



LESÕES IATROGÊNICAS DAS VIAS BILIARES

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Caso clínico

AKLM, feminino, 29 anos

Colelitíase

Colecistectomia VL

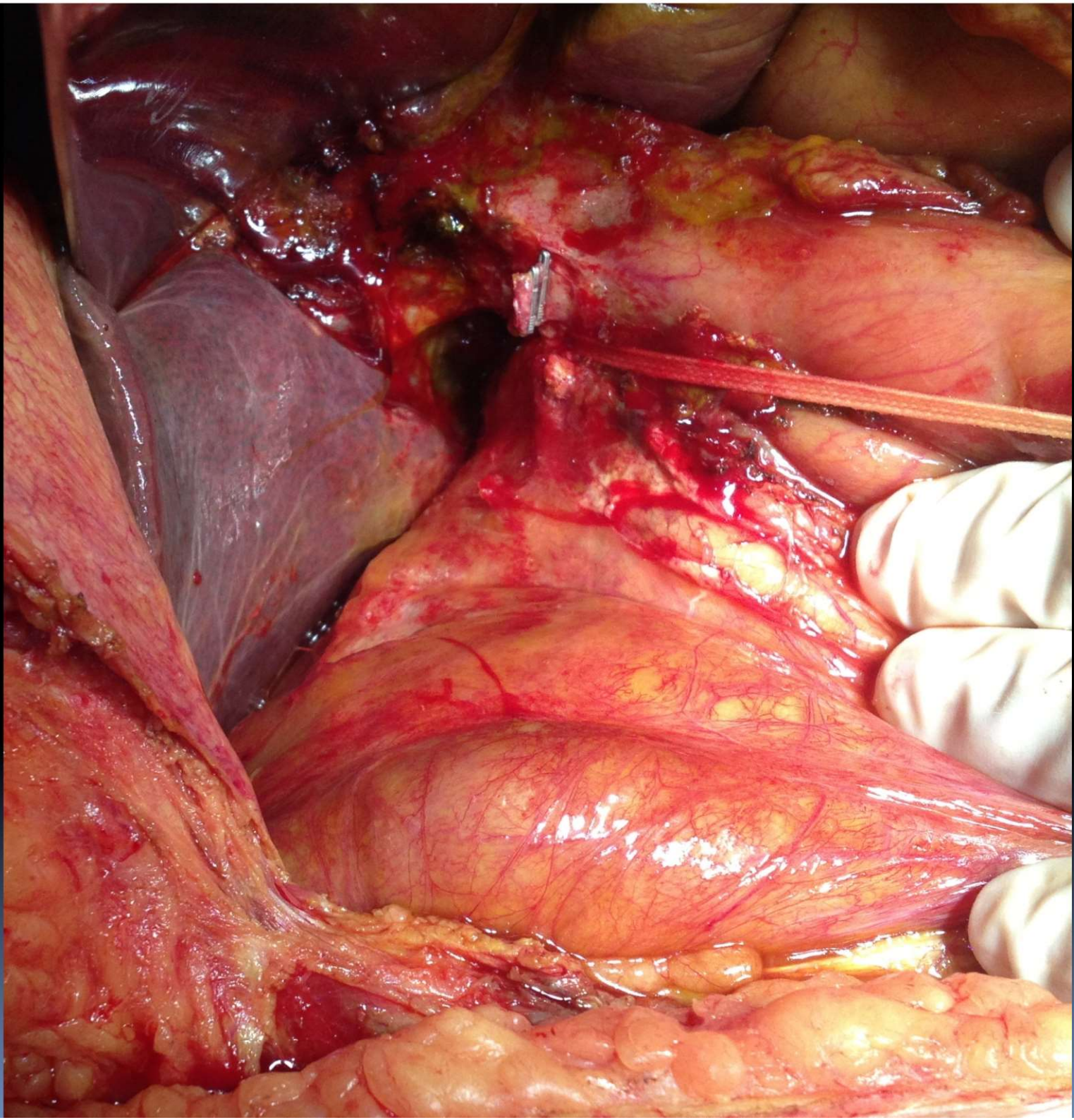
Icterícia no 2º DPO

Médico: cálculo residual

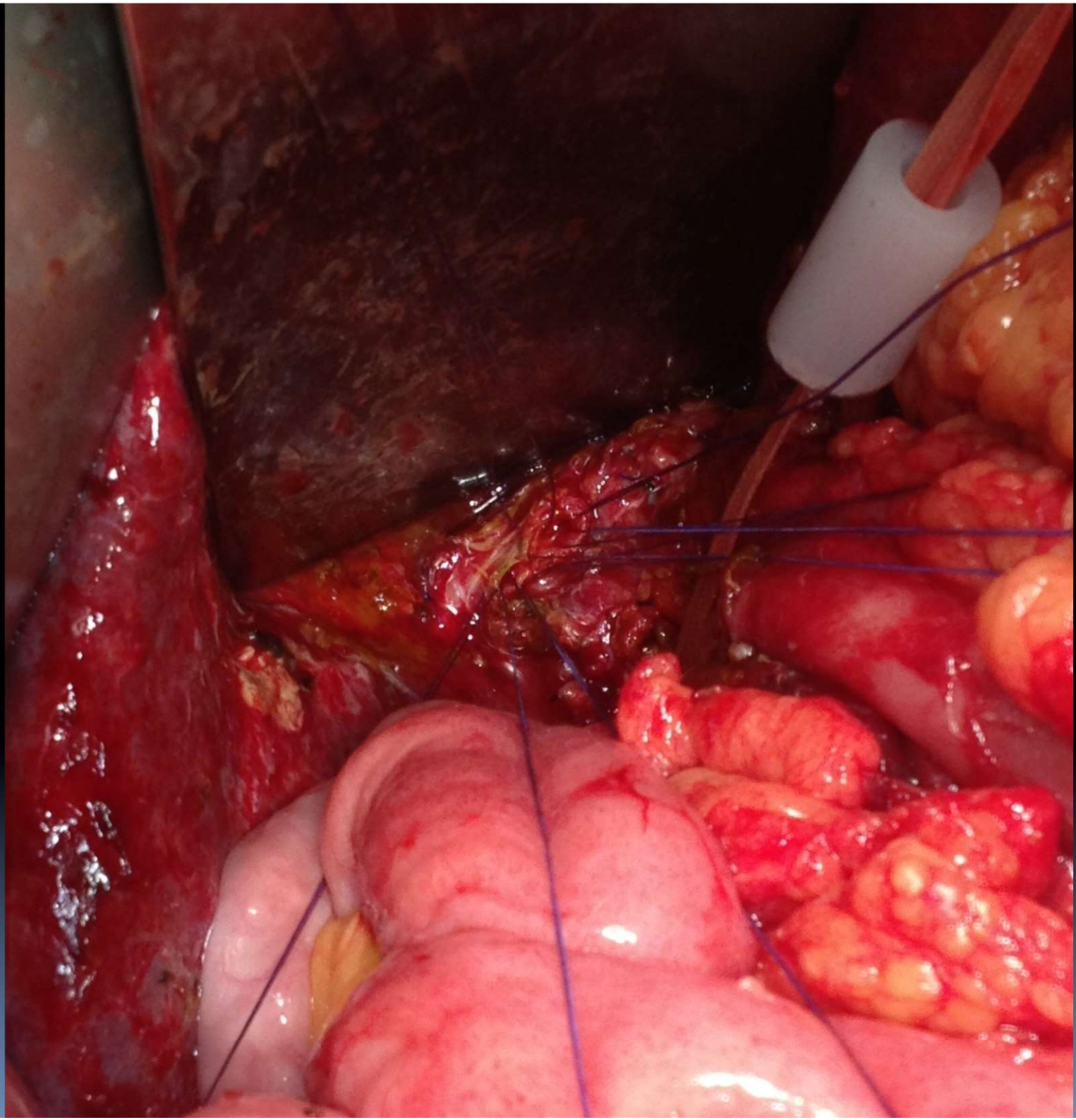
CPRE

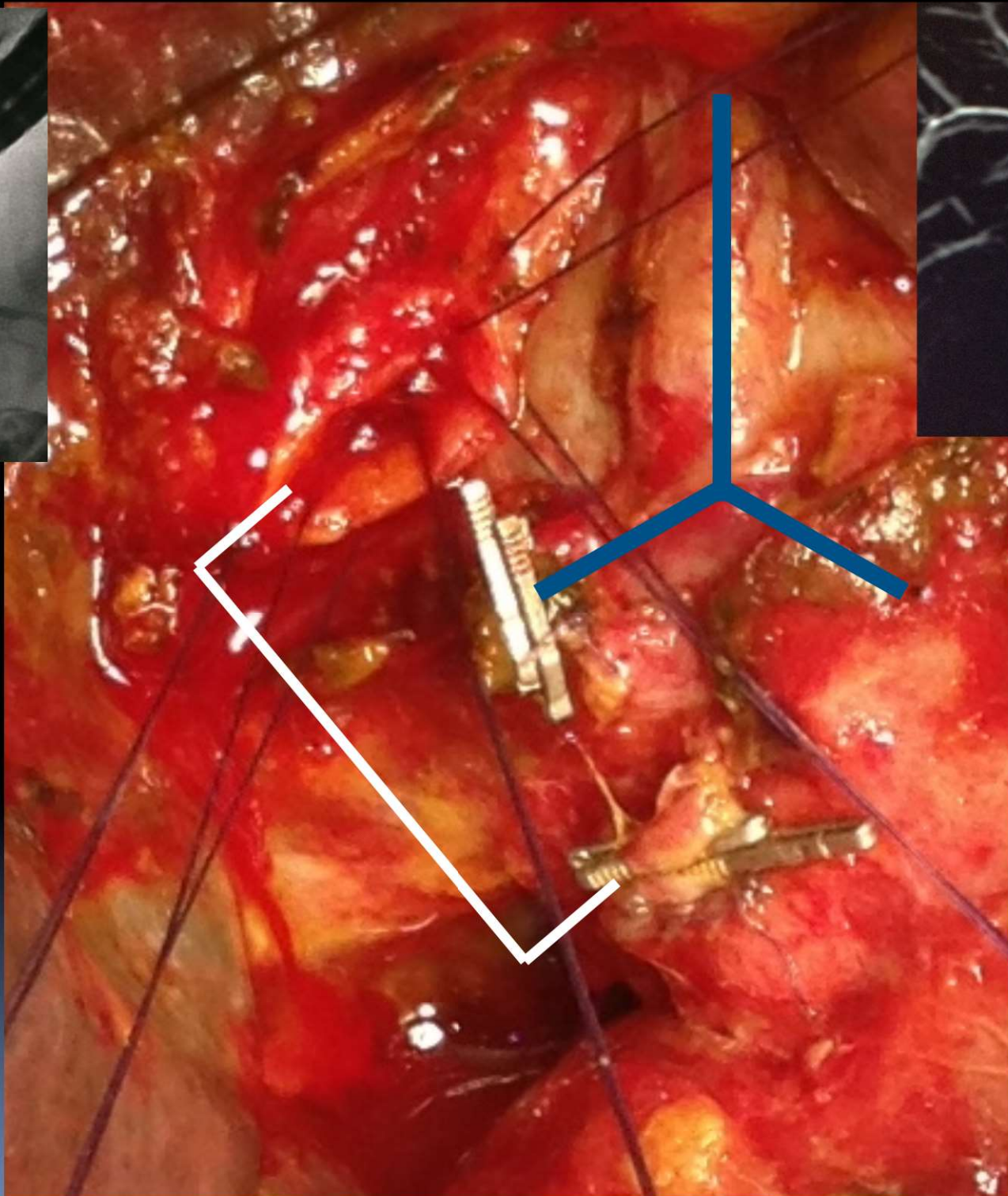


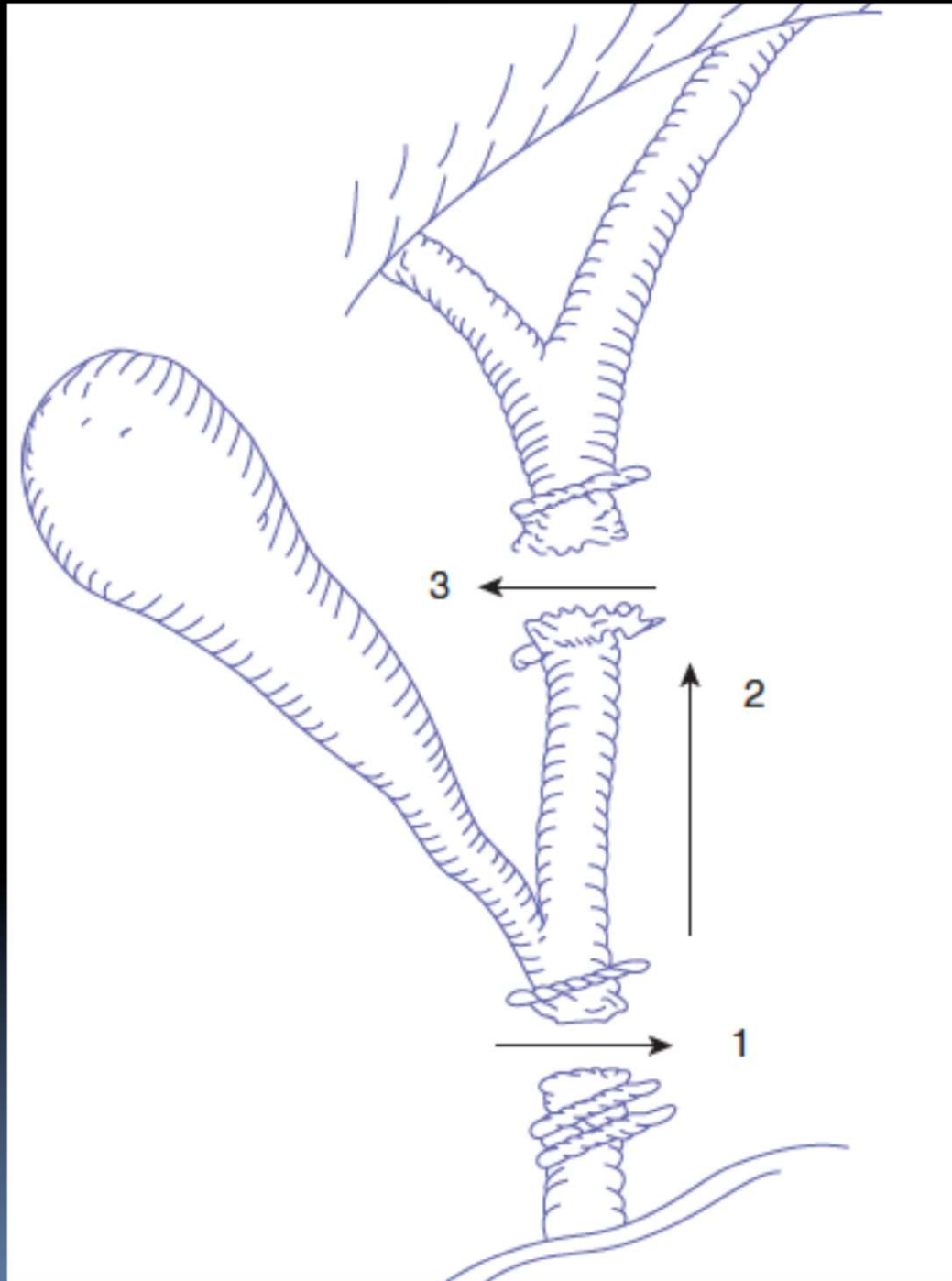


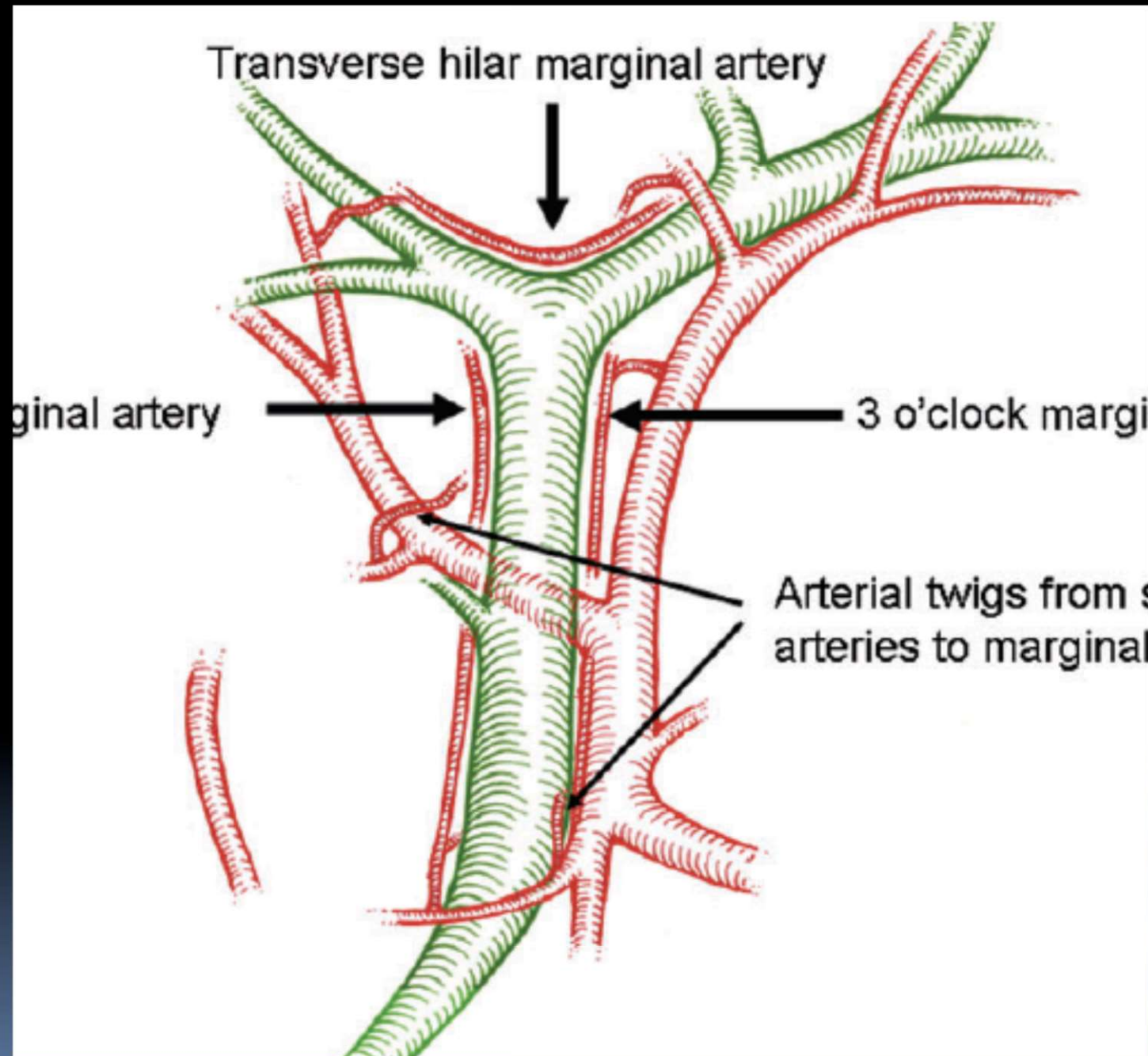


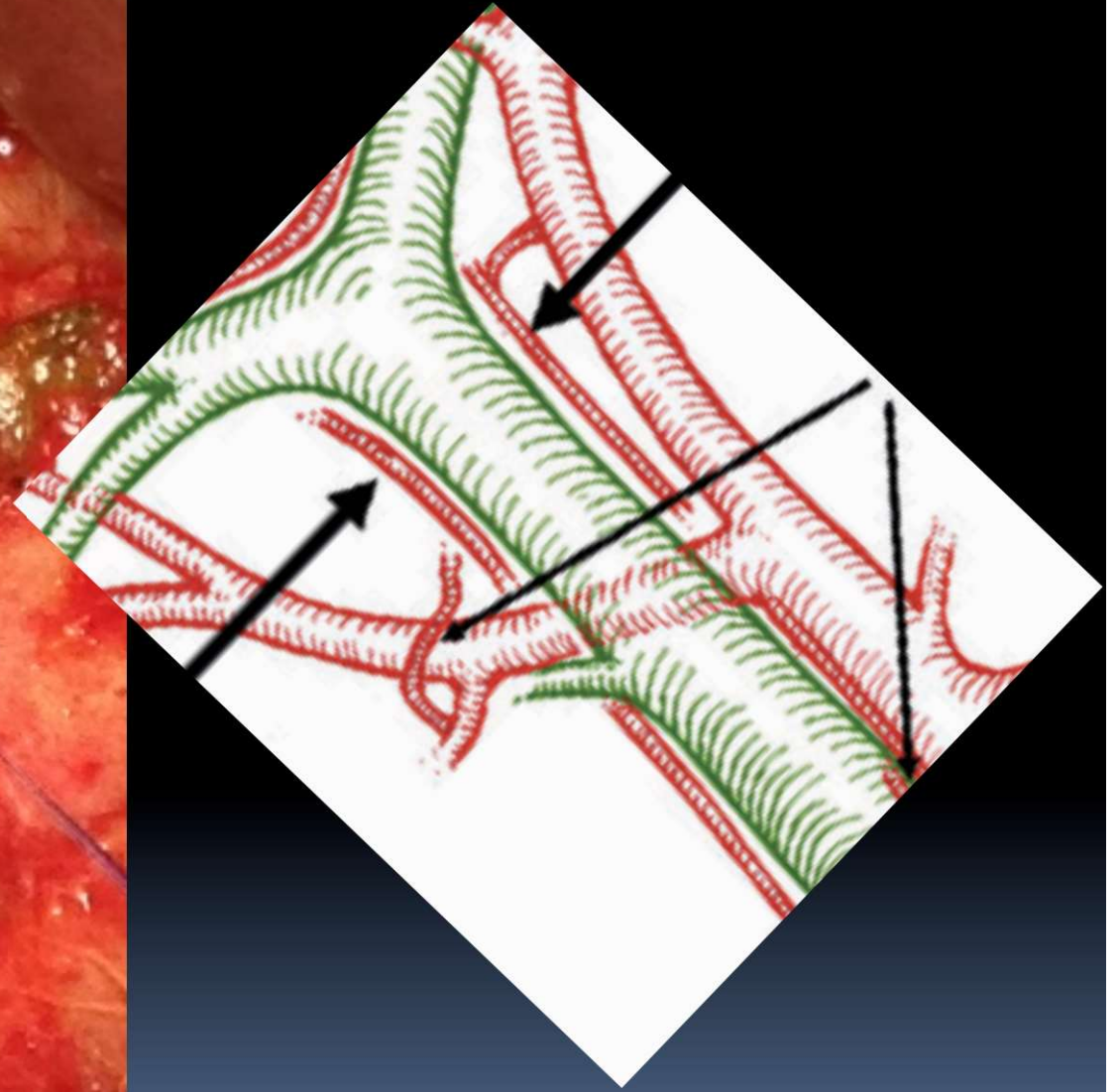
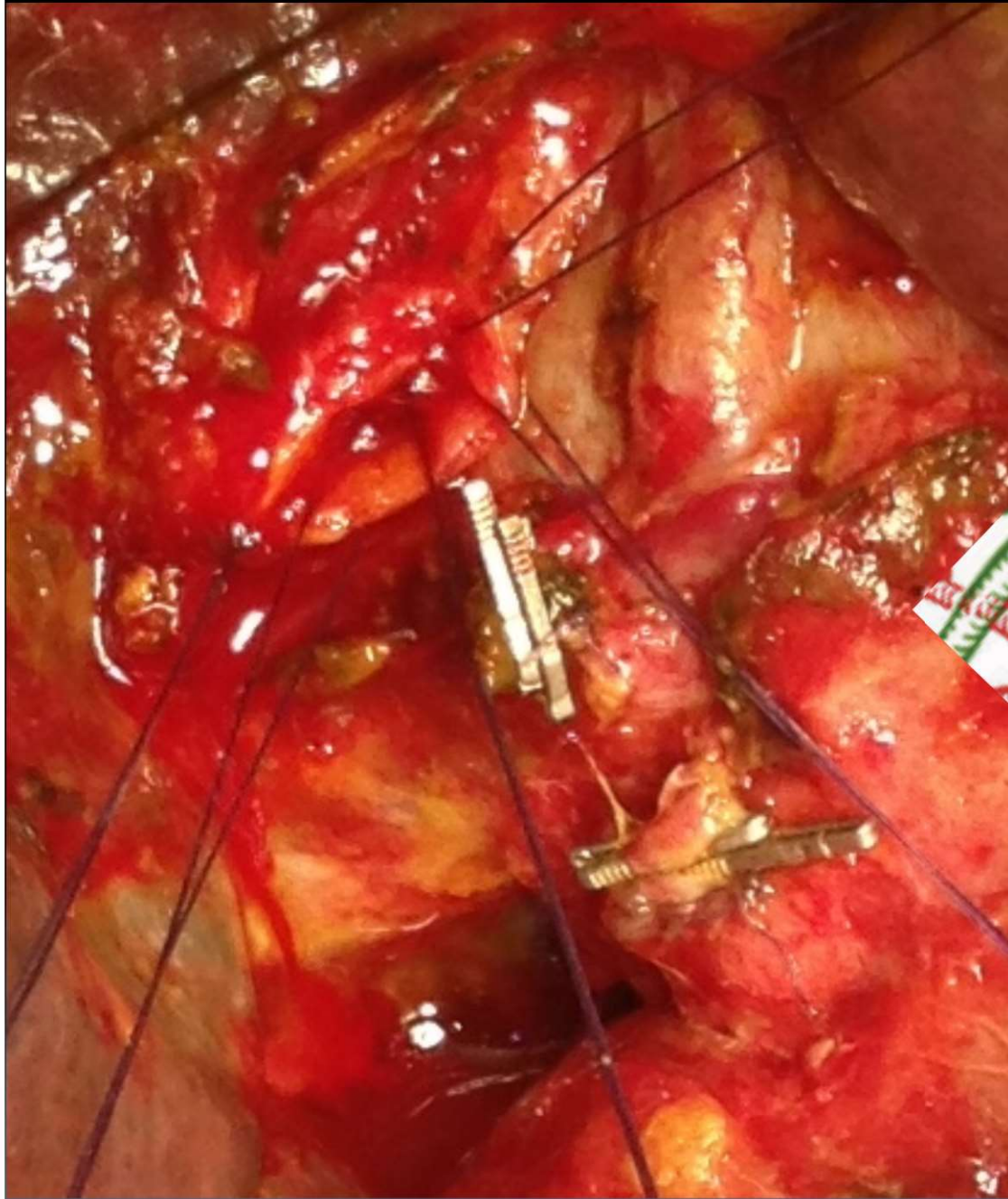










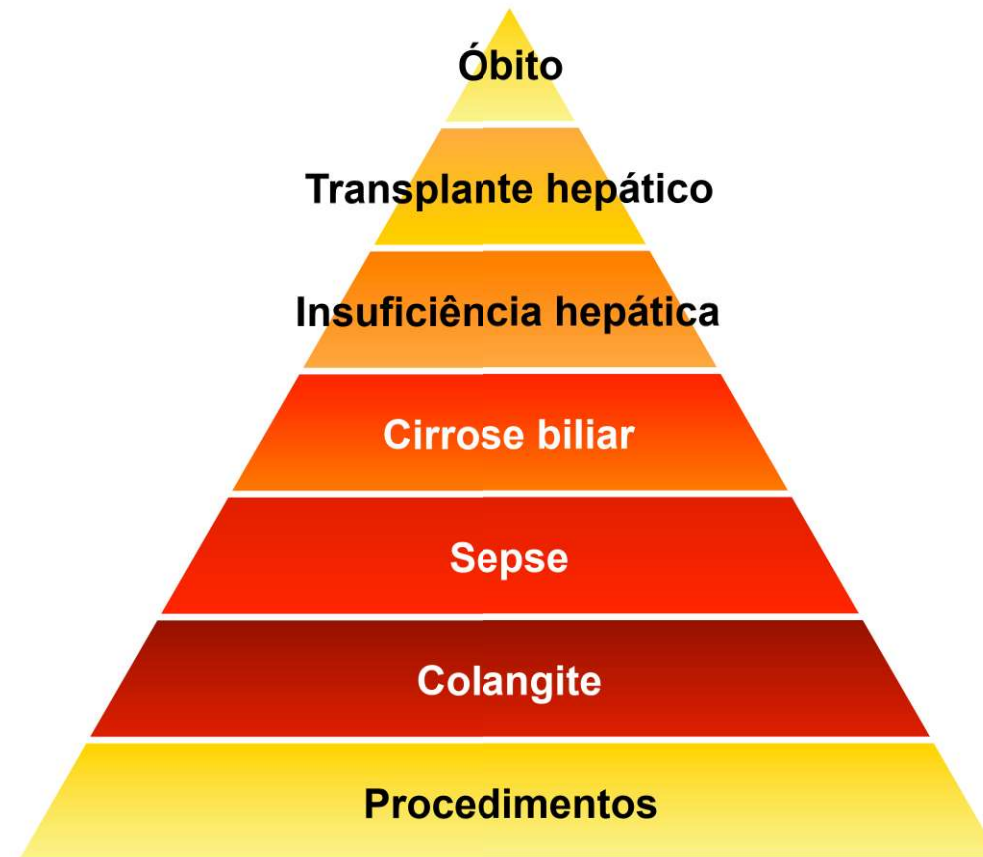




Lesão iatrogênica da via biliar

- ☐ Tragédia para o paciente
- ☐ Desastre para o cirurgião
- ☐ Prejuízo econômico
- ☐ Sério problema para seguros de saúde
- ☐ Estressante para a família do paciente
- ☐ Conseqüências de aspecto legal e jurídico

Lesão iatrogênica da via biliar



Kaman L et al – ANZ J Surg 76: 788-791, 2006



... e o doutor falou que seria uma cirurgia simples, de 20 minutos e que teria alta em menos de 24 horas, sem cortes na barriga, que poderia dirigir após 3 dias...



Melhor evitar!

