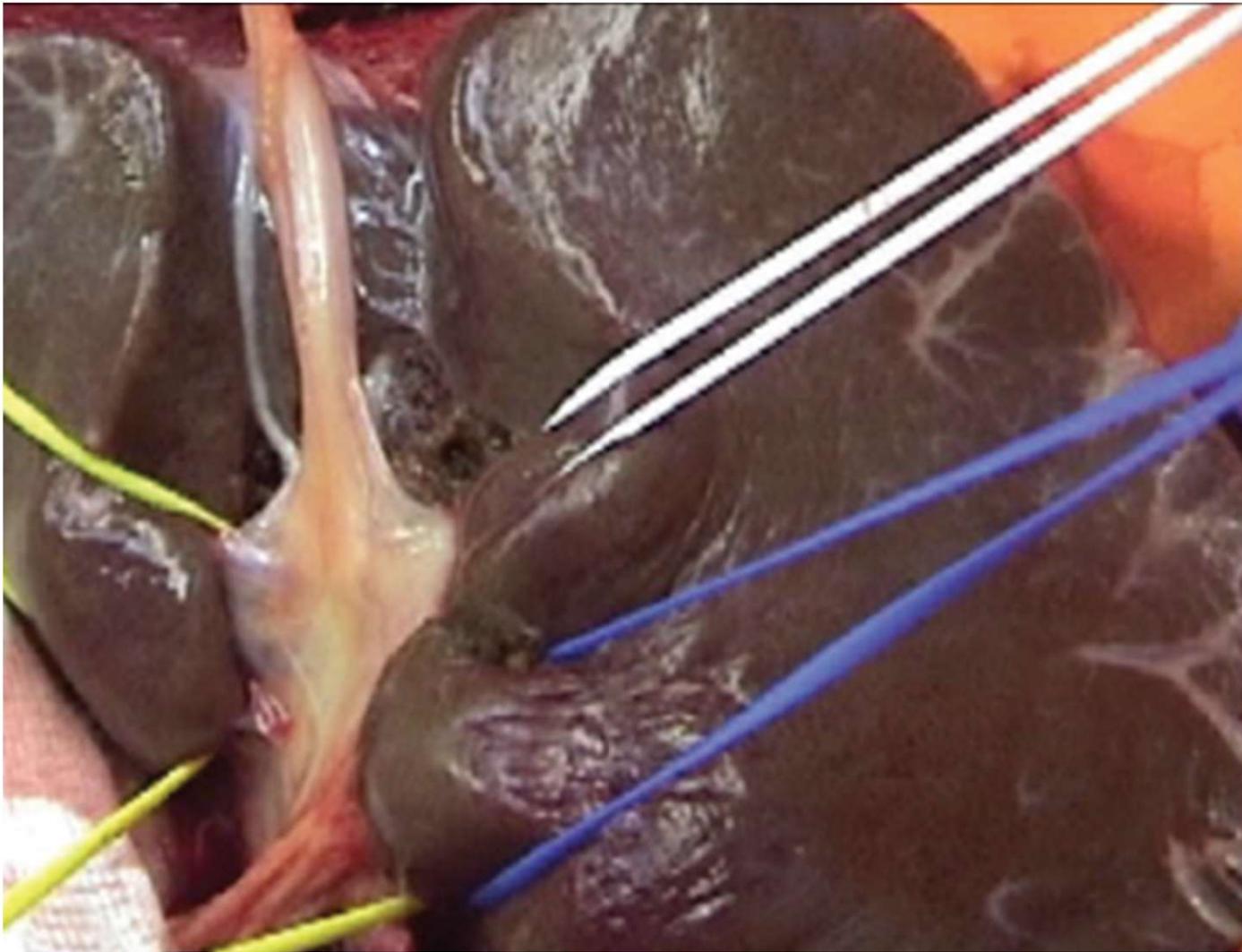


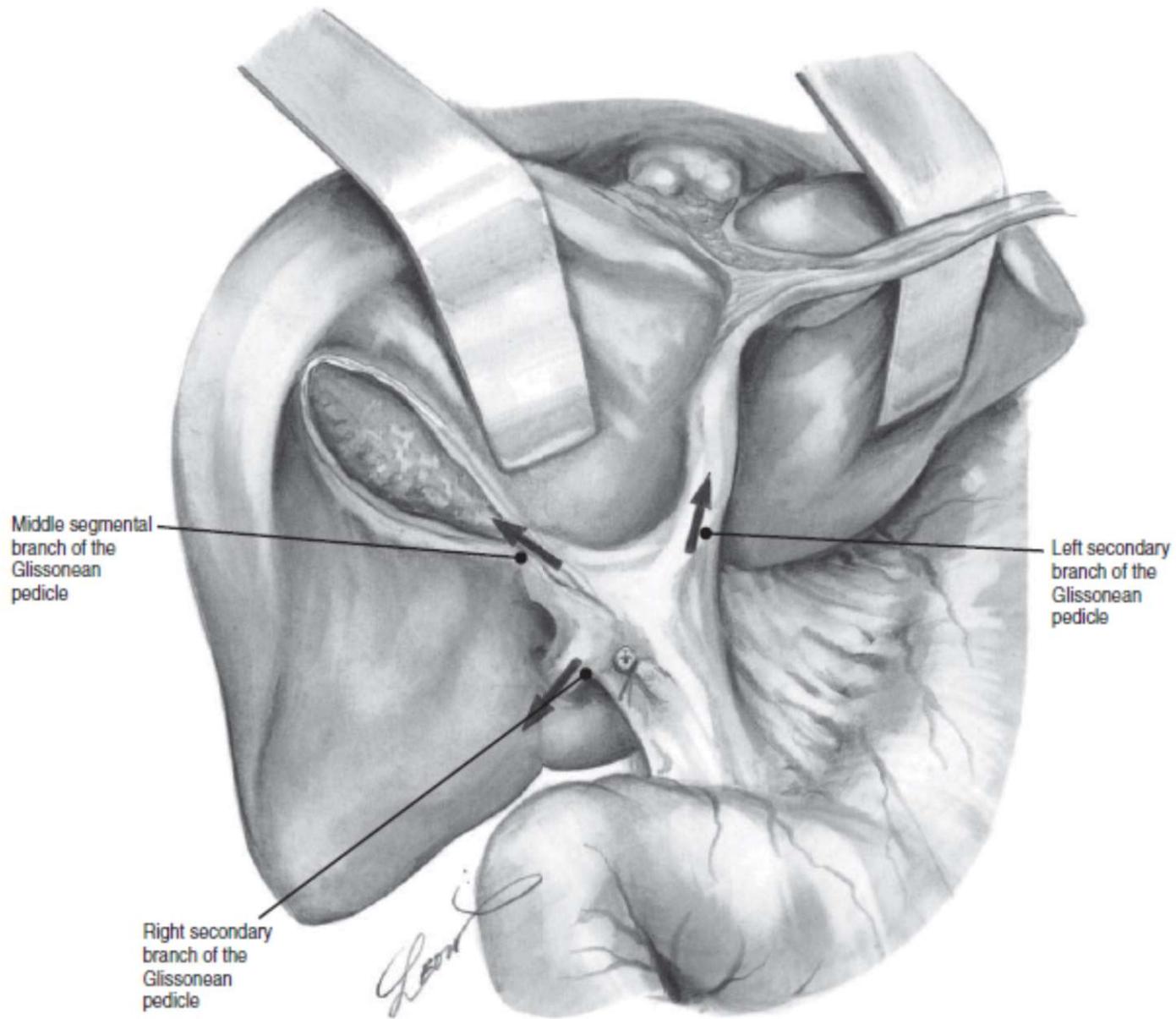
# Anatomia do pedículo Glissoniano



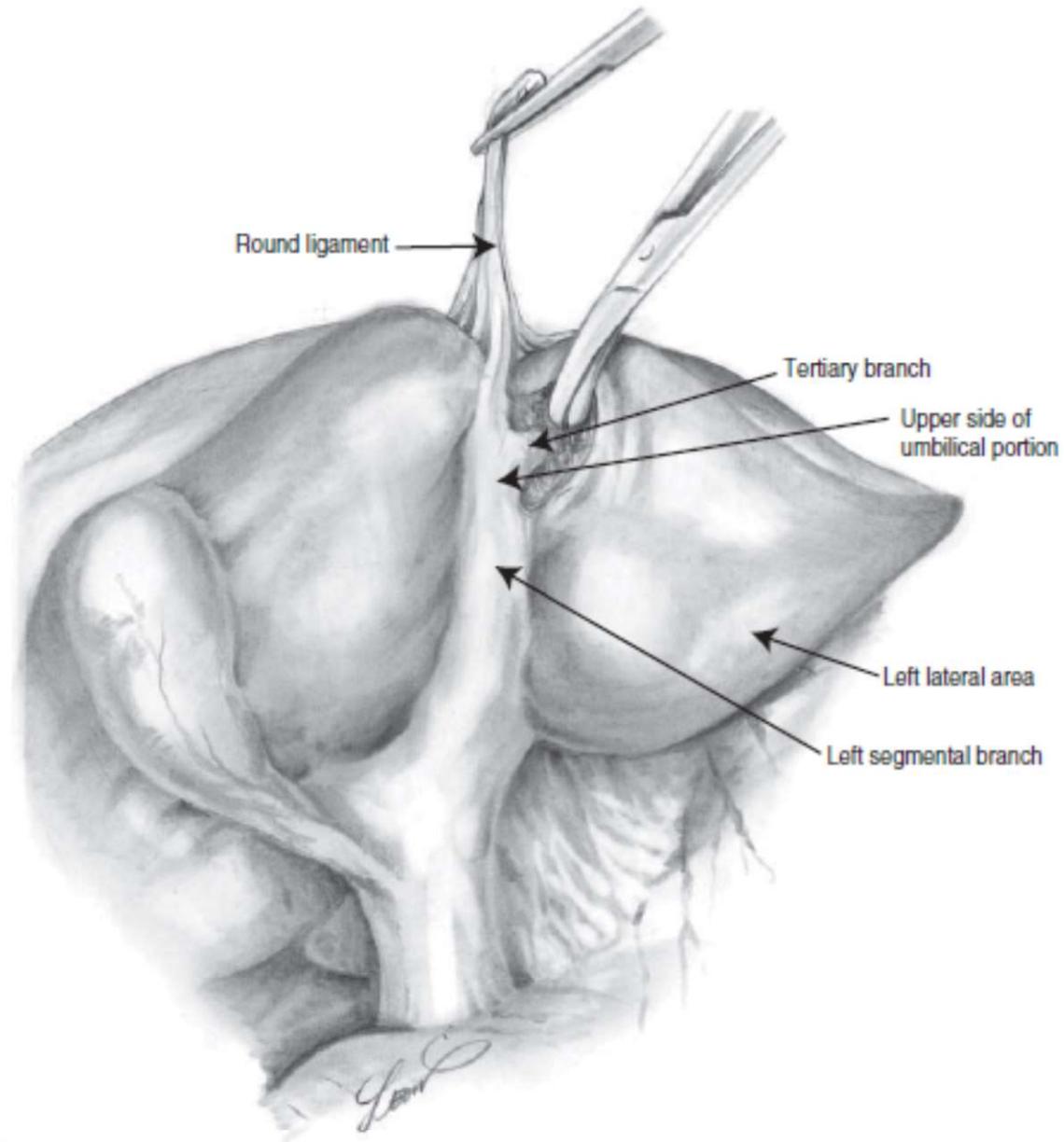
# PEDÍCULOS GLISSONIANOS

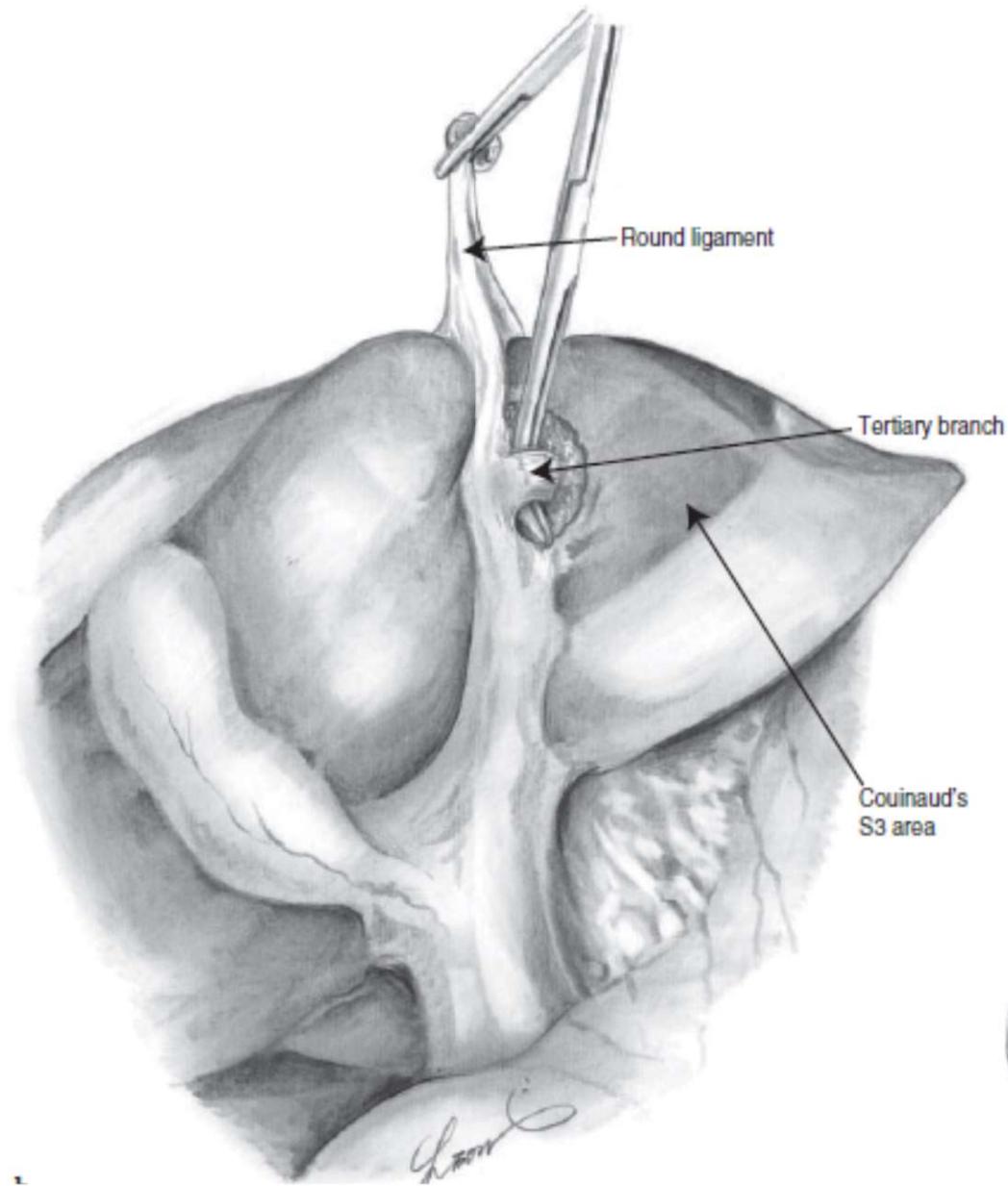


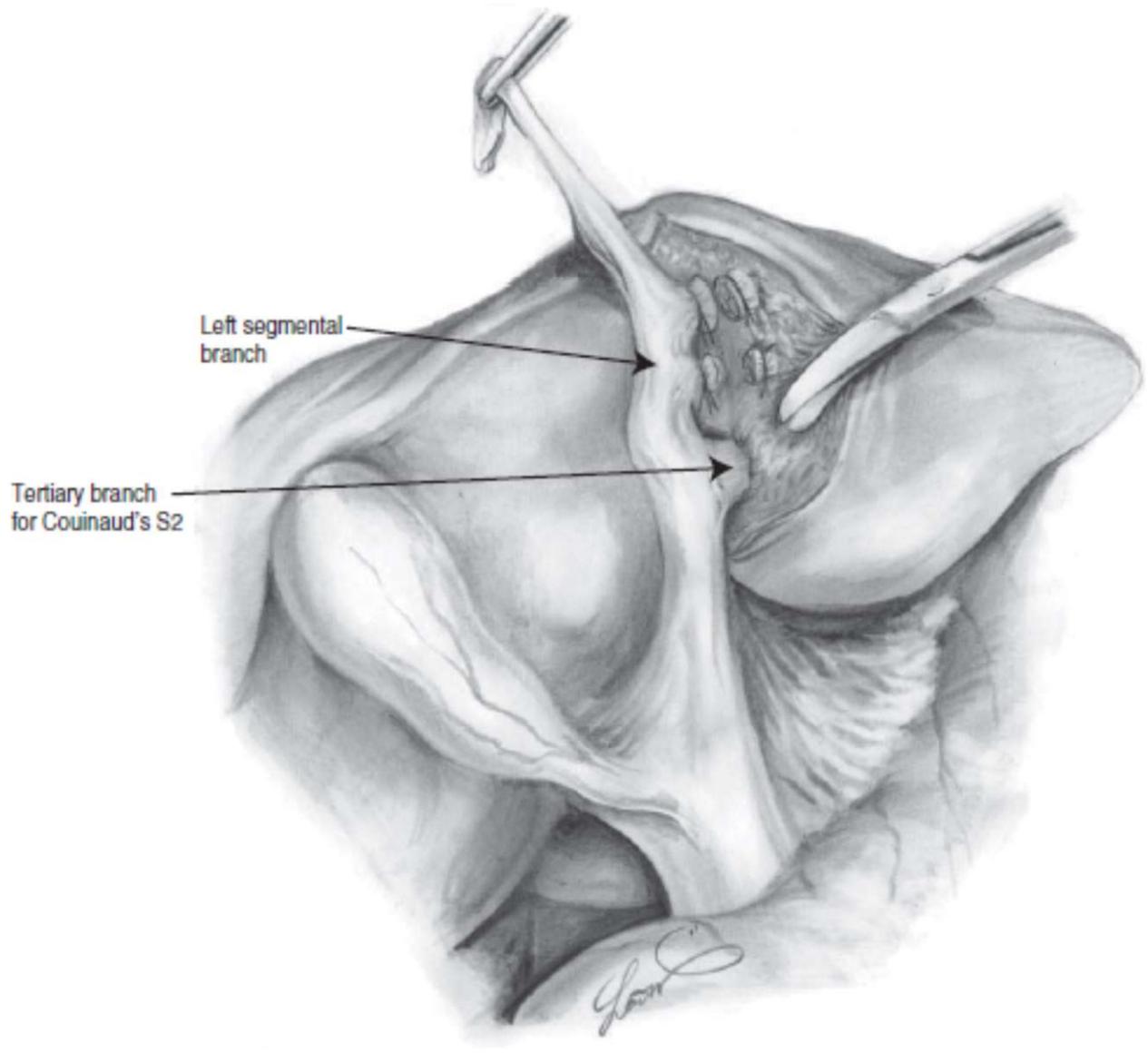


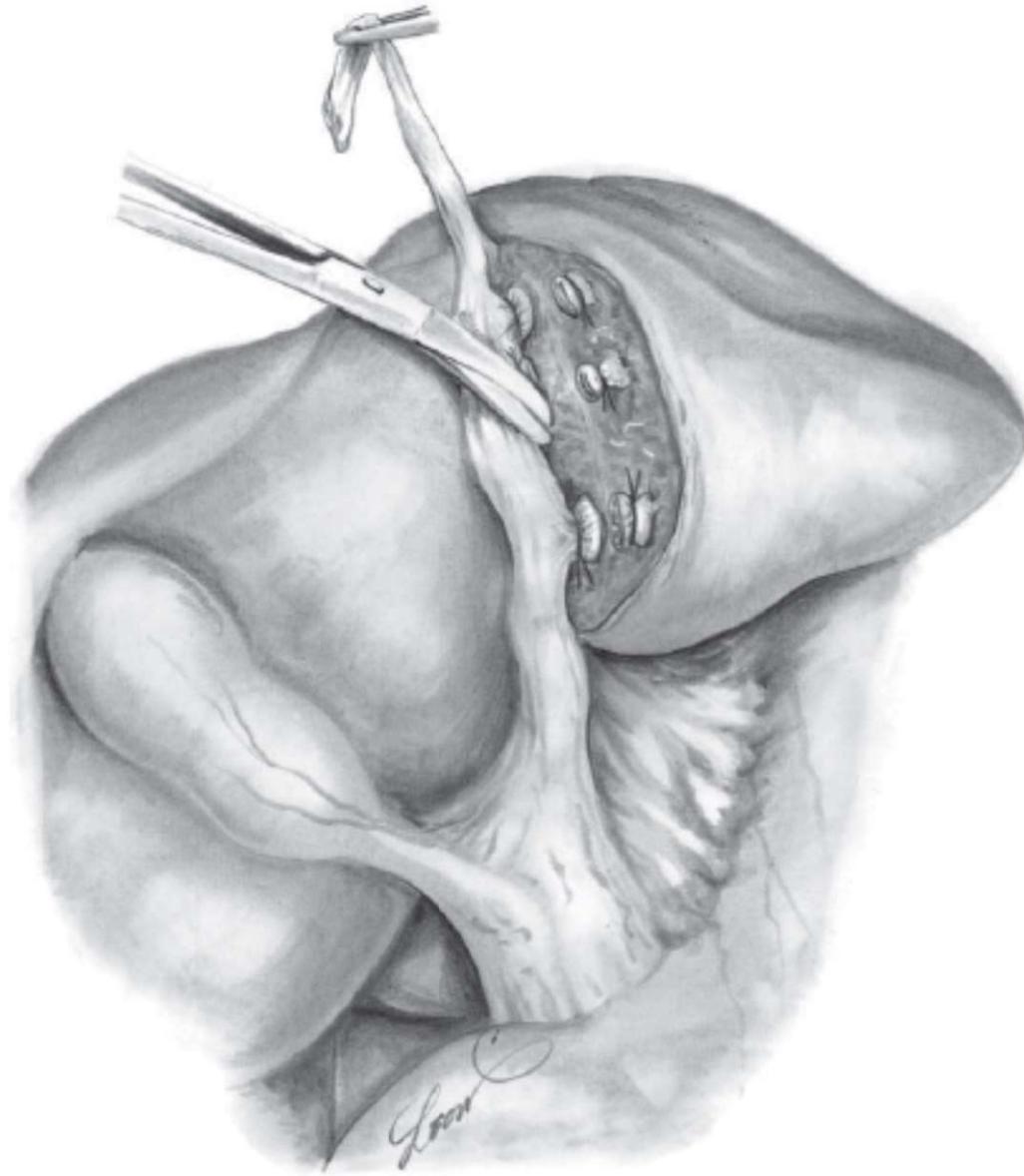


# RESSECÇÃO II/III

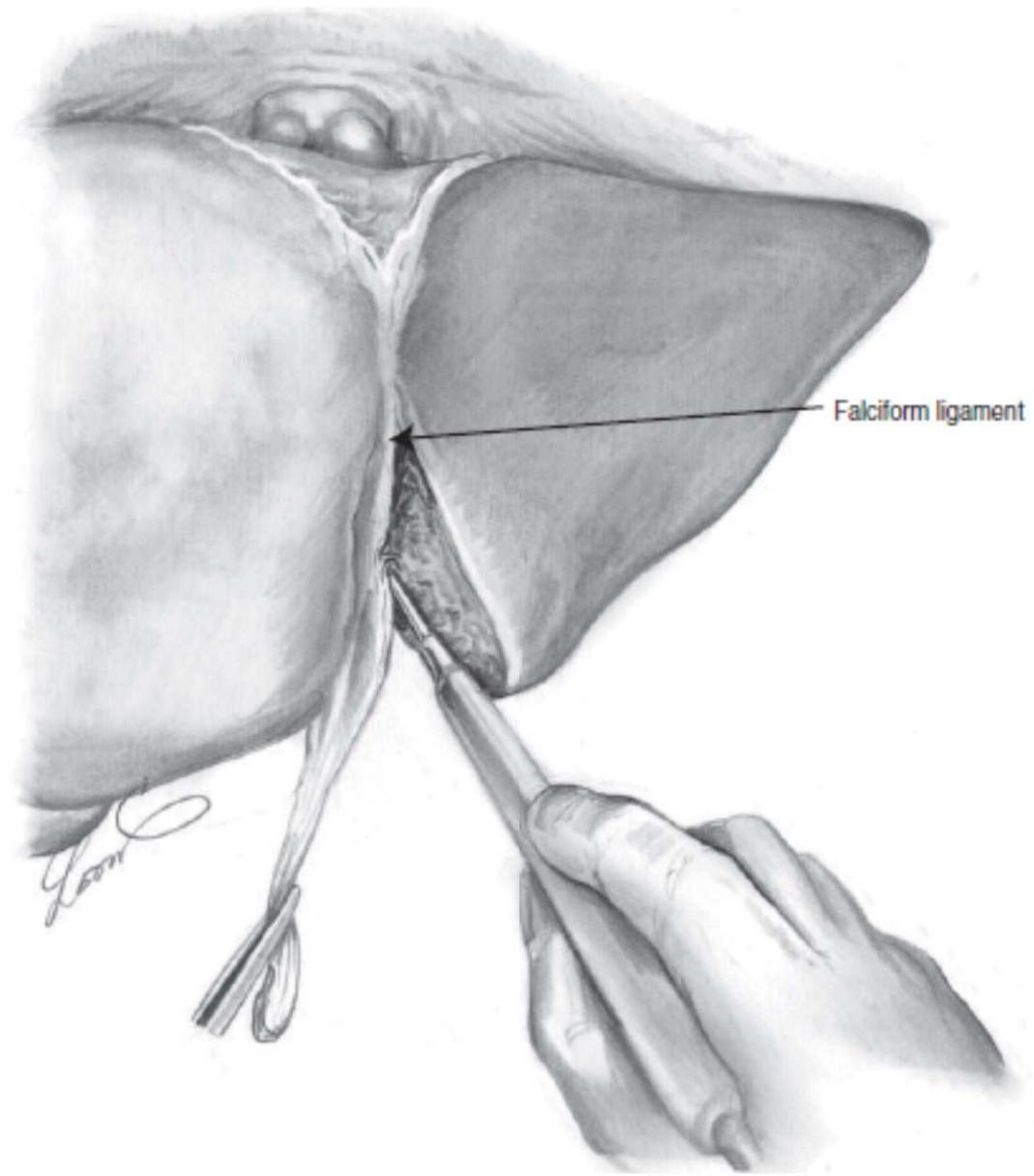




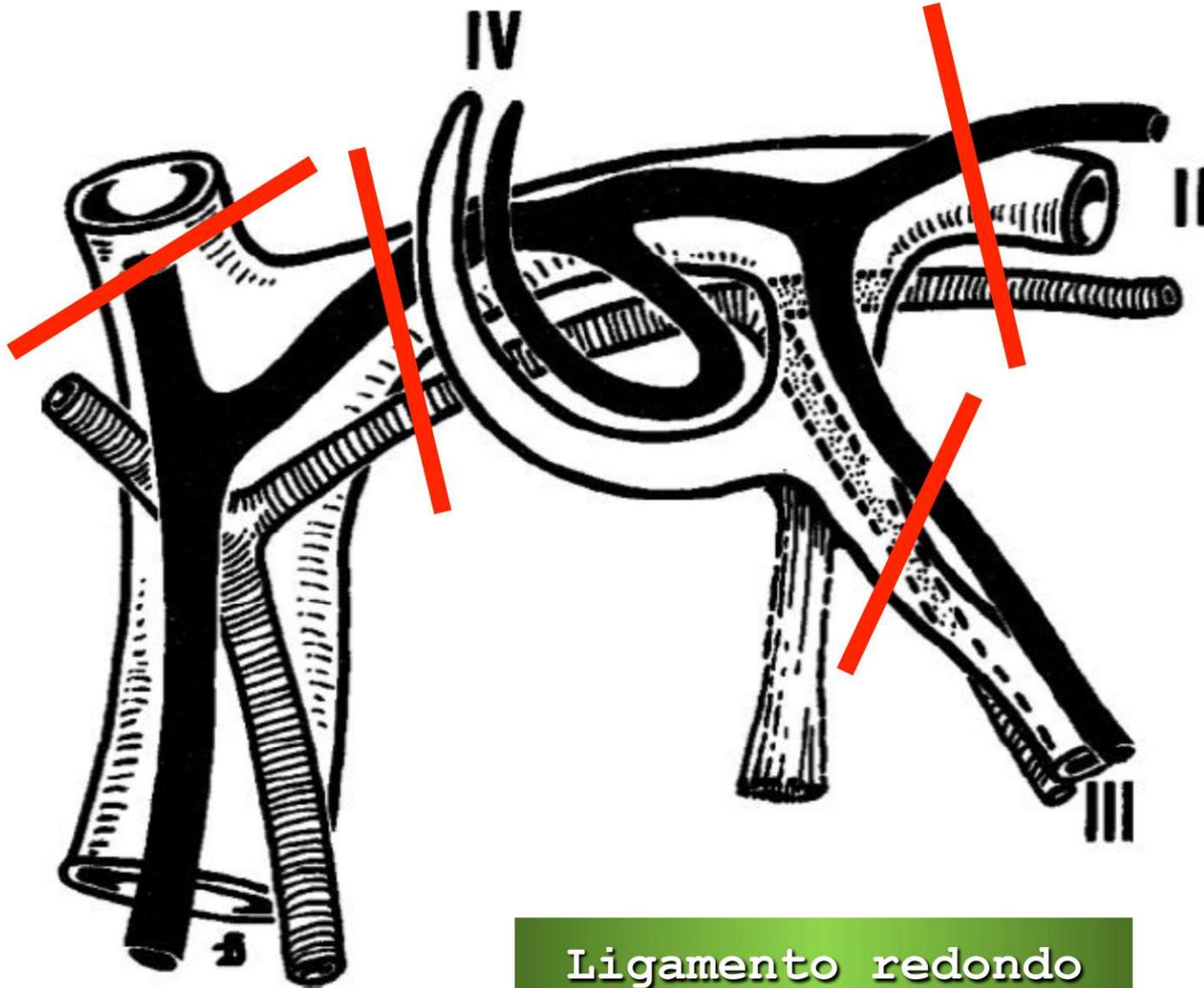




f



Falciform ligament



Ligamento redondo

## Complicações

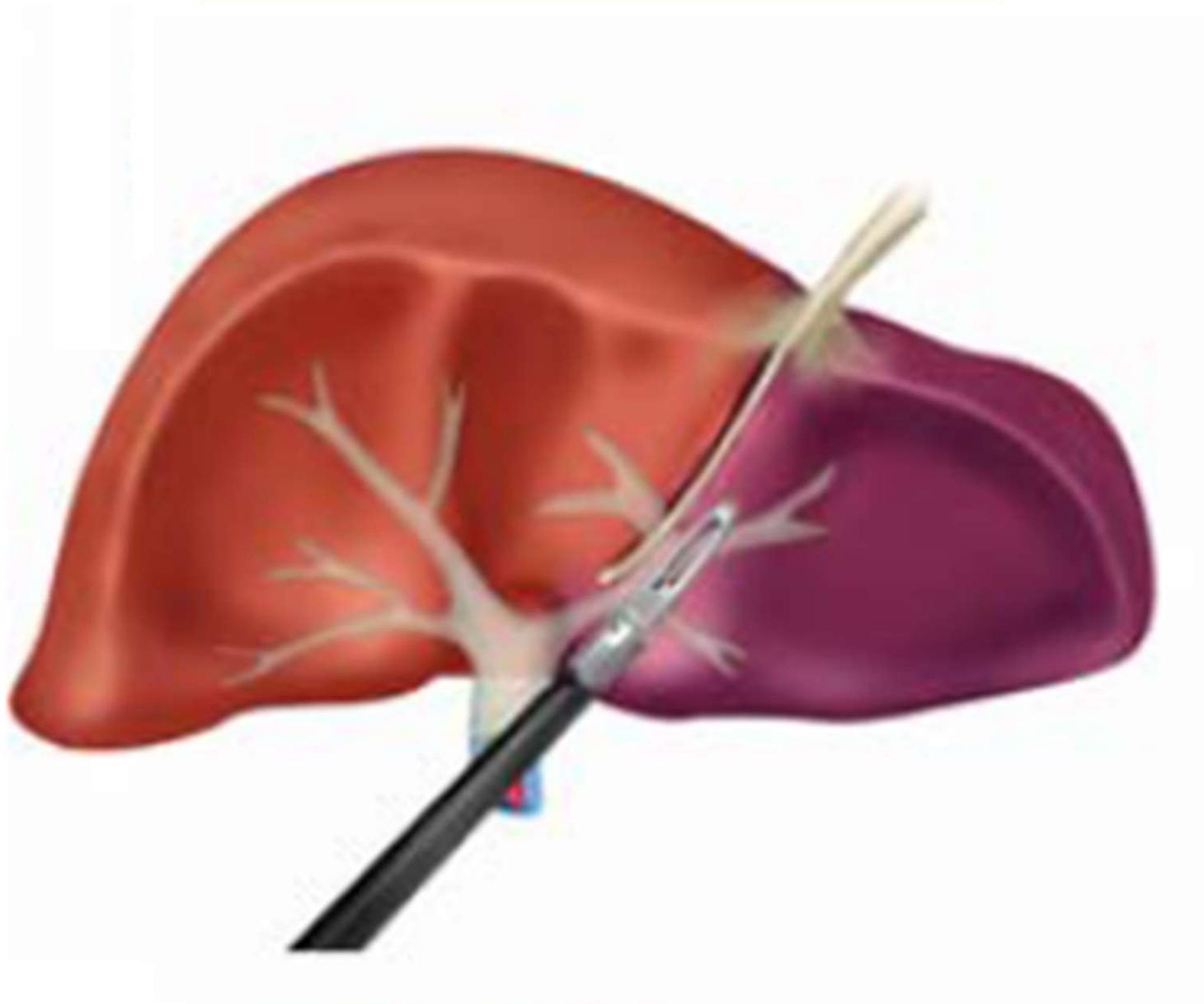
- Sangramento**
- Isquemia**
- Lesão de via biliar**

**TABLE 3.** The Clavien-Dindo Classification of Postoperative Complications Adapted for Laparoscopic Liver Resection

<b>Grade*</b>	<b>Definition of Complication</b>
Grade I	Deviation from normal postoperative course without need for additional pharmacological treatment or surgical, endoscopic, and radiologic interventions. Routine medication (antiemetics, antipyretics, analgesics, diuretics, electrolytes) and physiotherapy are allowed. This grade includes wound infection opened at the bedside.
Grade II	Requiring only the use of medication (nonroutine, eg, antibiotics for postoperative pneumonia or urinary tract infections). This grade includes total parenteral nutrition and postoperative blood transfusions.
Grade III	Requiring surgical intervention.
a	Intervention not under general anesthesia.
b	Intervention under general anesthesia.
Grade IV	Life-threatening complication requiring intensive care unit management.
Grade V	Death of the patient.

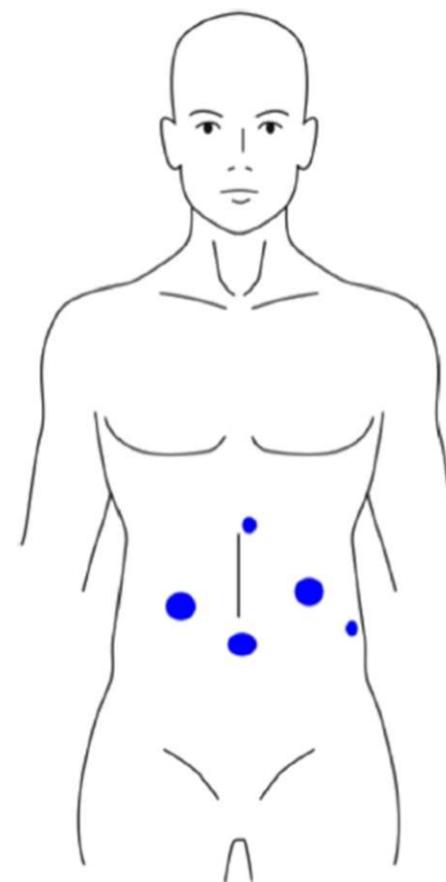
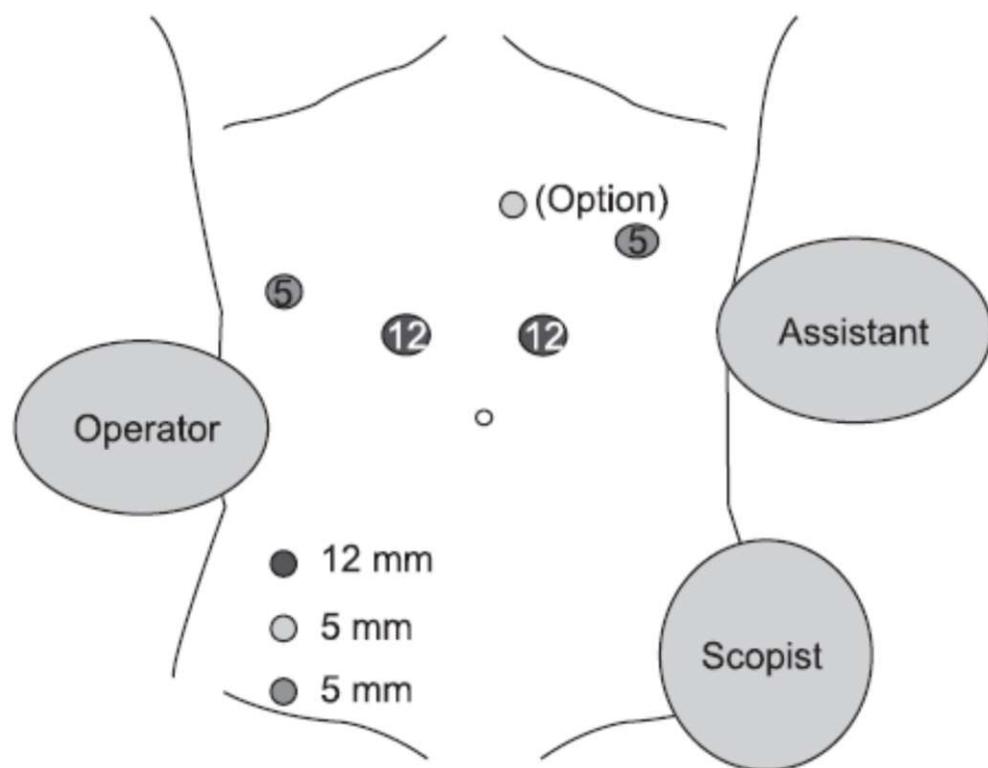
\*Minor complications: grades I–IIIa, Major complications: grades IIIb–IV.

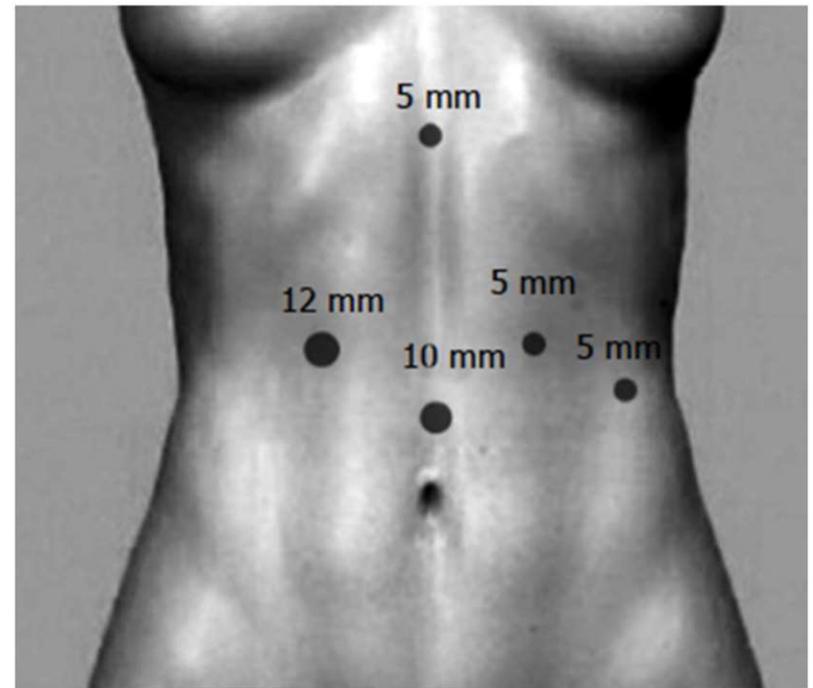
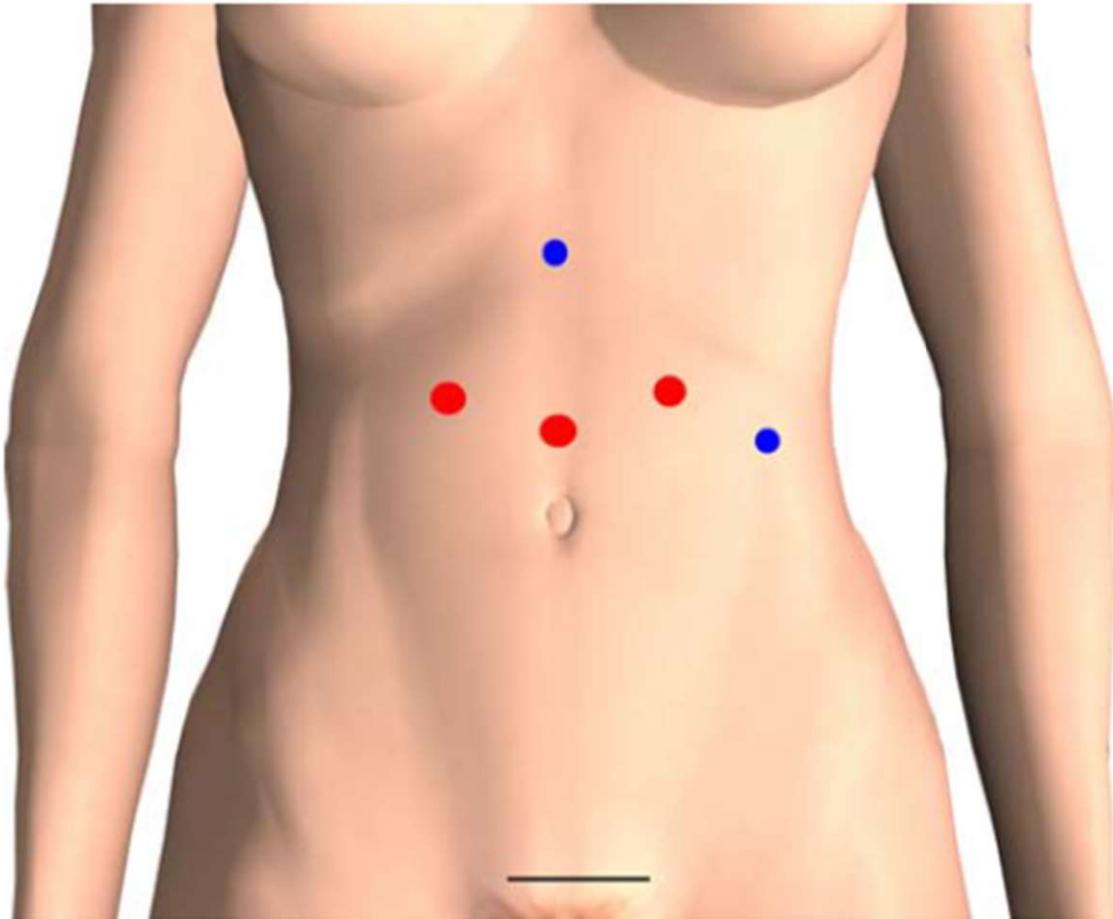
# RESSECÇÃO II/III

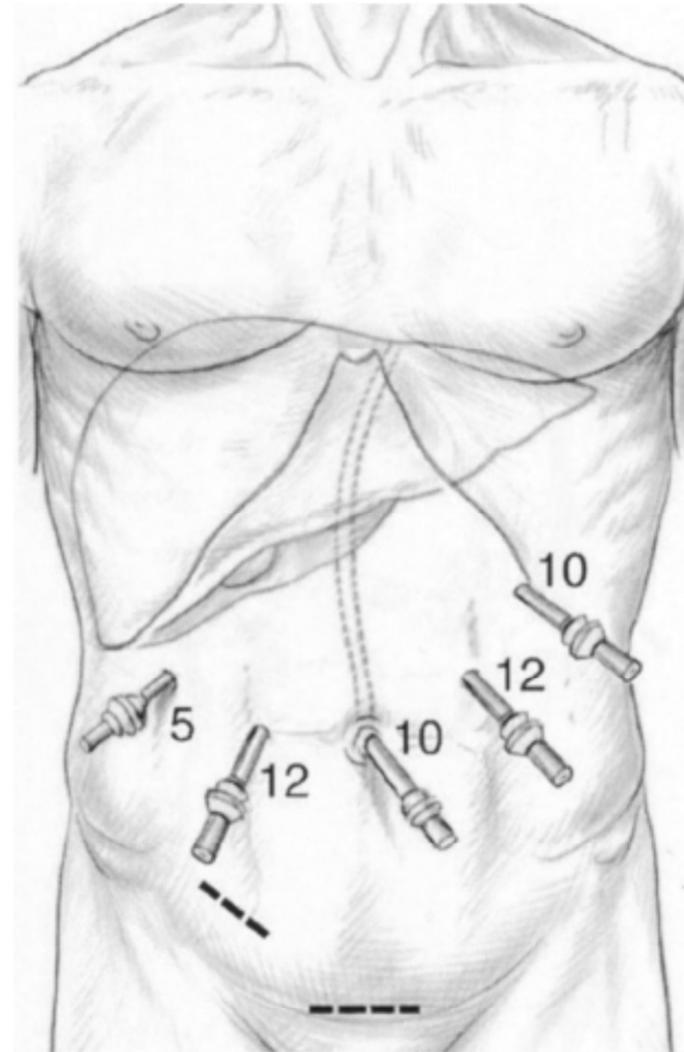
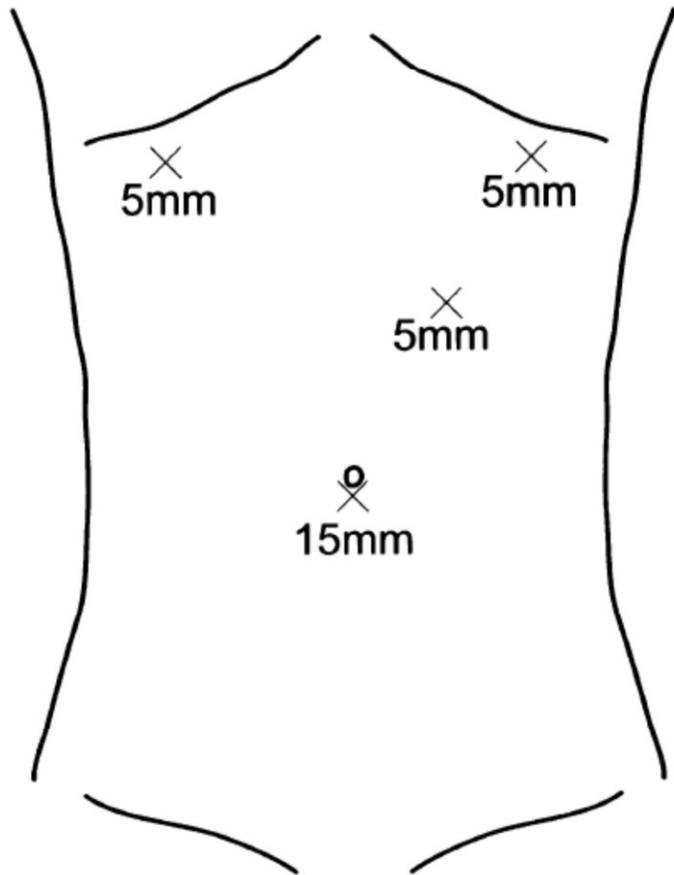