Lesões biliares em colecistectomia

Table 1. Comparative analysis of the two groups of patients who underwent laparoscopic and open cholecystectomy

Clinical characteristics	LC (n = 2079)	OC (n = 1558)	P value
Sex			
Female	1 539	1 143	0.669
Male	540	415	
Age (years)			
(Median + IR)	54 (31–72)	58 (34–71)	0.418
Type of operation			
Elective	2010	1477	0.004
Urgent	69	81	
Operative time (min)			
Median (IR)	75 (45–85)	75 (30–75)	0.441
Postoperative hospital stay (days)			
Median (IR)	2 (2–3)	4 (3–5)	0.001
Bile leakages unrelated to bile duct injury	6	4	0.856
Bile duct injuries	13	6	0.317
Time of BDI recognition			
Intraoperative	9	1	0.033
Postoperative	4	5	
Bismuth's classification of BDI			
Type 1	1	1	0.578
Type 2	4	3	0.157
Type 3	6	2	0.622
Type 4	2	0	0.337

LC, laparoscopic cholecystectomy; OC, open cholecystectomy; BDI, bile duct injury; IR, interquartile range

Lesões biliares em colecistectomia

		Lesões maiores		Fístula biliar		Total		
	Pacientes	N	%	N	%	N	%	Var. (%)
Convencional	25.544	81	0,32	106	0,41	187	0,70	(0,00-2,46)
Laparoscópica	124.433	650	0,52	415	0,33	1.060	0,85	(0,20-3,40)

Table 7. Incidence of biliary tract injury during laparoscopic cholecystectomy in various multicenter European surveys

Country	Reference	Year of publication	No. of operations	Incidence of injury (%)
Belgium	37	1992	3,244	0.50
France	34	1992	3,606	0.78
France	11	1992	6,512	0.44
Holland	14	1993	6,076	0.86
France	7	1993	3,673	0.60
Austria	30	1993	7,351	0.50
Holland	15	1994	2,932	1.1
Switzerland	31	1994	3,722	0.60
Italy	9	1994	6,865	0.26
Spain	38	1994	2,342	0.28
Norway	32	1995	2,612	0.61

Table 1. Annual rate of laparoscopic bile duct injury (BDI) in Japan

Year	1990–2001	2002	2003	2004	2005	2006	2007
BDI rate (%)	0.66 (mean)	0.79	0.77	0.66	0.77	0.65	0.58

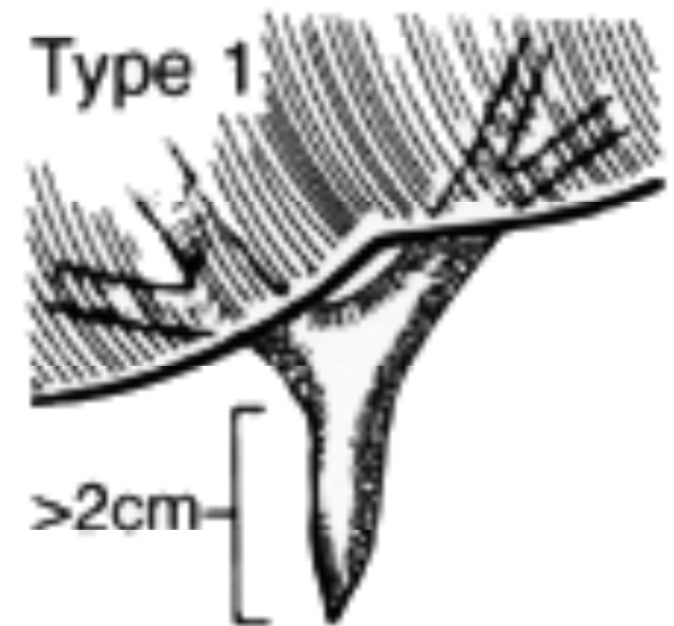
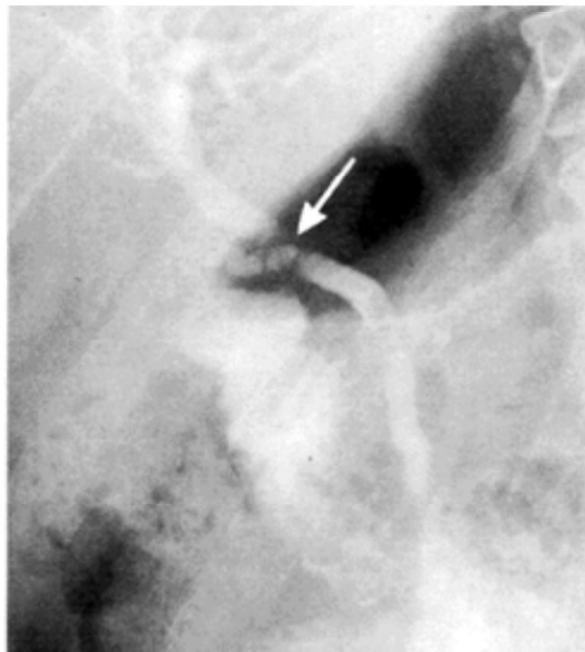
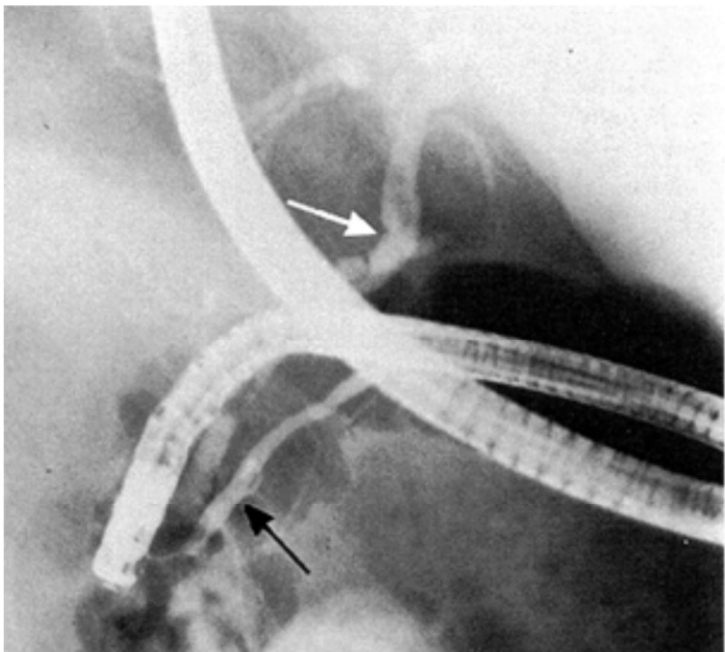


Em termos numéricos, as consequências da lesão da via biliar após colecistectomia, são mais prevalentes que aquelas decorrentes da hepatectomia por neoplasia de fígado.

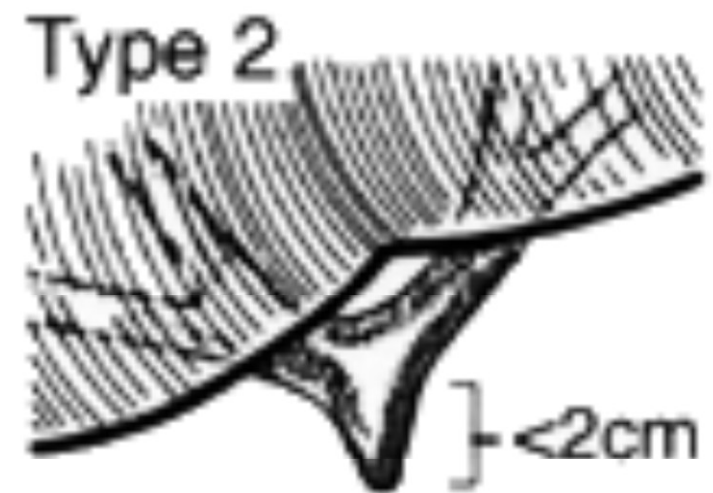
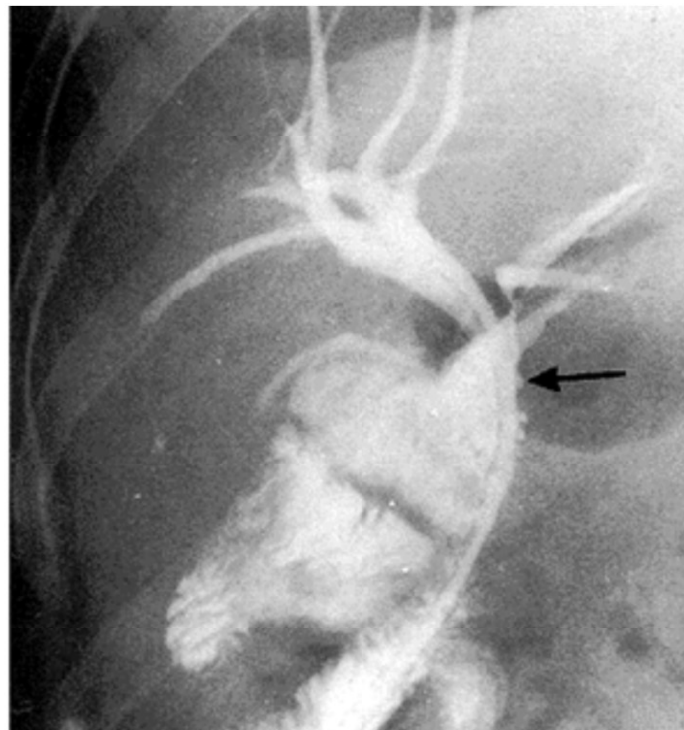
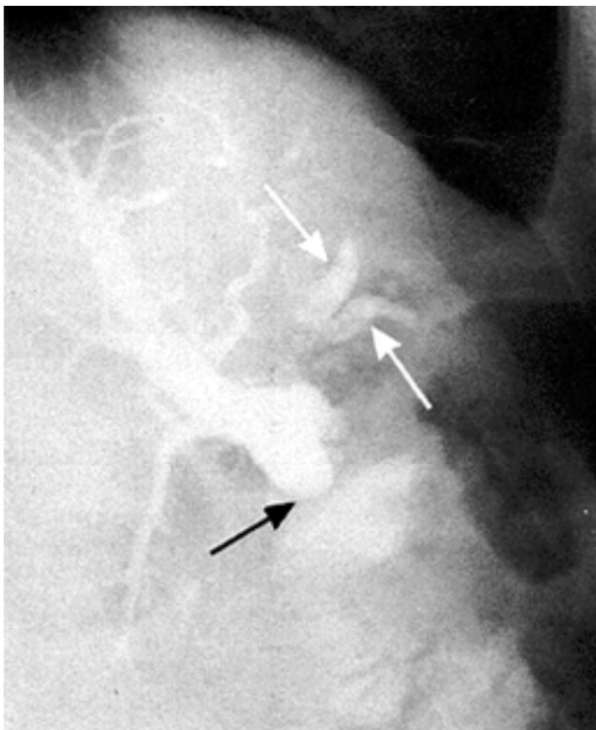
Classificação de Bismuth



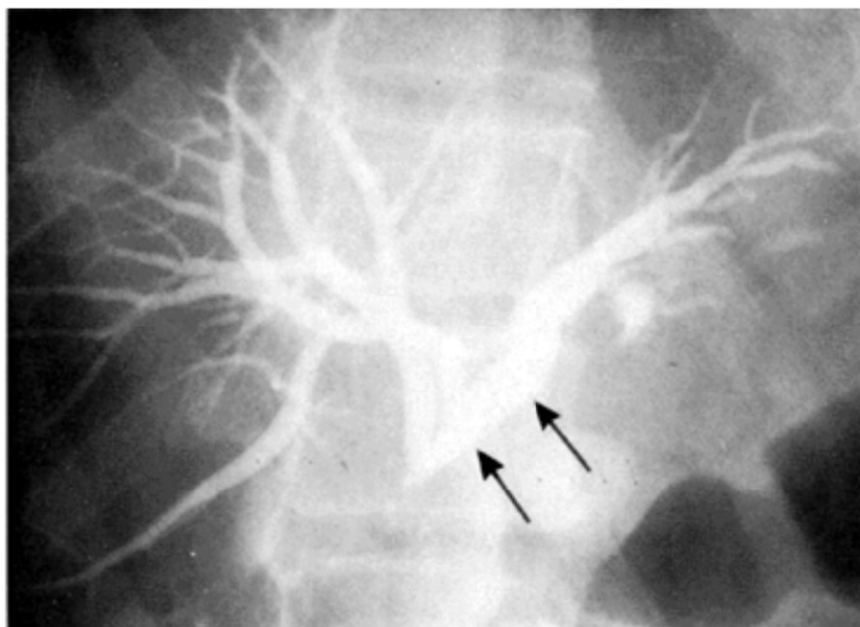
❑ Tipo I – Lesão de ducto hepático comum baixo com ducto hepático remanescente > 2 cm



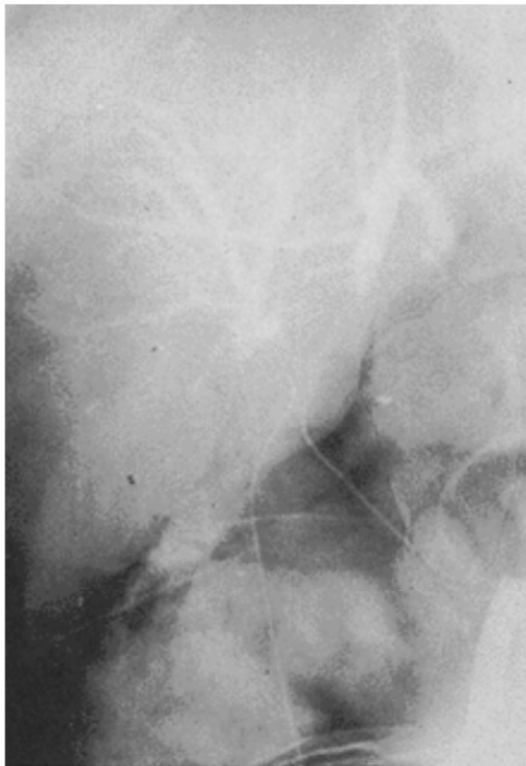
□ Tipo II – Lesão de ducto hepático comum médio com ducto hepático remanescente < 2 cm



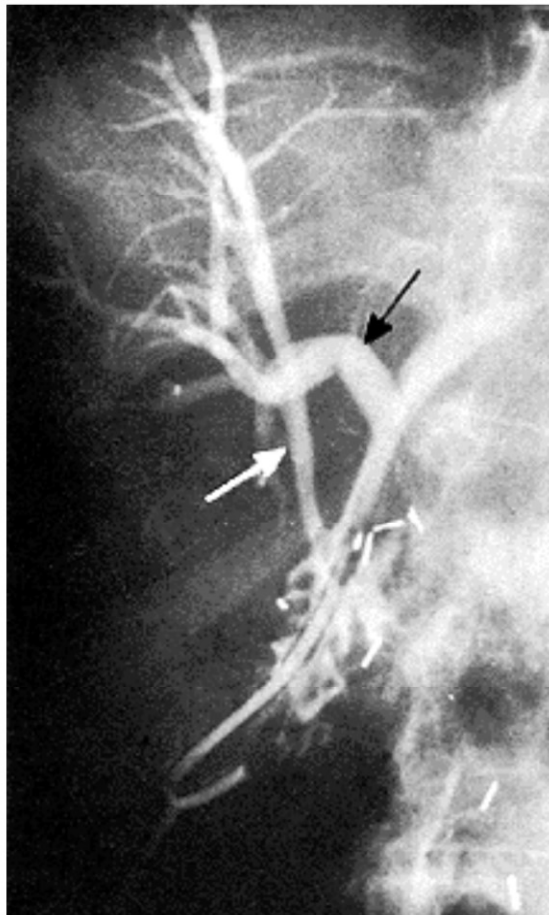
**□ Tipo III – Lesão hilar sem ducto hepático comum residual.
Confluência hilar intacta.**



❑ Tipo IV – Destruição da confluência hilar. Ductos direito e esquerdo separados.



❑ **Tipo V – Envolvimento de ducto sectorial direito aberrante isolado ou incluindo o ducto comum.**



Classificação de Strasberg



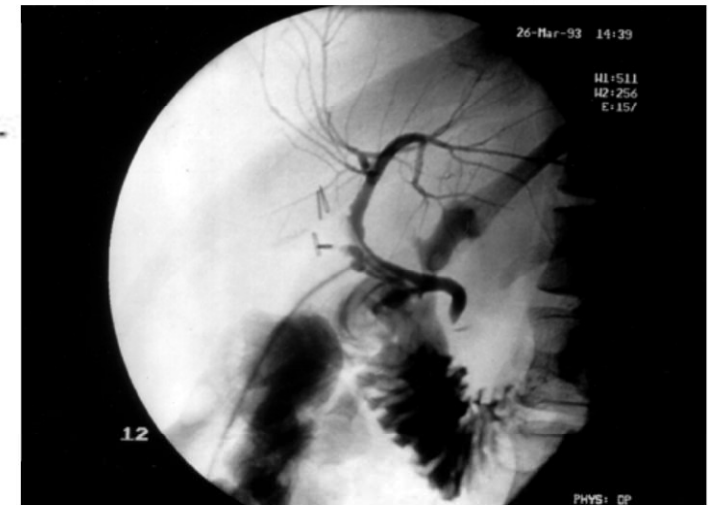
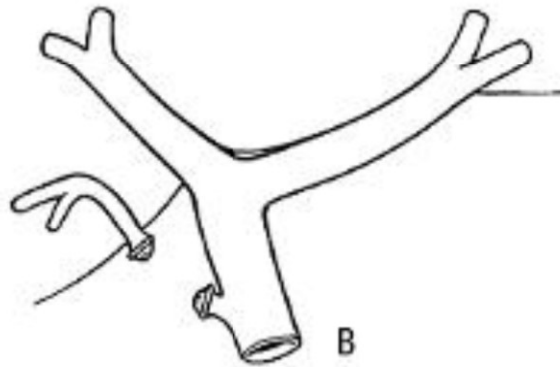
Tipo A

Vazamento biliar de um ducto menor, ainda em continuidade com o ducto biliar comum



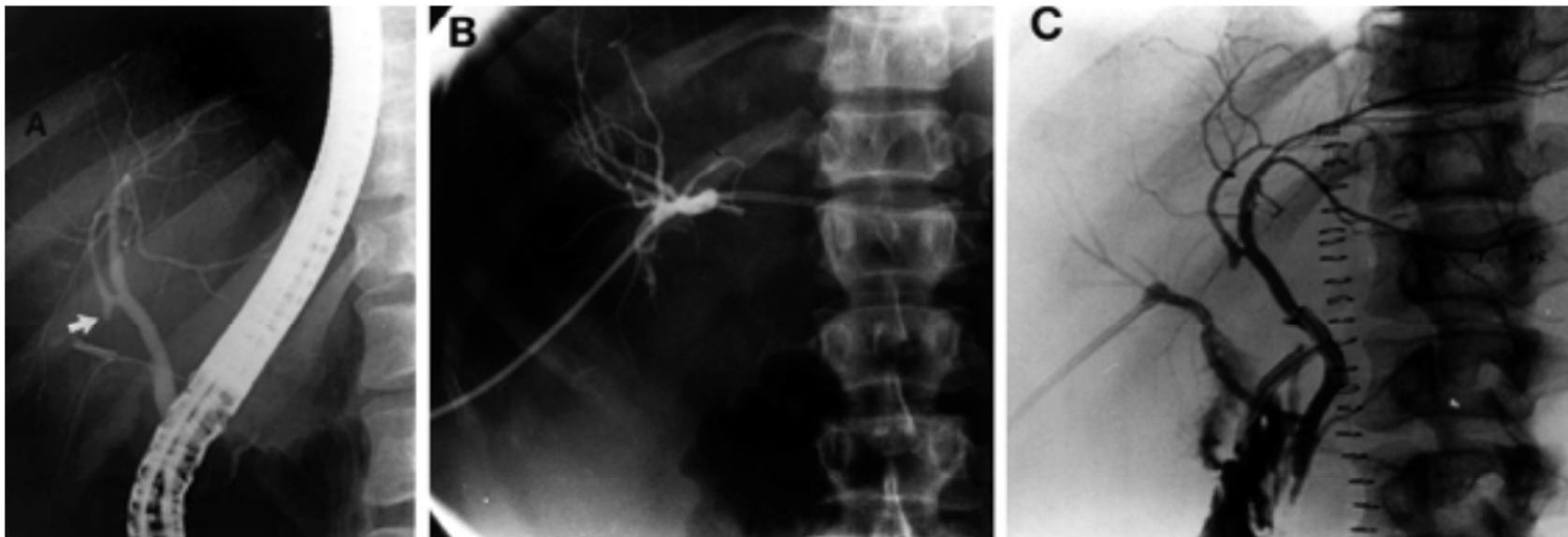
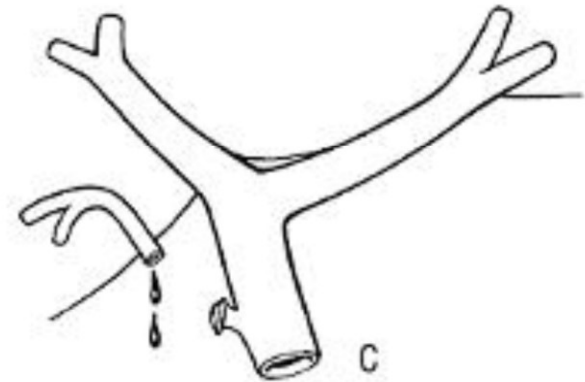
Tipo B

Oclusão de parte da árvore biliar



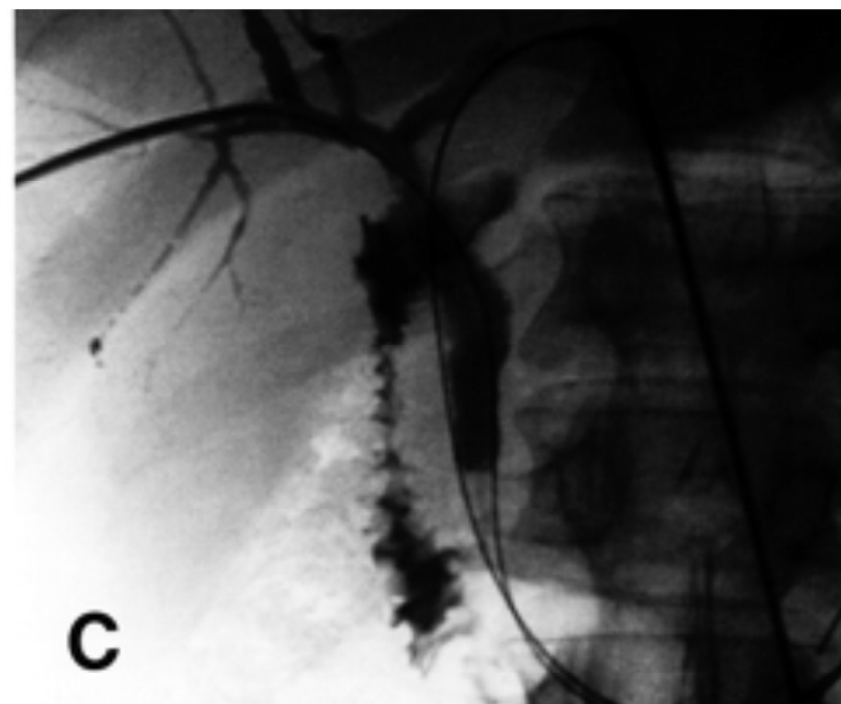
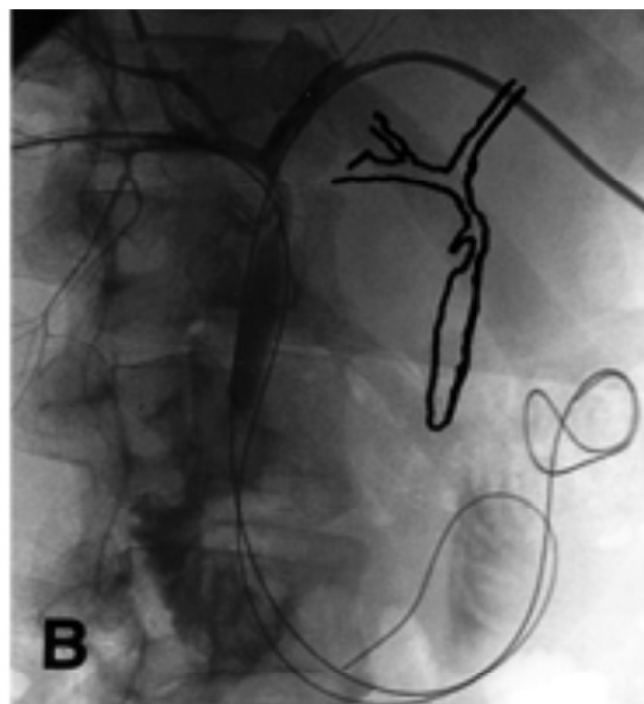
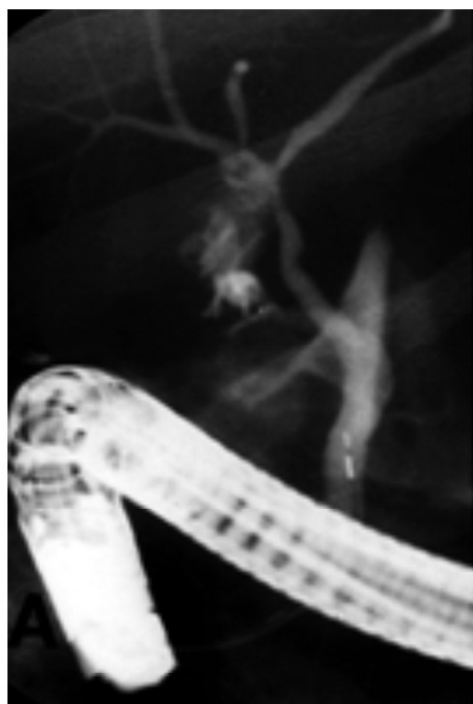
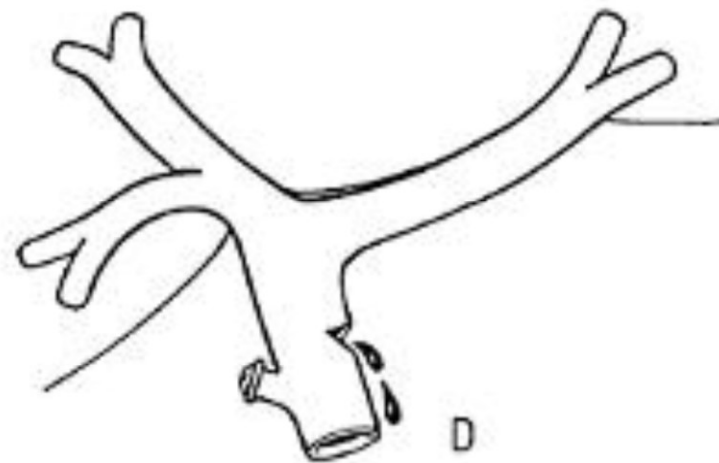
Tipo C

Vazamento biliar de ducto que não está em comunicação com o ducto biliar comum.



Tipo D

Lesão lateral do ducto biliar extra-hepático.





Tipo E

Semelhante à de Bismuth (E1 – E5)

Fatores de risco para lesão

- ❑ Treinamento e experiência

- ❑ Fatores de risco locais

 - Colecistite aguda

 - Colecistite crônica

 - Sangramento (tentativa de controle)

 - Gordura na região portal

 - Obesidade

- ❑ Variações anatômicas

- ❑ Técnica imprópria

- ❑ Equipamento

REVIEW ARTICLE

An analytical review of vasculobiliary injury in laparoscopic and open cholecystectomy

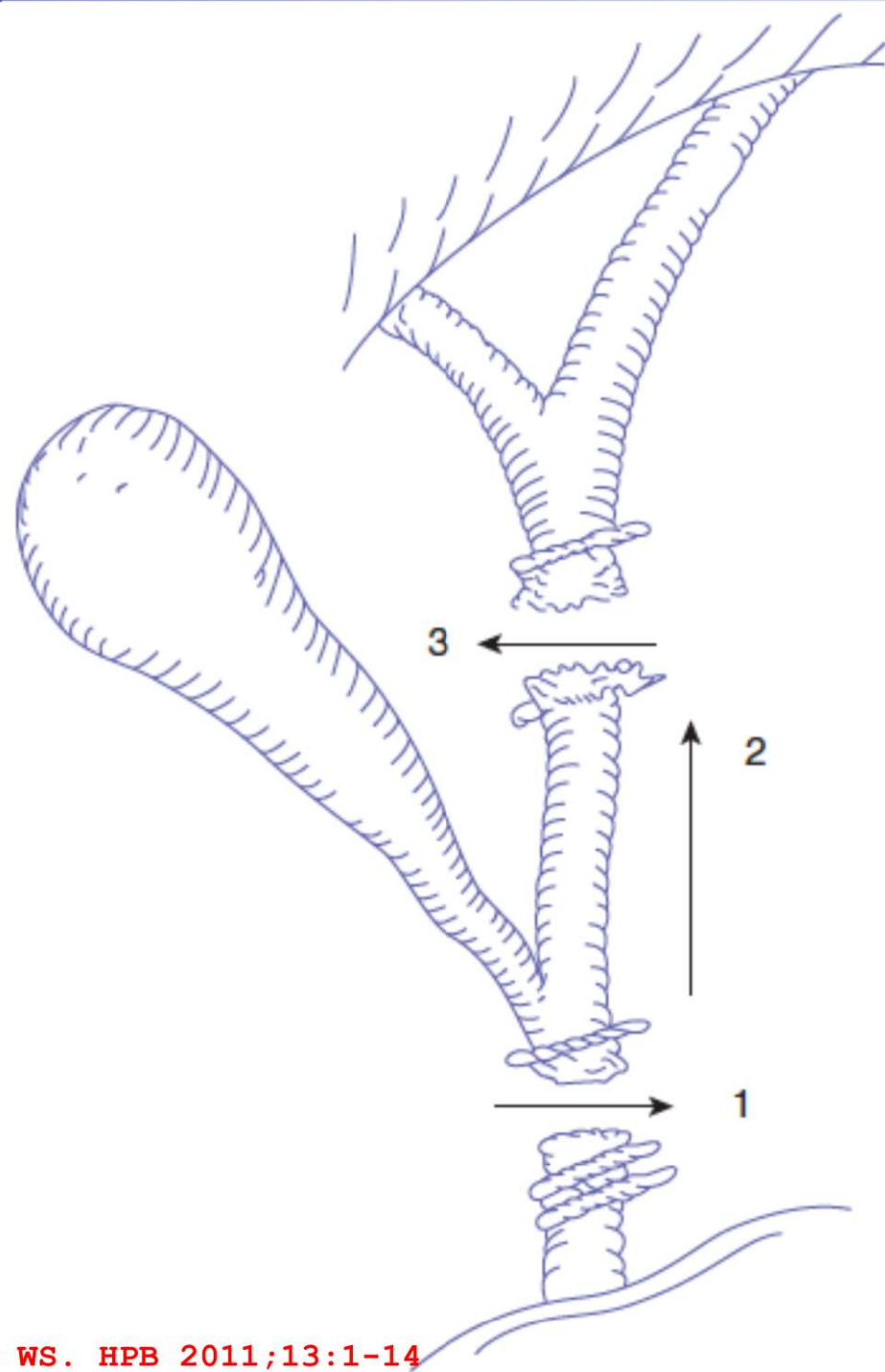
Steven M. Strasberg¹ and W. Scott Helton²

¹Section of Hepato-Pancreato-Biliary Surgery, Department of Surgery, Washington University in Saint Louis, St Louis, MO, USA and ²Department of Surgery, Hospital of St Raphael, New Haven, CT, USA

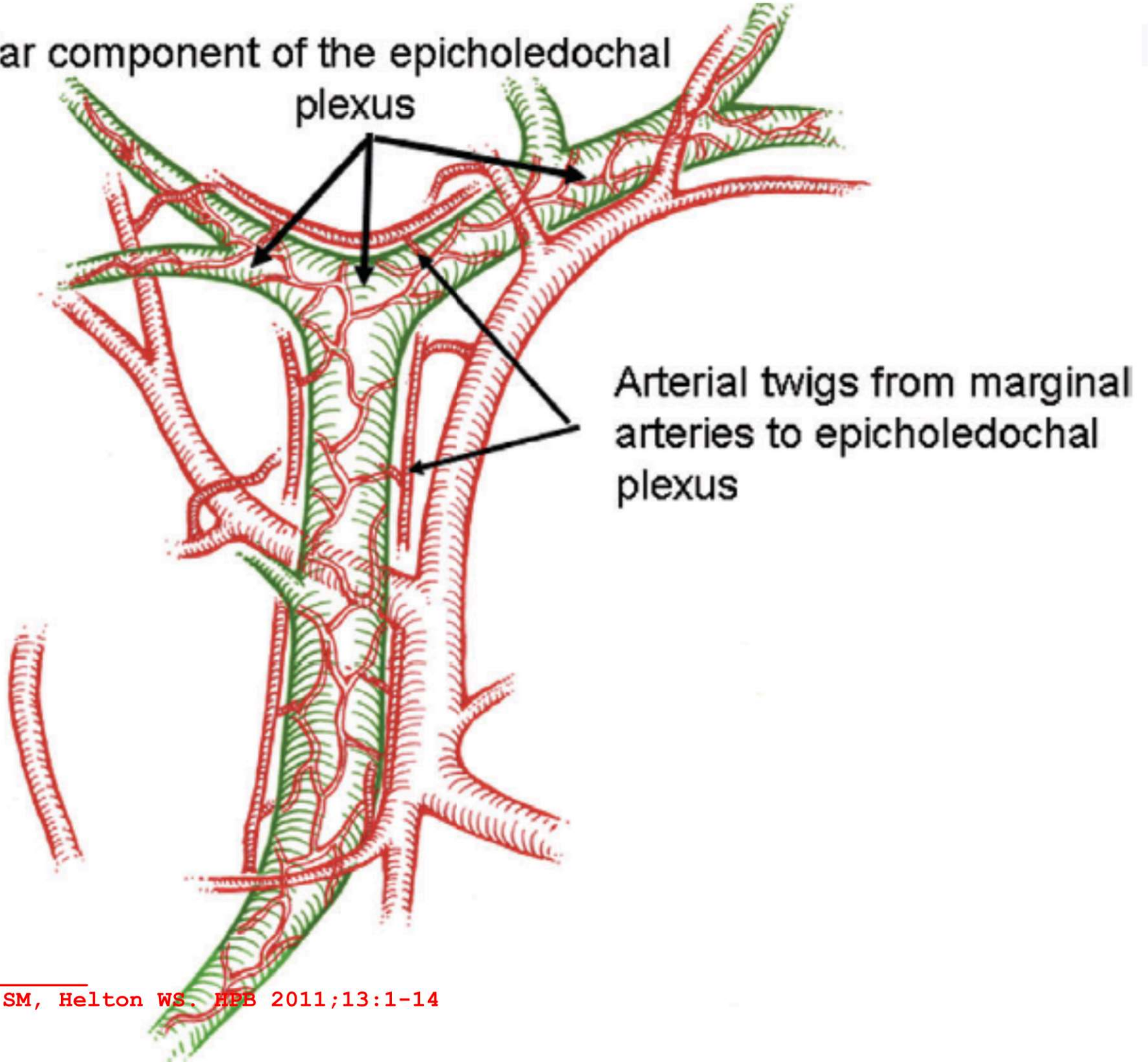
Abstract

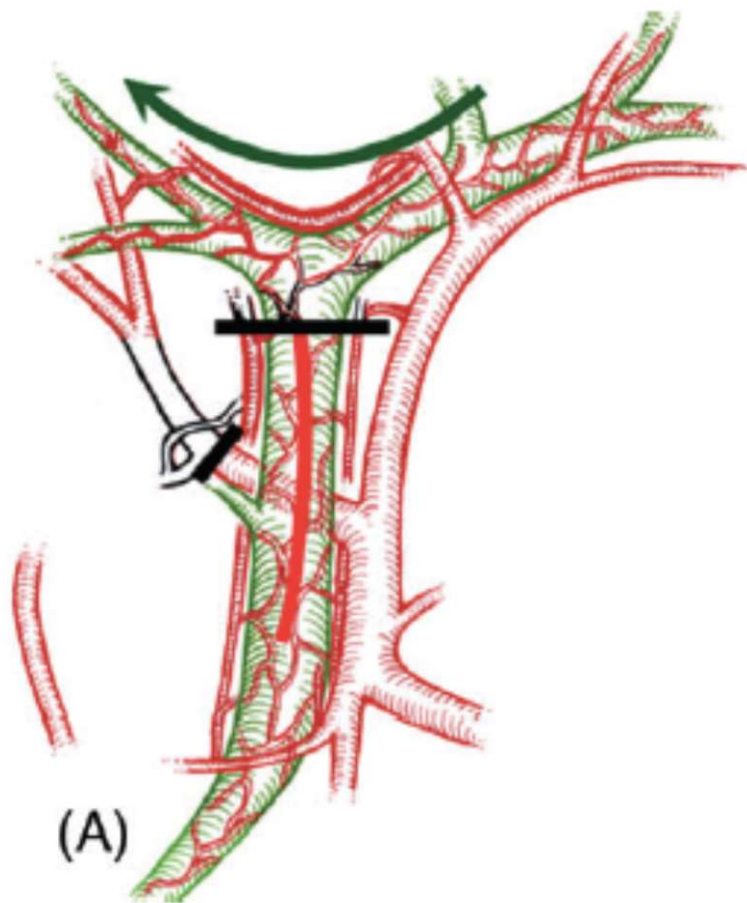
Objectives: Biliary injuries are frequently accompanied by vascular injuries, which may worsen the bile duct injury and cause liver ischemia. We performed an analytical review with the aim of defining vasculobiliary injury and setting out the important issues in this area.

Methods: A literature search of relevant terms was performed using OvidSP. Bibliographies of papers were also searched to obtain older literature.

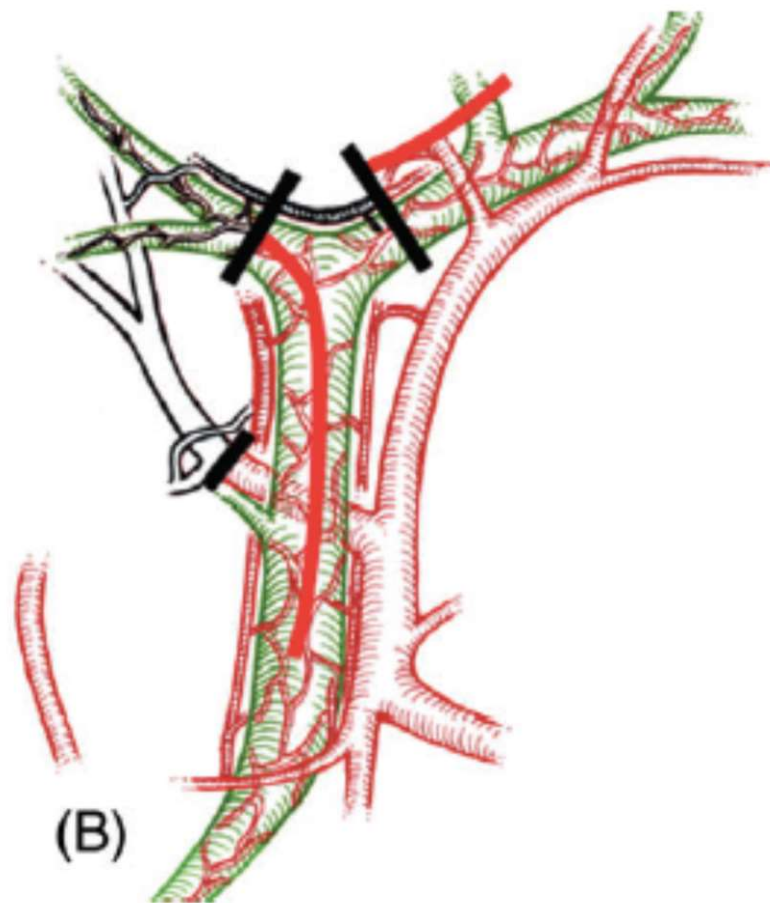


Hilar component of the epicholedochal
plexus

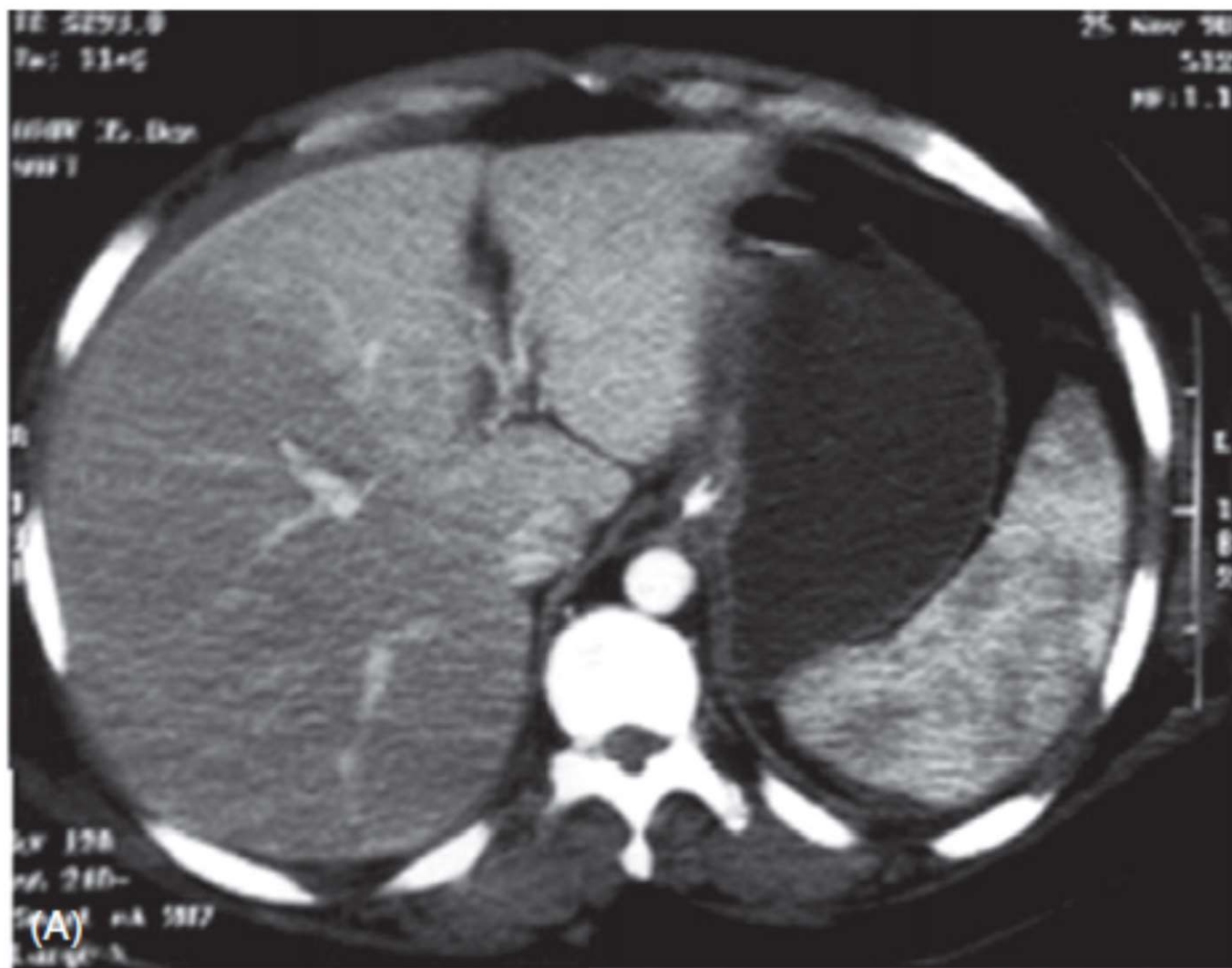




(A)



(B)



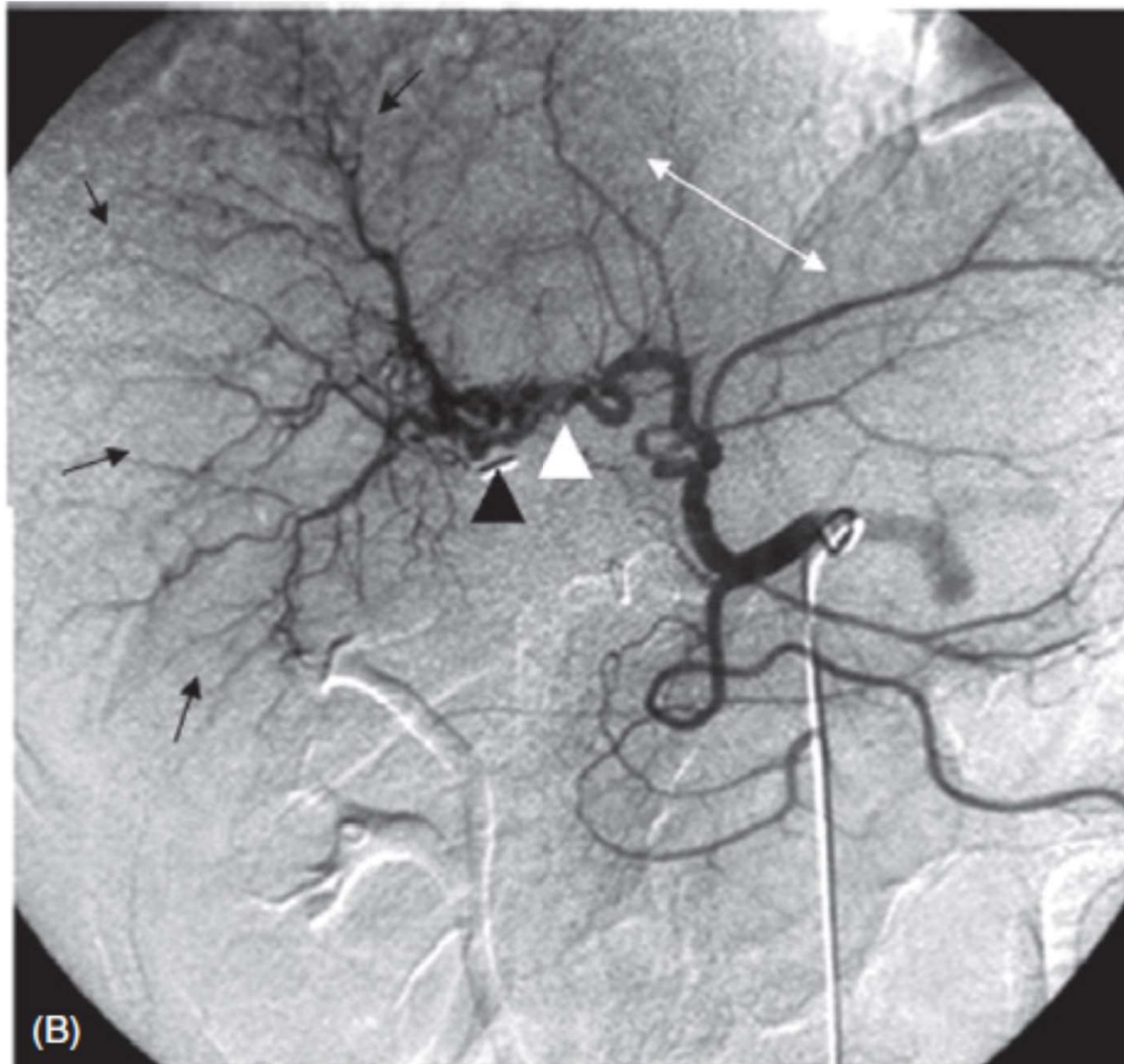




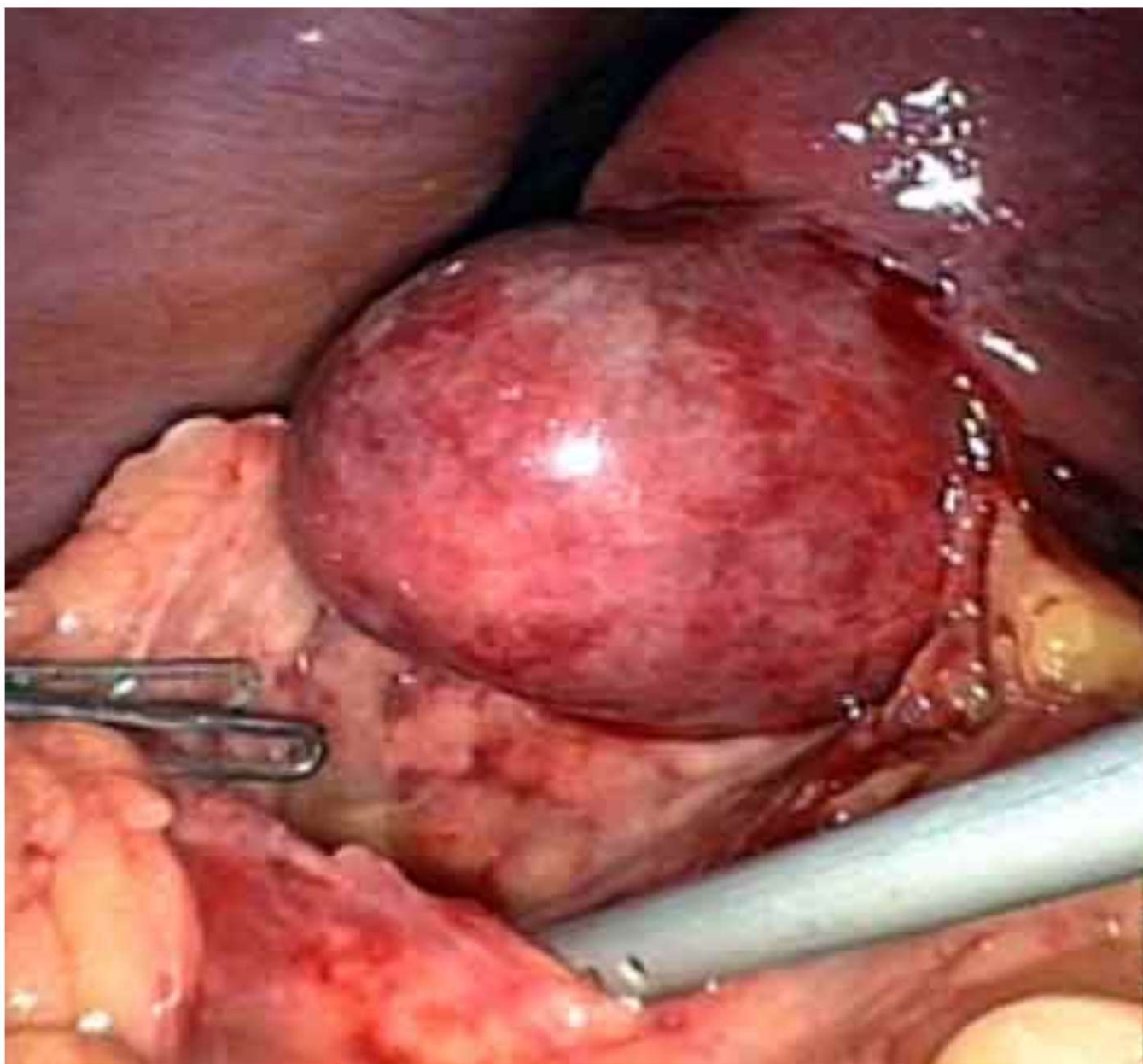
Table 3 Risk factors for BDIs

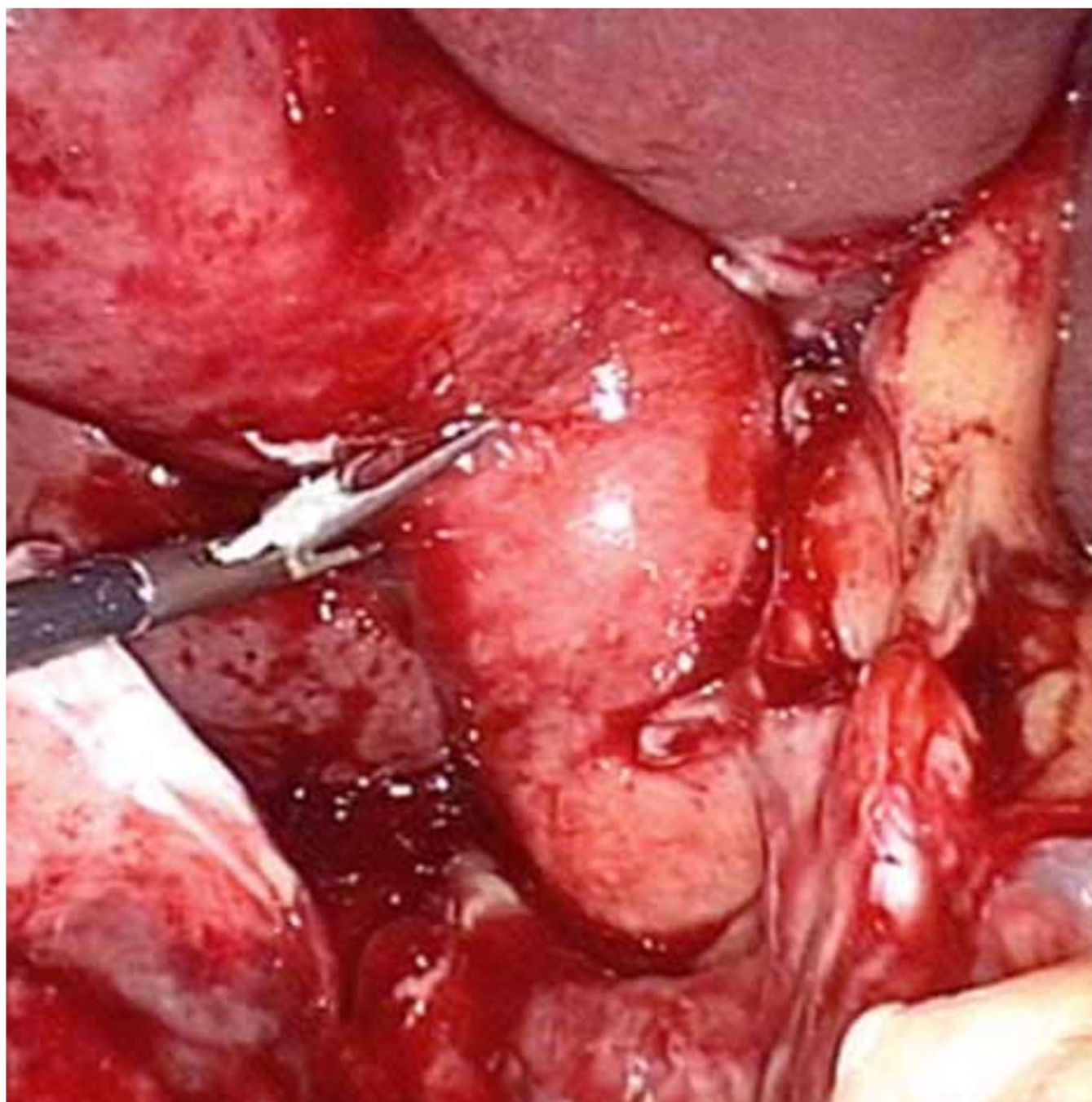
Characteristics	With BDI (<i>n</i> = 15)	Without BDI (<i>n</i> = 2,169)	<i>p</i> -value
Gender (male)	7 (47%)	750 (35%)	0.327
Age (years)	56 ± 16.8	57 ± 14.6	0.860
Inflammation	6 (40%)	338 (16%)	0.01
Laparoscopic experience ^a			0.408
<50	3 (20%)	447 (21%)	
51–100	1 (7%)	431 (20%)	
>100	11 (73%)	1,291 (59%)	
LC performed by residents	3 (20%)	639 (29%)	0.423

^a Experience of the surgeon in numbers of laparoscopic operations performed

Table 2. Details of 51 local risk factors for biliary tract injury present during laparoscopic cholecystectomy in 40 patients (62%)

Risk factors	No. of patients
Acute inflammation in the triangle of Calot	19
Scleroatrophic cholecystitis with a short cystic duct	14
Huge impacted gallstone in the gallbladder neck	8
Biliary anomaly (aberrant right posterior hepatic duct)	5
Instrumental endobiliary maneuver during transcystic laparoscopic common bile duct exploration	3
Mirizzi syndrome: gangrenous cholecystitis	1
Gallbladder cancer	1





Fatores de risco para lesão

❑ Variações anatômicas

Ducto cístico curto ou ausente

Ducto cístico originando do hepático D

Ducto hepático D acessório ou aberrante

❑ Técnica imprópria

Tenda no ducto hepático comum

Colocação imprópria do clip no cístico

Lesão do ducto cístico/hepático comum

durante dissecação

Variações anatômicas



Variações anatômicas

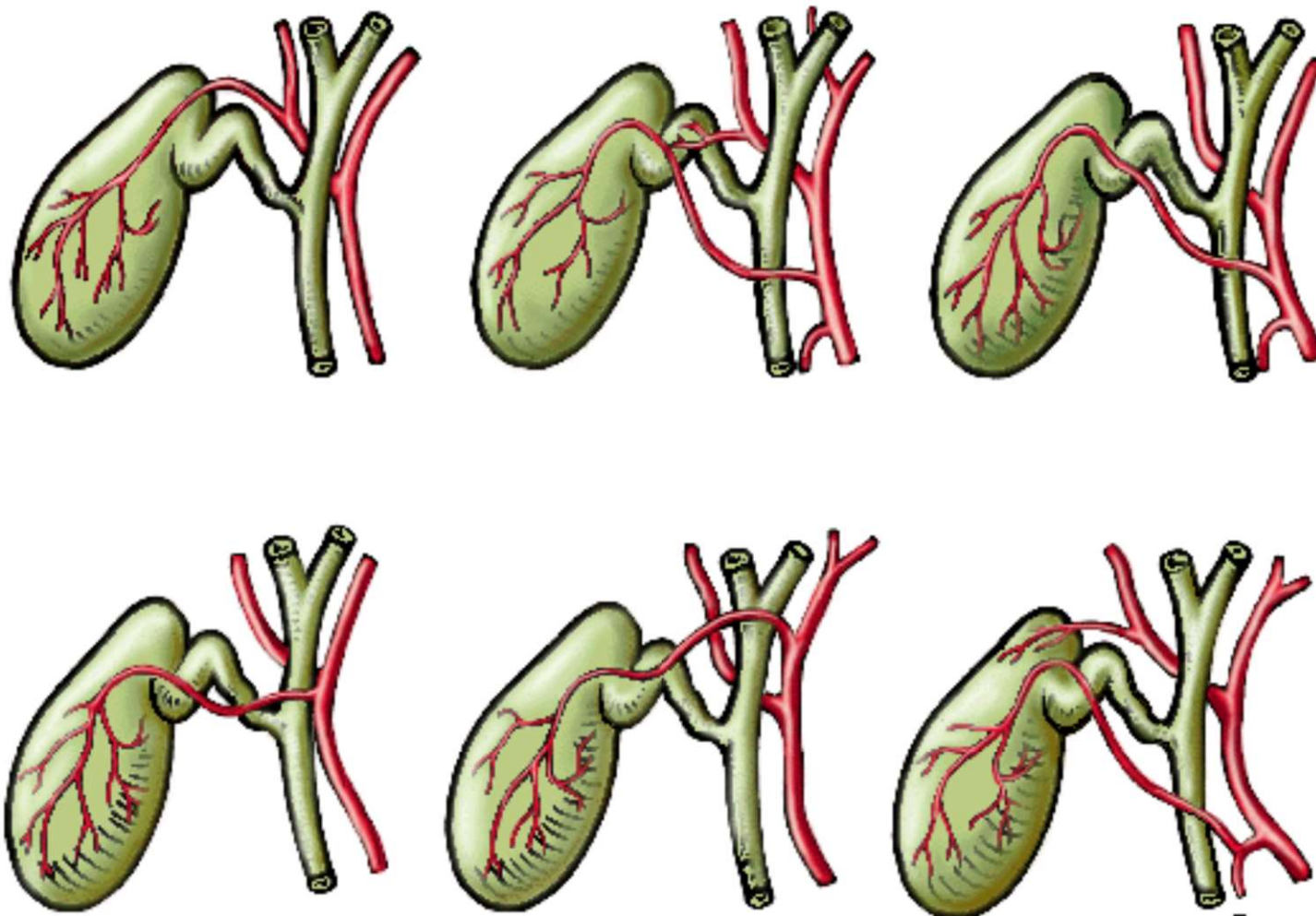


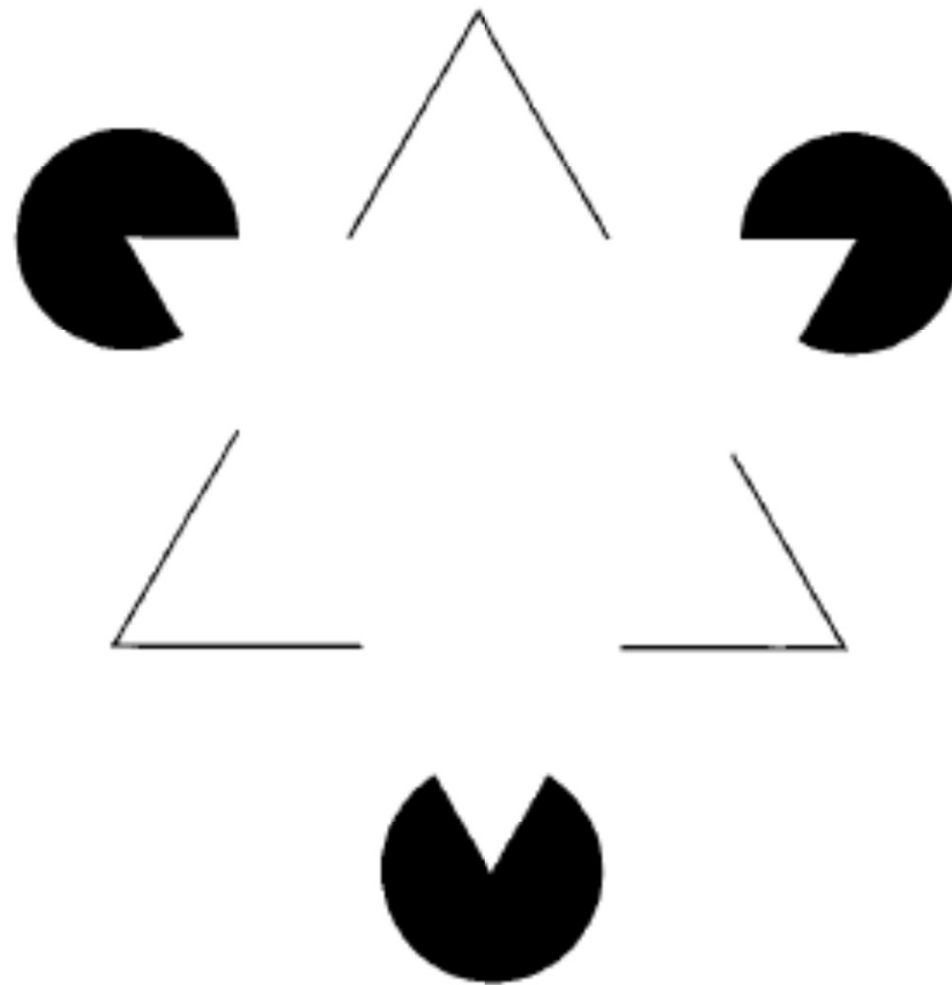
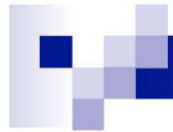
Table 3. Mechanism of biliary tract injury during laparoscopic cholecystectomy in 63 patients in whom the mechanism was identified (97%)