# Colocação dos portais

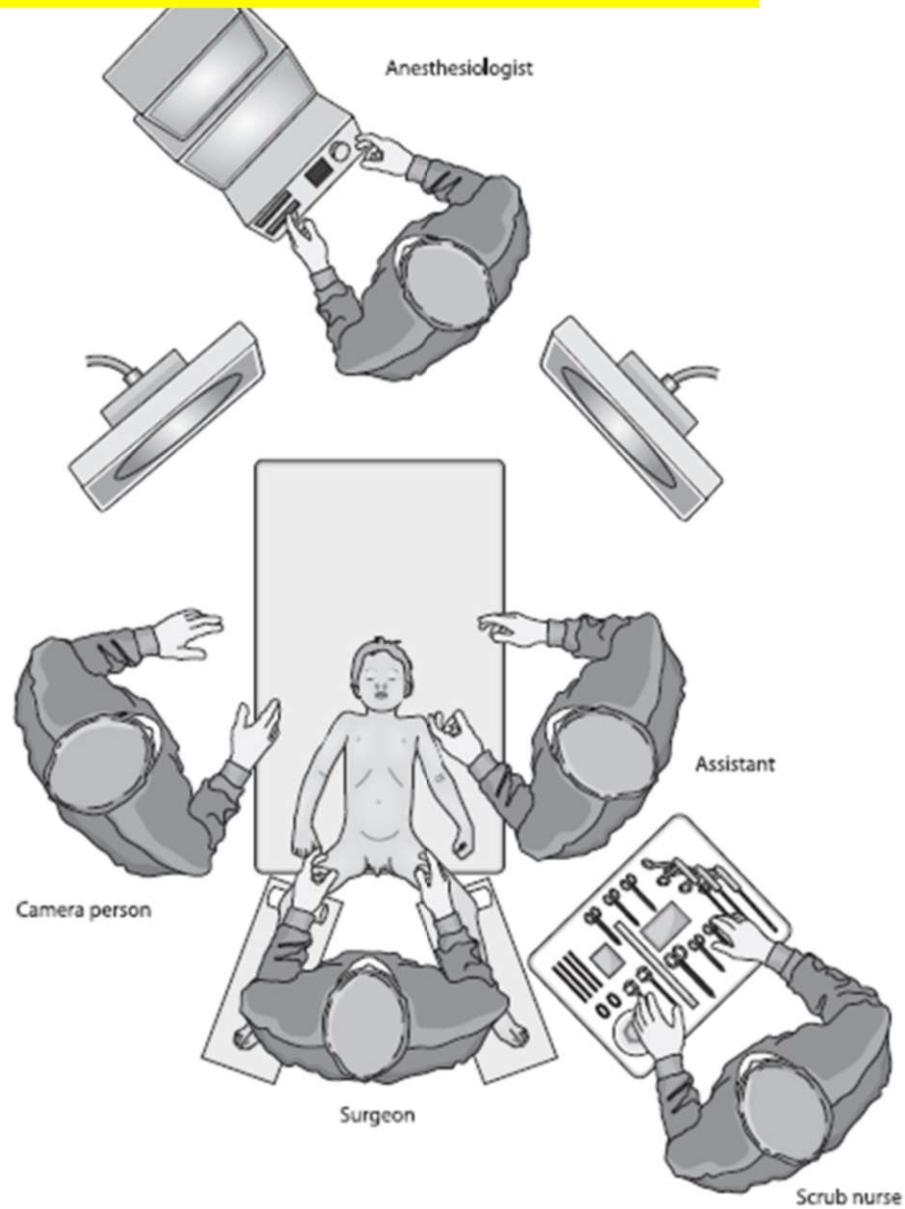
## Lobectomia esquerda laparoscópica

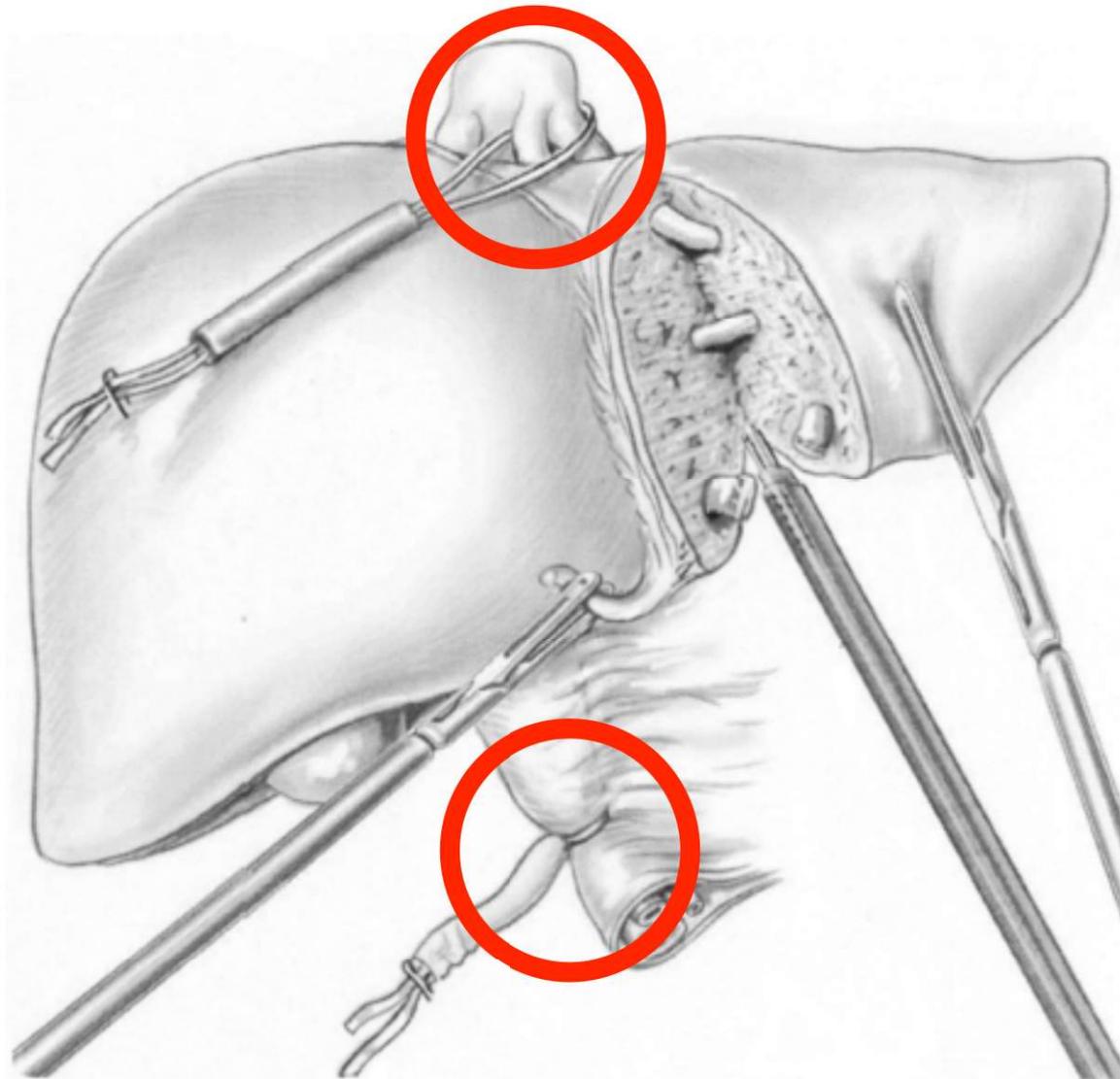




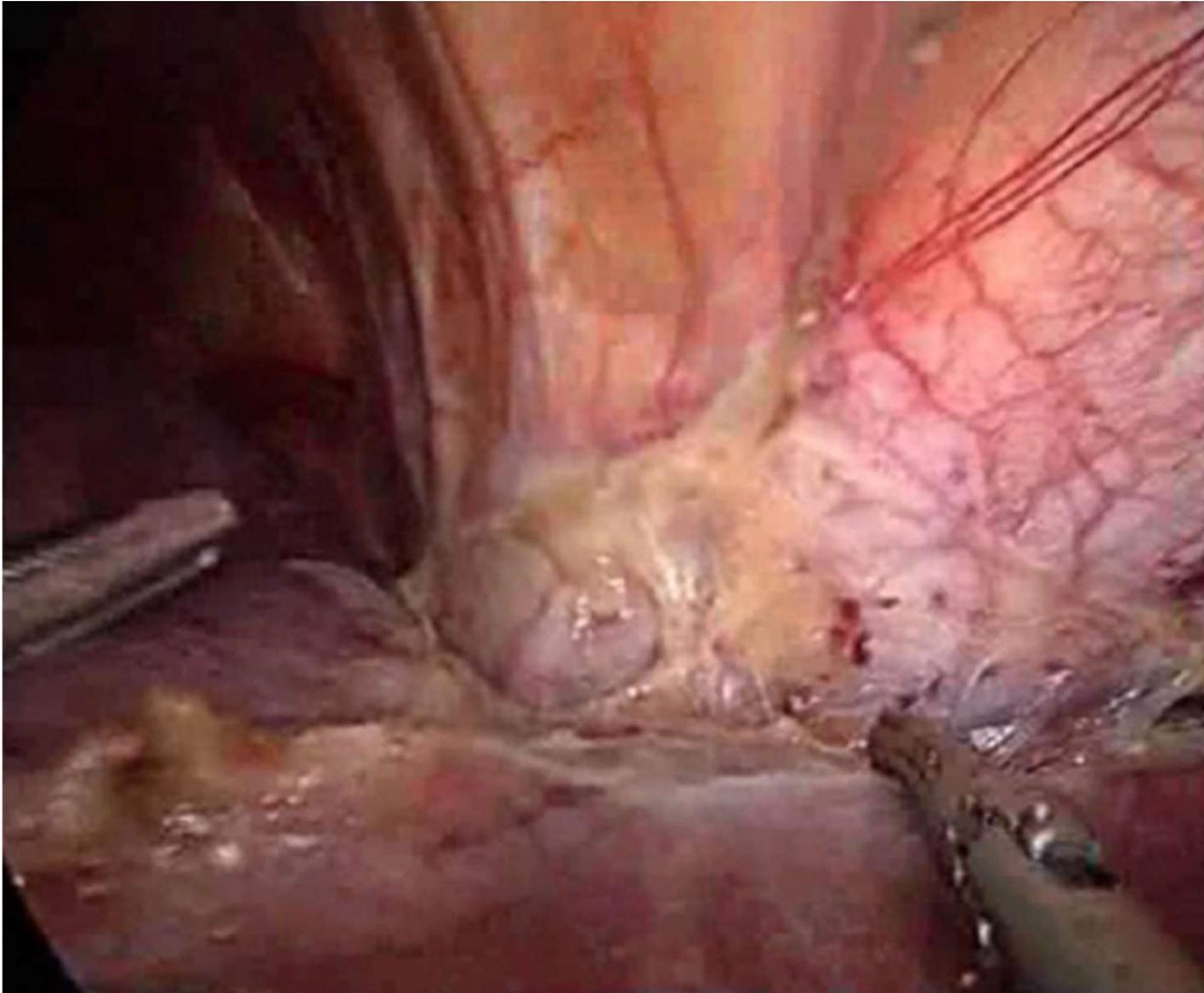


# Posicionamento

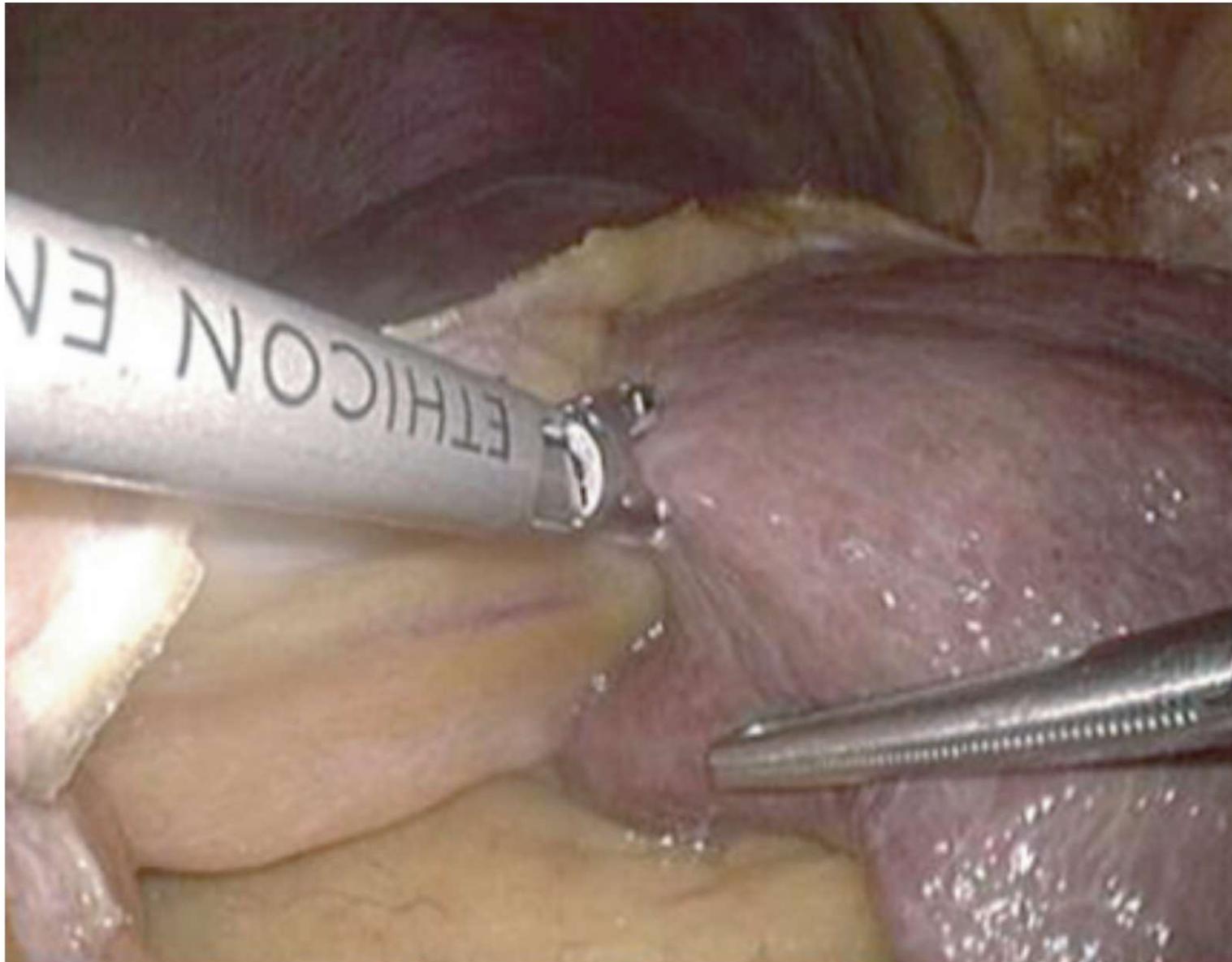




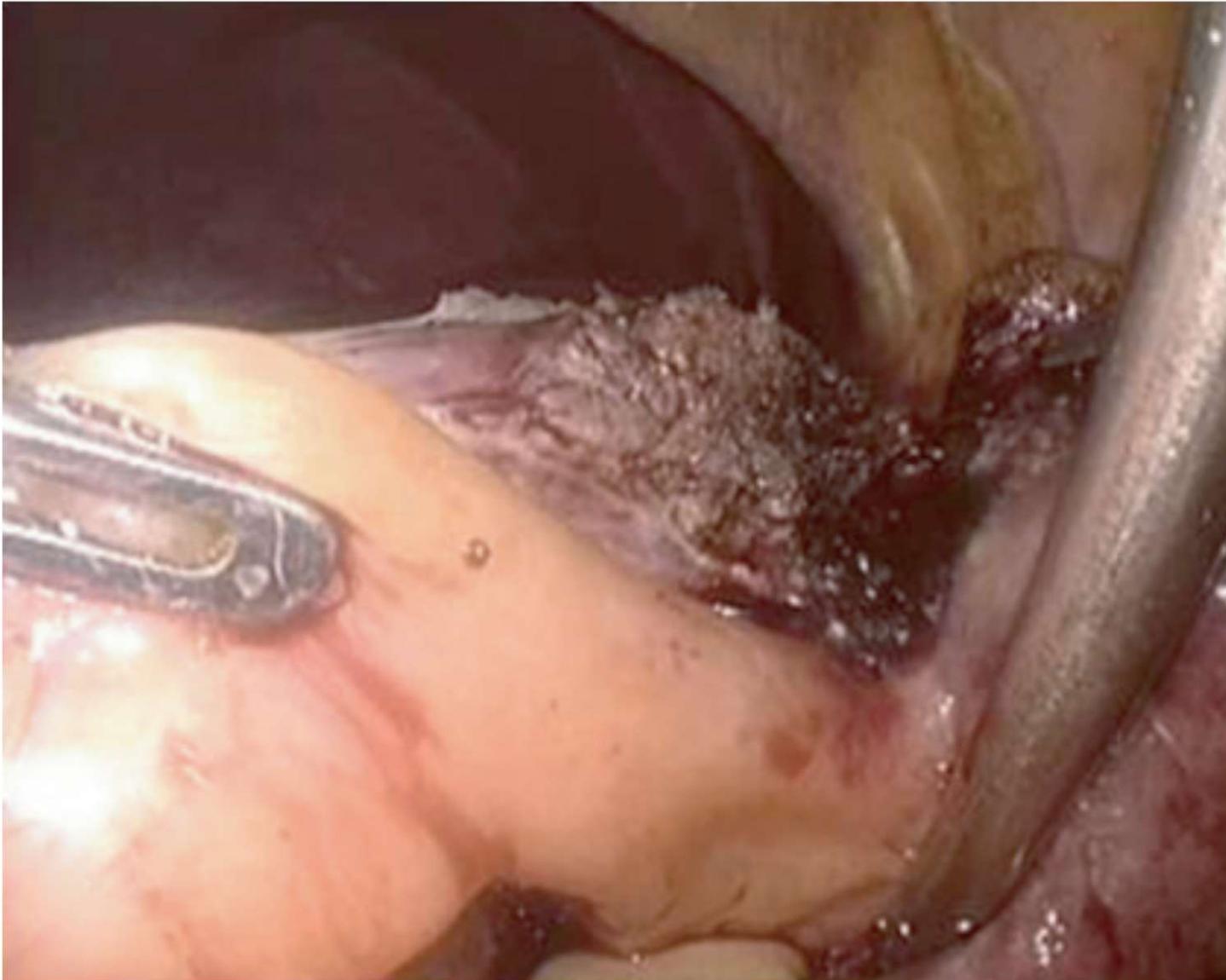
# Liberação dos ligamentos



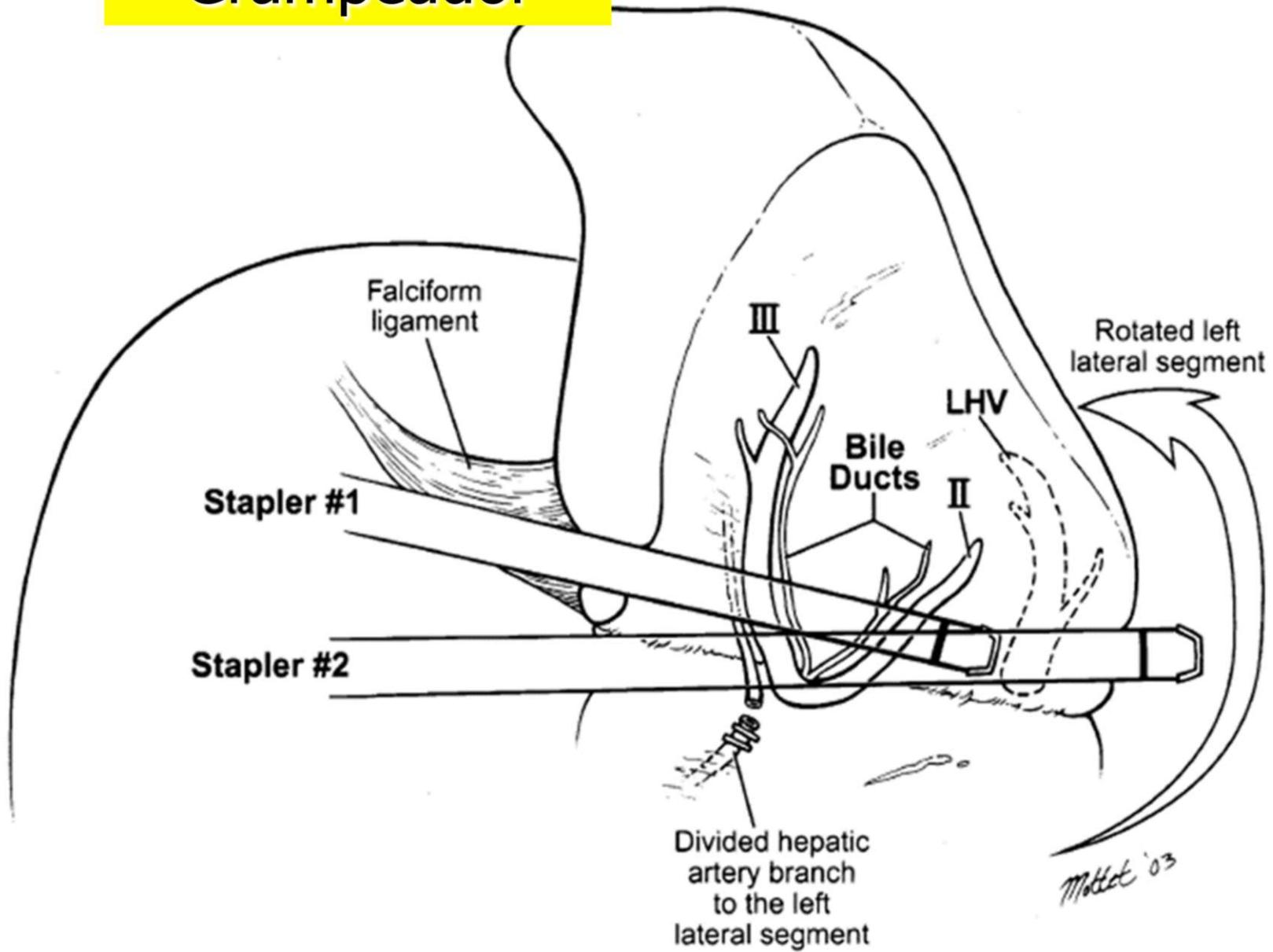