Mechanism of injury	No. of patients
<i>During dissection of the triangle of Calot</i>	
Anatomic confusion between common bile duct and cystic duct: During cholangiography	4
During surgical dissection	22
and the cystic artery:	1
Instrumental injury	13
Coagulation	8
Cystic duct avulsion	2
Common bile duct tenting	2
During urgent hemostasis	1
Lateral clipping	1
Adhesiolysis in front of common bile duct	1
<i>During the phase of cholecystectomy</i>	
Gallbladder neck adherent to common bile duct	3
Biliary anomaly	1
Coagulation	1
<i>During laparoscopic common bile duct exploration</i>	
Transcystic balloon dilatation	2
Instrumental Dormia basket injury	1



Heurística visual

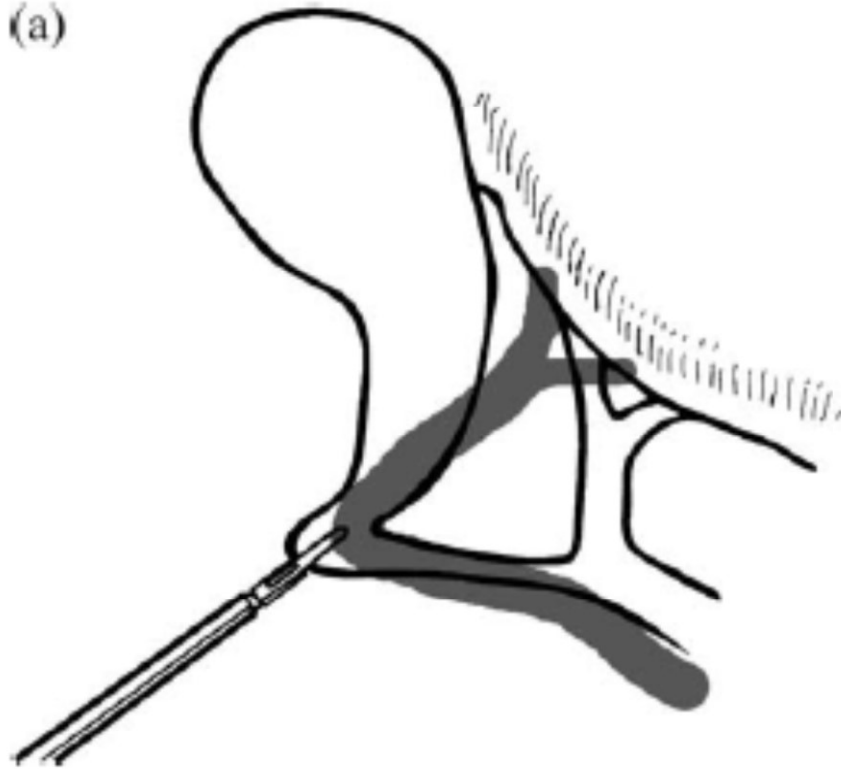
Ver o que você acredita



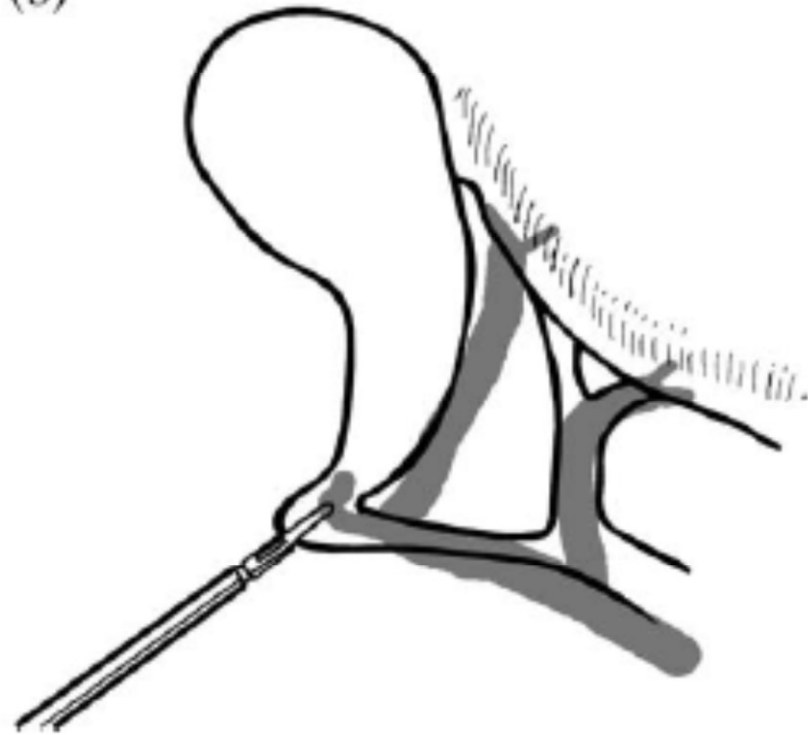


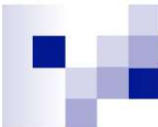


(a)



(b)





Como operar?

Aspectos técnicos:

- Visão crítica de segurança
- Checklist

Strasberg SM, et al. HPB 2011;13:1-14.

Connor SJ, et al. HPB 2013



Equipamento

- ☐ Visibilidade do Monitor (iluminação)
- ☐ Eletrocautério
- ☐ Tesouras e pinças
- ☐ Clipador
- ☐ Pneumoperitôneo (vazamentos)
- ☐ Auxiliares

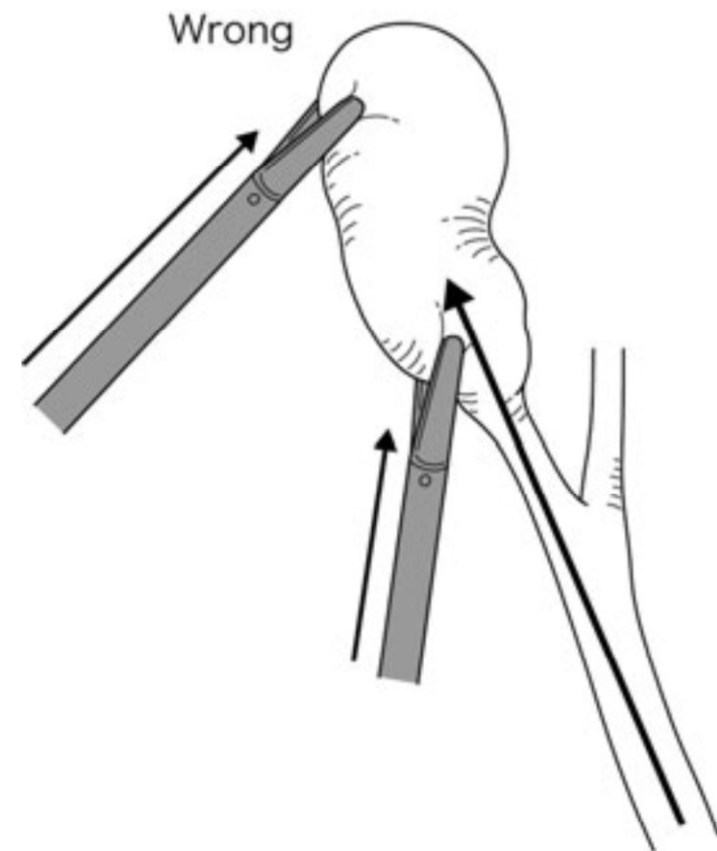
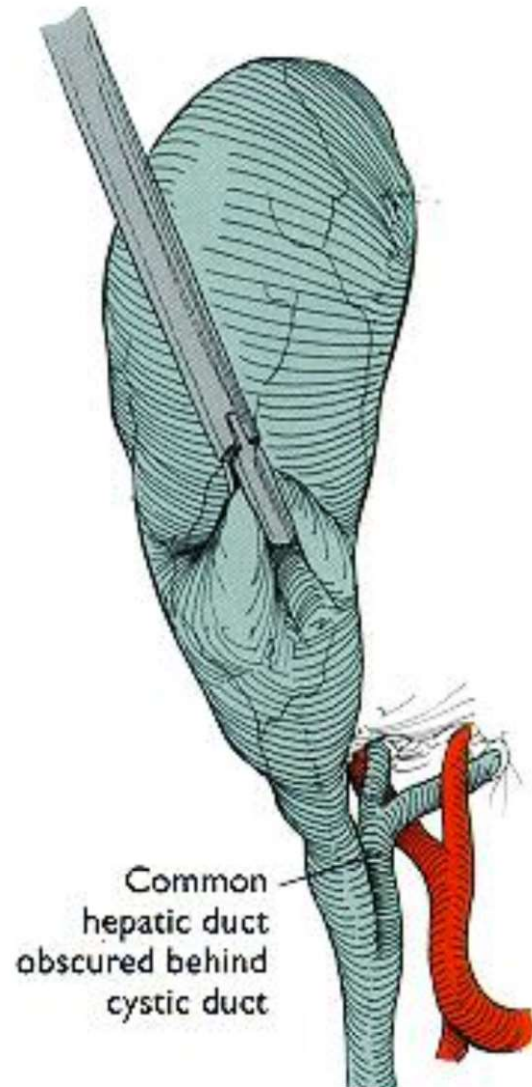




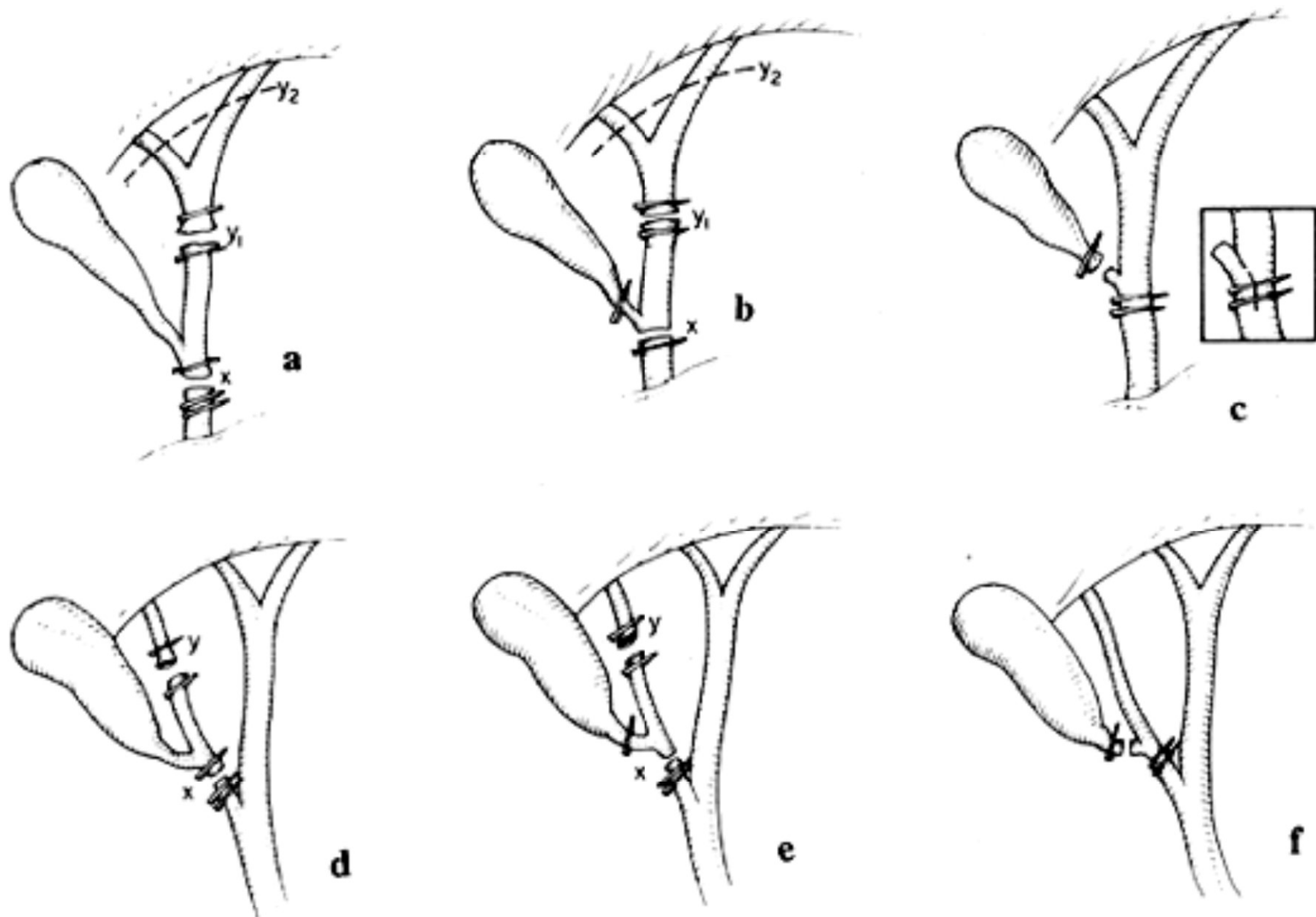
Visão crítica de segurança

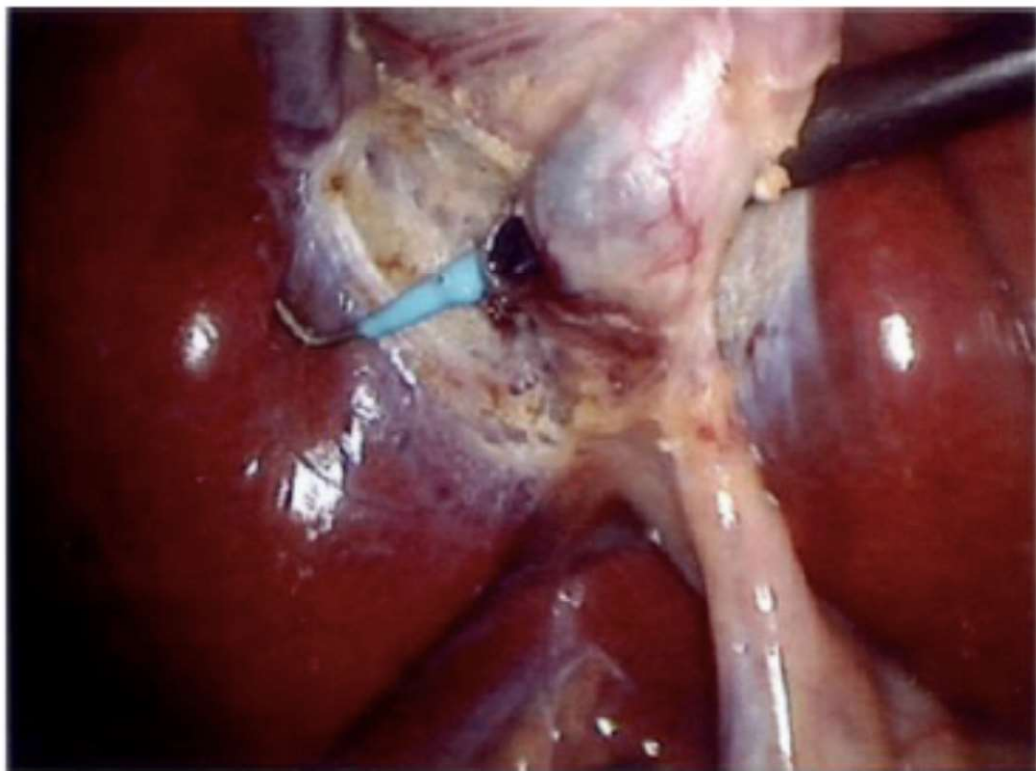
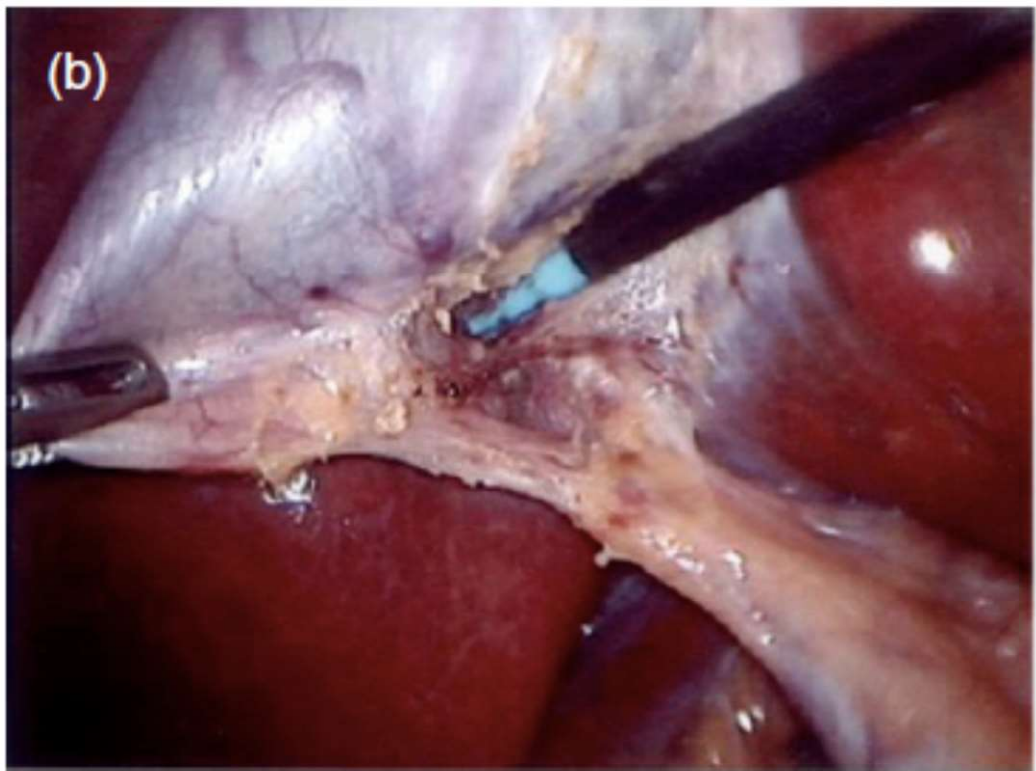
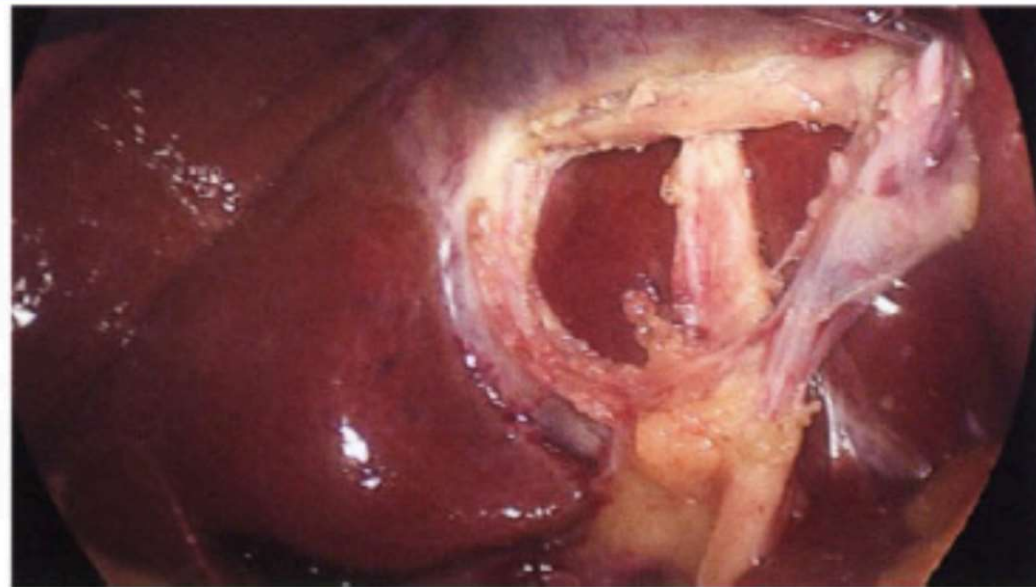
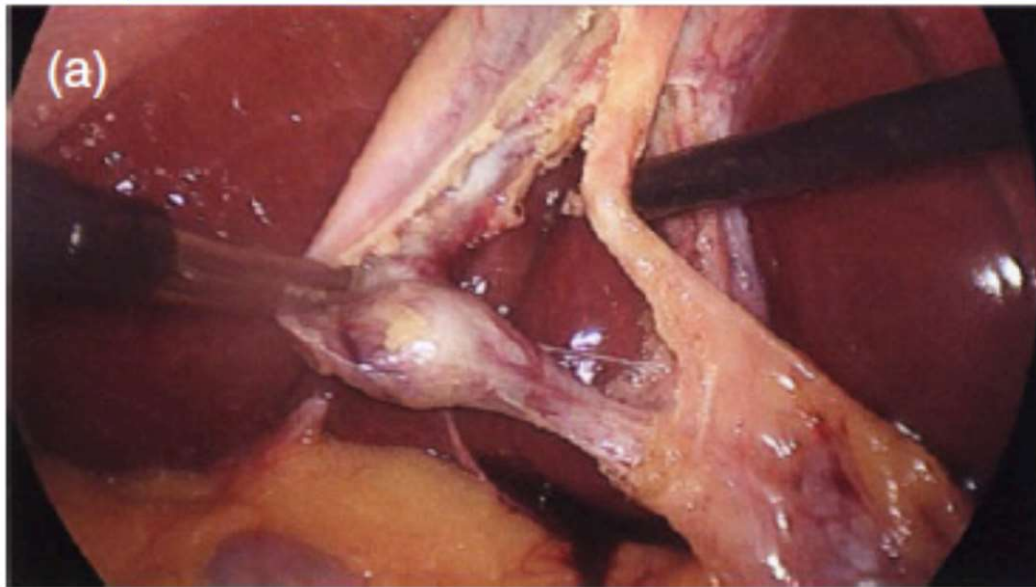
A má identificação do ducto cístico causa as principais lesões da via biliar e resulta de uma dissecação incompleta ou errada do triângulo de Calot.

Técnica imprópria



Técnica imprópria

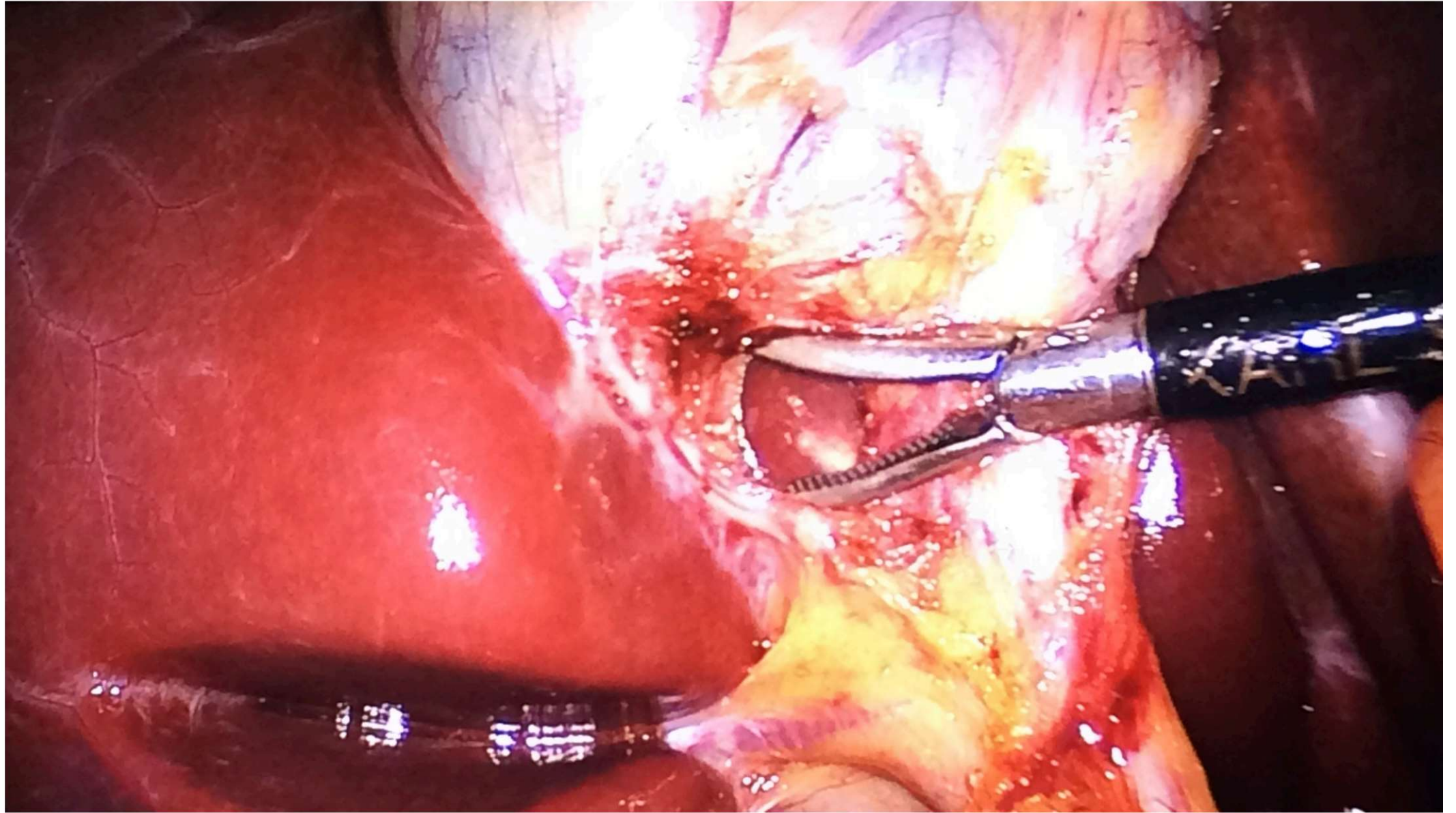


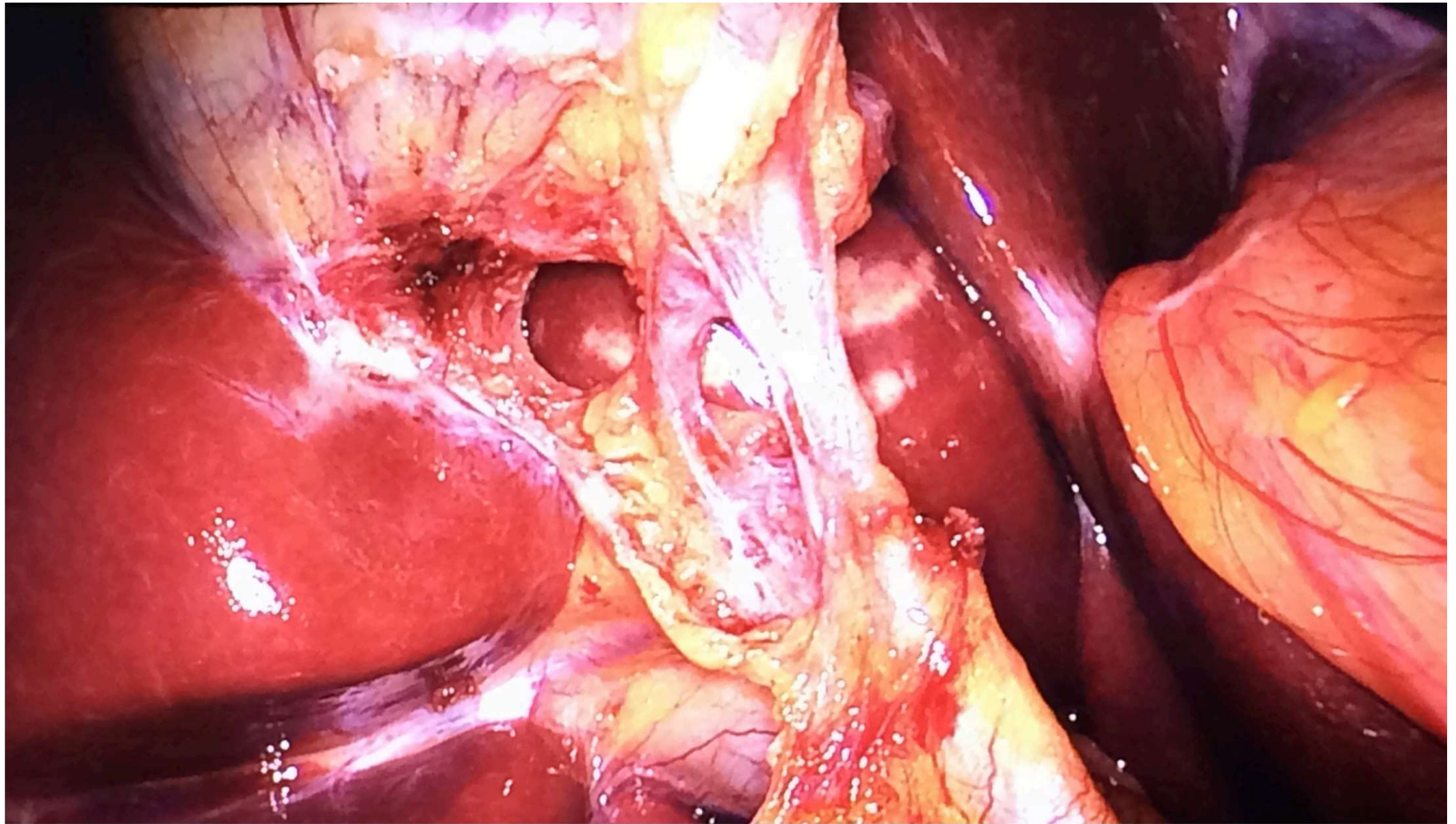


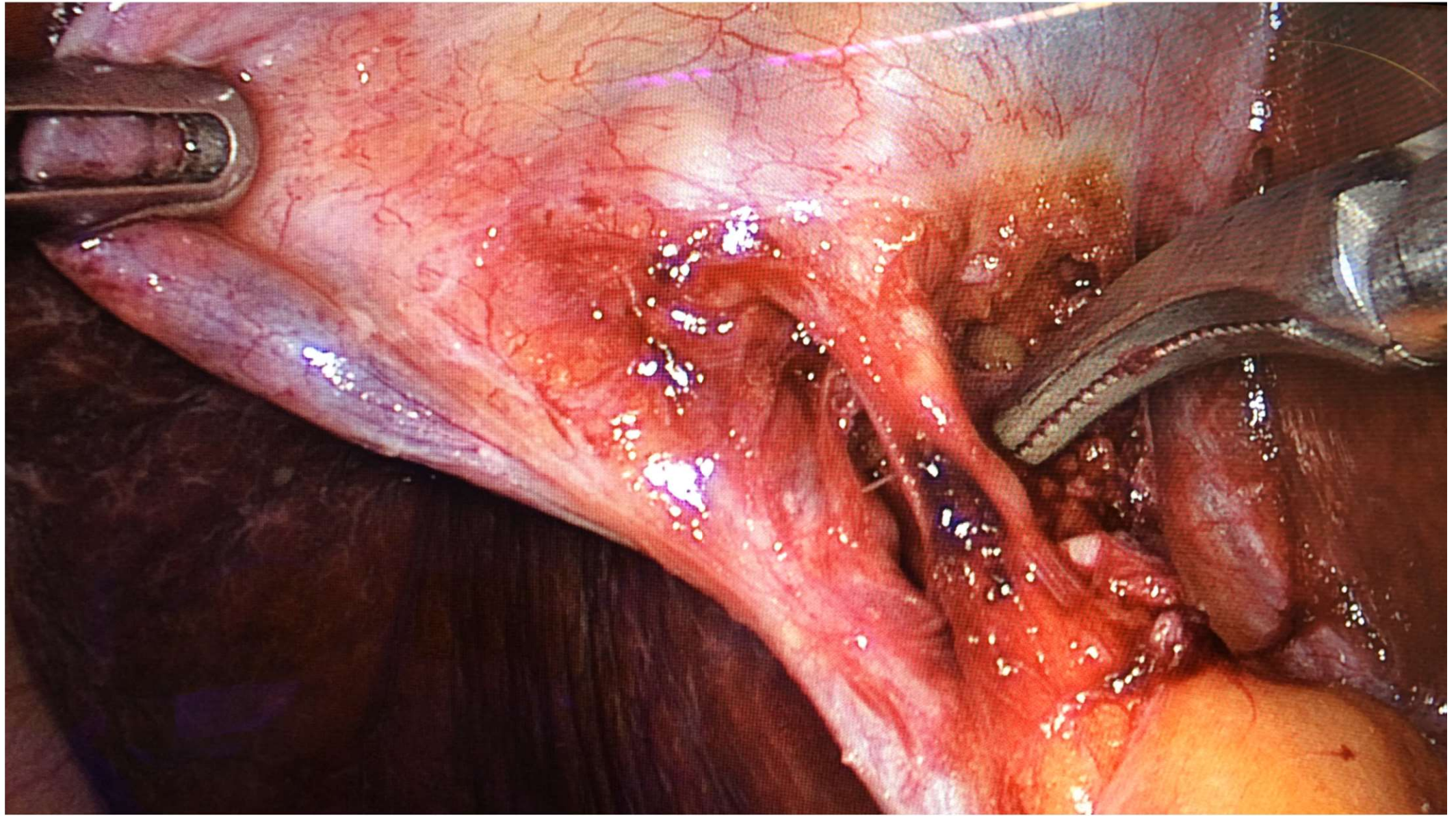


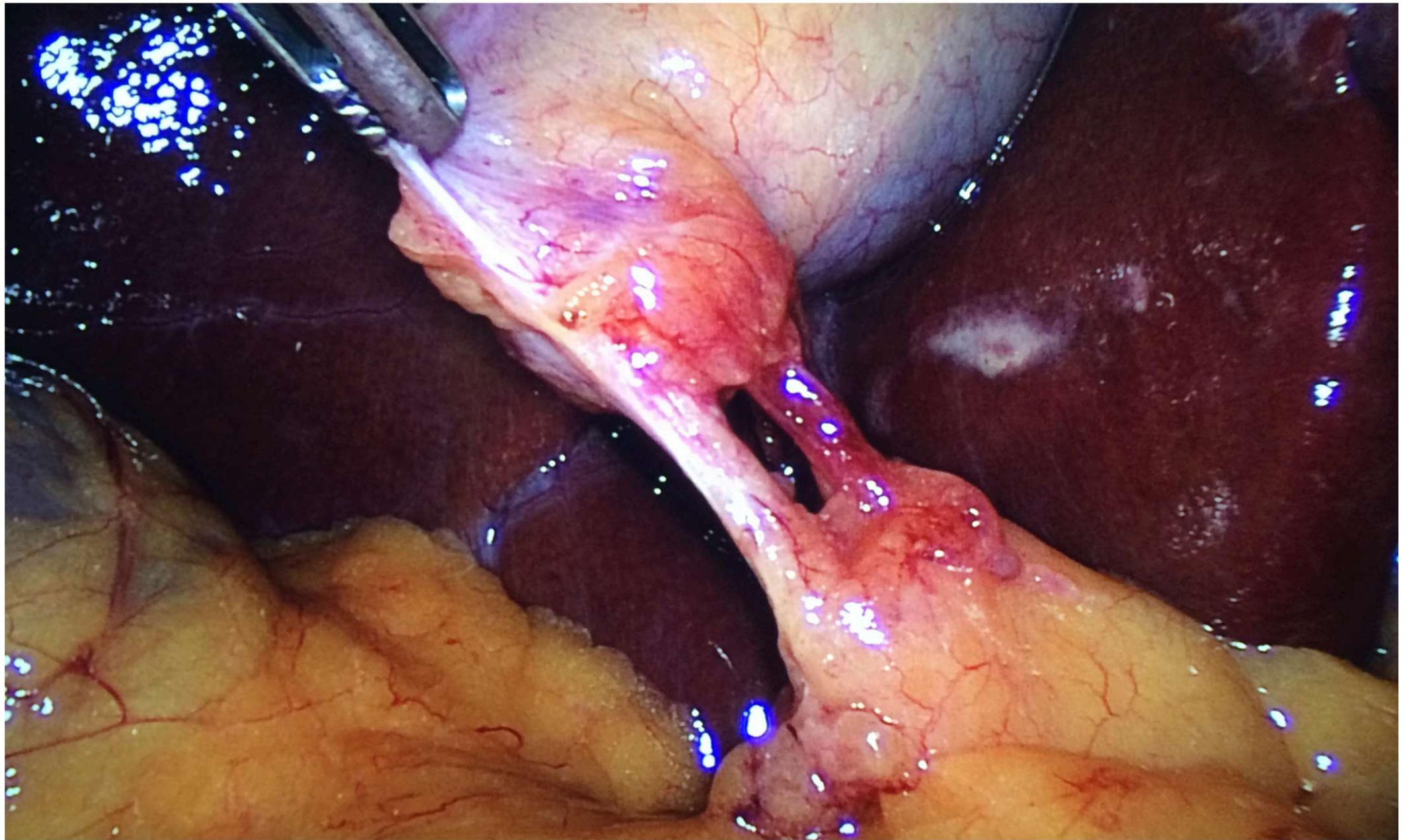
Visão crítica de segurança

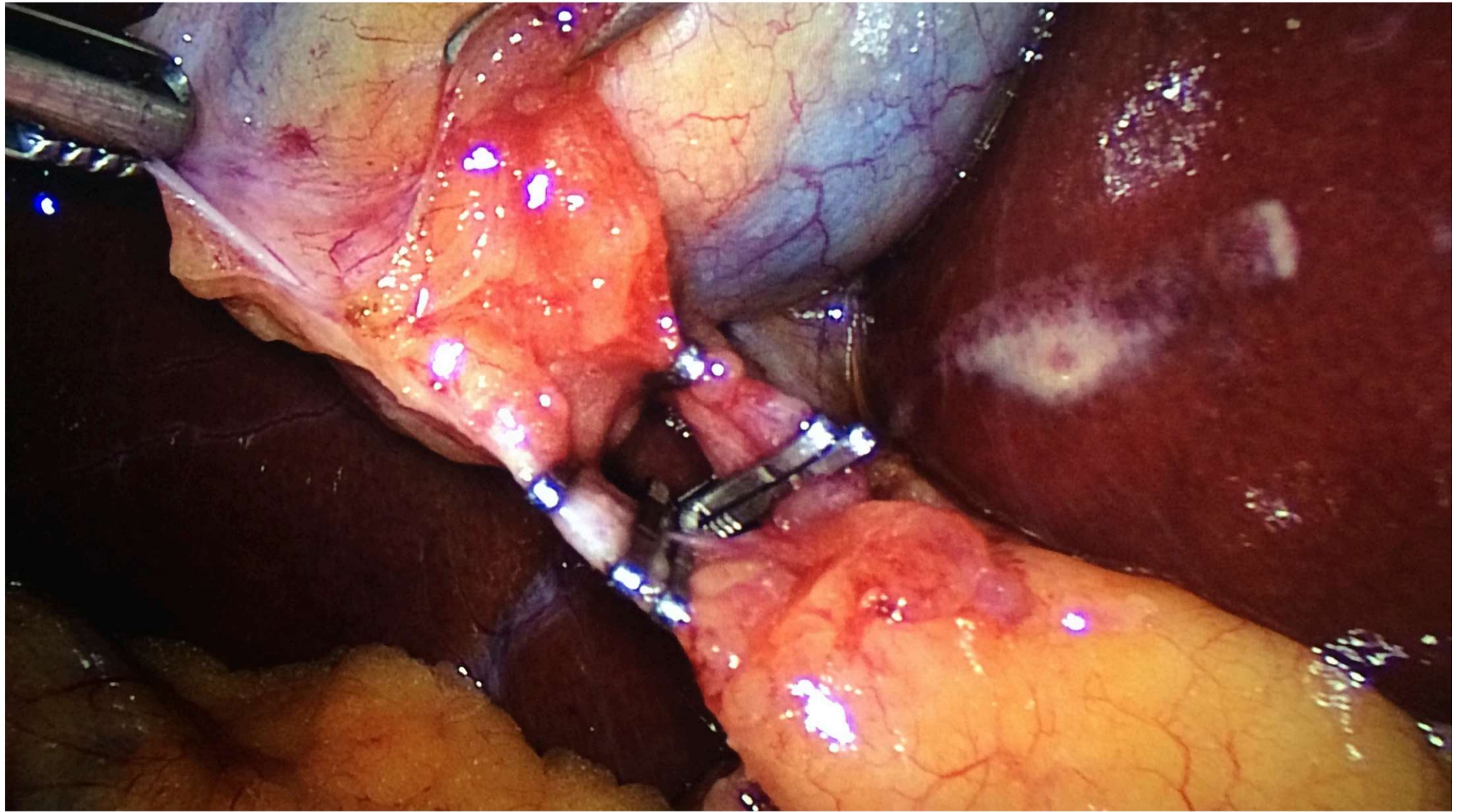
A má identificação do ducto cístico causa as principais lesões da via biliar e resulta de uma dissecção incompleta ou errada do triângulo de Calot.











Colangiografia intra-operatória

- ❑ O uso freqüente deste recurso permite ao cirurgião visualizar um maior número de vezes a diversidade da anatomia da via biliar, passando a conhecê-la profundamente.
- ❑ o fato da CIO permitir a observação adequada da anatomia faz com que o cirurgião saiba quais pacientes estão sob maior risco de sofrer iatrogenias (pacientes com um ducto aberrante, por exemplo).
- ❑ Se a lesão já tiver ocorrido, a sua identificação precoce pode ser feita com maior facilidade.

Colangiografia intra-operatória

- ☐ Ajudou na identificação imediata da lesão.
- ☐ Contribuiu para a instituição da terapia apropriada.
- ☐ Não evitou lesão da via biliar.

Colangiografia intra-operatória

Table 1. Characterization of patients ($n = 12.111$).

	LC total	CCL	AC	BDI
Patients (n)	12,111	9338	2207	36
	100.0%	77.1%	18.2%	0.3%
Mean age (range) in years	54.7 (3–98)	53.3 (3–98)	58.6 (16–98)	
Surgical procedure				
Elective	88.6%	96.8%	54.6%	86.1%
Emergency	11.4%	3.2%	45.4%*	13.9%
Therapy				
CE with IOC	37.3%	37.7%	35.6%	54.3%*
CE without IOC	62.7%	62.3%	64.4%	45.7%
Conversion rate	7.3%	3.6%	19.5%*	63.9%*

LC: laparoscopic cholecystectomy; CCL: chronic cholecystitis/cholecystolithiasis; AC: acute cholecystitis; BDI: bile duct injury; CE: cholecystectomy; IOC: intraoperative cholangiography.

* $p < 0.05$ AC/BDI vs. LC total.

Causas diretas e como evitar

□ Geral

Somente cirurgião treinado

Colecistite aguda

Homens

Idosos

Crises de dor

História prévia de colecistite aguda

□ Causas diretas específicas

Uso do cautério

Identificação do ducto cístico

Causas diretas e como evitar

❑ Problemas técnicos

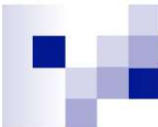
Incapacidade de ocluir o ducto cístico

Plano de dissecação muito profunda

Lesões térmicas

Lesão em tenda

Problemas de identificação



Visão crítica de segurança

❑ Equipe Cirúrgica

Cirurgião recebeu treinamento adequado

Equipamento apropriado

Técnica segura

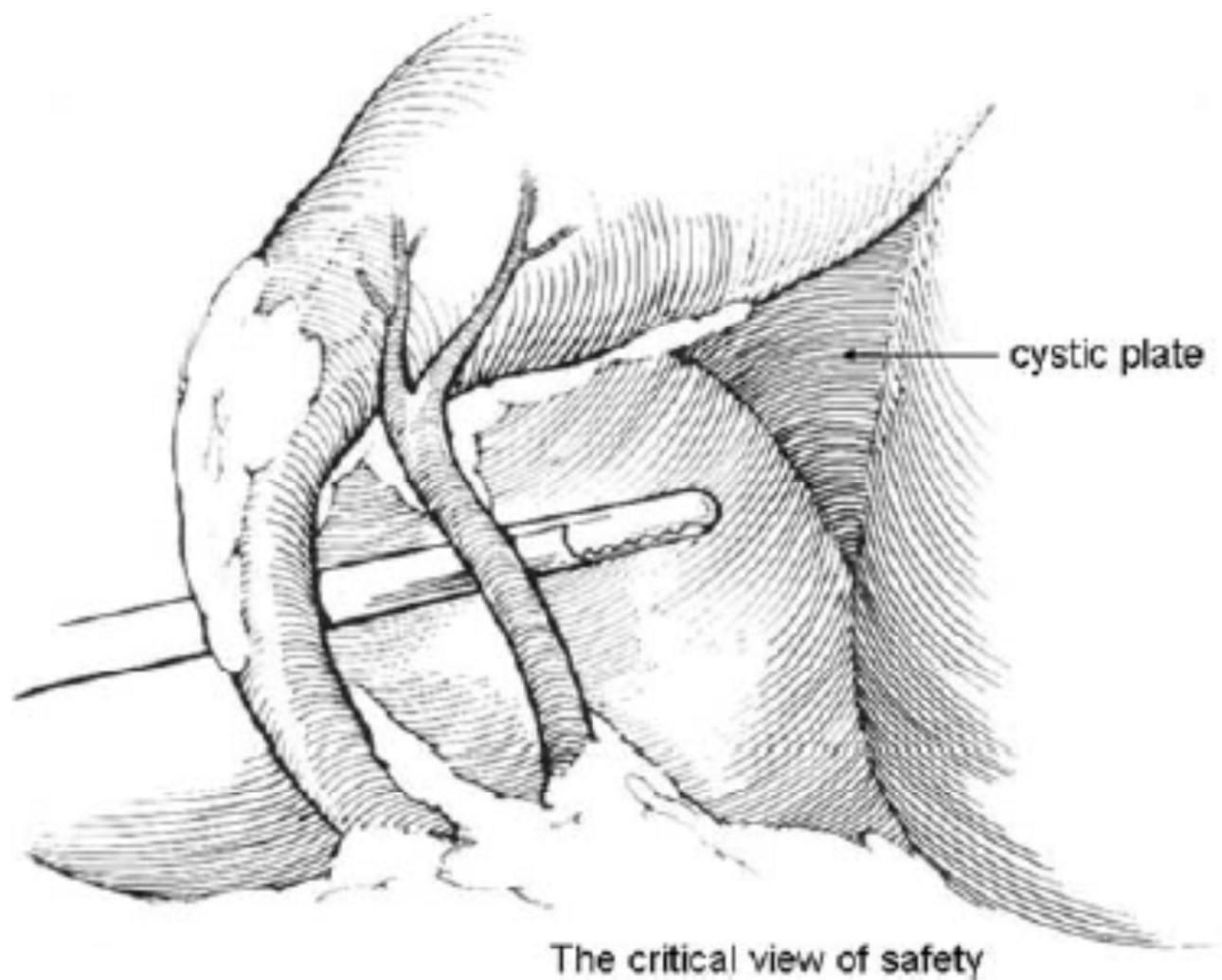
Familiarizado com as anomalias da via biliar

Aceita sugestões

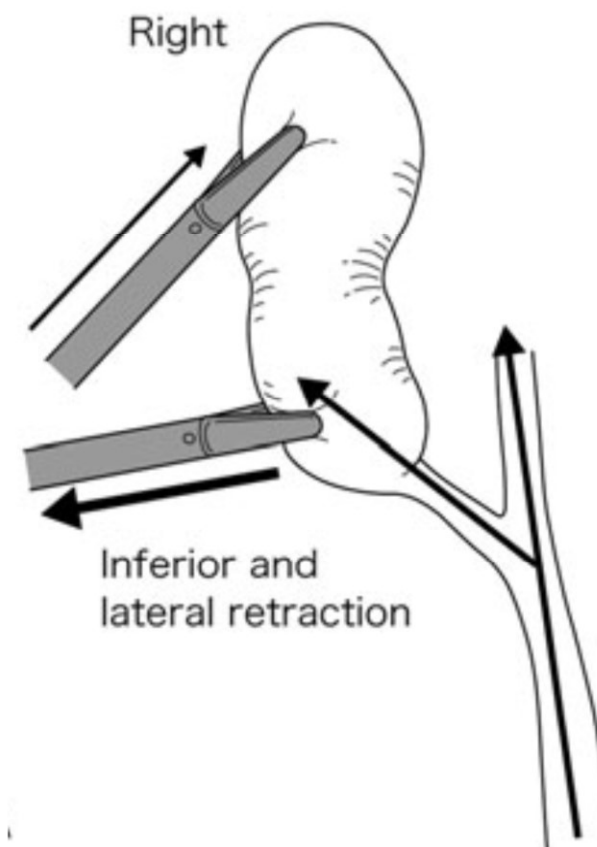
Interpreta bem colangiografia intra-operatória