## Abordagem inicial com ultracision



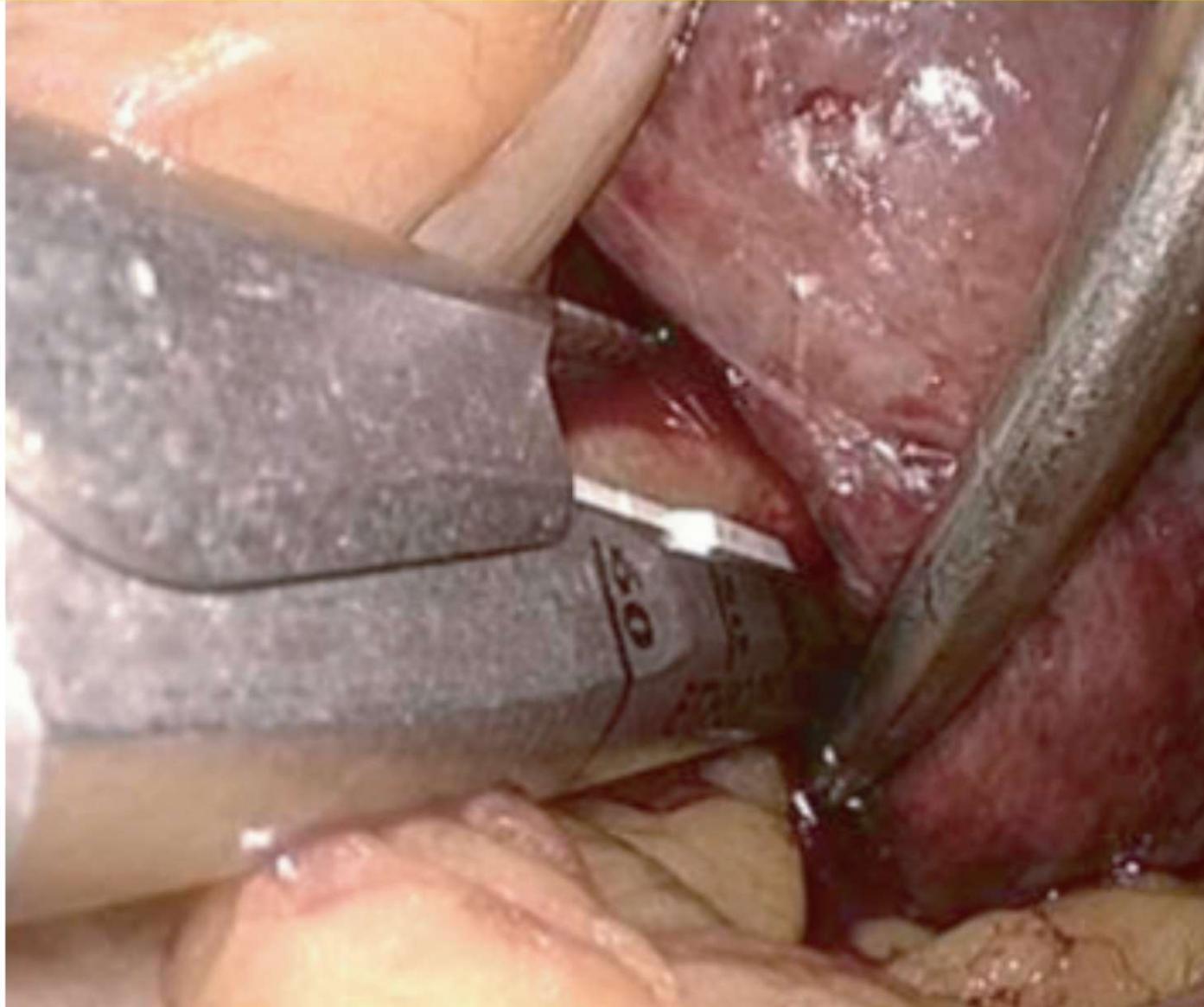
## Acesso ao pedículo do segmento III



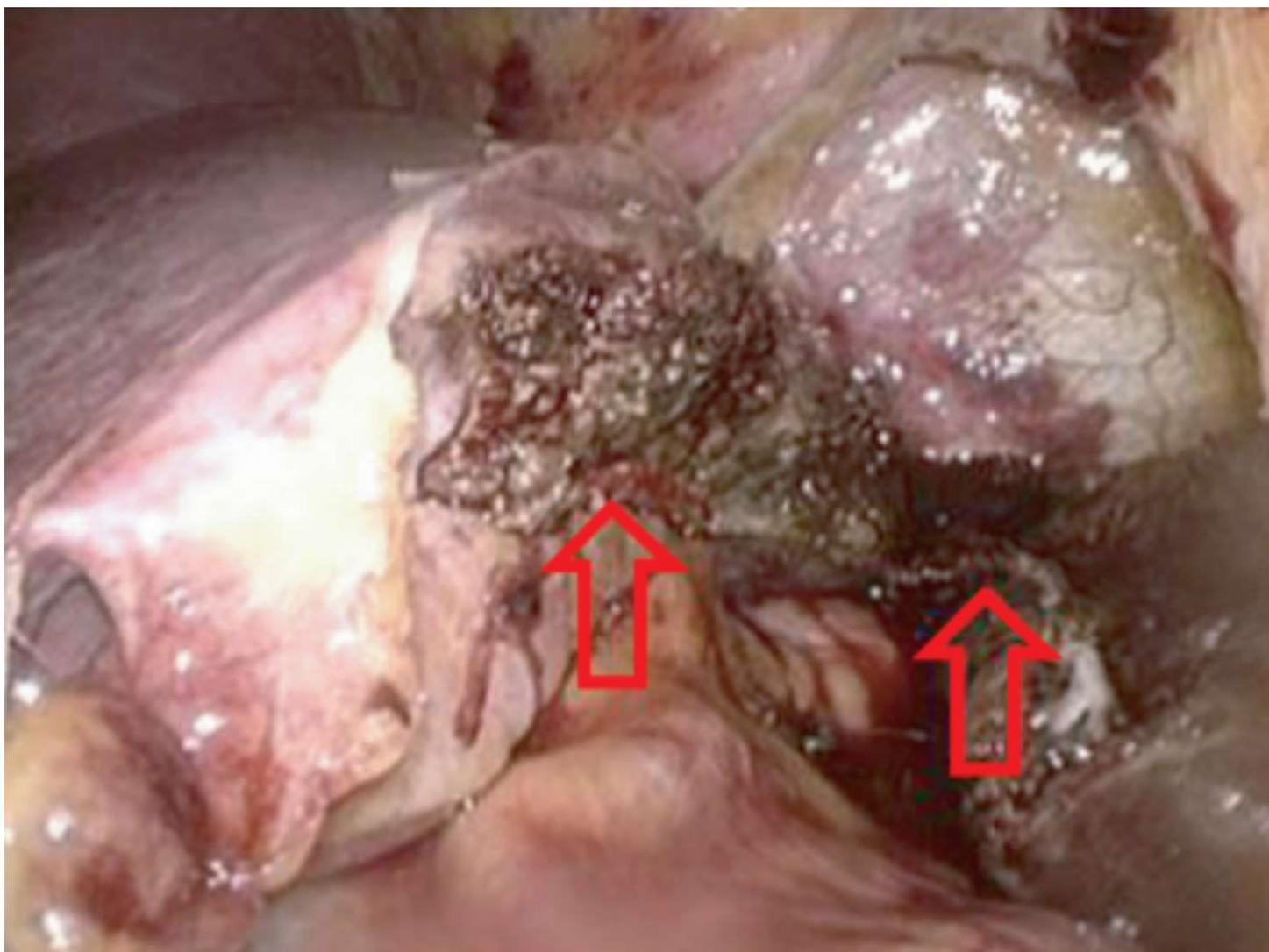
# Grampeador

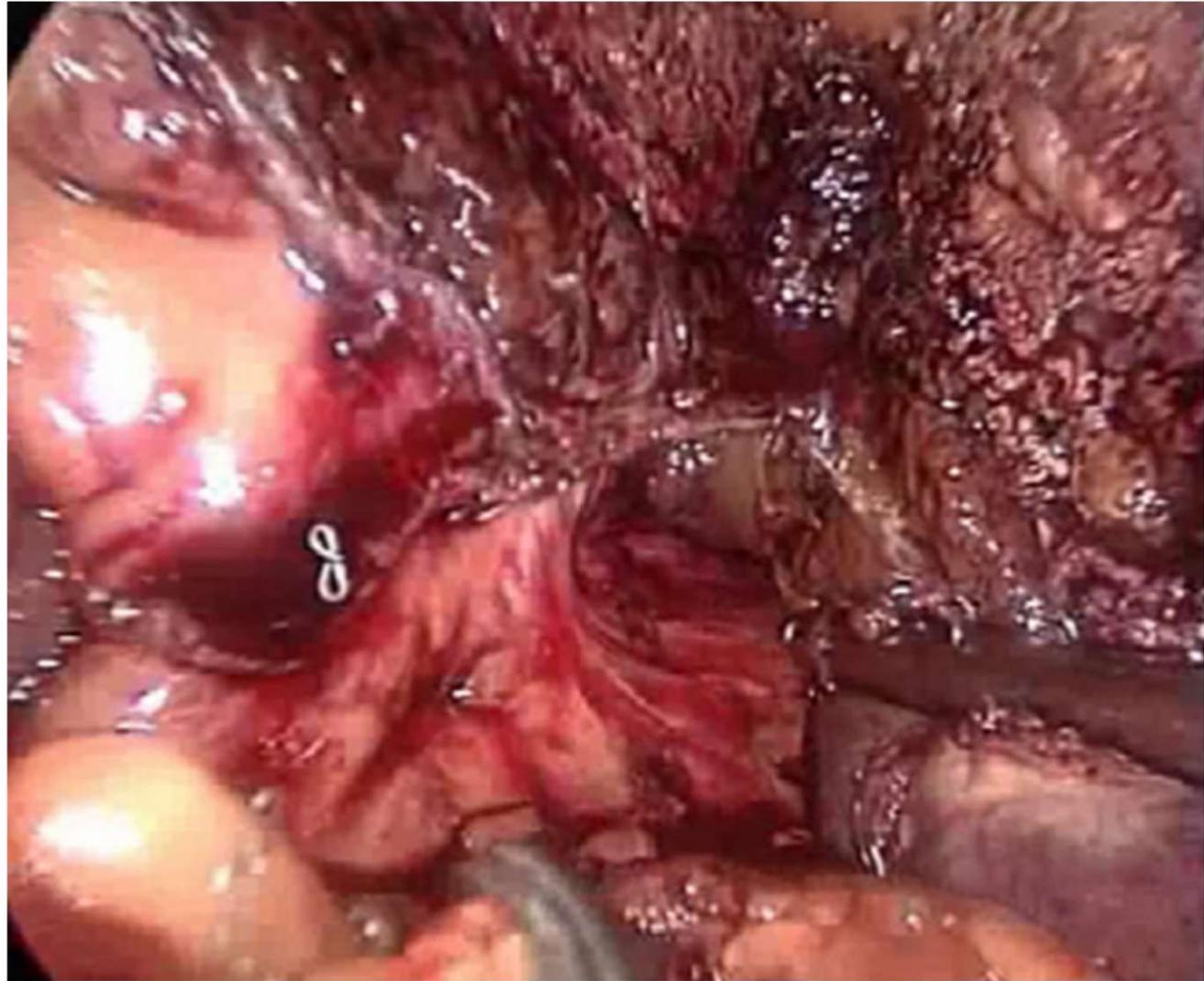


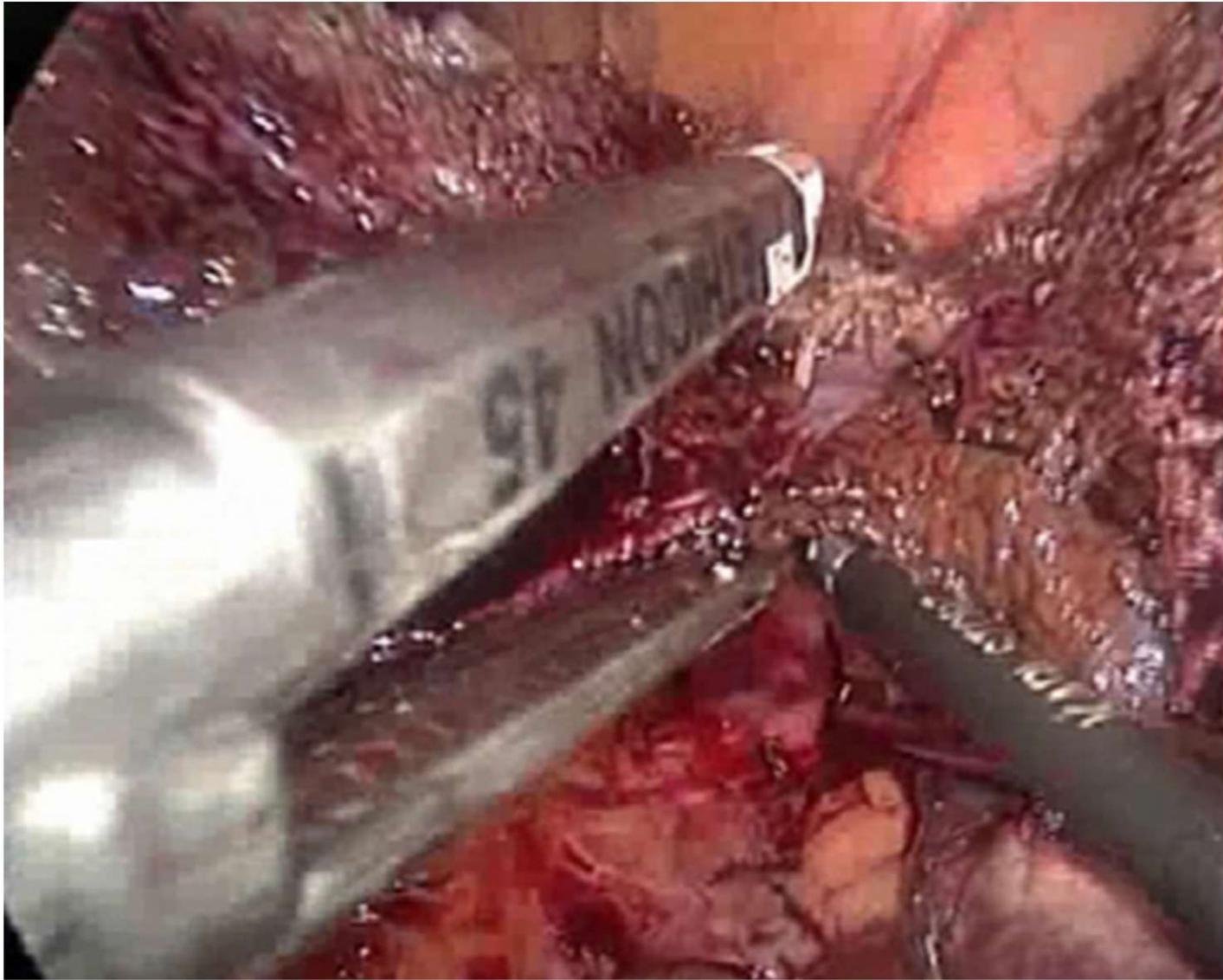
## Primeira carga no pedículo III (Branca)



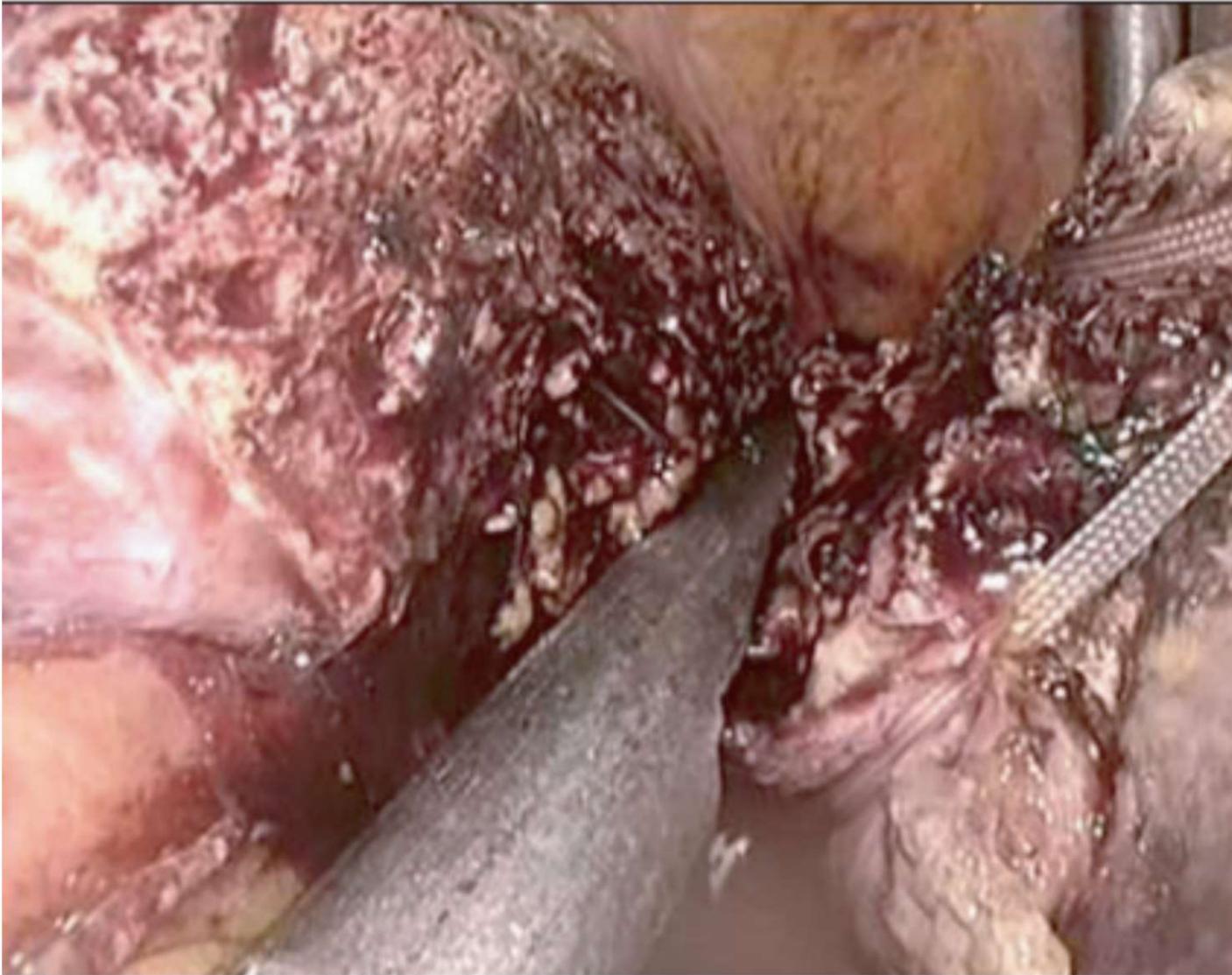
## Secção parcial do fígado



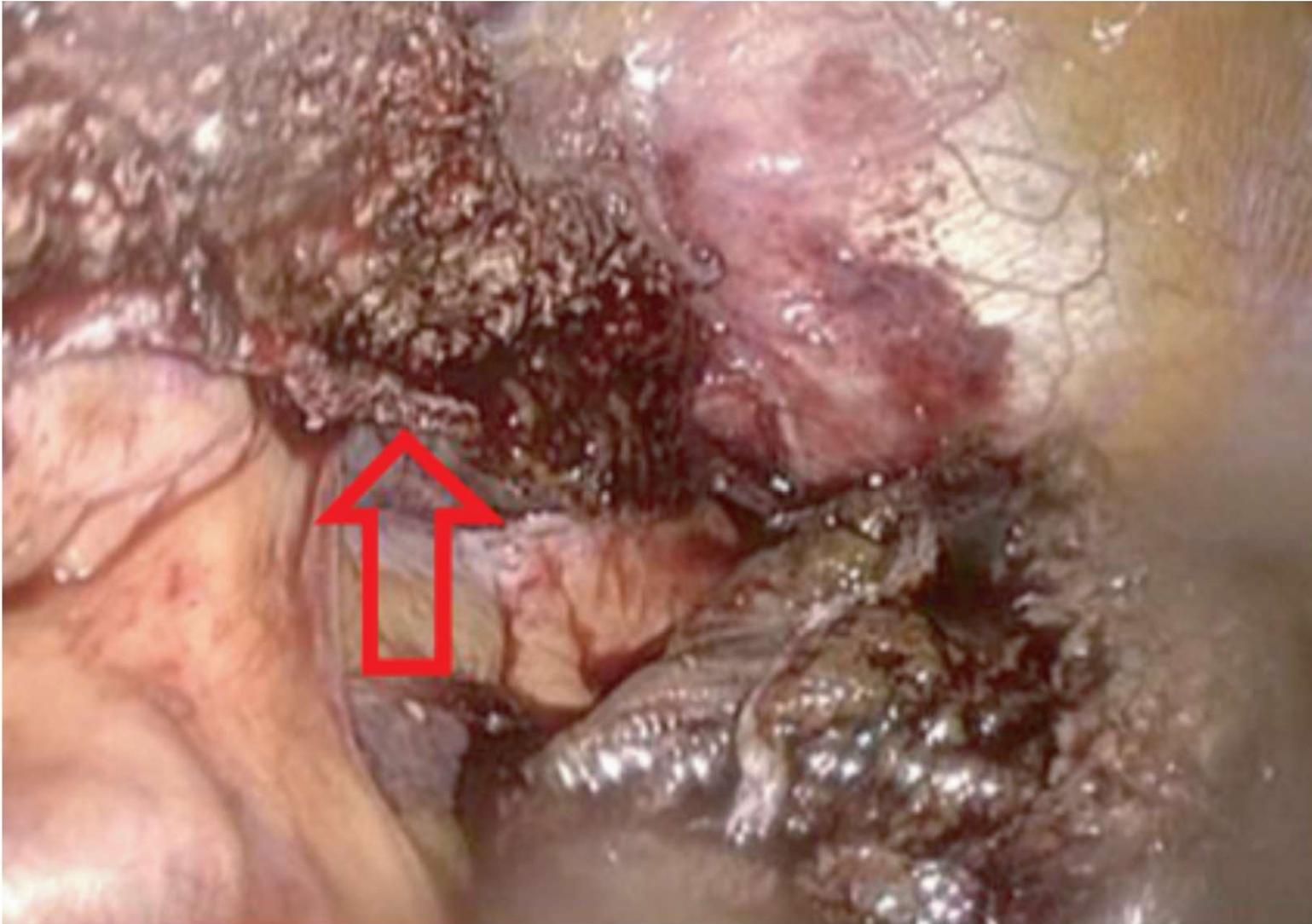


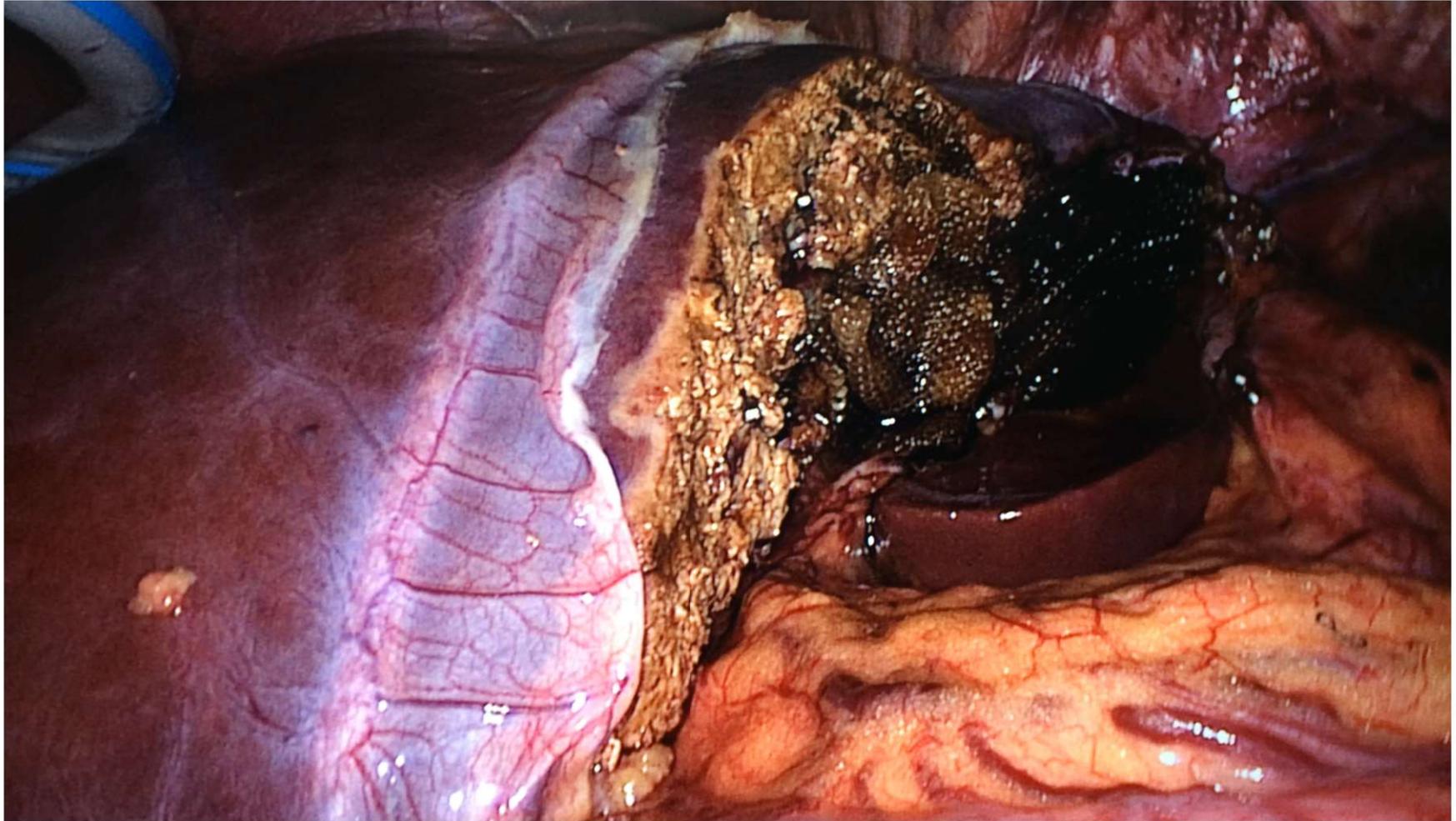


## Segunda carga no pedículo II (Branca)

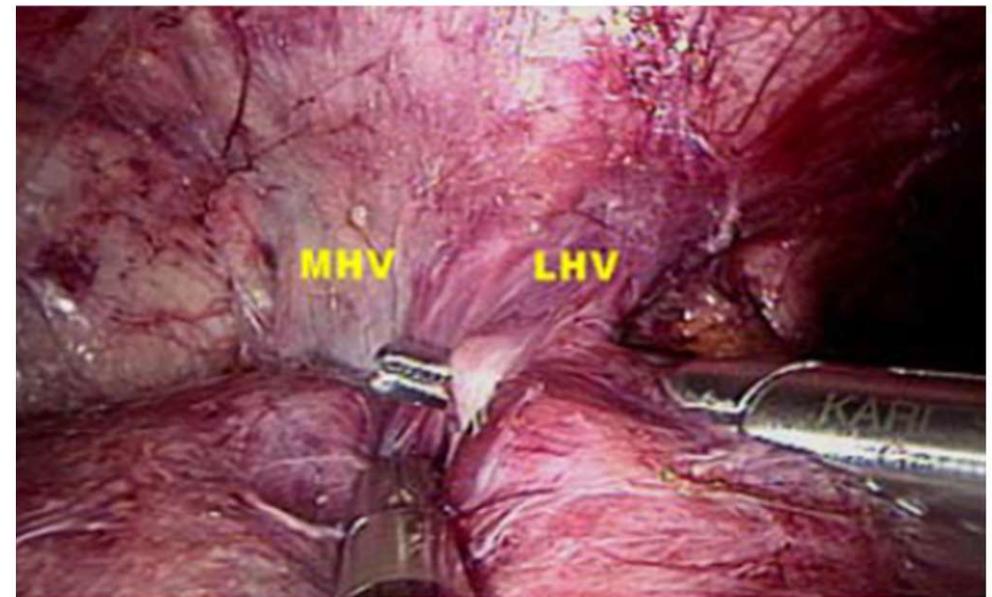
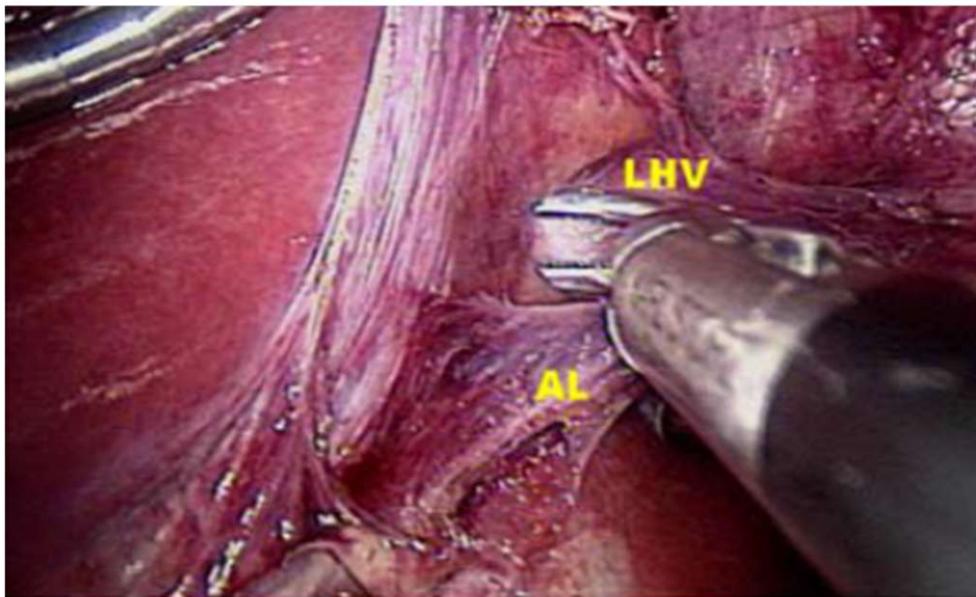
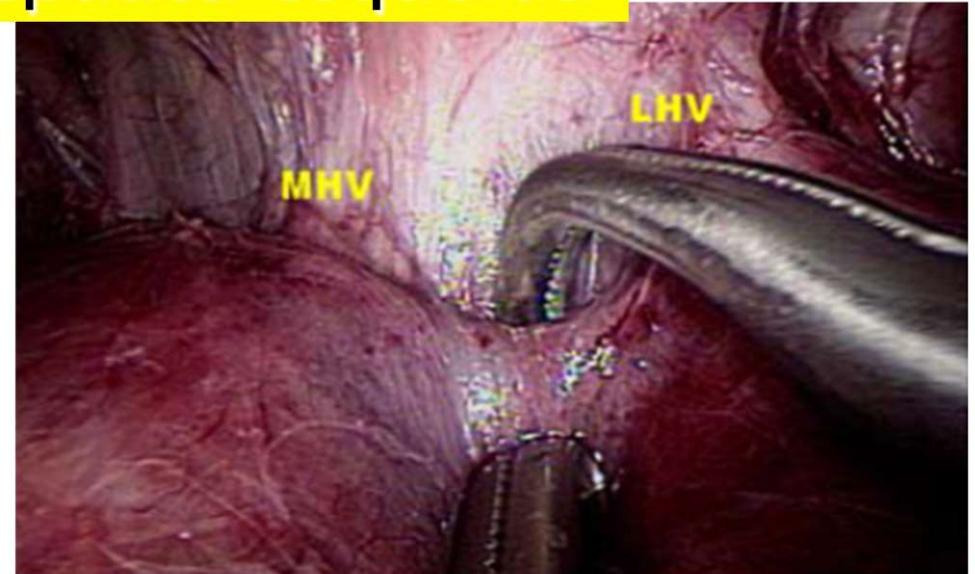


## Secção (quase) completa do fígado

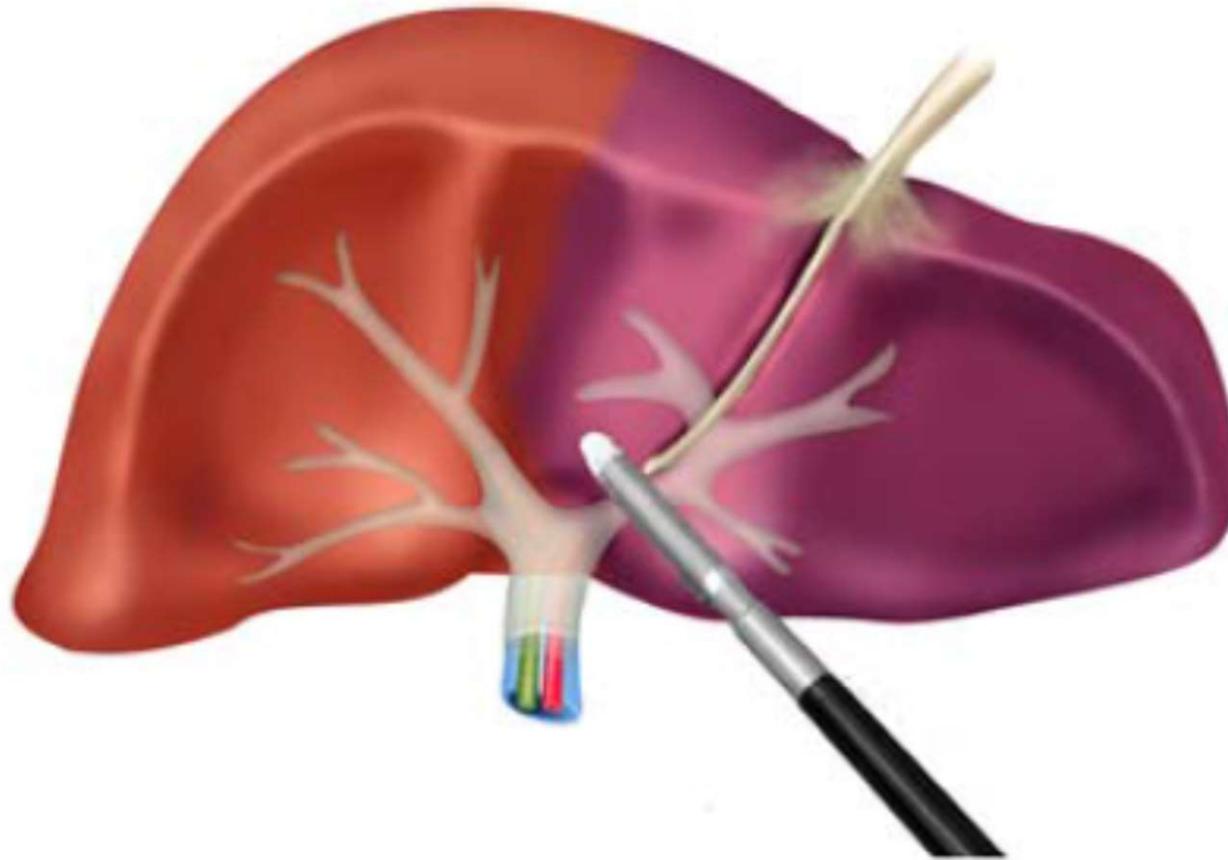


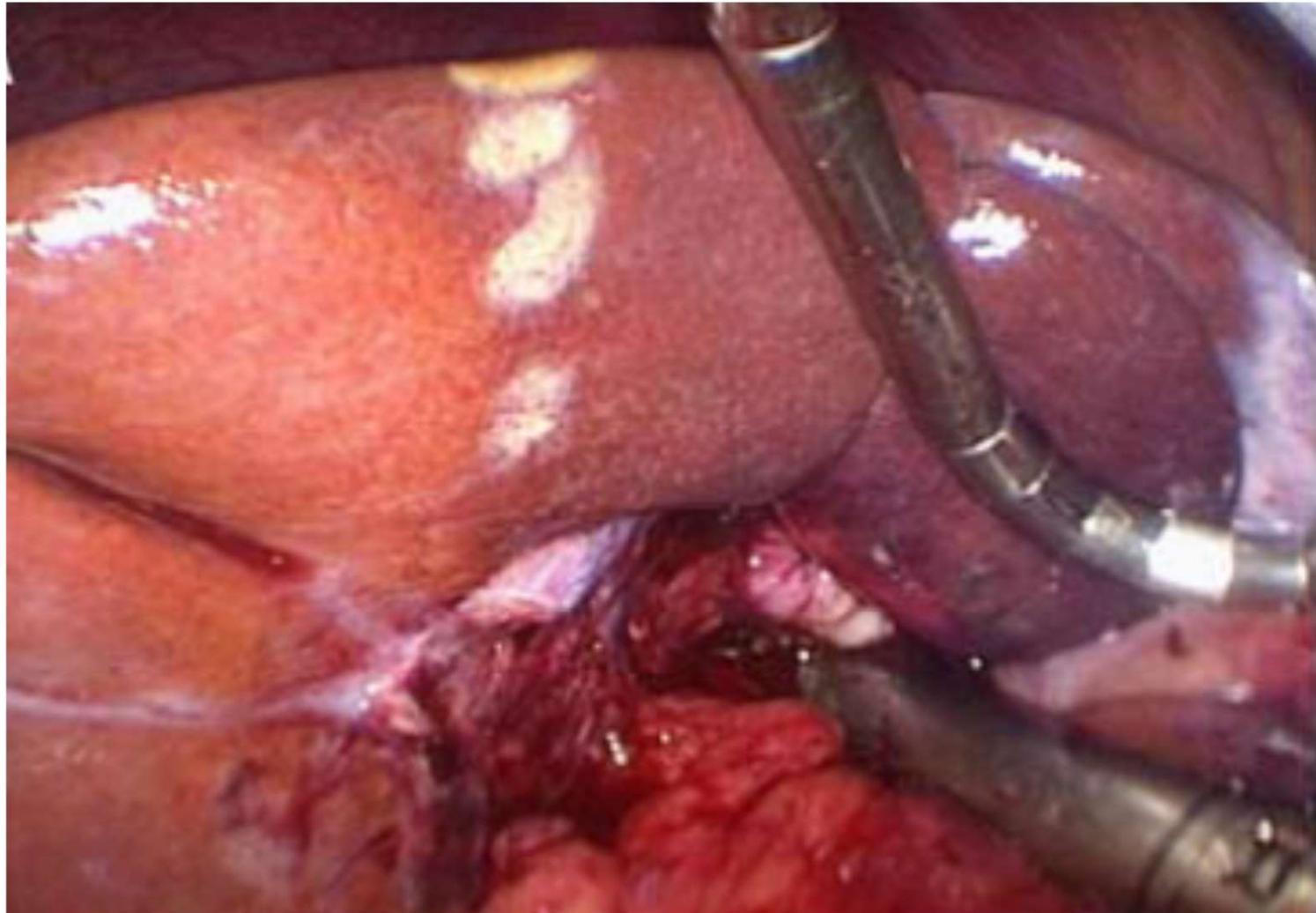


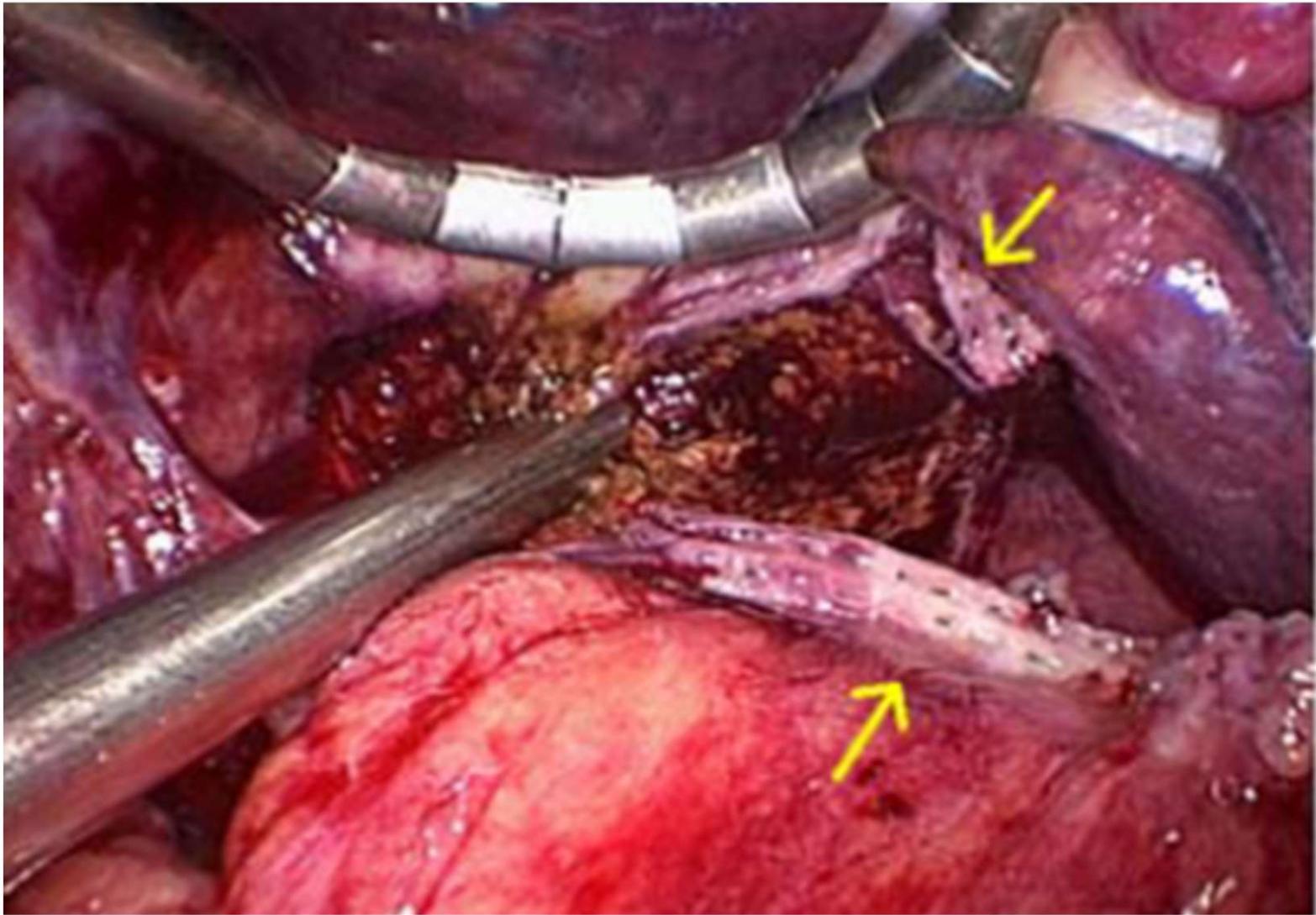
# Veia hepática esquerda



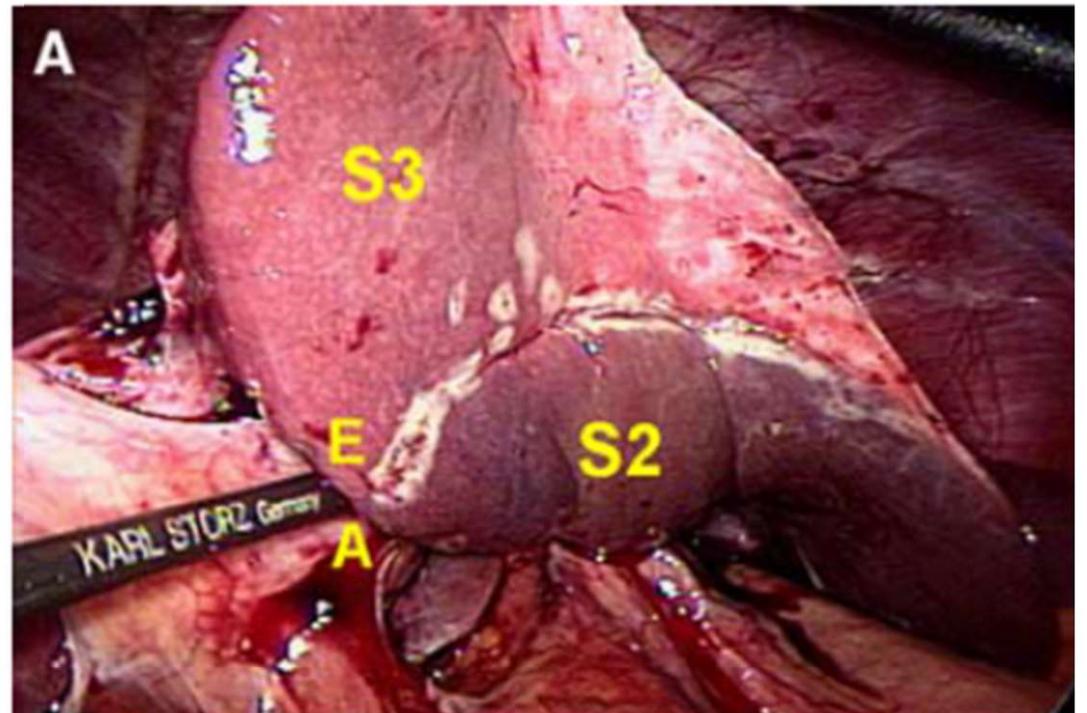
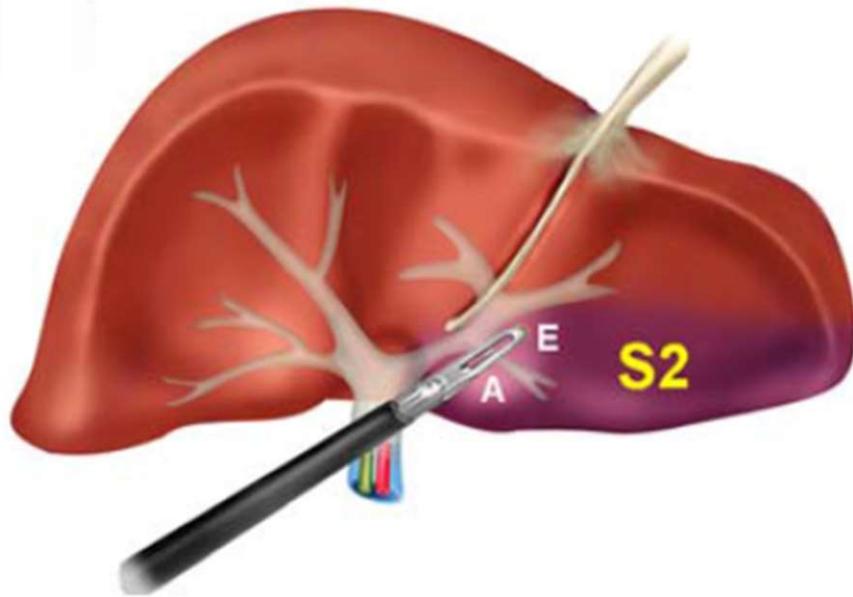
# Hepatectomia esquerda (II/III/IV)