Realiza o procedimento com frequência

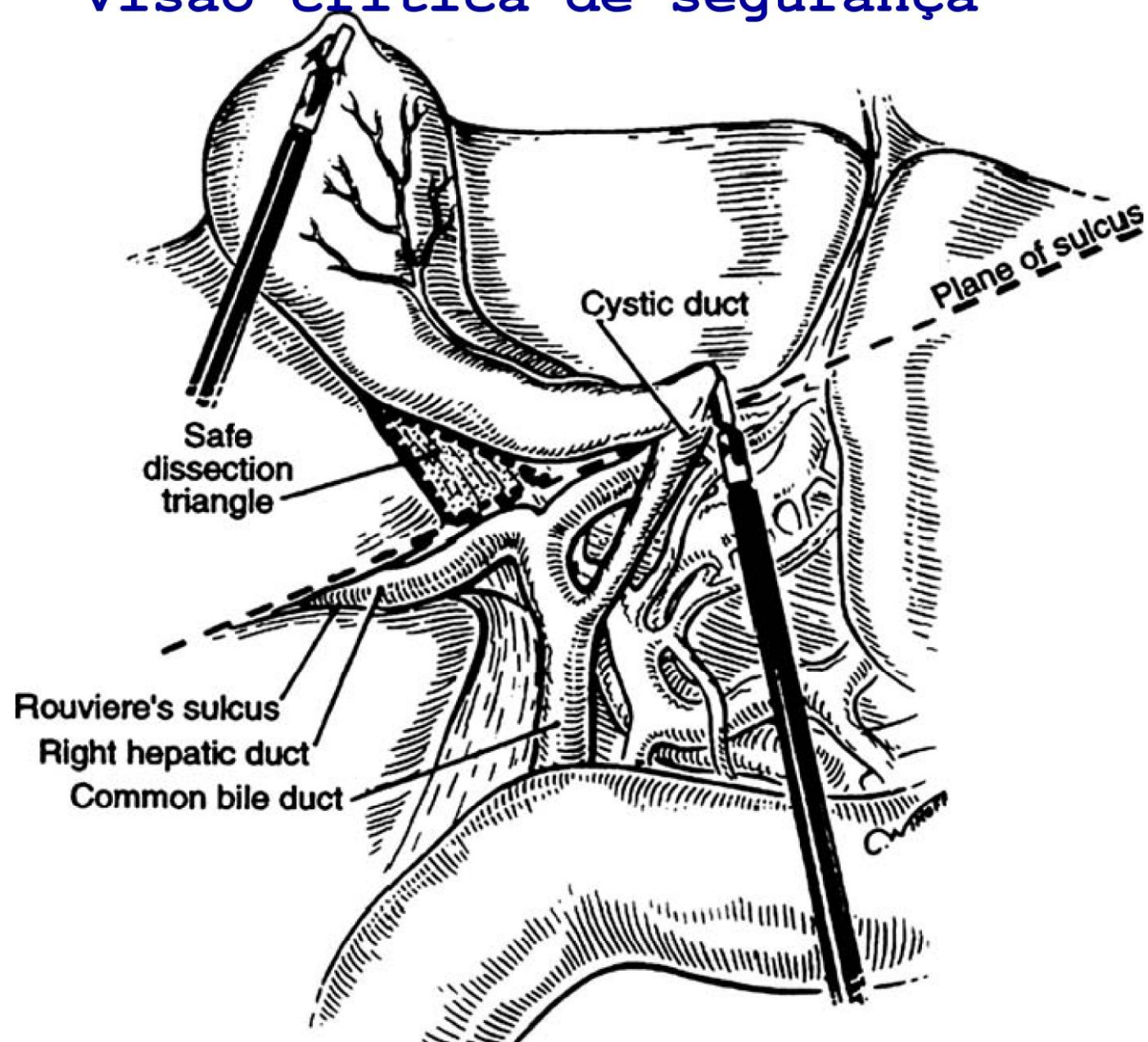
Visão crítica de segurança



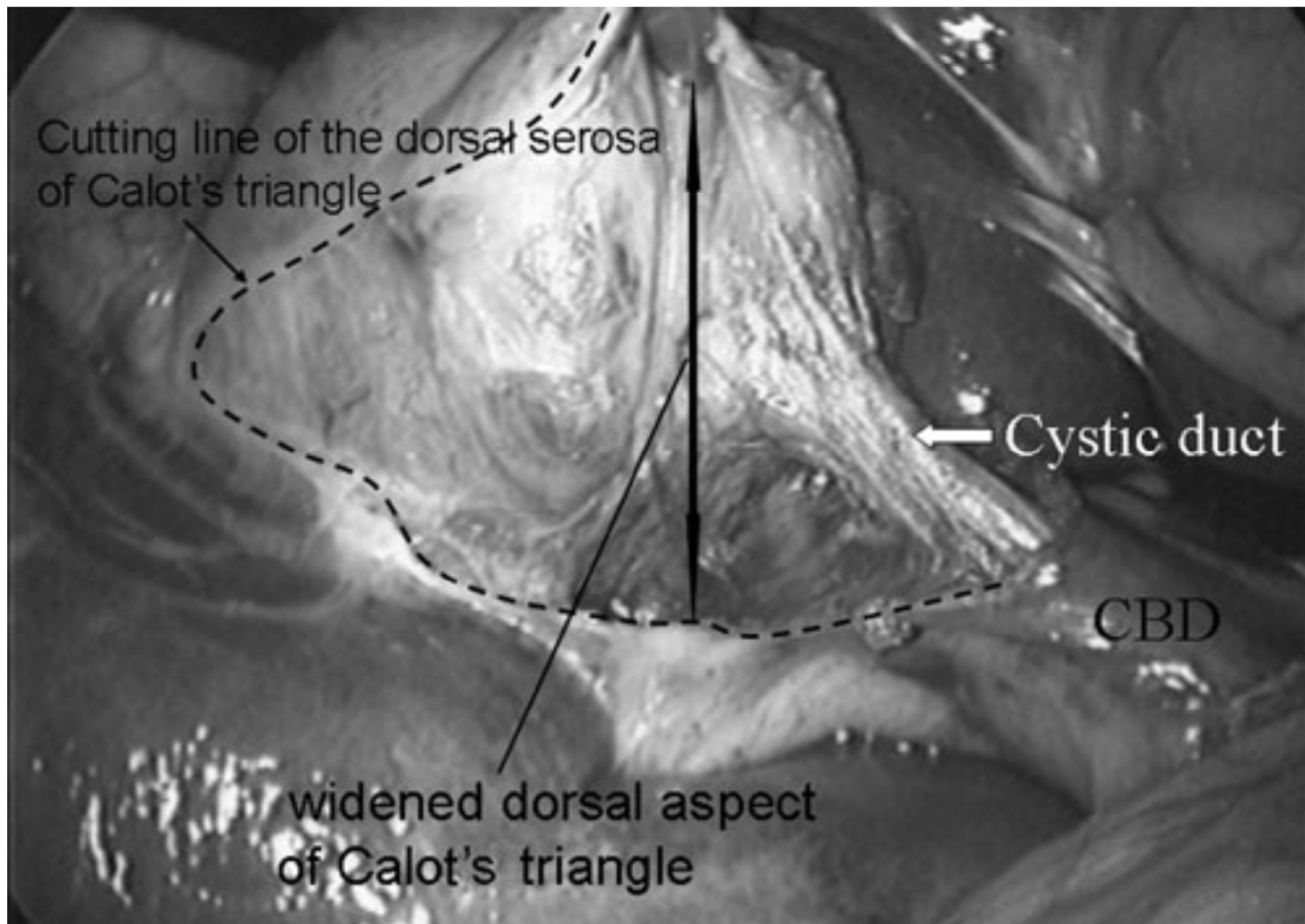
Visão crítica de segurança



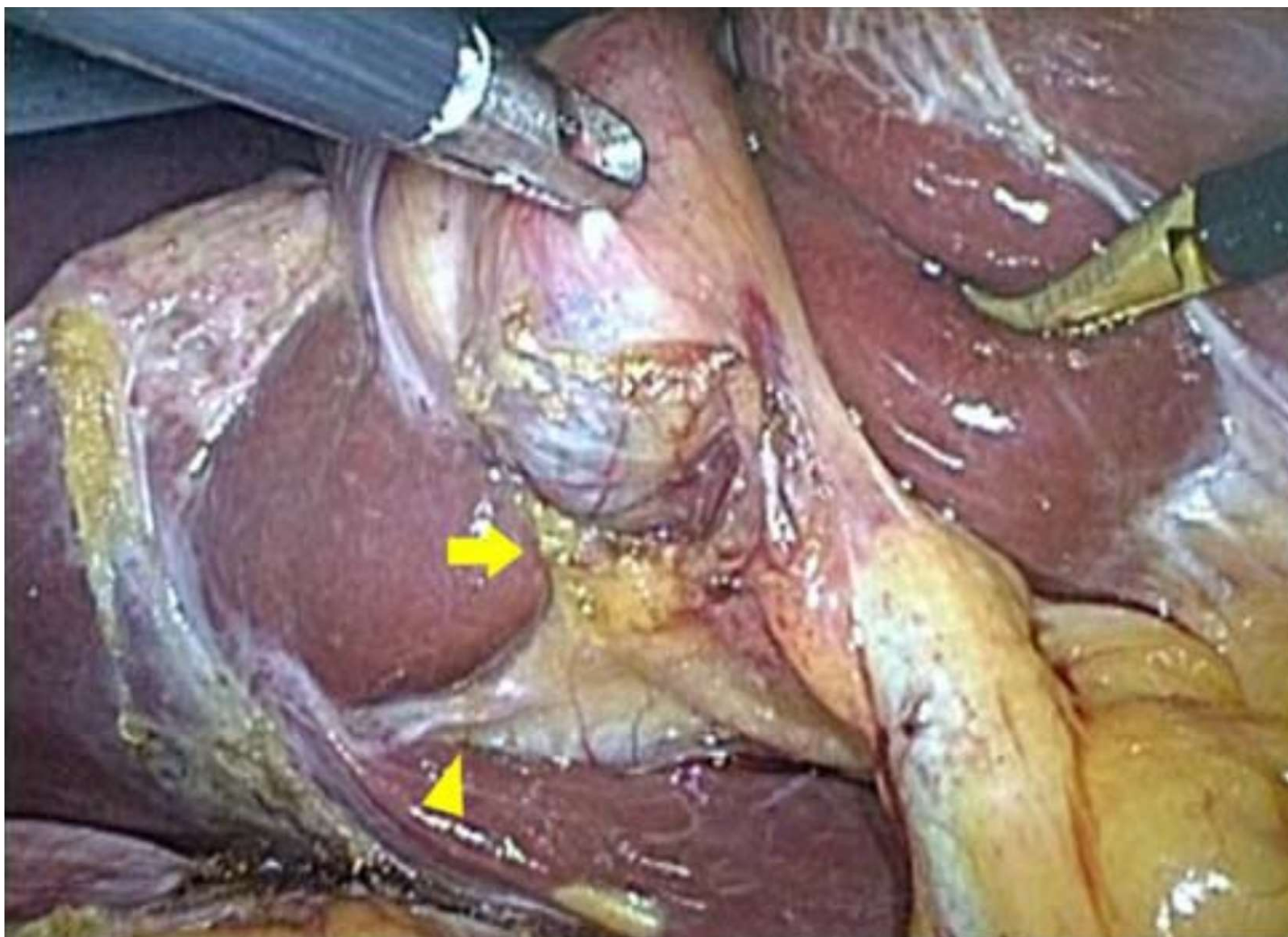
Visão crítica de segurança



Visão crítica de segurança



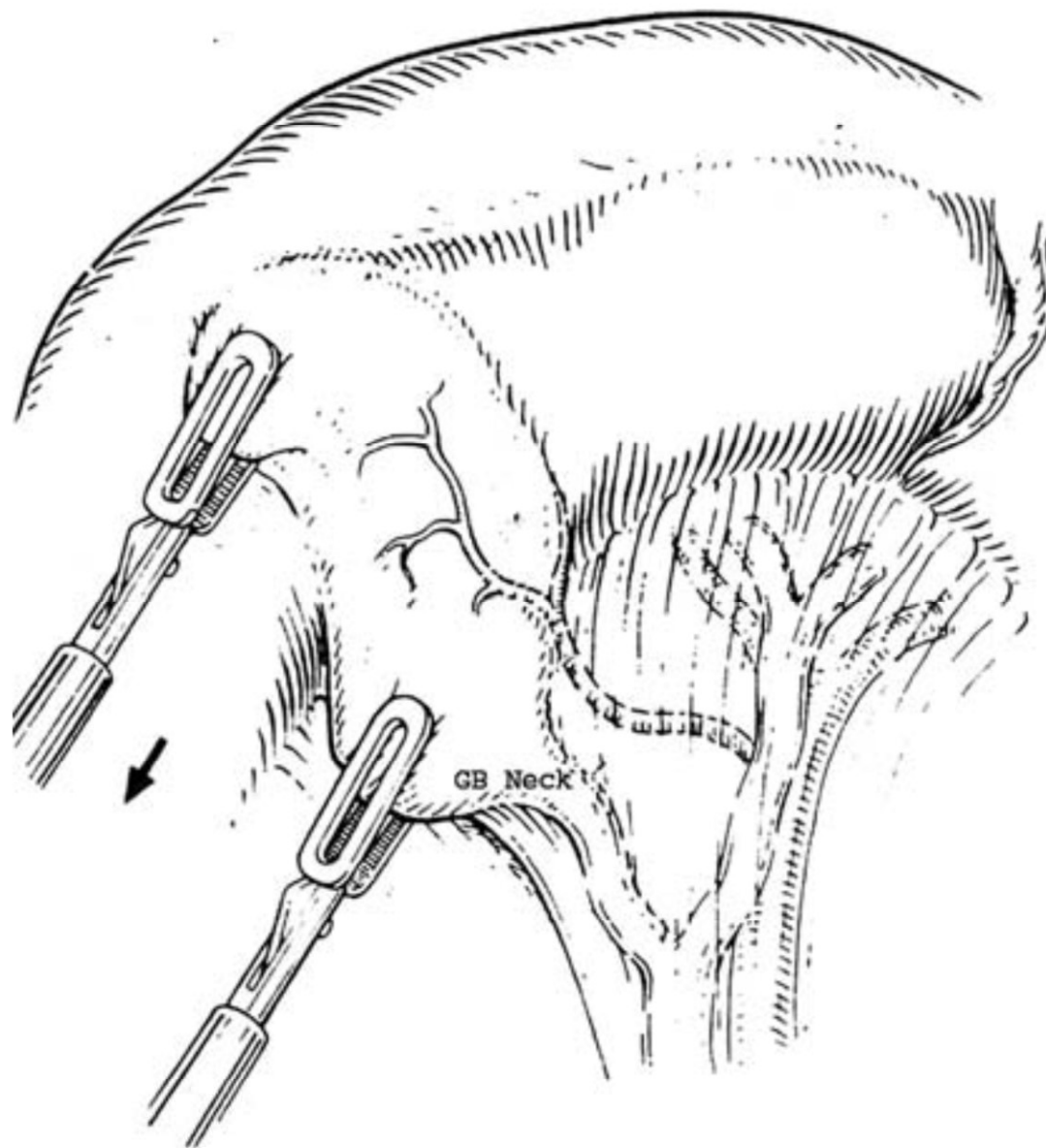
Visão crítica de segurança

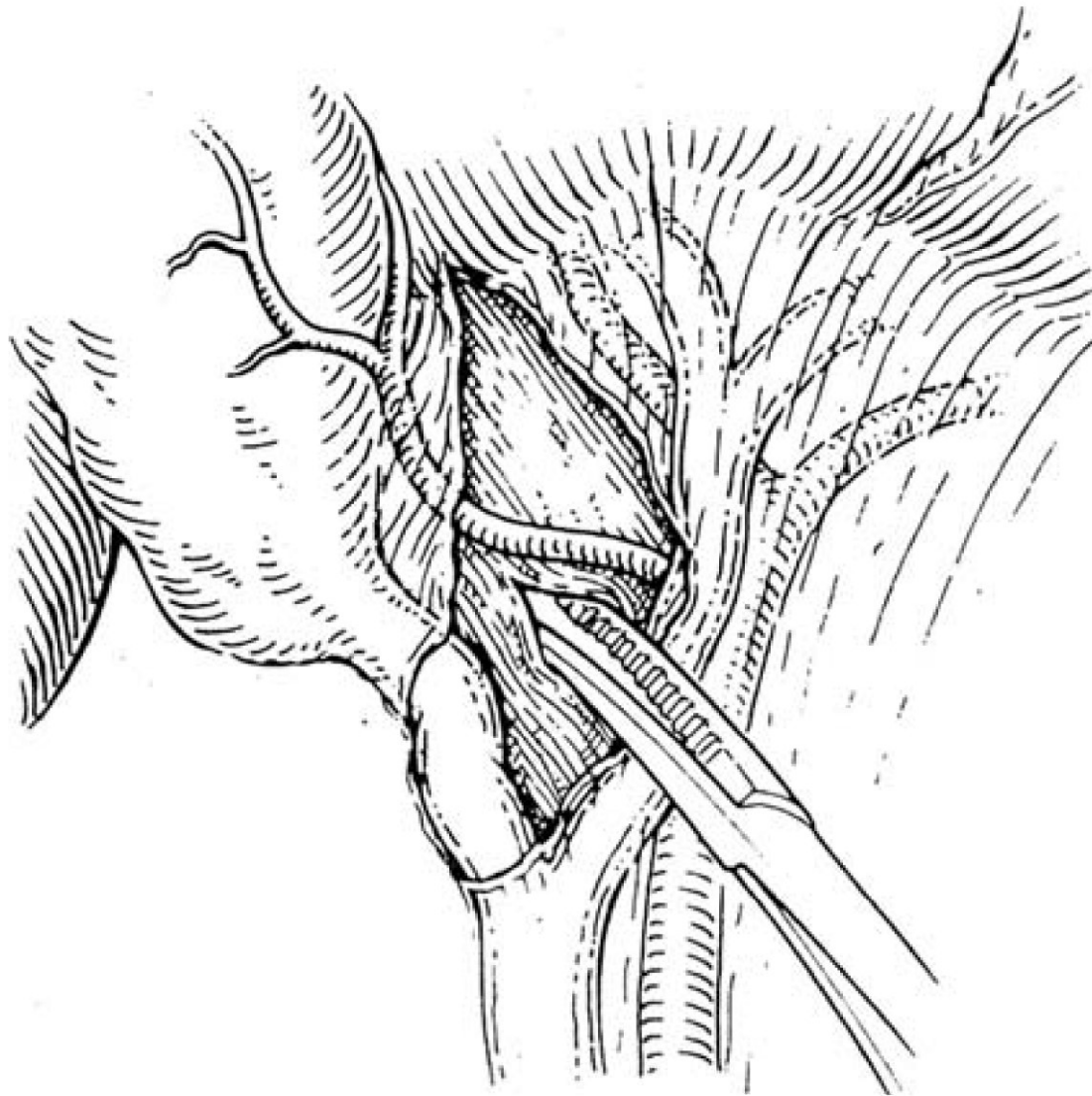


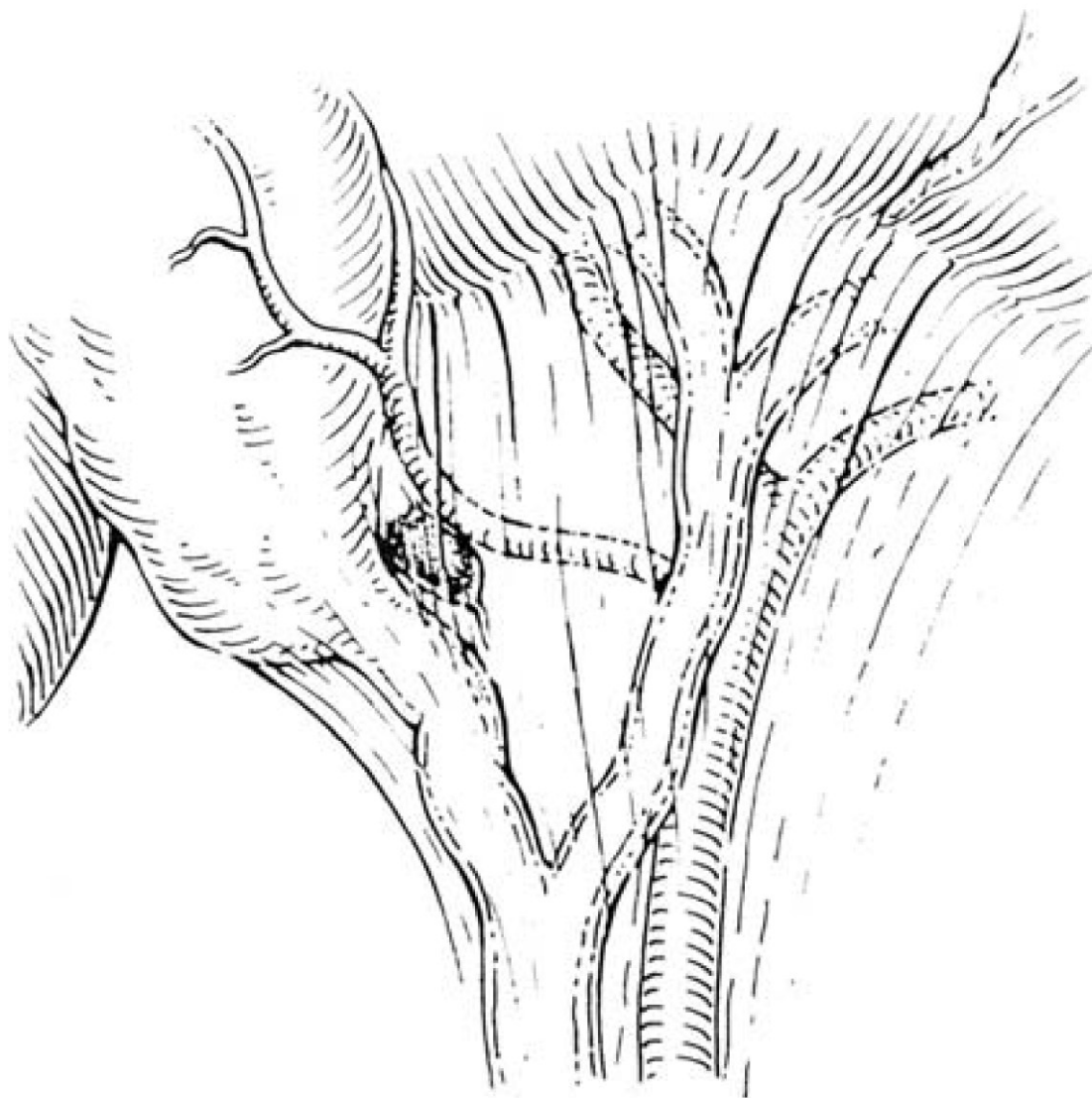


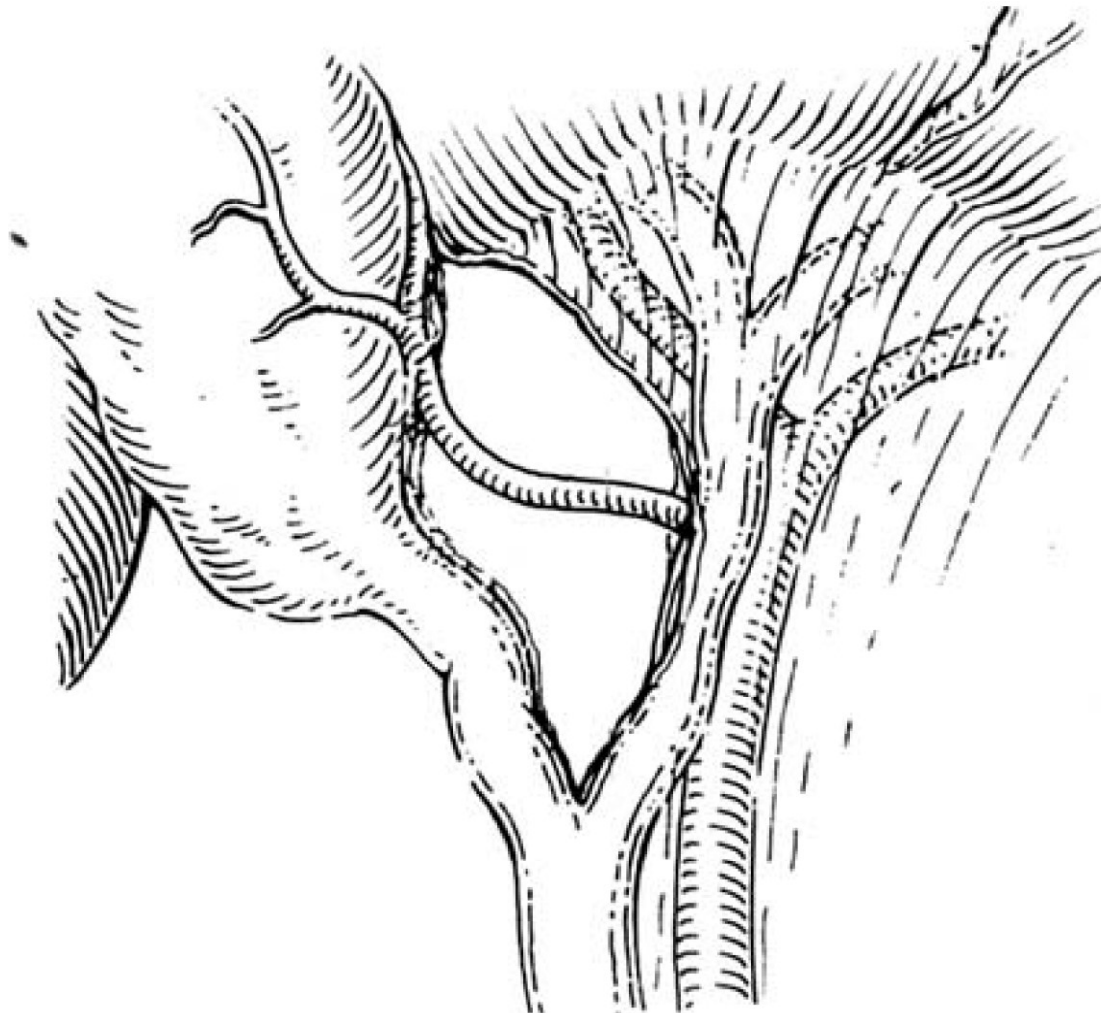
Faz devagar para terminar rápido.

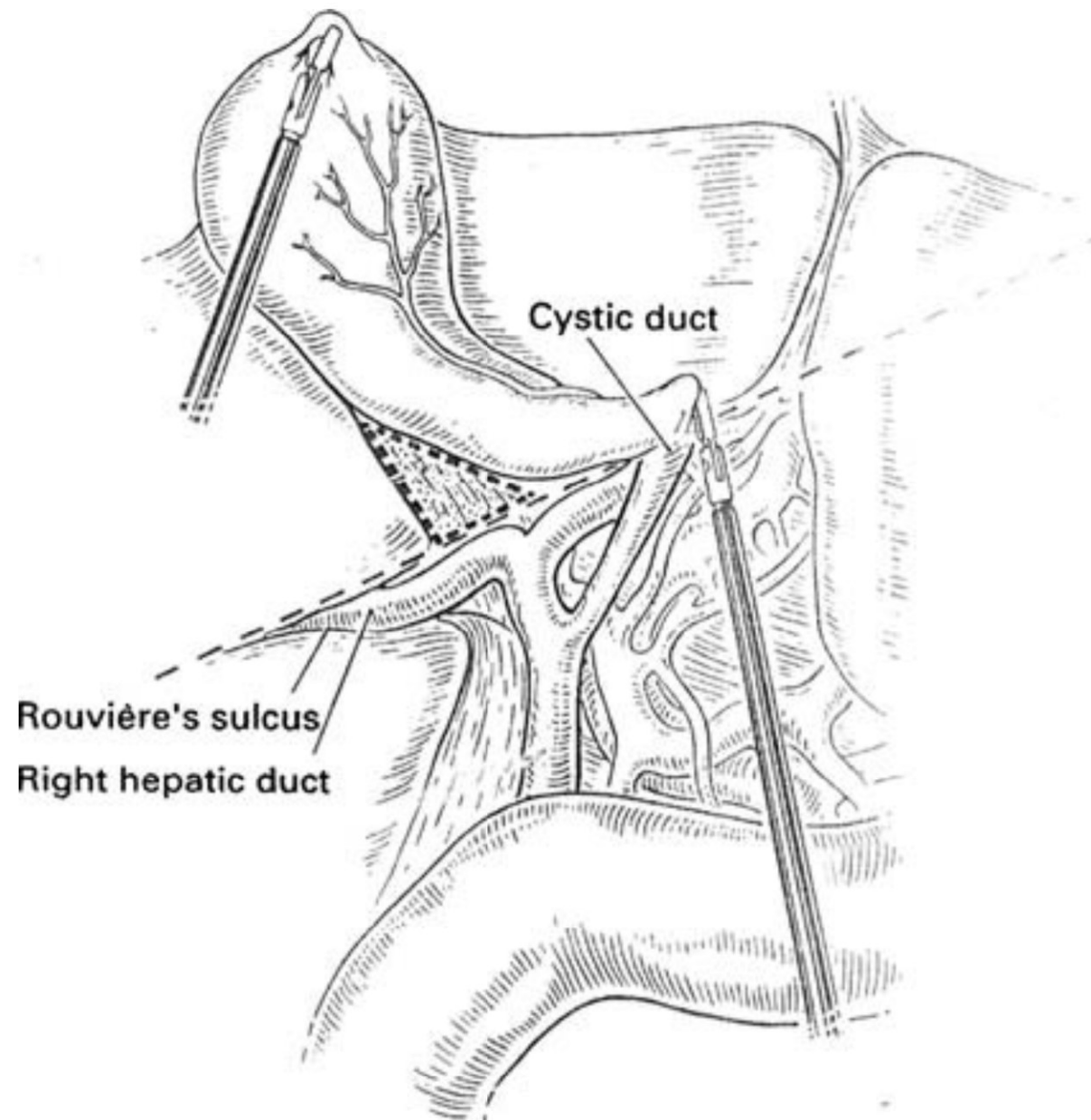
Dr. Eduardo Carone Filho











Visão crítica de segurança

☐ Pode não ser o ducto cístico

Clip padrão não completa o ducto cístico

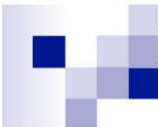
Presença de outra estrutura ductal

Estrutura vascular e extra-linfática na dissecção

Ducto segue posterior no sentido do duodeno

Artéria maior passando atrás do ducto

Falta opacificação proximal na colangiografia



Como operar?

Aspectos técnicos: - Checklist

Strasberg SM, et al. HPB 2011;13:1-14.

Connor SJ, et al. HPB 2013

Table 1 Steps recommended to reduce risk for bile duct injury in laparoscopic cholecystectomy (LC)

Step	Reference(s)
Use a 30-degree scope	12
Use an experienced assistant	11
Ensure the lateral retraction of the fundus of the gallbladder	12,13,15
Ensure dissection is lateral to the cystic node	12,15
Stay on the border of the gallbladder within the window between the cystic artery and the cystic duct	13,15
Dissect the cholecysto–cystic duct junction toward the common bile duct	12,13,15
Avoid the use of diathermy	13
Release the anterior and posterior peritoneum	11,15
Use Rouvière's sulcus and the base of segment IV as fixed landmarks to aid orientation	11,16,33
Avoid dissection on the left side of the hepatoduodenal ligament	13,22
Ensure the routine use of intraoperative cholangiography	1,12,19
Perform subtotal cholecystectomy rather than fundus-first cholecystectomy in the event of a hostile hepatobiliary triangle	17,18
Develop a culture of safety when performing LC	20–22

Risco de conversão

Table 3

Comparison of preoperative clinical & laboratory factors in patients undergoing successful versus failed early laparoscopic cholecystectomy.

	Early laparoscopic cholecystectomy		p-Value
	Successful	Failed	
Mean age (years)	33.5	35.7	0.292
Sex			
Male	1	3	0.022
Female	39	7	
Mean preoperative duration of symptoms (days) ^a	2.7	2.8	0.971
Mean WBC count ($\times 1000/\text{ml}$) ^a	13.55	14.03	0.422
Mean serum alkaline phosphatase (kA/ml) ^a	8.8	10	0.113
Mean serum amylase (IU/ml) ^a	96.97	118.5	0.086
Mean serum CRP (mg/dl) ^a	2.38	5.04	0.002

Bold values signify statistically significant values.

^a At the time of admission.

Laparoscopic Cholecystectomy Checklist

to accompany the WHO Surgical Safety Checklist

PRE-INCISION

After WHO Surgical Safety Checklist

Surgeon to:

- ☐ Review liver function tests
- ☐ Review radiological imaging
- ☐ Confirm whether gallbladder is likely to be contracted

PRE-DISSECTION

Surgeon to confirm with **assistant**:

- ☐ Fundus retracted to 10 o'clock
- ☐ Hartmann's pouch lifted up and across to origin of segment IV pedicle
- ☐ Line between Rouviere's sulcus and base of segment IV identified
- ☐ Safe level of dissection identified
- ☐ Posterior leaf of peritoneum covering hepatobiliary triangle can be released

PRIOR TO CLIPPING CYSTIC DUCT

Surgeon to:

- ☐ Confirm critical view with **assistant:**

Surgeon to consider:

- ☐ Performing intraoperative cholangiogram (IOC) and confirm with **assistant:**
 1. Flow into duodenum
 2. Proximal hepatic duct visualized
 3. Three hepatic ducts are seen proximally, including right posterior sectoral
 4. No filling defects within common bile duct
 5. Presence of spiral valves within cystic duct