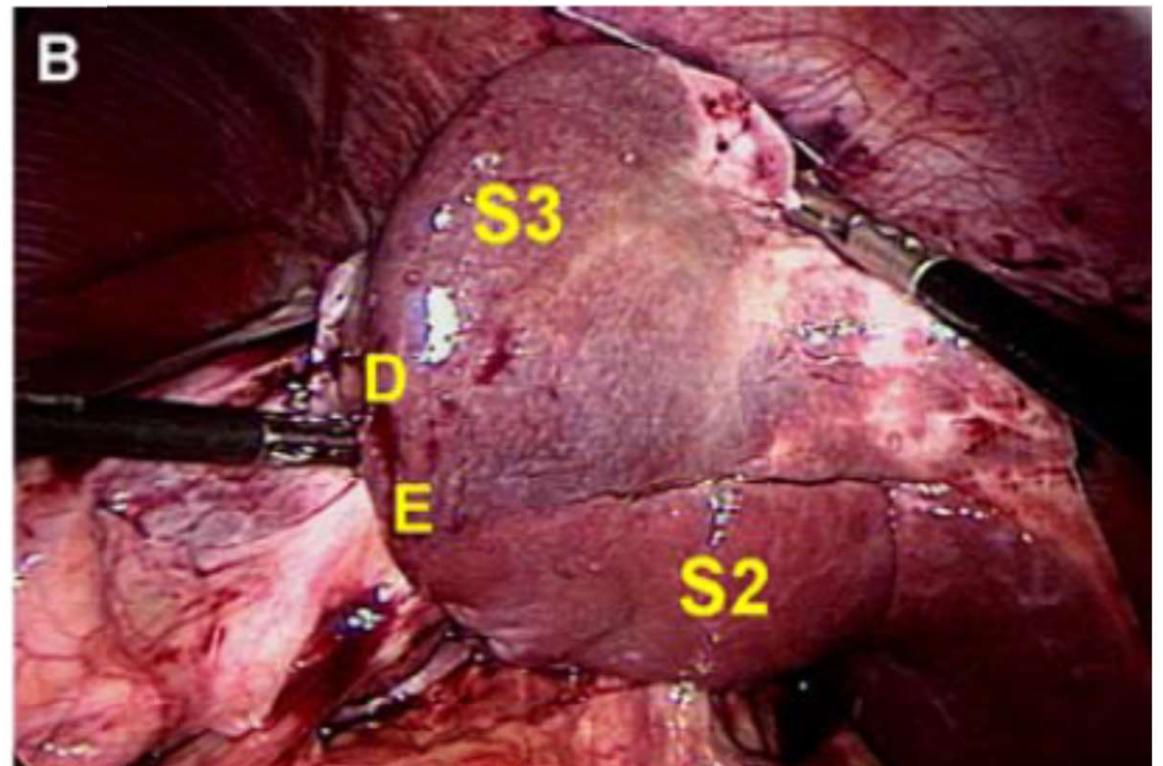
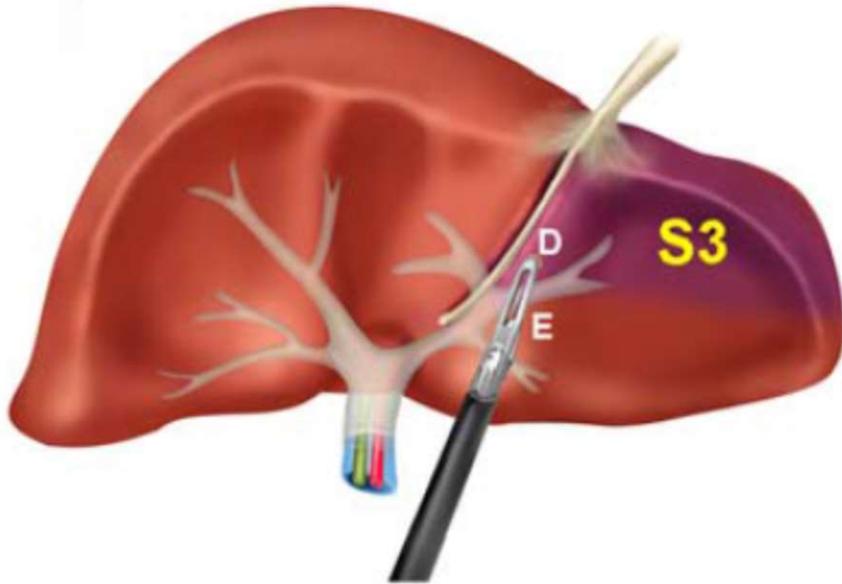




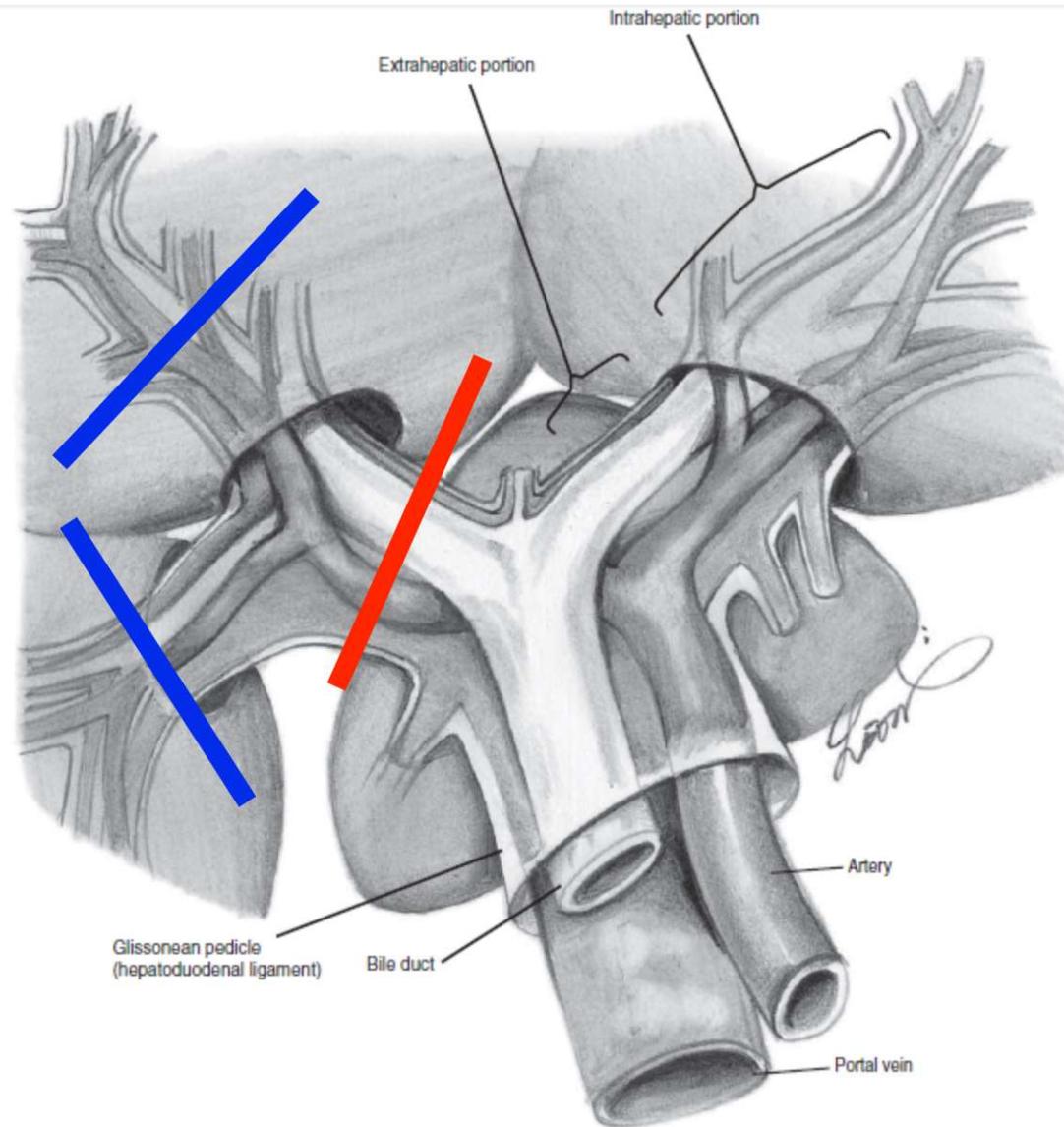
# Hepatectomia S2



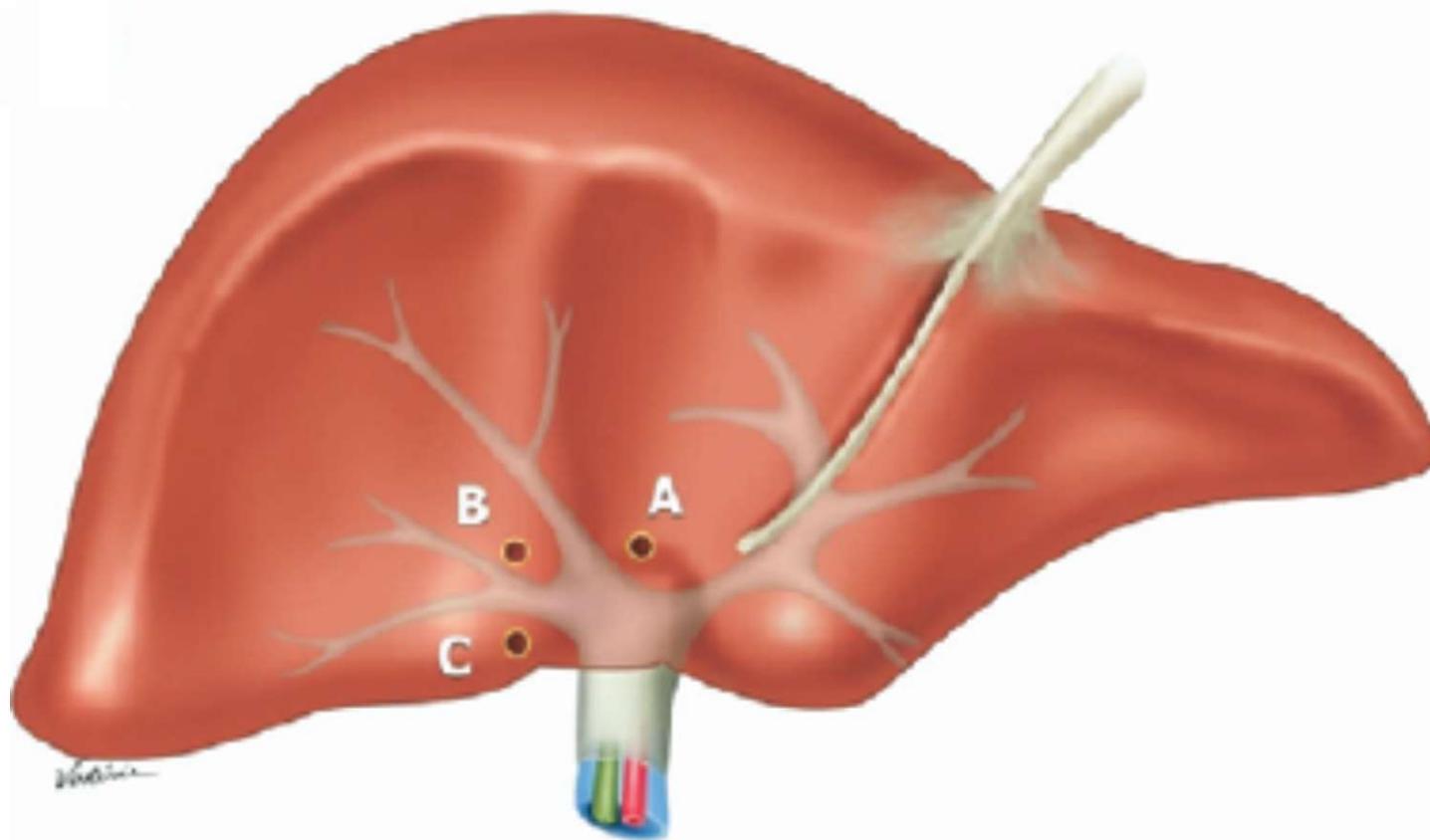
# Hepatectomia S3

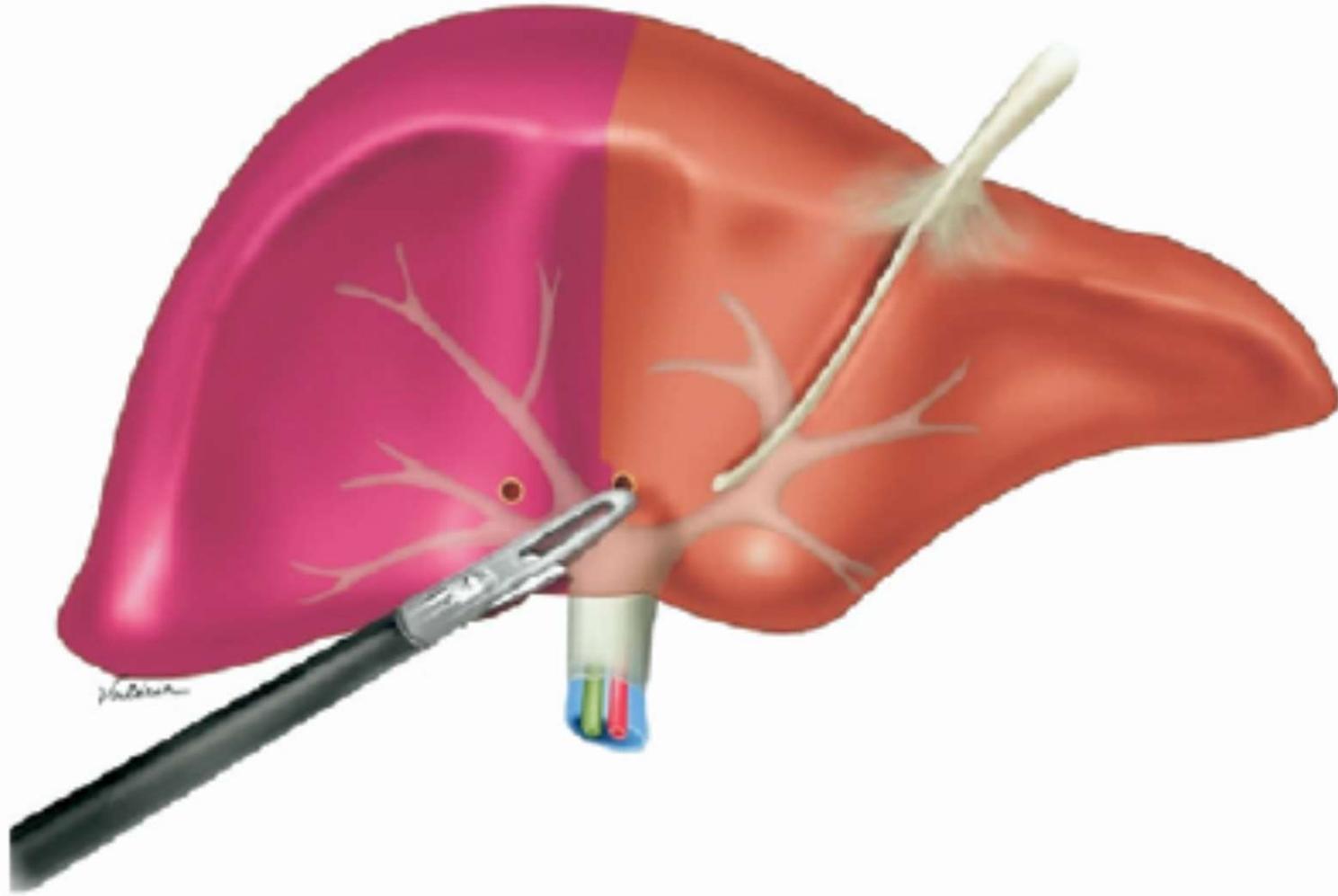


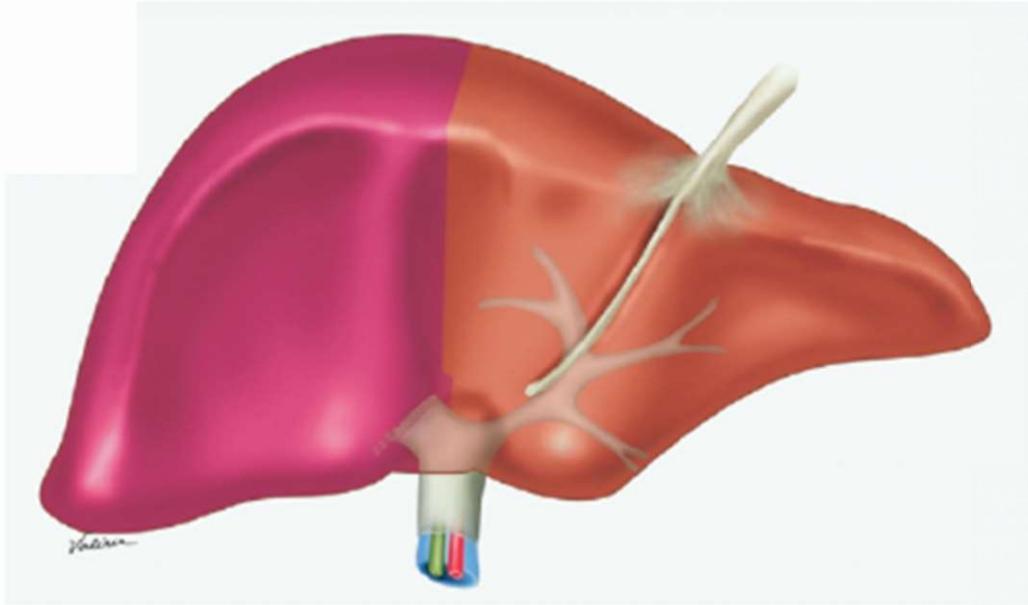
# Hepatectomia direita

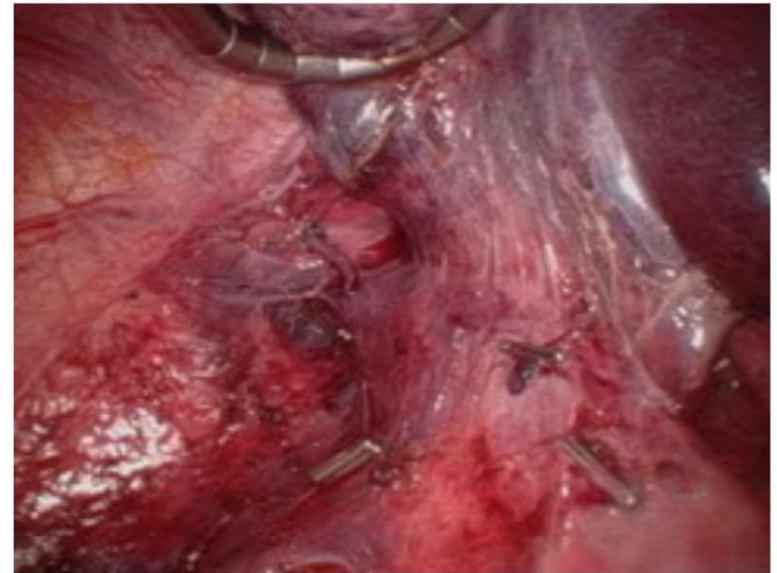
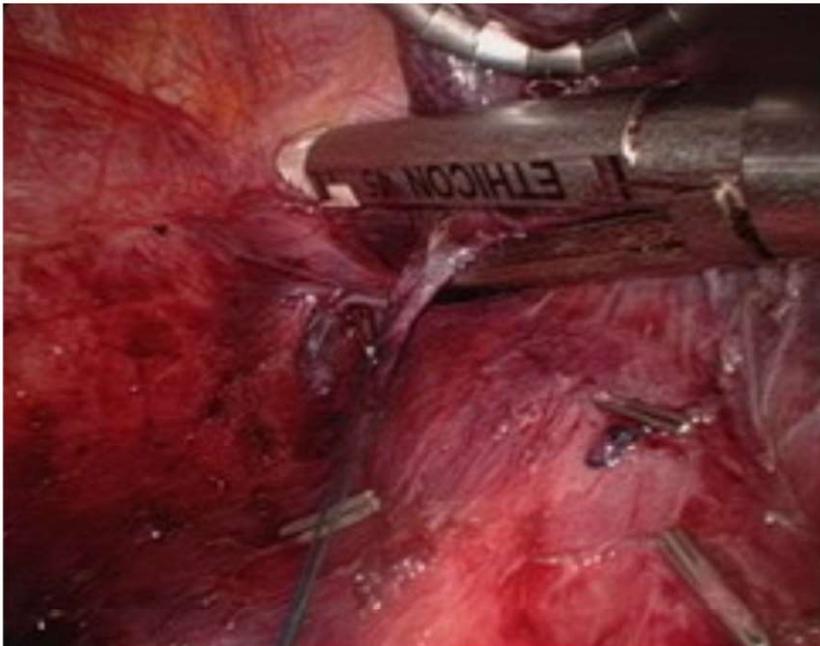
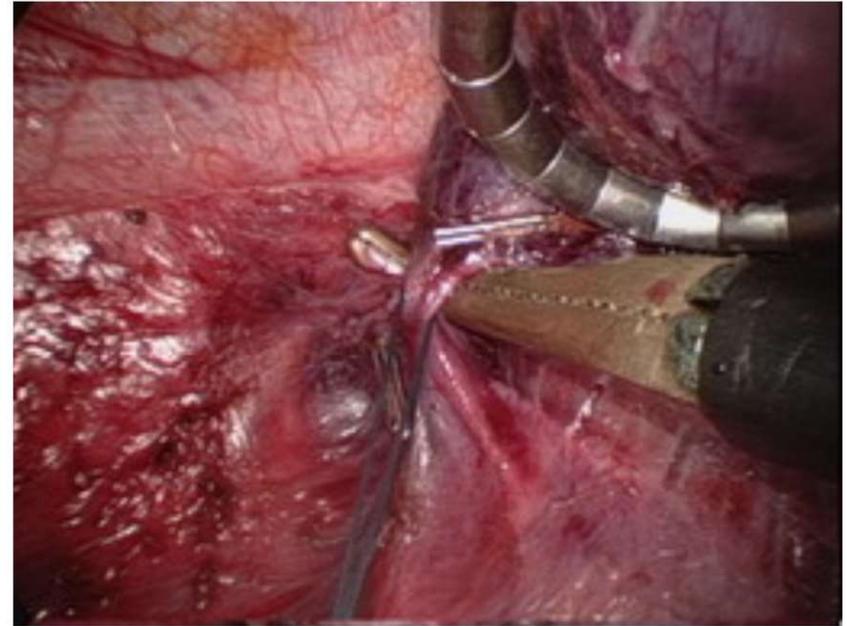
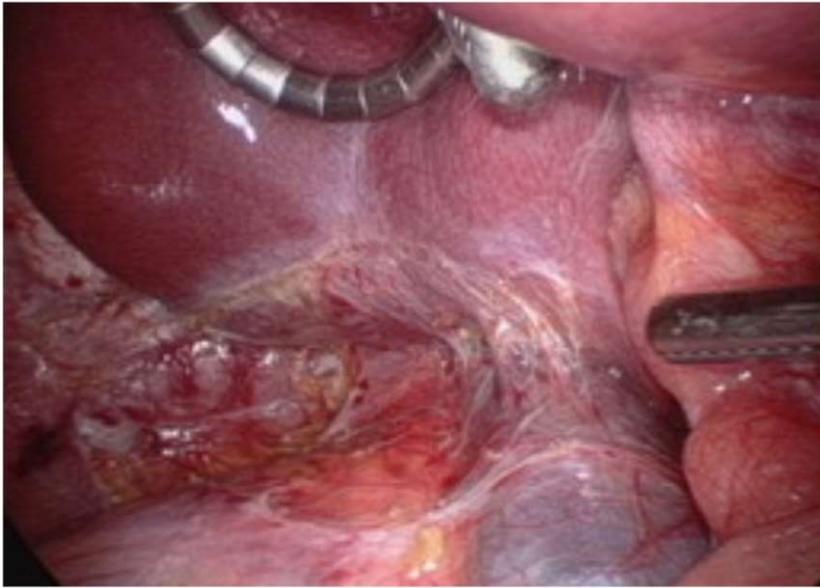


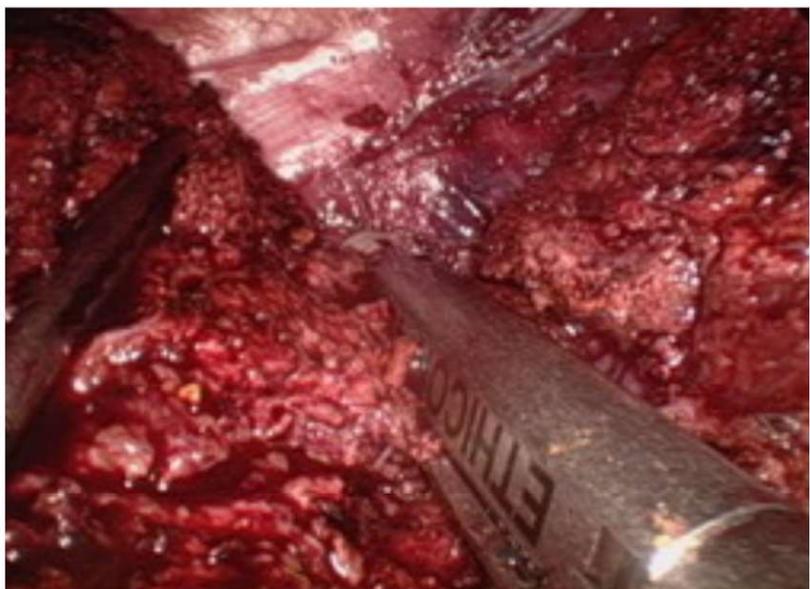
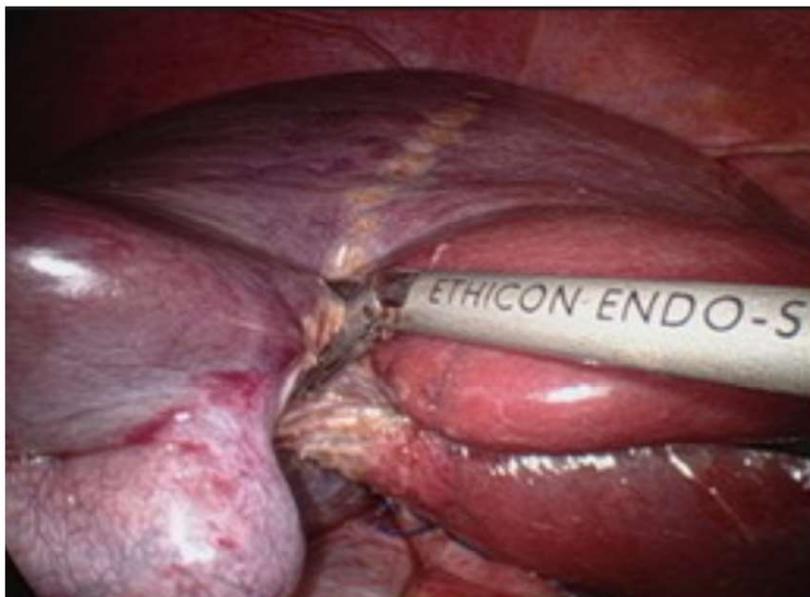
# Pedículo Glissoniano

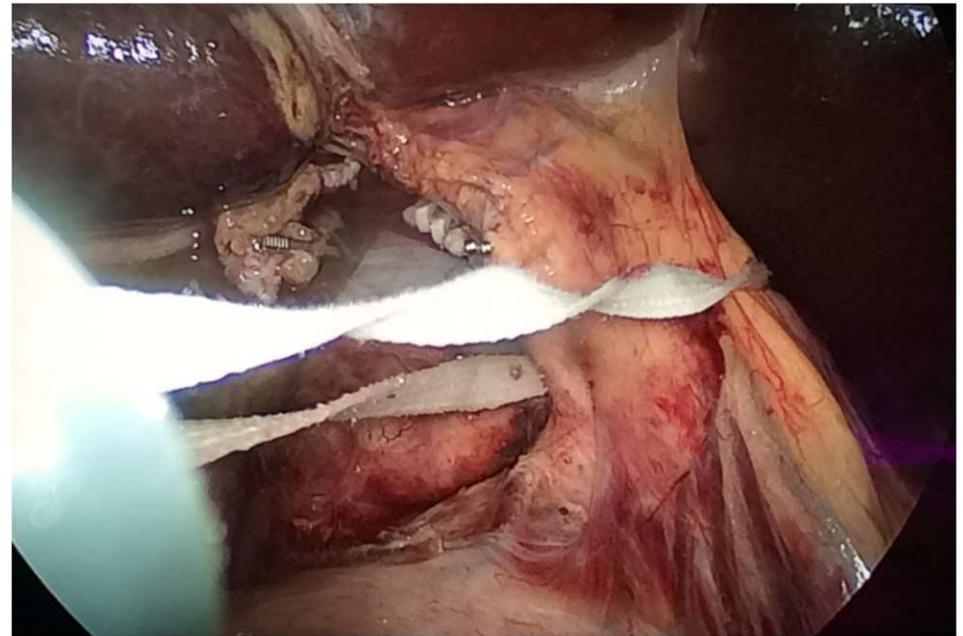
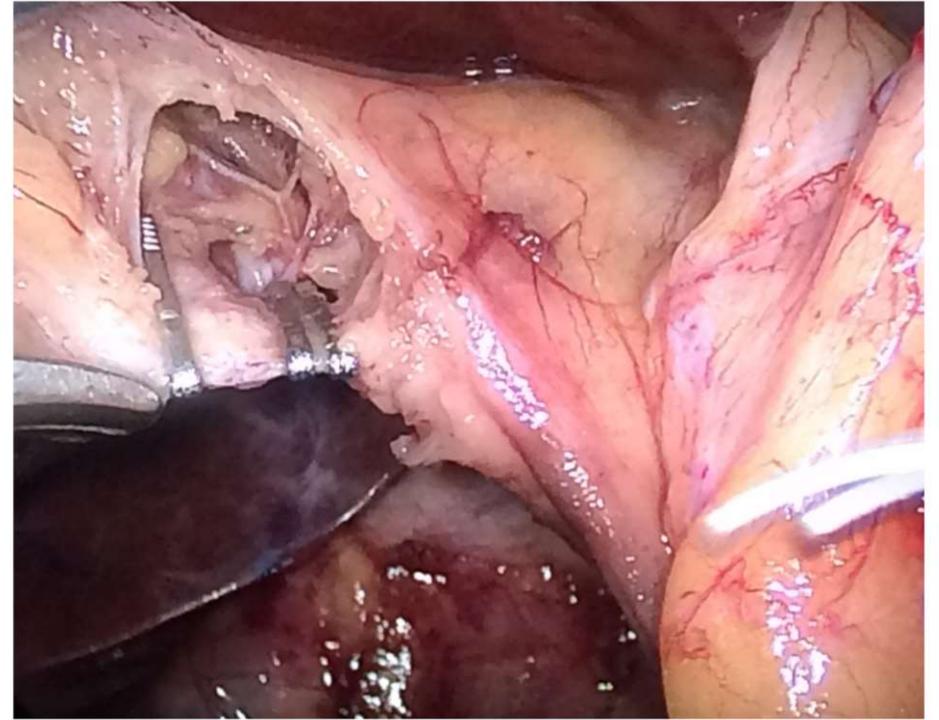
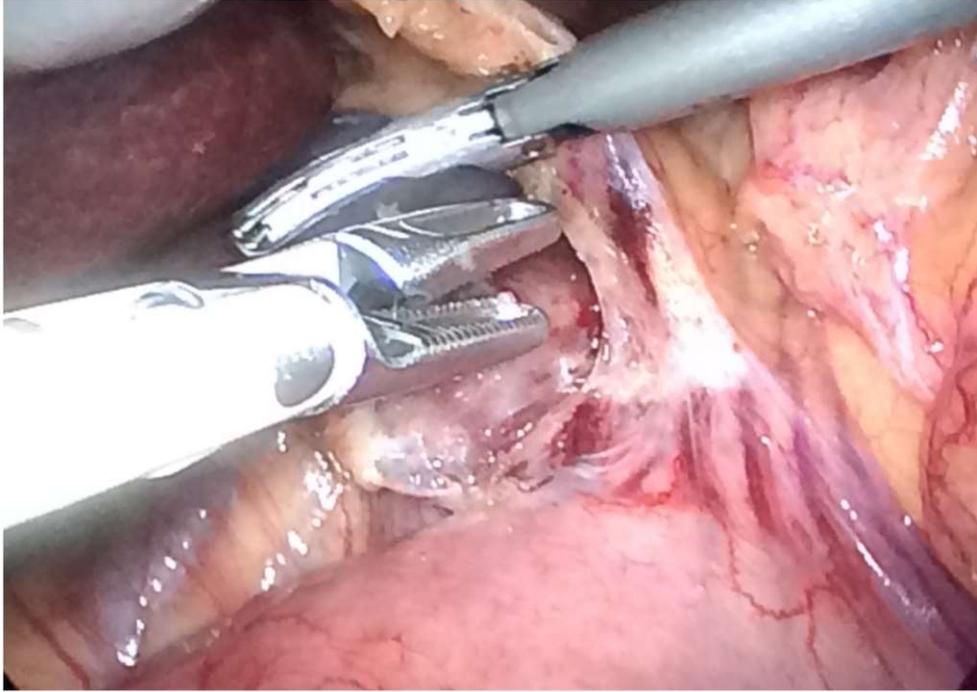






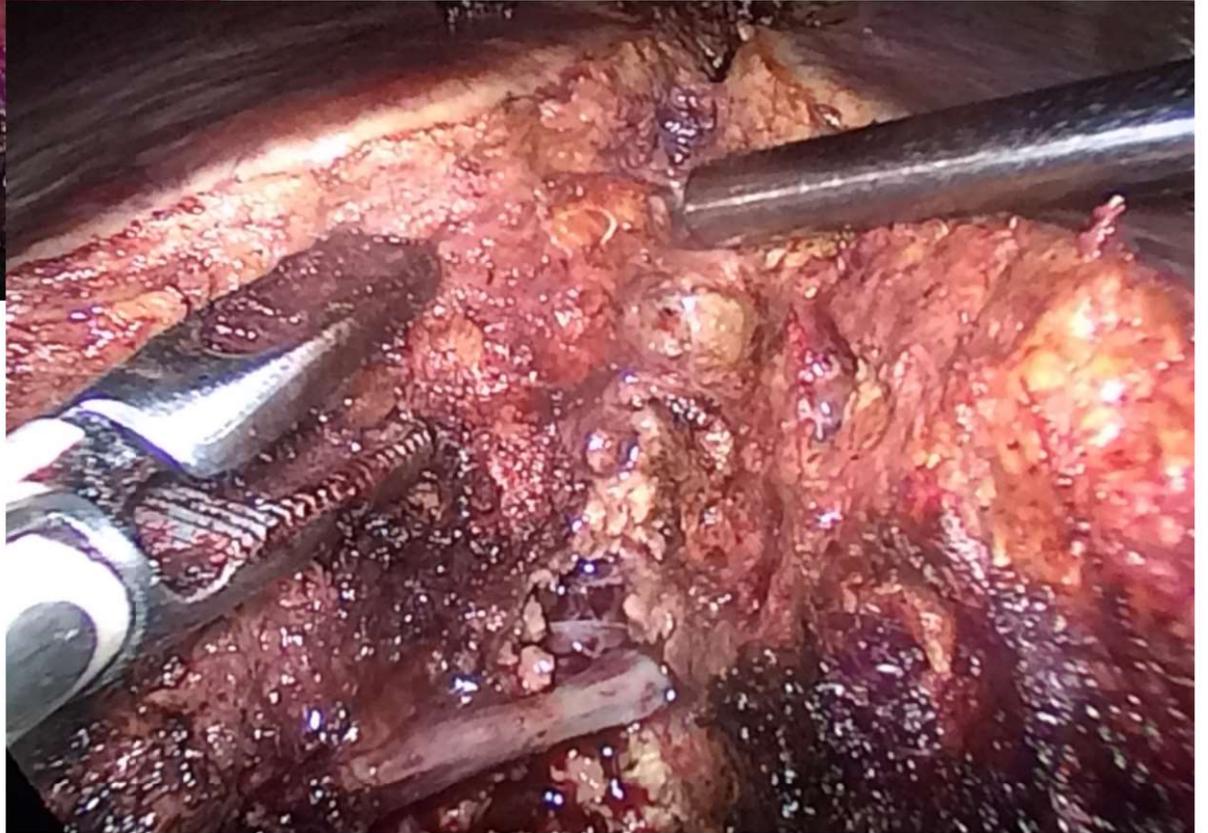
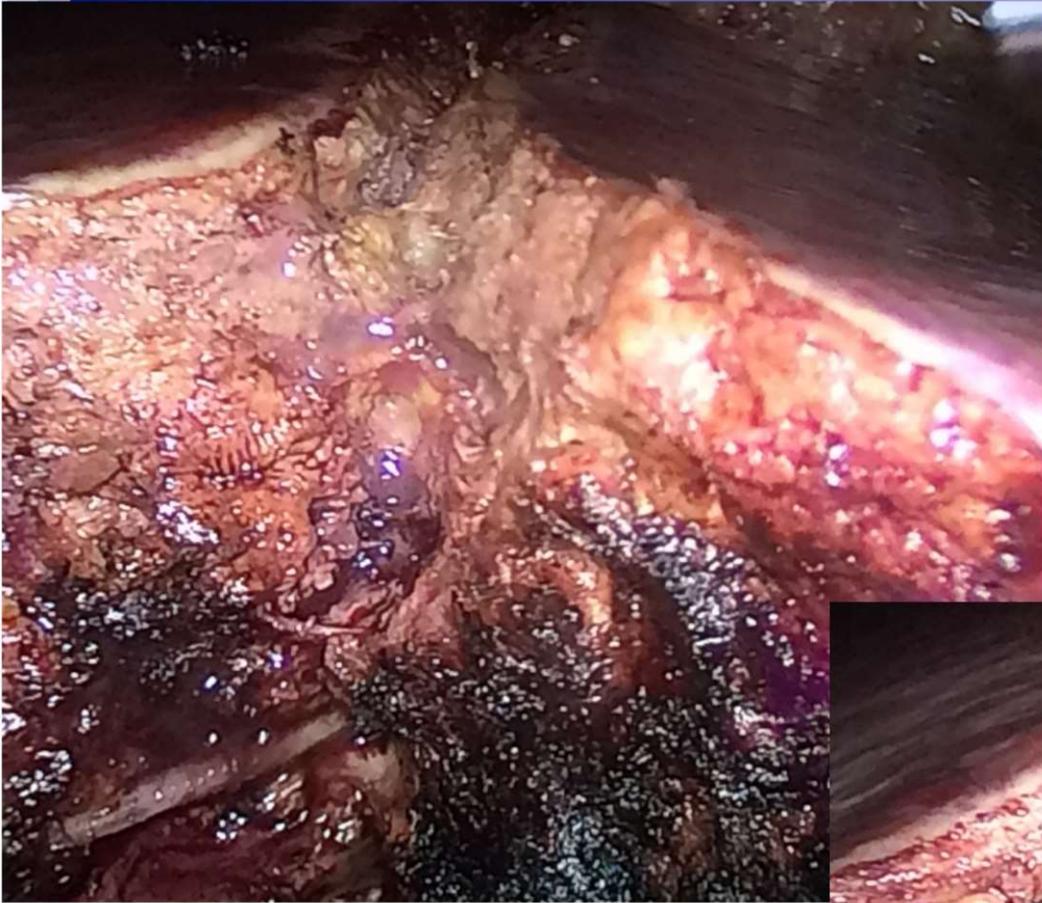