Colecistectomia segura

1. Utilize ótica de 30°
2. Assistente experiente

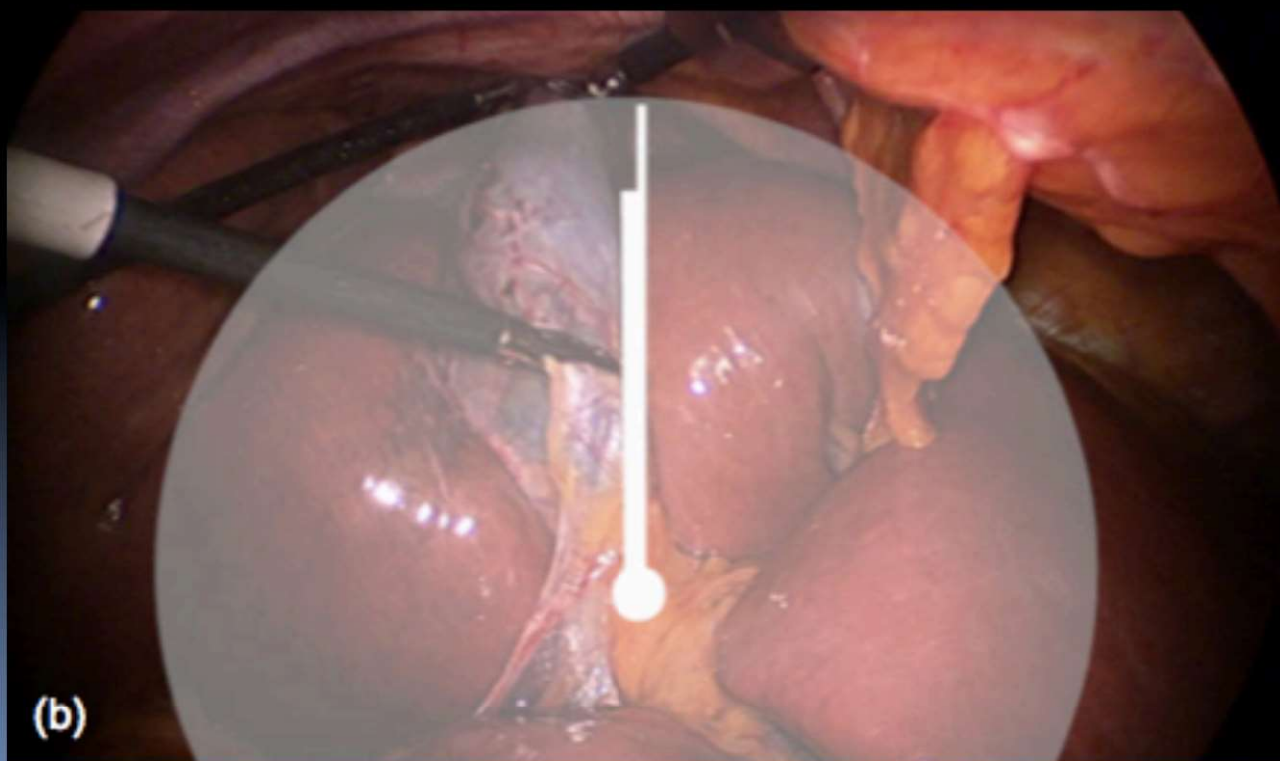
Colecistectomia segura

3. Promova retração lateral do fundo da vesícula (posição de 10 horas).

4. Dissecção lateral ao linfonodo cístico.

5. Liberar o folheto posterior do peritônio que cobre o triângulo hepatobiliar.

6. Dissecção na borda da vesícula na janela entre a artéria cística e o ducto cístico.



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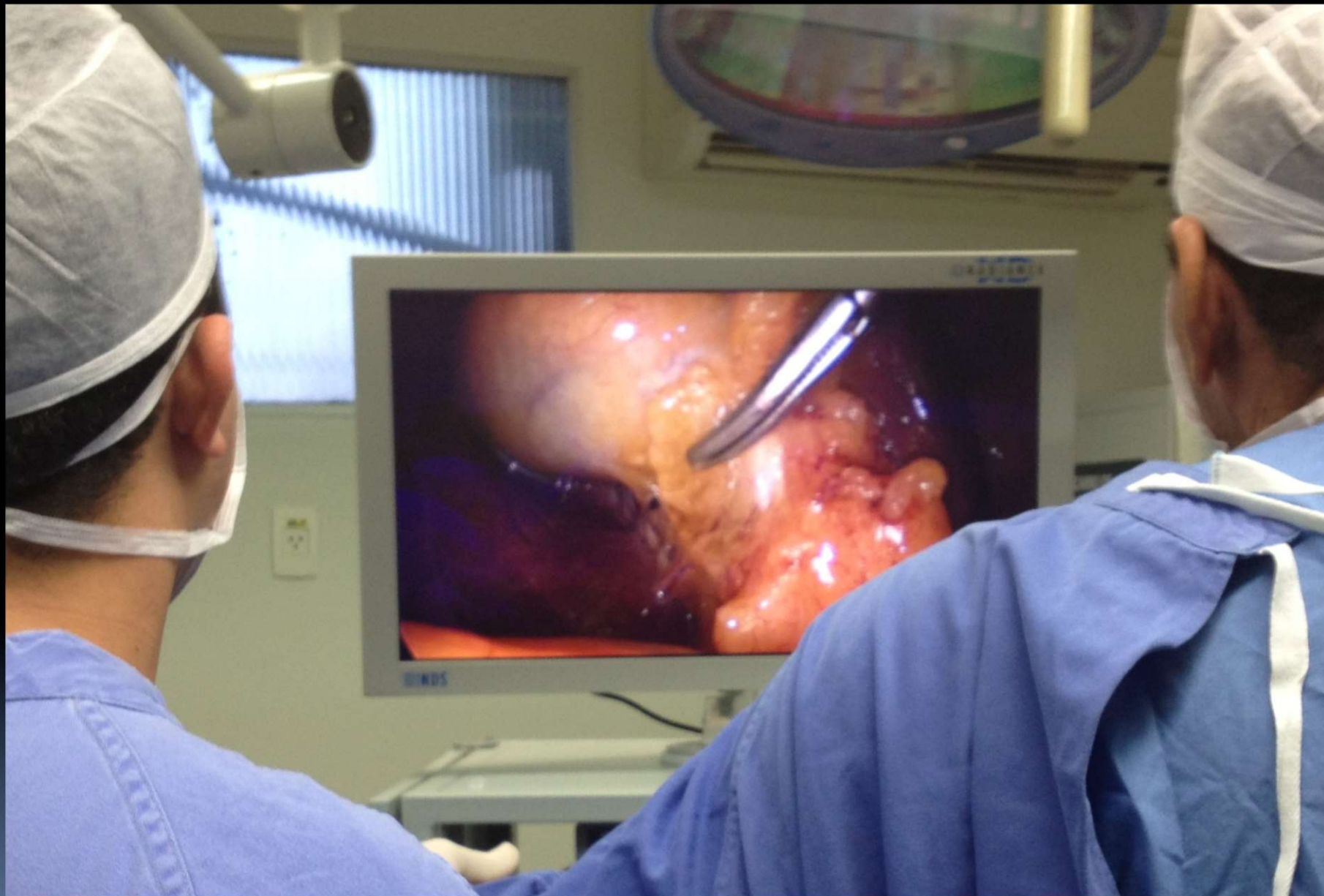
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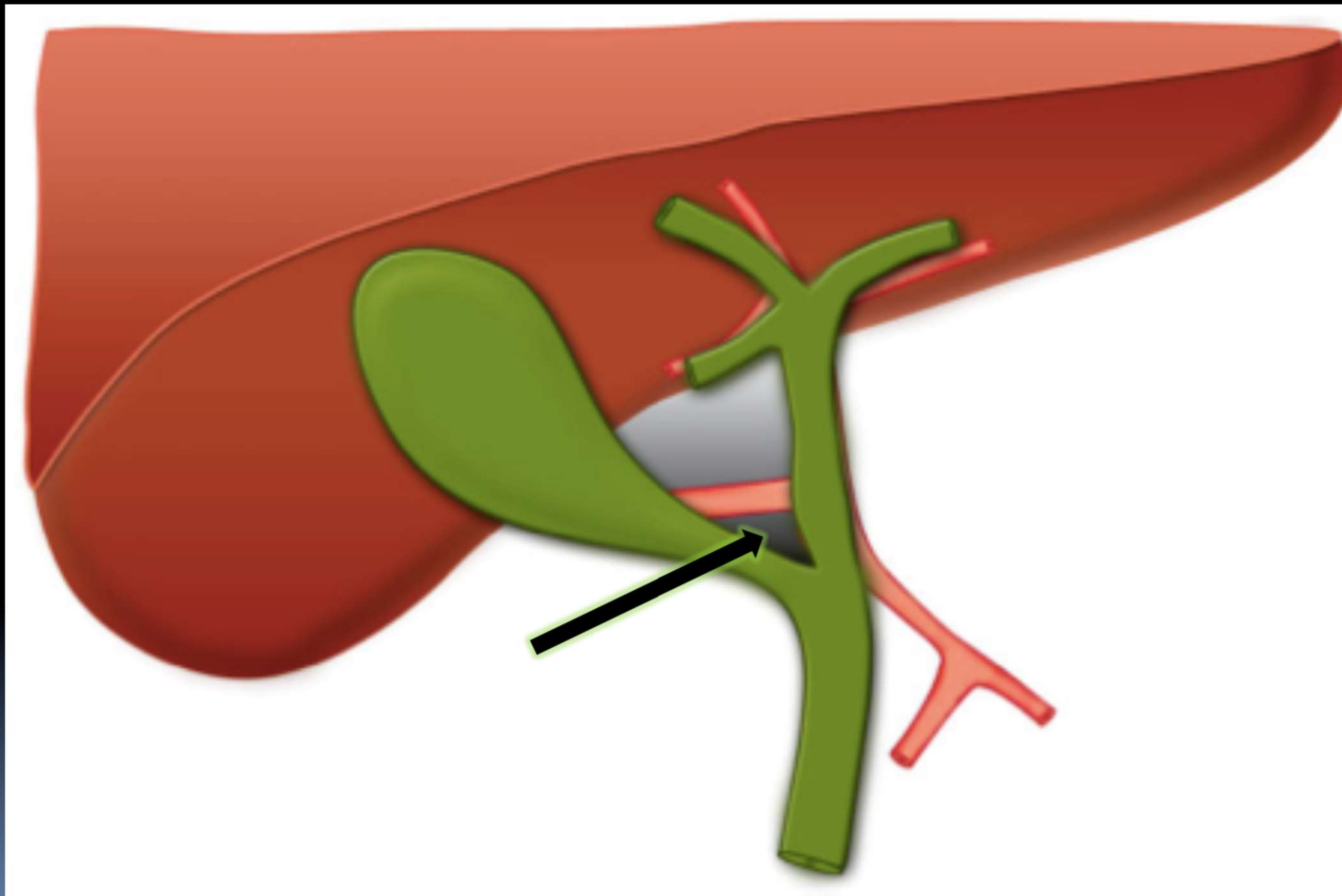
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6. Dissecção na borda da vesícula na janela entre a artéria cística e o ducto cístico.



Colecistectomia segura

7. Dissecção colecisto-ducto cístico em direção à via biliar.
8. Evitar uso de bisturi elétrico
9. Liberar o peritôneo anterior e posterior.
10. Identificar a linha entre o sulco de Rouviere e a base do segmento IV.



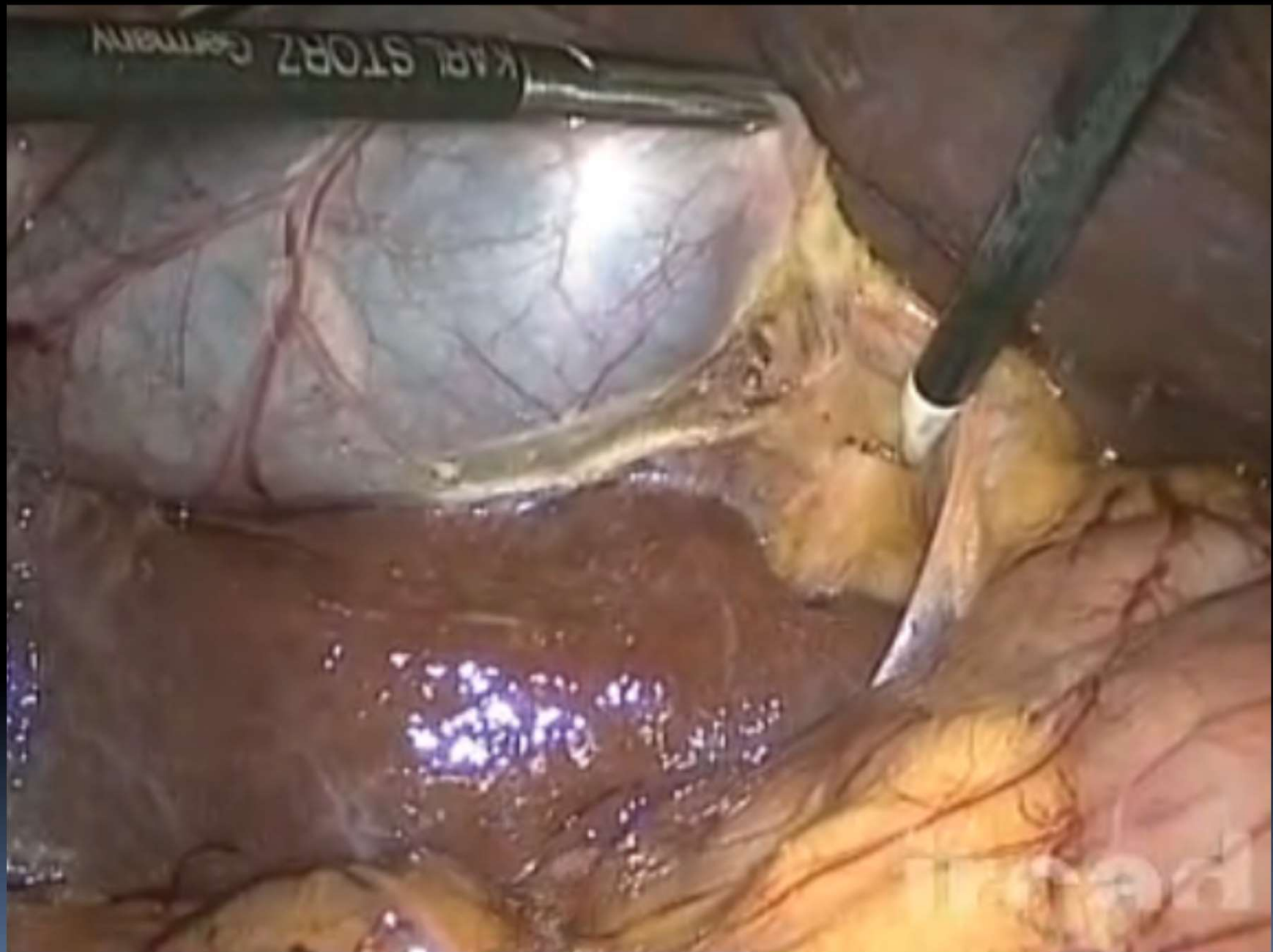


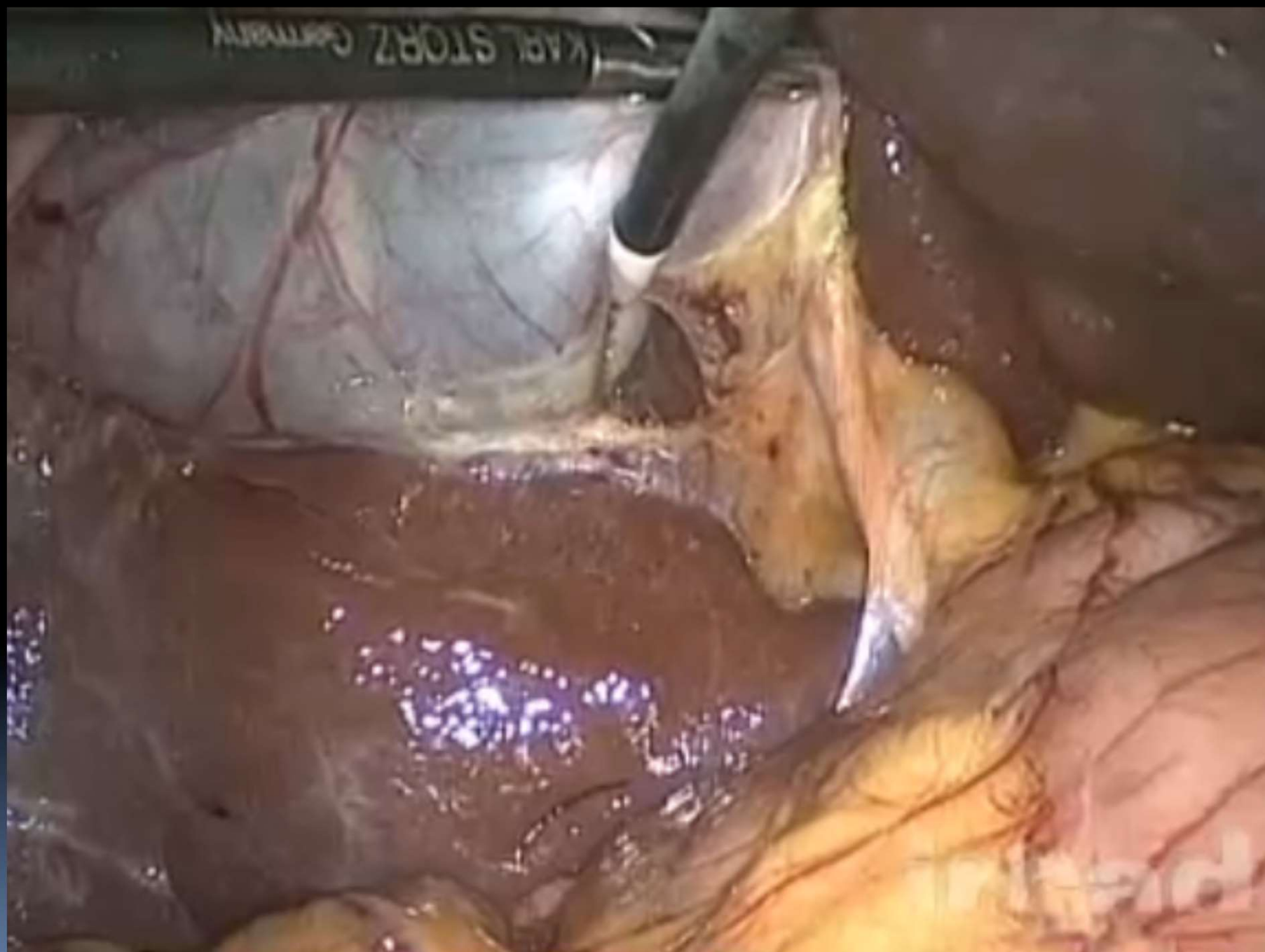
Colecistectomia segura

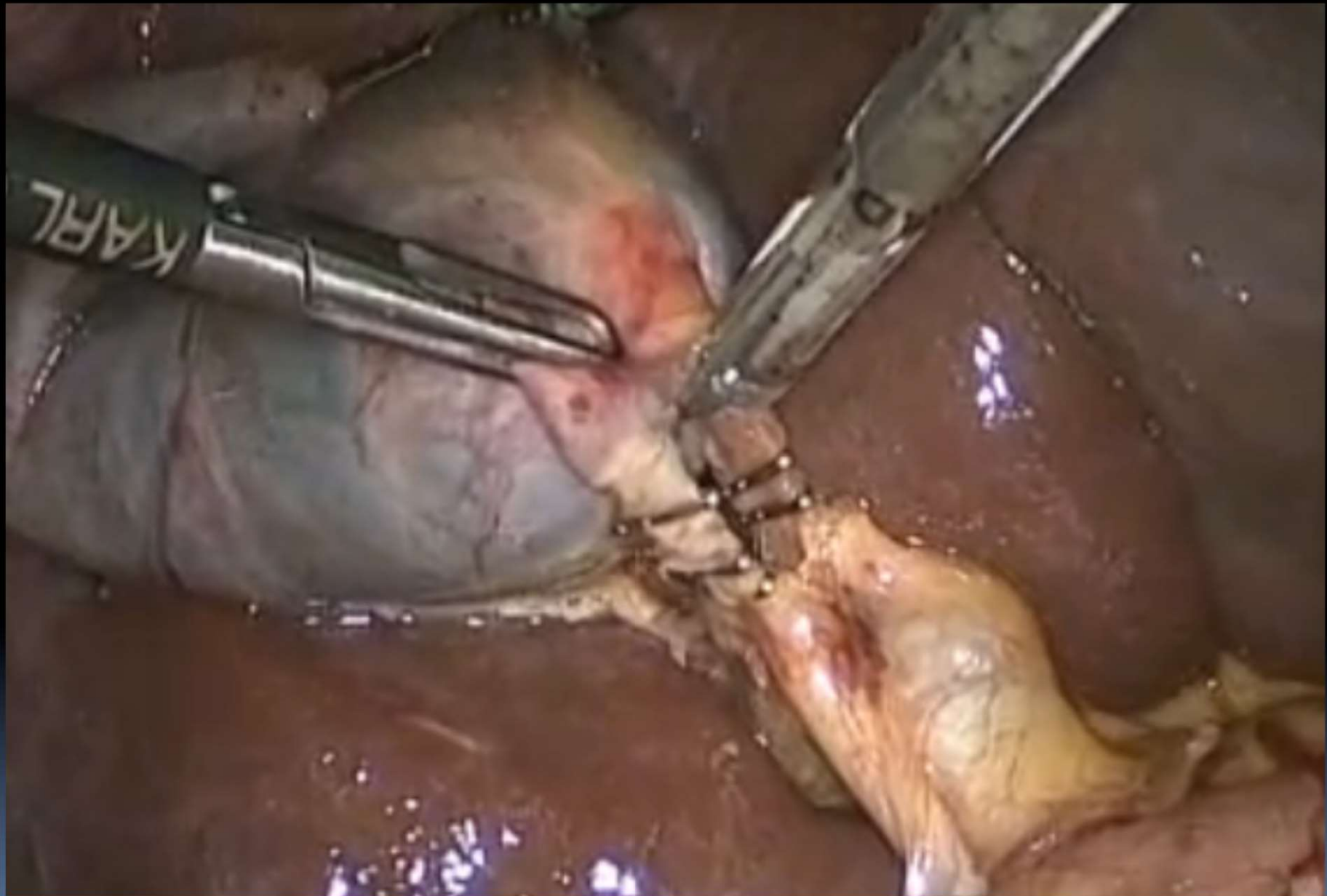
7. Dissecção colecisto-ducto cístico em direção à via biliar.
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Colecistectomia segura

7. Dissecção colecisto-ducto cístico em direção à via biliar.
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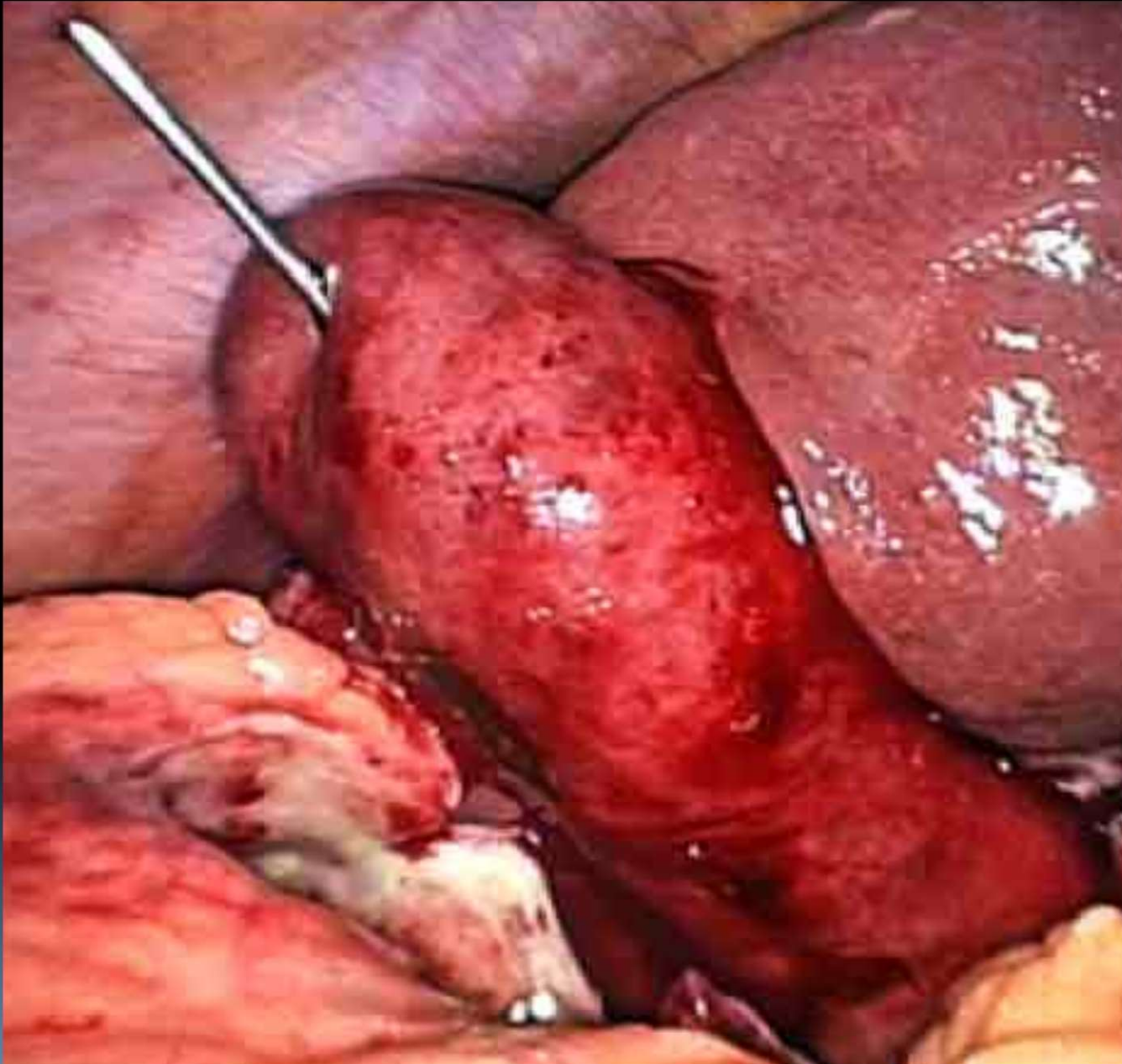




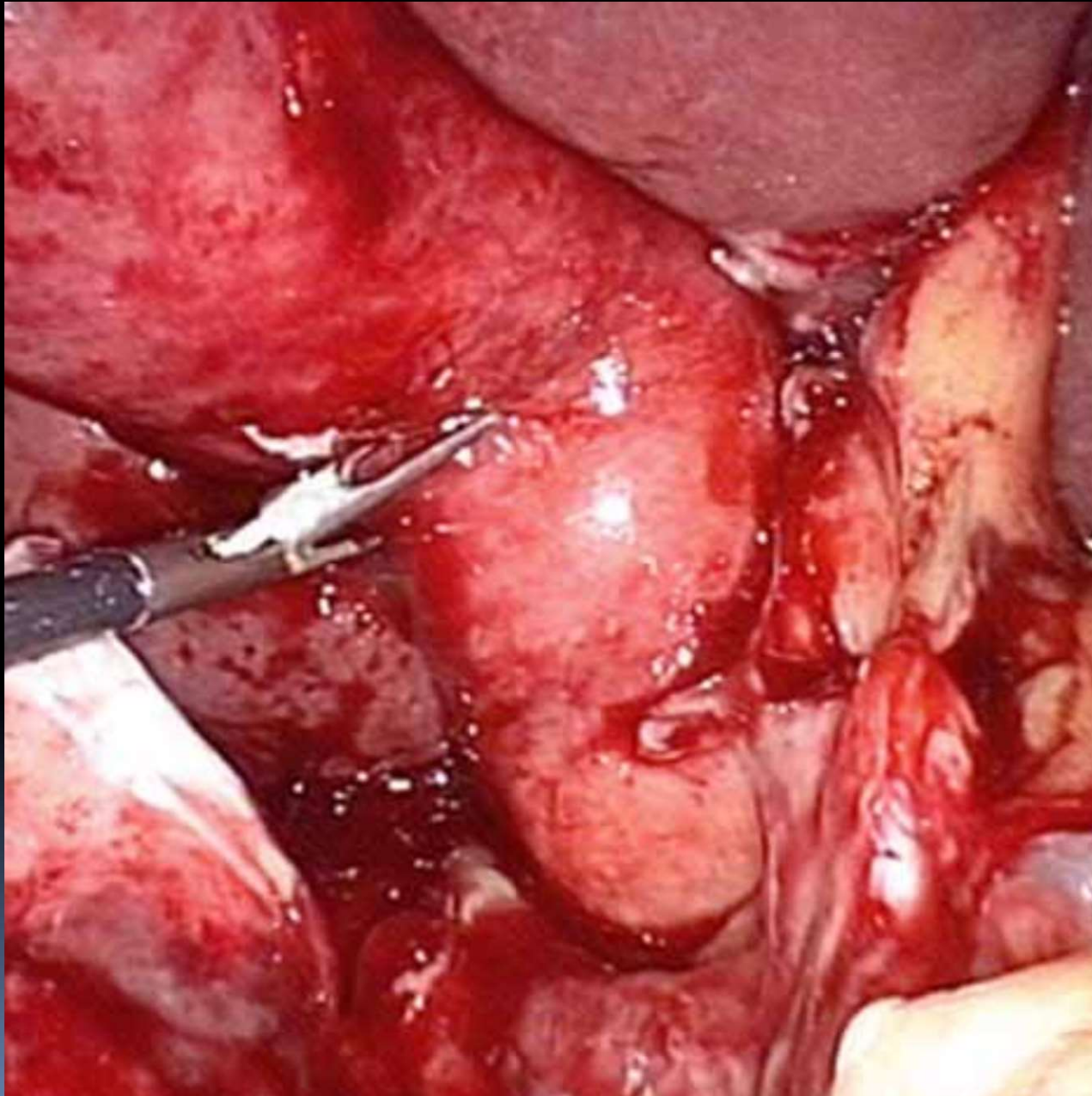
Colecistectomia segura

7. Dissecção colecisto-ducto cístico em direção à via biliar.
8. Evitar uso de bisturi elétrico
9. Liberar o peritôneo anterior e posterior.
10. Identificar a linha entre o sulco de Rouviere e a base do segmento IV.

Esvaziar a vesícula



Cálculo impactado na bolsa de Hartmann



Colecistectomia segura

11. Evite dissecação do lado esquerdo do ligamento hepatoduodenal.

12. Avaliar necessidade de colangiografia.

Surgeon to consider:

- ☐ Performing intraoperative cholangiogram (IOC) and confirm with **assistant**:
 1. Flow into duodenum
 2. Proximal hepatic duct visualized
 3. Three hepatic ducts are seen proximally, including right posterior sectoral
 4. No filling defects within common bile duct
 5. Presence of spiral valves within cystic duct

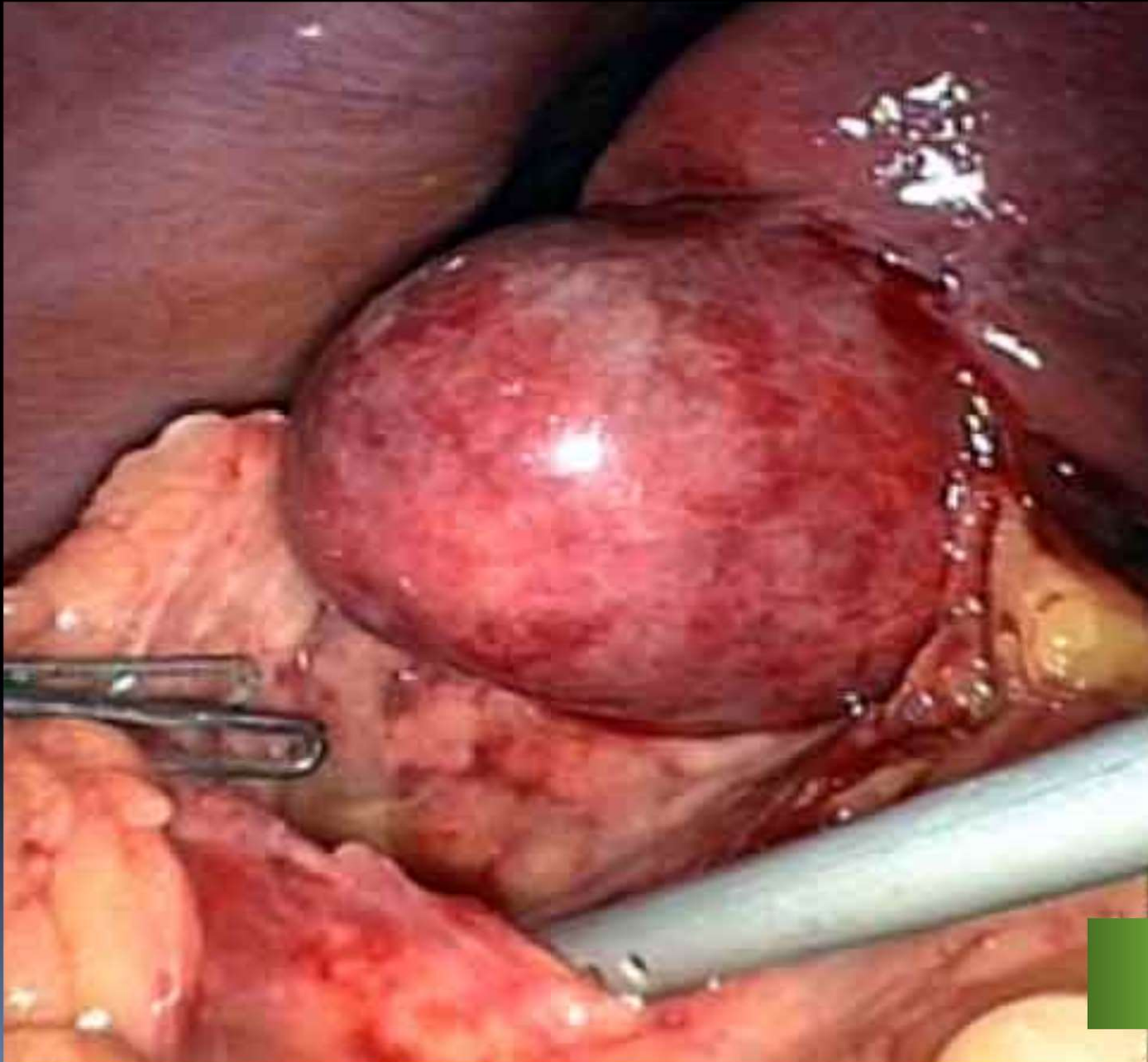


Colecistectomia segura

Utilize hidrodissecção

13. Prefira colecistectomia
subtotal a colecistectomia
fundo-cística

Colecistectomia fundo-cística



Não

ORIGINAL ARTICLE

'Extreme' vasculobiliary injuries: association with fundus-down cholecystectomy in severely inflamed gallbladders

Steven M. Strasberg¹ & Dirk J. Gouma²

¹Section of Hepatopancreatobiliary Surgery, Washington University in St Louis, Saint Louis, MO, USA and ²Department of Surgery, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands

Conclusions: Extreme vasculobiliary injuries tend to occur when fundus-down cholecystectomy is performed in the presence of severe inflammation. Contractive inflammation thickens and shortens the cystic plate, making separation of the gallbladder from the liver hazardous.

Colecistectomy subtotal

Biliary

Role of laparoscopic subtotal cholecystectomy in the treatment of complicated cholecystitis

Wu Ji, Ling-Tang Li and Jie-Shou Li

Nanjing, China

BACKGROUND: Laparoscopic cholecystectomy (LC) has become the "gold standard" in treating benign had acute calculic cholecystitis, 47 had chronic calculic atrophy cholecystitis, and 71 had polypus. Seventeen

14. Desenvolva cultura de segurança

Antes de clipar o ducto cístico

Confirmar visão crítica
com o assistente

A colecistectomia na colecistite aguda sempre será um desafio. A operação por videolaparoscopia deve ser a indicada e sempre obedecer os padrões de segurança até o momento bem estabelecidos.