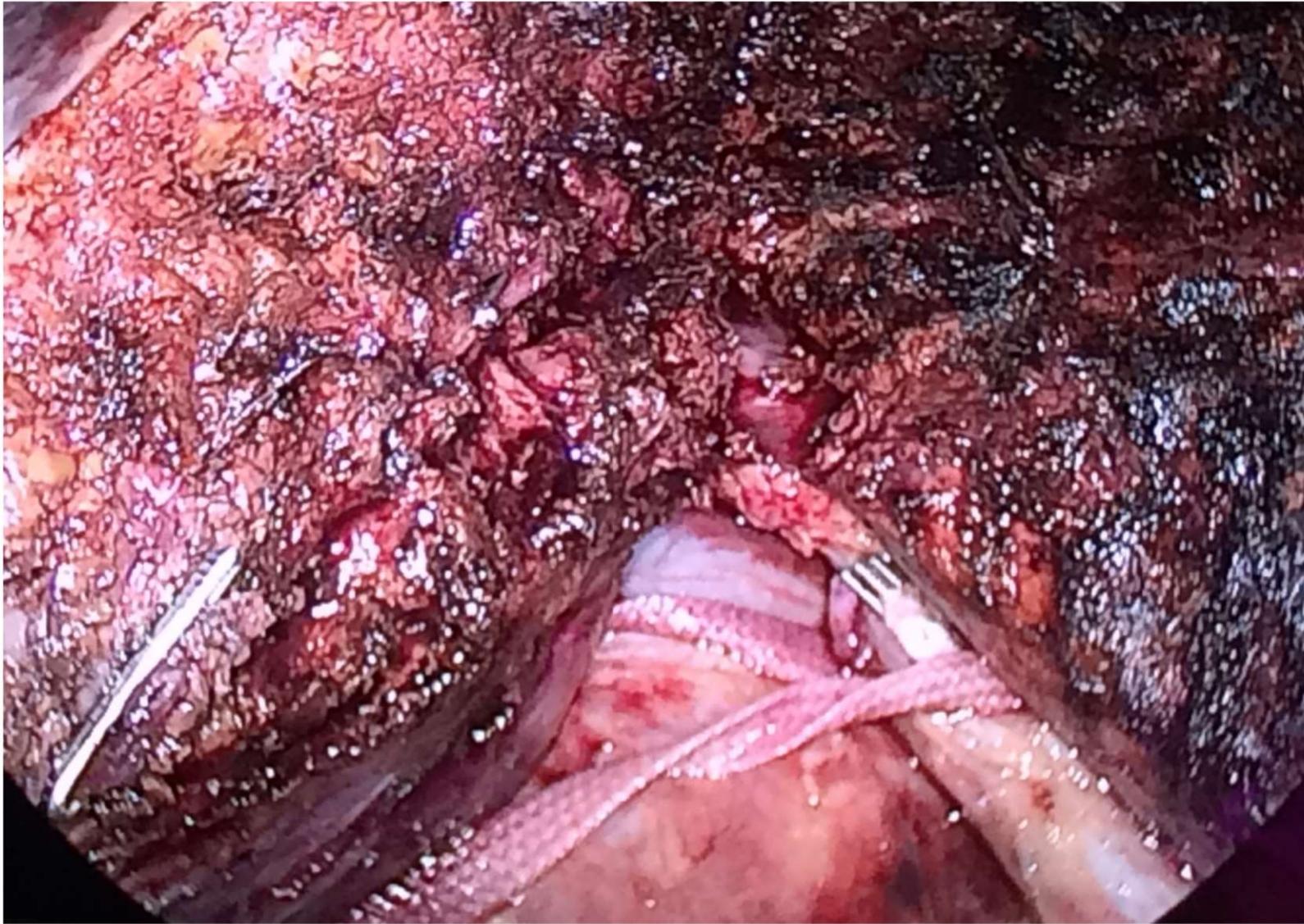




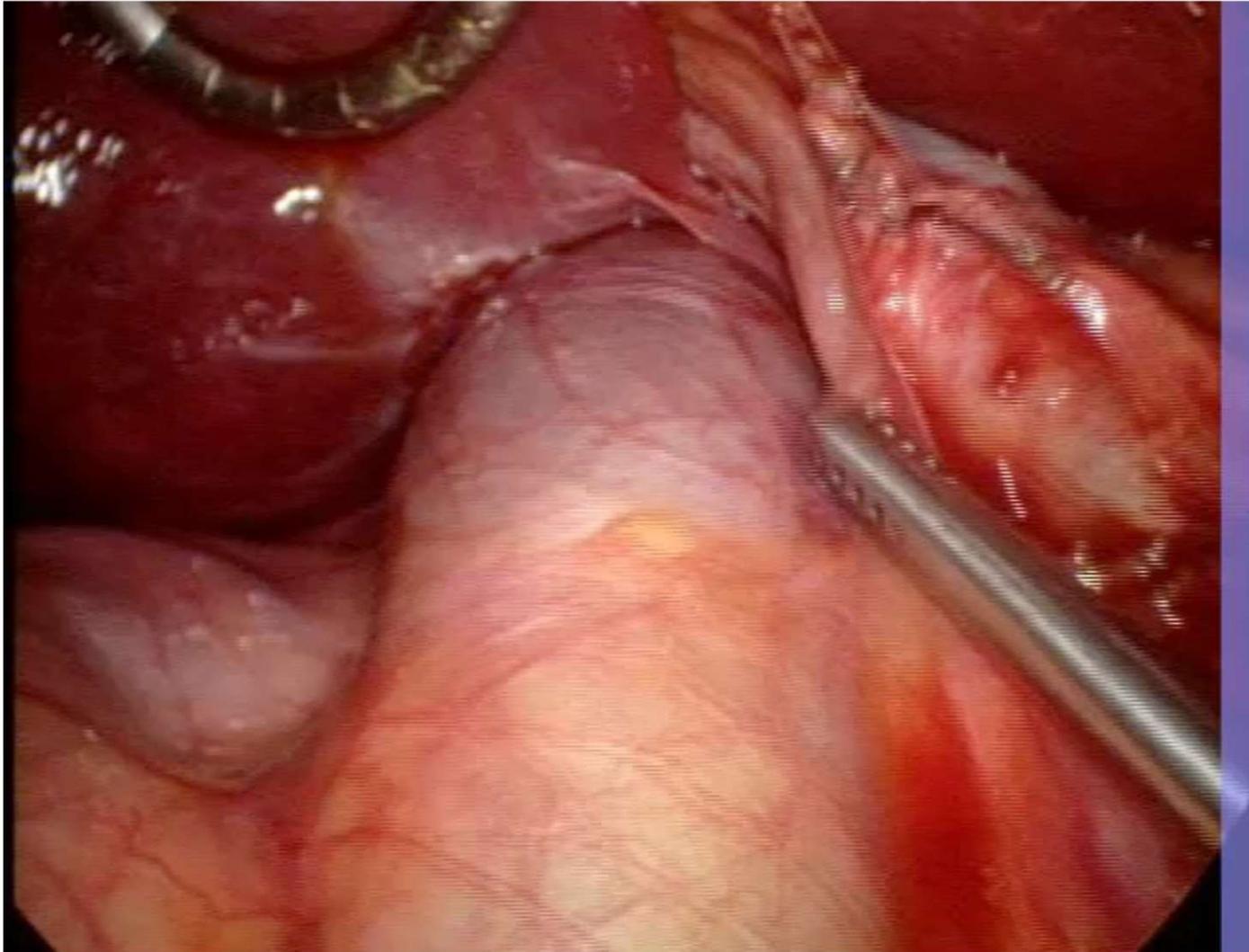
# US intra-operatório



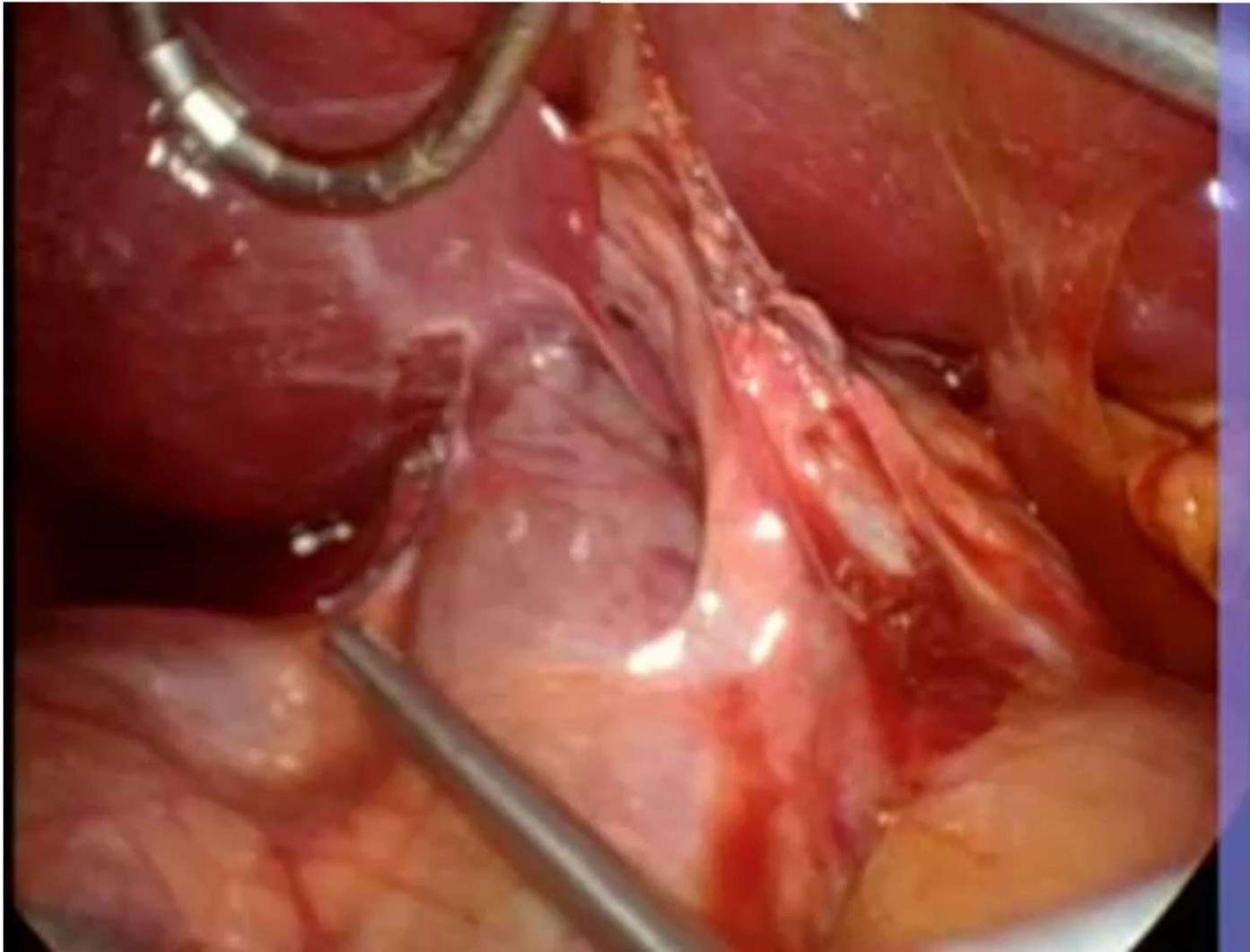




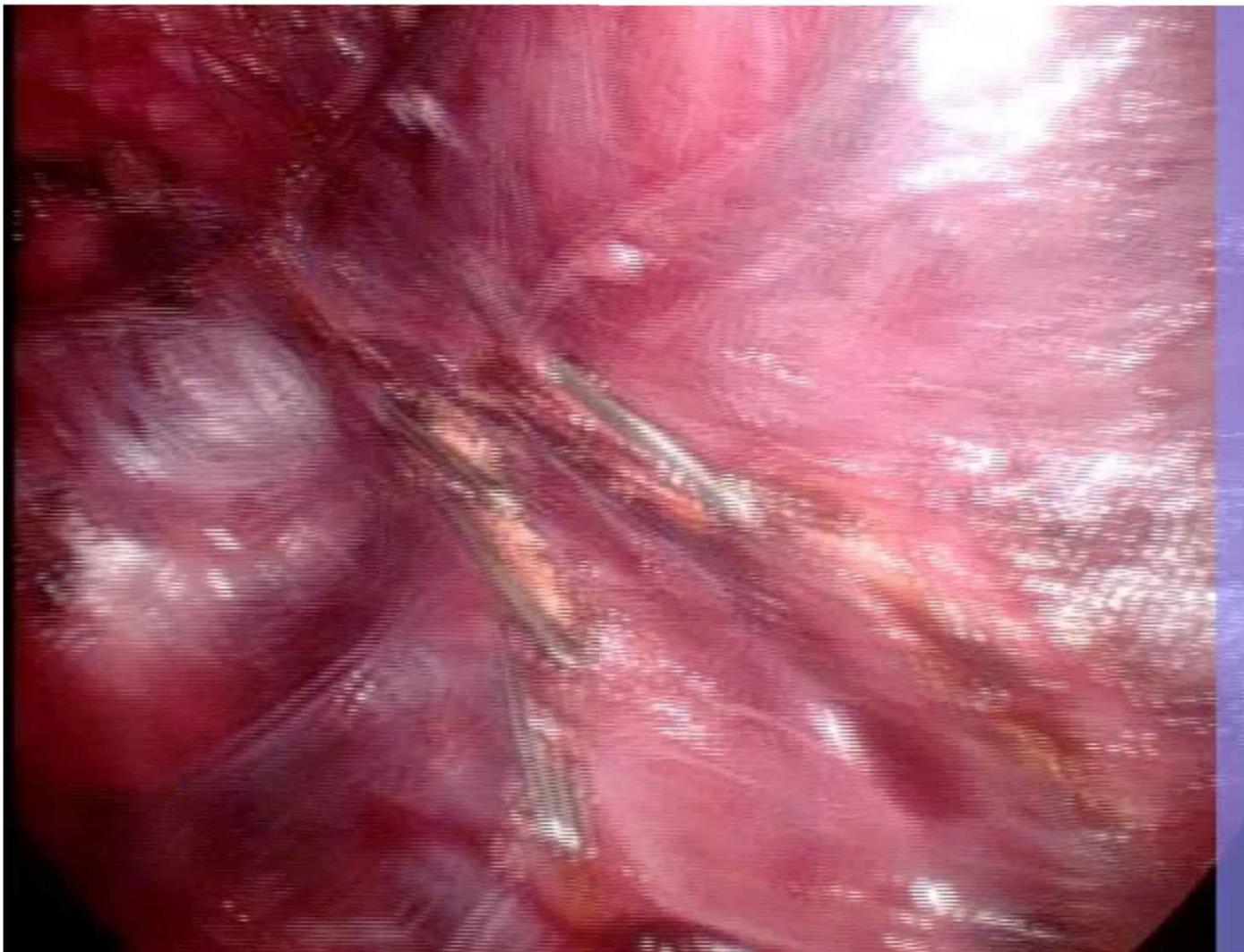
# Hepatectomia direita



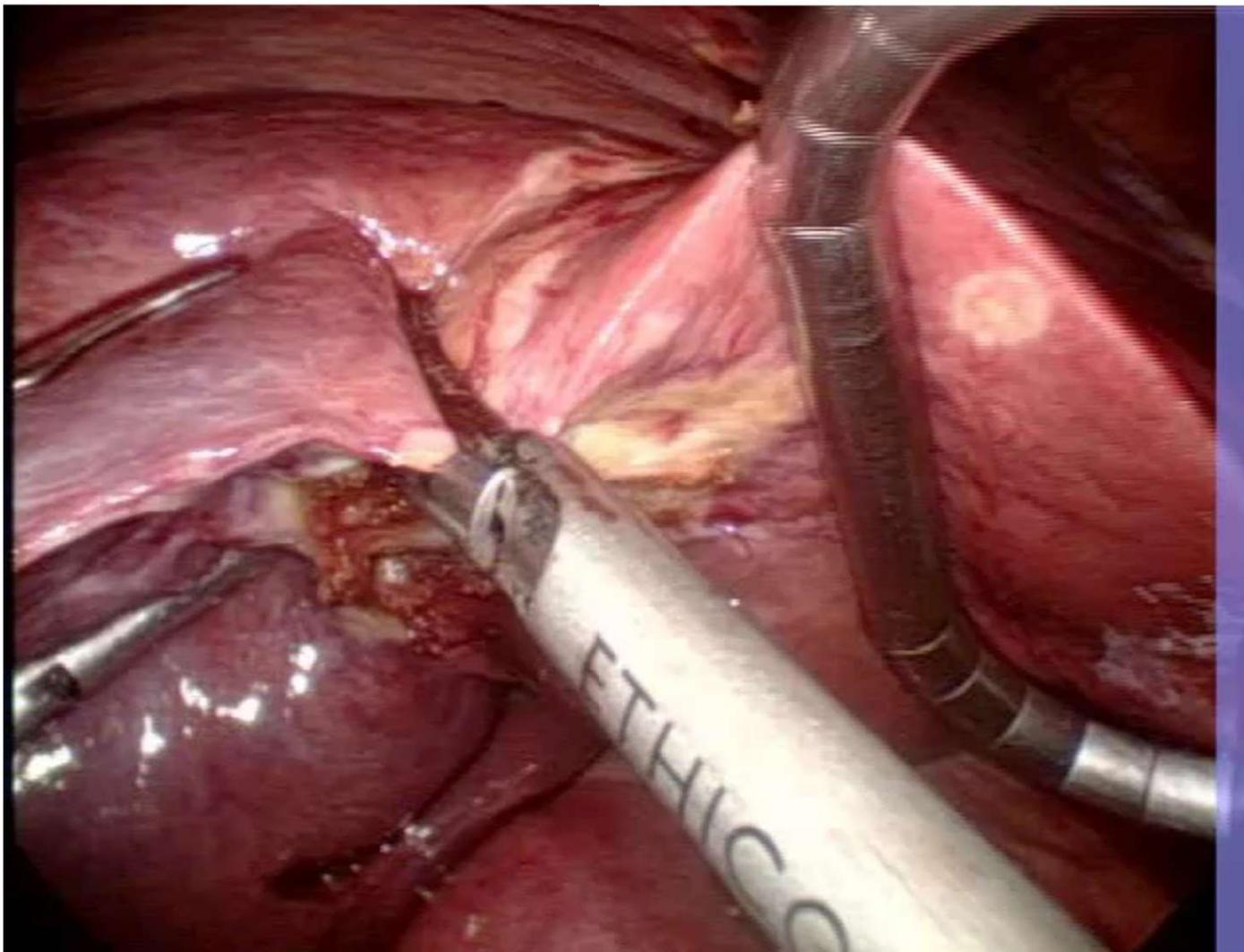
Hilo hepático



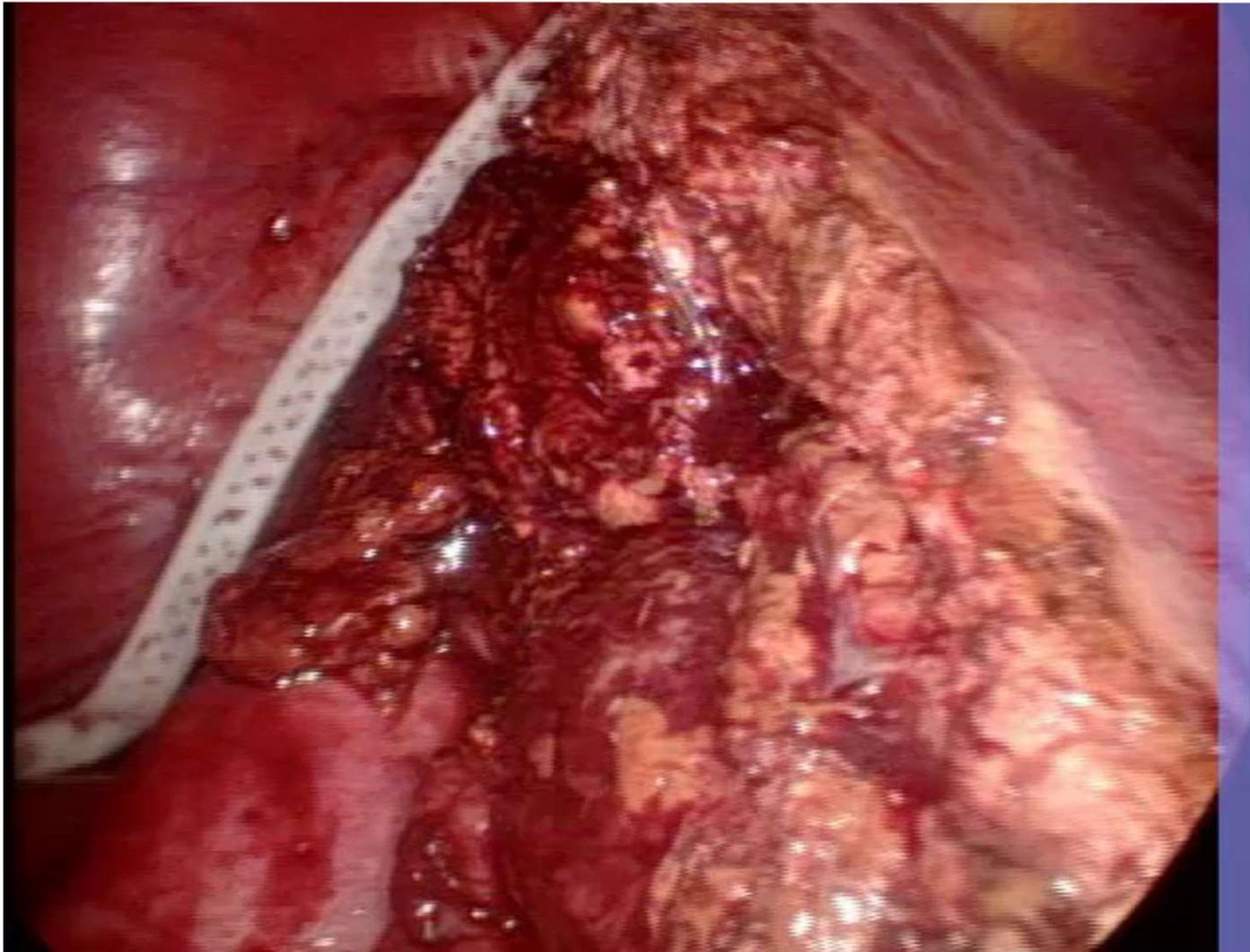
Veia cava inferior



Veia hepática direita



Transecção do parênquima



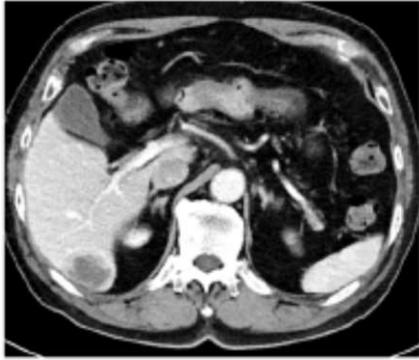
Aspecto final

# Grau de dificuldade

Difficulty of laparoscopic liver resection										
10-level index	1	2	3	4	5	6	7	8	9	10
3-level index	Low			Intermediate			High			
Definition	<ul style="list-style-type: none"> <li>For surgeons starting laparoscopic liver resection</li> <li>For surgeons with experience of &lt;10 cases of laparoscopic liver resection</li> </ul>			<ul style="list-style-type: none"> <li>For surgeons who can consistently perform laparoscopic liver resection in “low difficulty” cases</li> <li>For surgeons with experience of <math>\geq 10</math> and &lt;50 cases of laparoscopic liver resection</li> </ul>			<ul style="list-style-type: none"> <li>For surgeons who can consistently perform laparoscopic liver resection in “intermediate difficulty” cases</li> <li>For surgeons with experience of <math>\geq 50</math> cases of laparoscopic liver resection</li> </ul>			
Landmark Operation										



# Exemplo 1

<b>Patient</b>	78-y-old, male, Ht.167 cm, Wt. 74.2 kg, BMI 26.5. Previous laparotomy: none Past history, none; Ascites, none; Hepatic encephalopathy, none; Varix, none	
<b>Laboratory Data</b>	<b>Tumor</b>	
Albumin: 4.7 mg/dL PT%: 92% T-bilirubin: 0.9 mg/dL Platelet count: $15.5 \times 10^4$ /mL ICG 15R: 29% HBV / HCV: - / -	Liver metastasis Location: Segment 6 Tumor size: 4 cm	
<b>Surgical procedure</b>	Laparoscopic partial liver resection	

<p><b>Location of the tumor</b></p>  <table border="1"> <thead> <tr> <th>Segment</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>S2</td><td>2</td></tr> <tr><td>S3</td><td>1</td></tr> <tr><td>S4</td><td>3</td></tr> <tr><td>S5</td><td>2</td></tr> <tr><td>S6</td><td>2</td></tr> <tr><td>S7</td><td>2</td></tr> <tr><td>S8</td><td>5</td></tr> </tbody> </table>	Segment	Score	S2	2	S3	1	S4	3	S5	2	S6	2	S7	2	S8	5	<p><b>Tumor size</b></p> <table border="1"> <thead> <tr> <th>Tumor size</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>Tumor size &lt; 3 cm</td><td>0</td></tr> <tr><td>Tumor size ≥ 3 cm</td><td>1</td></tr> </tbody> </table> <p><b>Proximity to the major vessel</b></p> <p>Proximity to the major vessel: <b>Score</b></p> <p>no — 0</p> <p>yes — 1</p> <p><small>*On several branches of Glisson's vein, the major hepatic vein, and the inferior vena cava</small></p>	Tumor size	Score	Tumor size < 3 cm	0	Tumor size ≥ 3 cm	1
Segment	Score																						
S2	2																						
S3	1																						
S4	3																						
S5	2																						
S6	2																						
S7	2																						
S8	5																						
Tumor size	Score																						
Tumor size < 3 cm	0																						
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<p><b>Extent of hepatic resection</b></p> <table border="1"> <thead> <tr> <th>Procedure</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>Hr0 (partial resection)</td><td>0</td></tr> <tr><td>Hr-LLR (Left lateral sectionectomy)</td><td>2</td></tr> <tr><td>Hr-S (segmentectomy)</td><td>3</td></tr> <tr><td>Hr-1, 2 (not less than a sectionectomy)</td><td>4</td></tr> </tbody> </table>	Procedure	Score	Hr0 (partial resection)	0	Hr-LLR (Left lateral sectionectomy)	2	Hr-S (segmentectomy)	3	Hr-1, 2 (not less than a sectionectomy)	4	<p><b>Liver function</b></p> <table border="1"> <thead> <tr> <th>Child Pugh A</th> <th>Score</th> </tr> </thead> <tbody> <tr><td>Child Pugh A</td><td>0</td></tr> <tr><td>Child Pugh B</td><td>1</td></tr> </tbody> </table>	Child Pugh A	Score	Child Pugh A	0	Child Pugh B	1						
Procedure	Score																						
Hr0 (partial resection)	0																						
Hr-LLR (Left lateral sectionectomy)	2																						
Hr-S (segmentectomy)	3																						
Hr-1, 2 (not less than a sectionectomy)	4																						
Child Pugh A	Score																						
Child Pugh A	0																						
Child Pugh B	1																						

$2+0+1+0+0 = 3$

<b>10 index</b>	1	2	3	4	5	6	7	8	9	10
<b>3 index</b>	Low		Intermediate			High				

# Exemplo 2

**Patient** 81-y-old, male, Ht 161 cm, Wt 52 kg, BMI 20; previous laparotomy, none; past history: brain infarction; Ascites, none; Hepatic encephalopathy, none; Varix: none

**Laboratory Data**  
 Albumin: 4.1 mg/dL  
 PT%: 105%  
 T-bilirubin: 0.5 mg/dL  
 Platelet count:  $16.6 \times 10^4$ /mL  
 ICG 15R: 18%  
 HBV / HCV: - / -

**Tumor**  
 Hepatocellular carcinoma  
 Location: Segment 4  
 Tumor size: 6.3 cm



**Surgical procedure** Laparoscopic left internal sectionectomy

**Location of the tumor**



Segment	Score
S2	2
S3	1
S4	3
S5	3
S6	2
S7	5
S8	5

**Extent of hepatic resection**

Resection	Score
Hr0 (partial resection)	0
Hr-LLR (Left lateral sectionectomy)	2
Hr-S (segmentectomy)	3
Hr-I, 2 (not less than a sectionectomy)	4

**Tumor size**

Tumor size	Score
Tumor size < 3 cm	0
Tumor size ≥ 3 cm	1

**Proximity to the major vessel**

Proximity to the major vessel*	Score
no	0
yes	1

\*The second branch of Glisson's vein, the major hepatic vein, and the inferior vena cava

**Liver function**

Child Pugh A	Score
Child Pugh A	0
Child Pugh B	1

→ **3+4+1+0+0 = 8**

<b>10 index</b>	1	2	3	4	5	6	7	8	9	10
<b>3 index</b>	Low			Intermediate			High			



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