Conduta

Domínios de qualidade

Reparo precoce por cirurgião HPB

Tão efetivo quanto reparo tardio

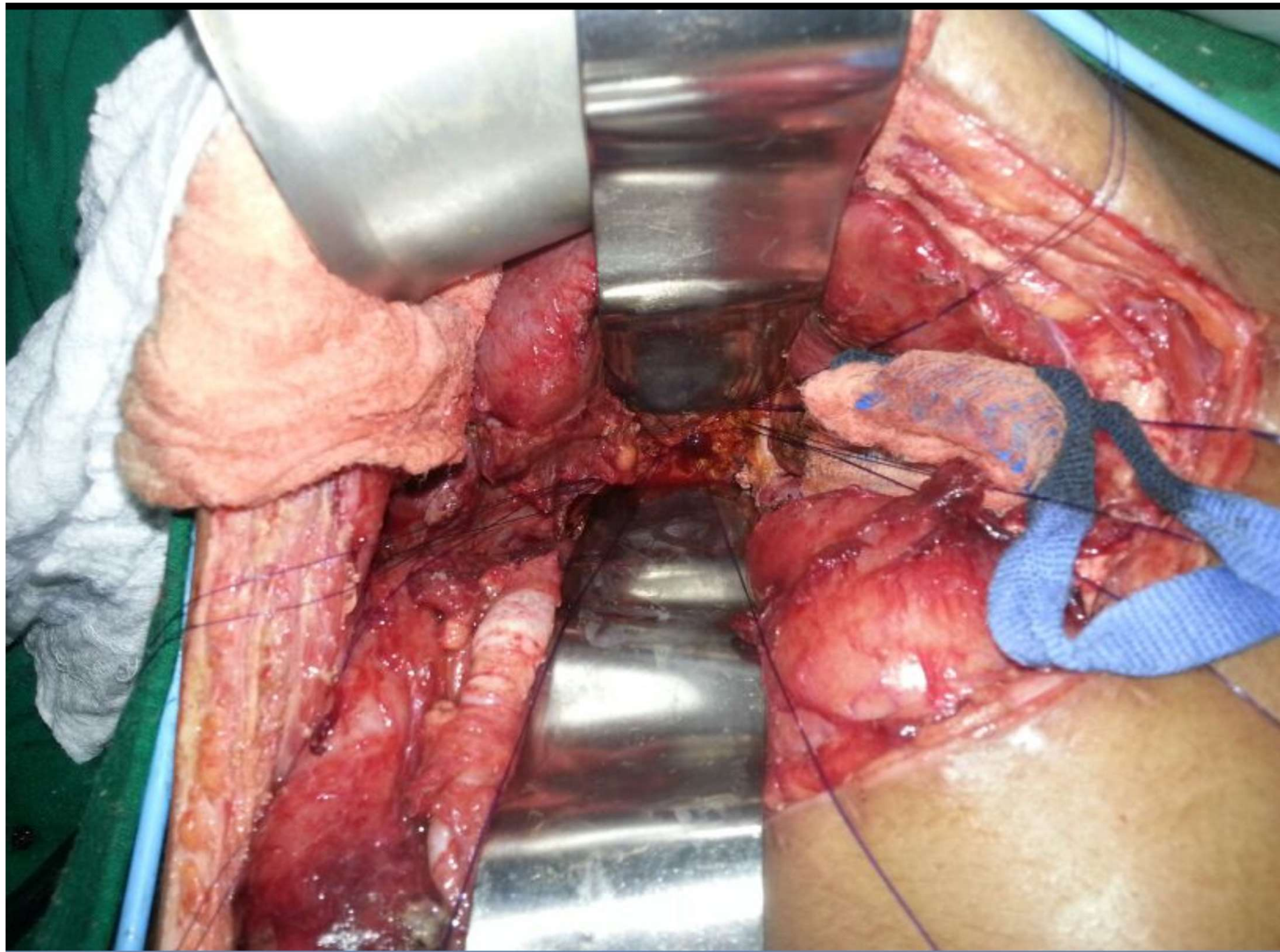
Não deve ser realizado pelo 1º Cirurgião

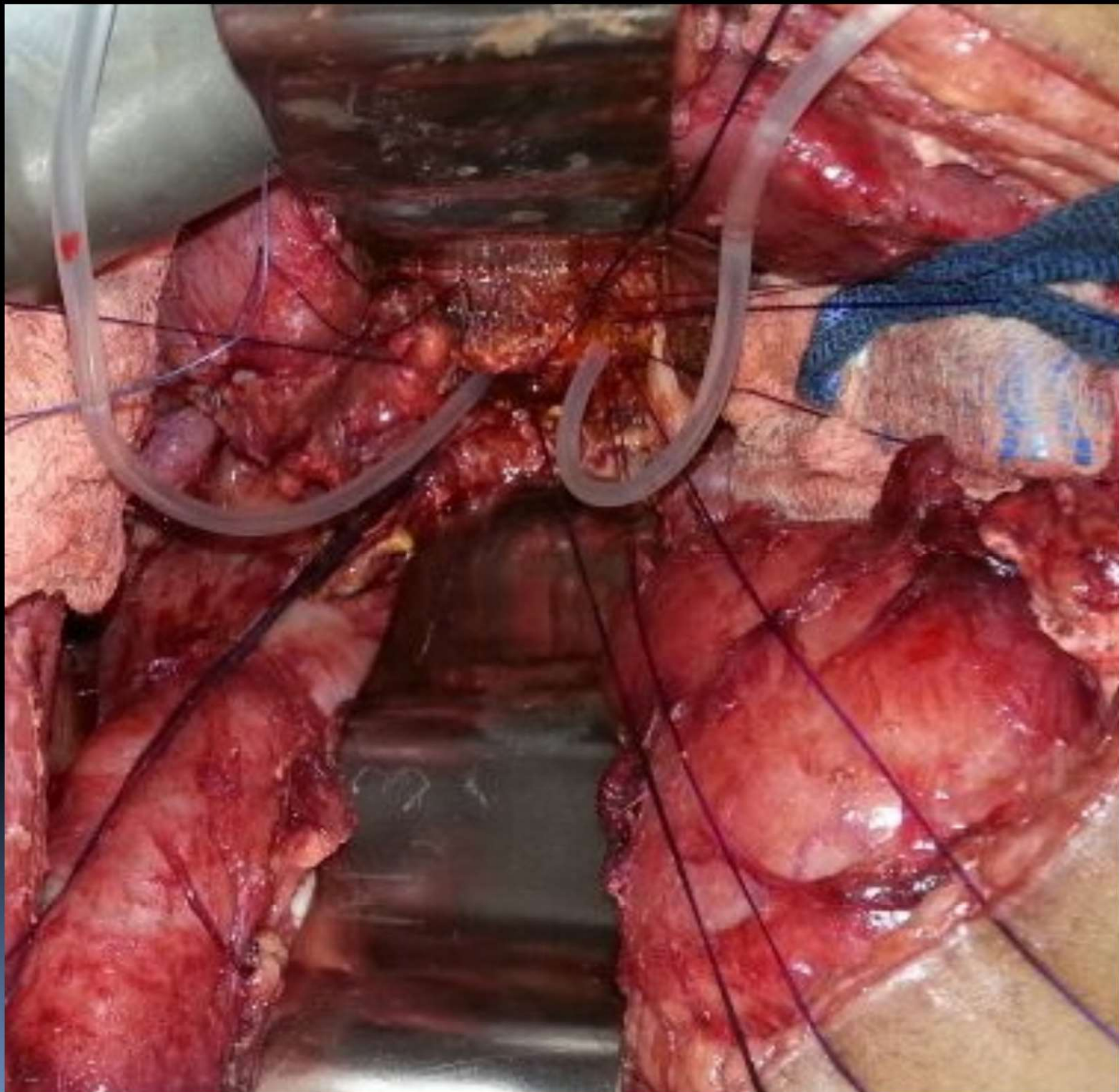
Fatores de risco para fracasso

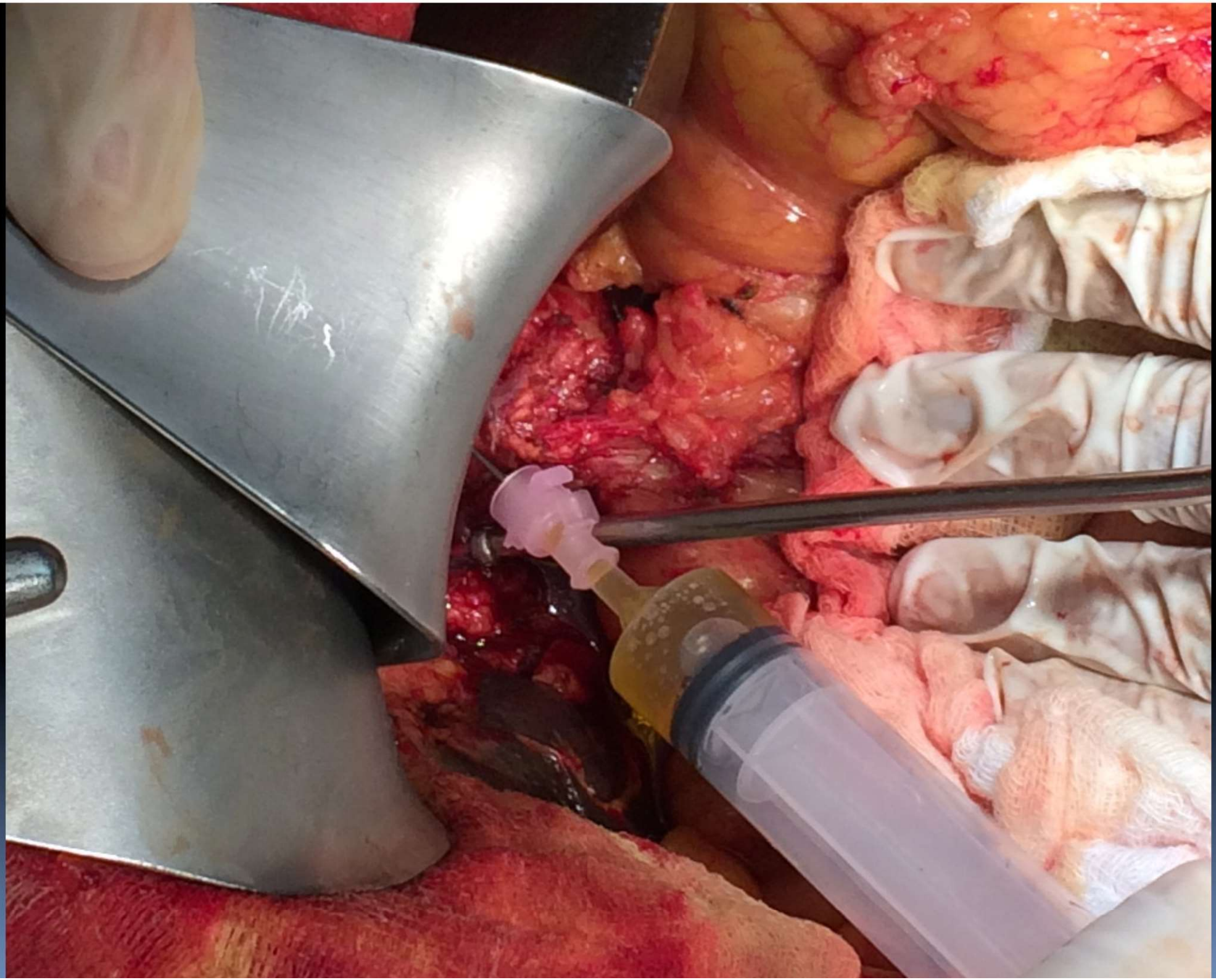
Nível da reconstrução

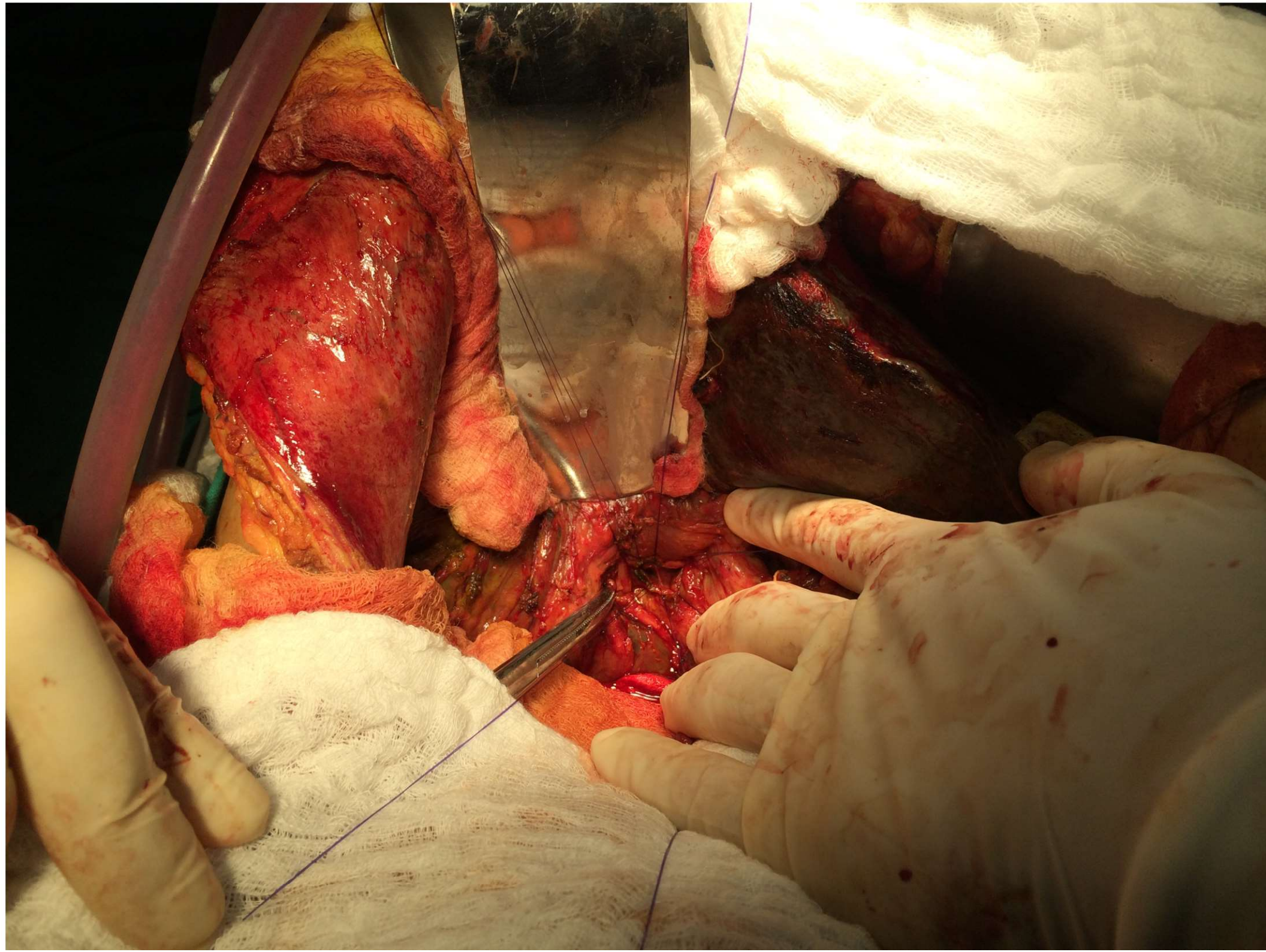
Reconstruções > 2 cm da confluência estão associadas a maiores taxas de fracasso.

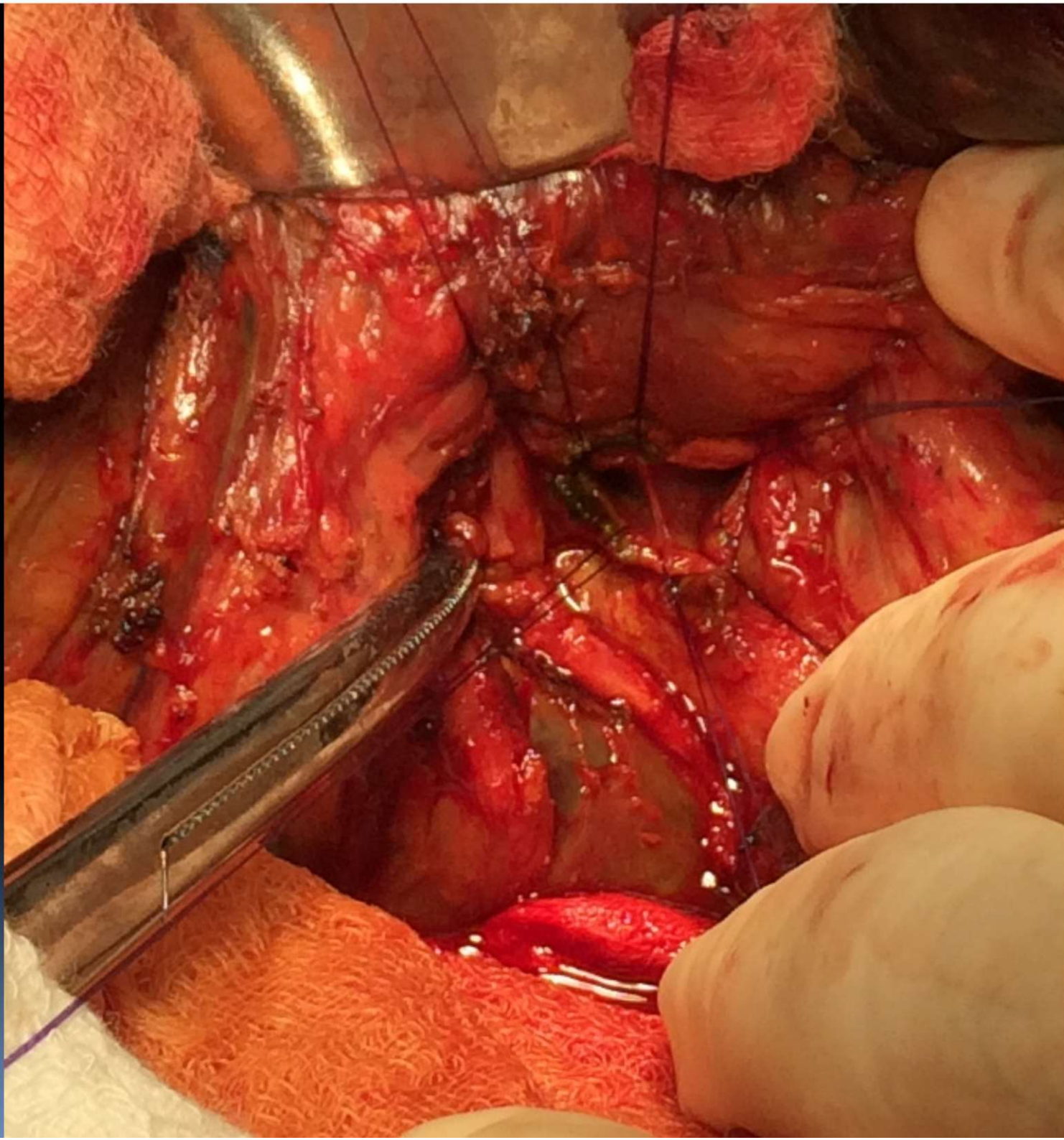


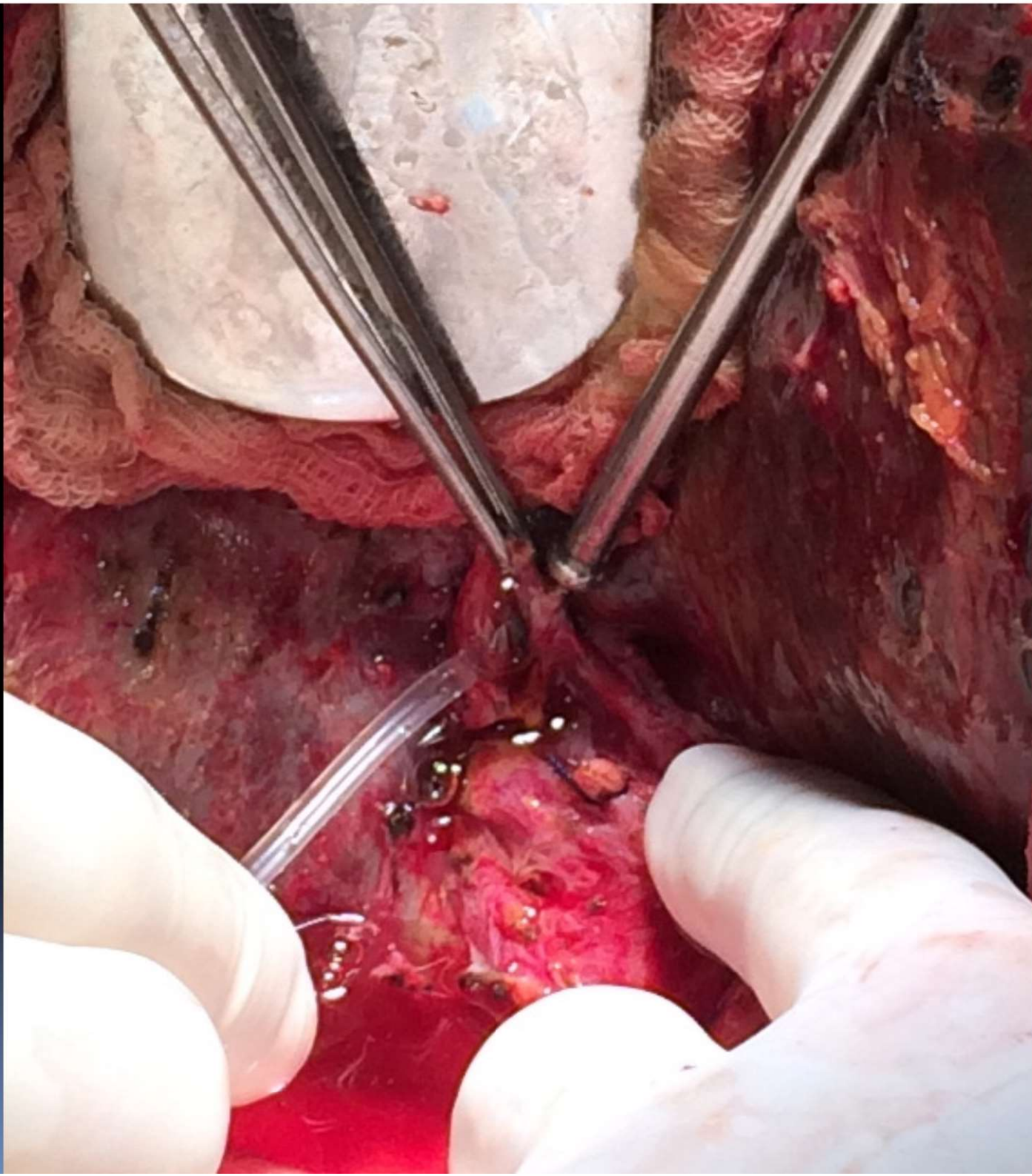


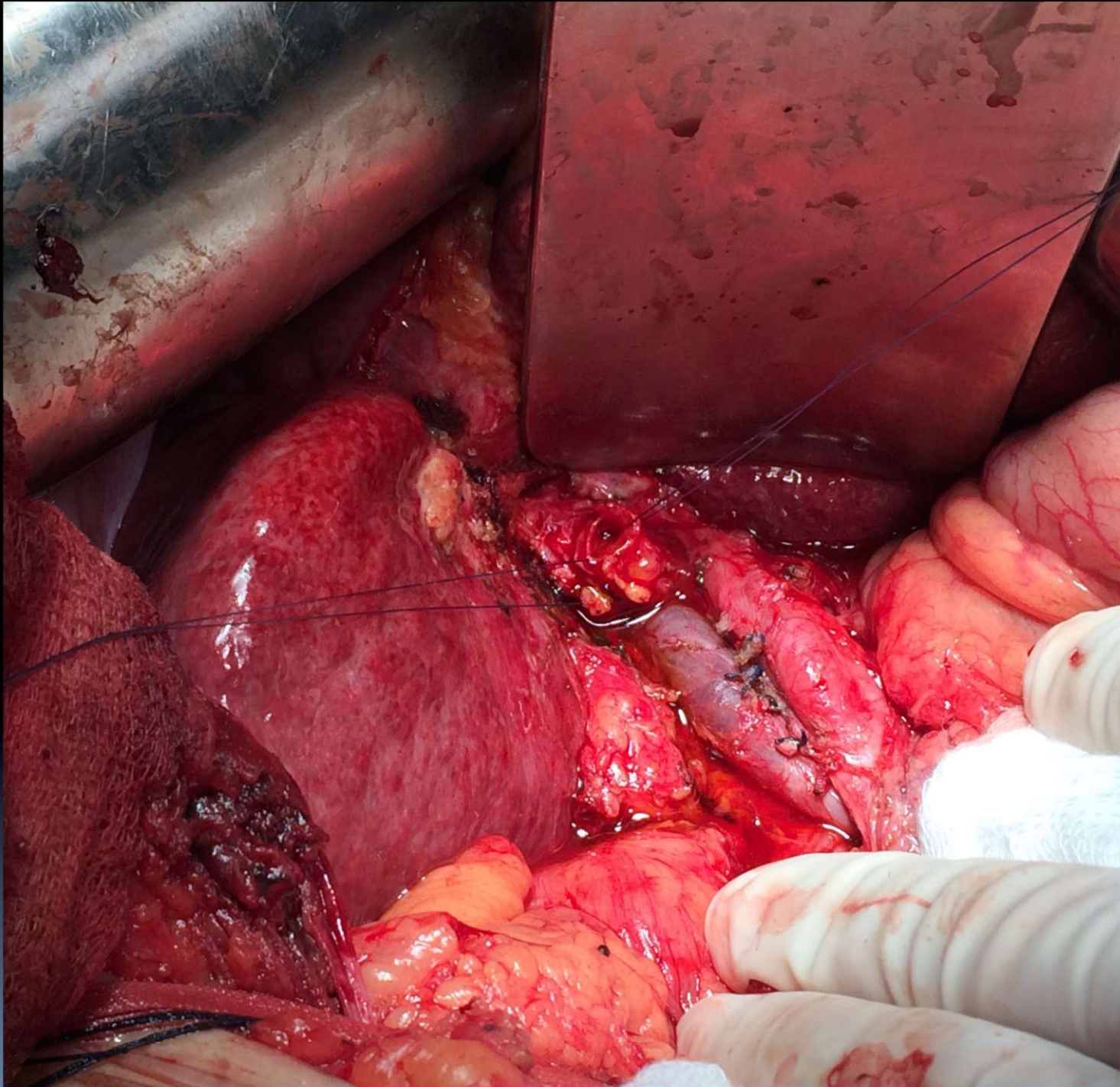


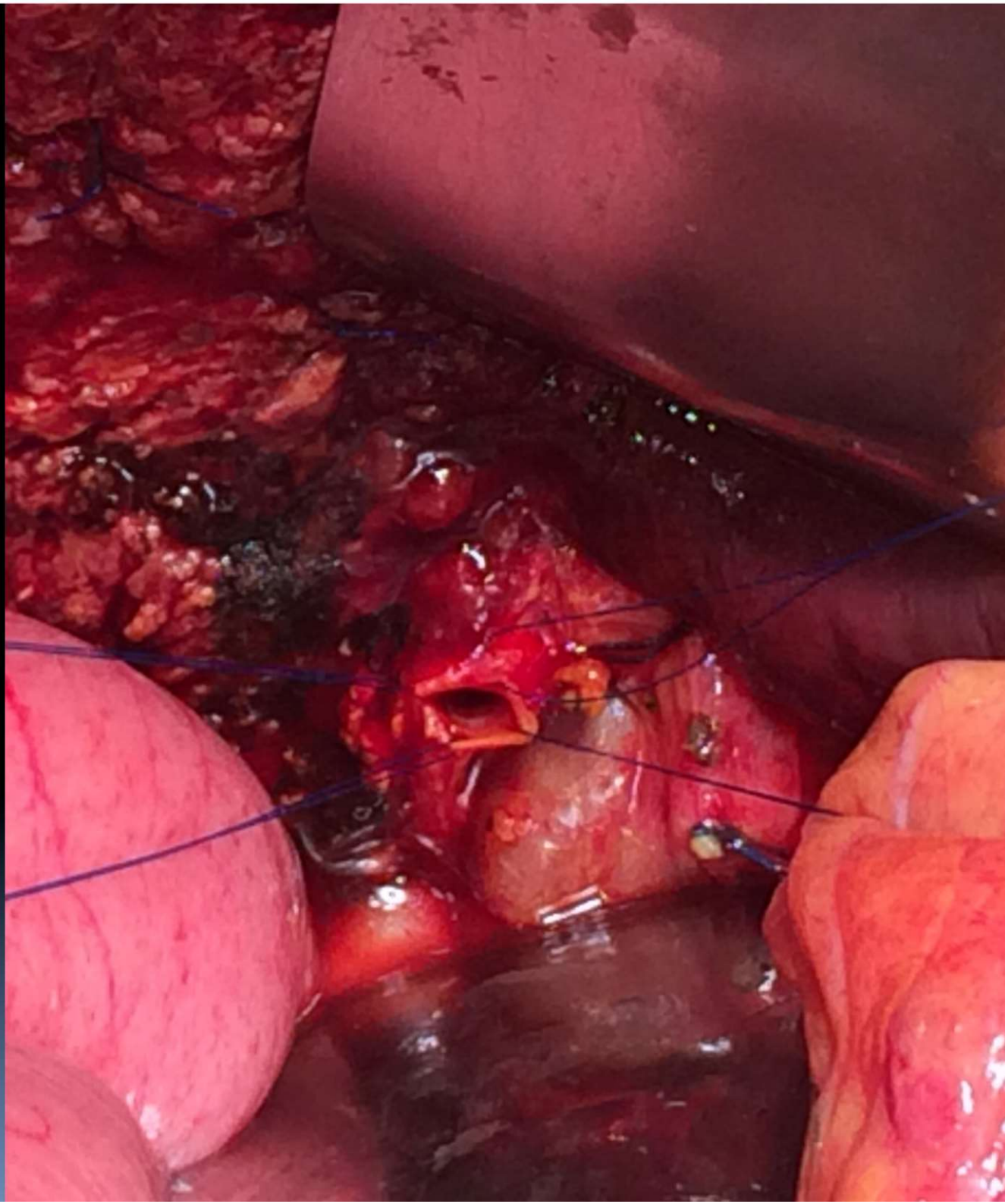


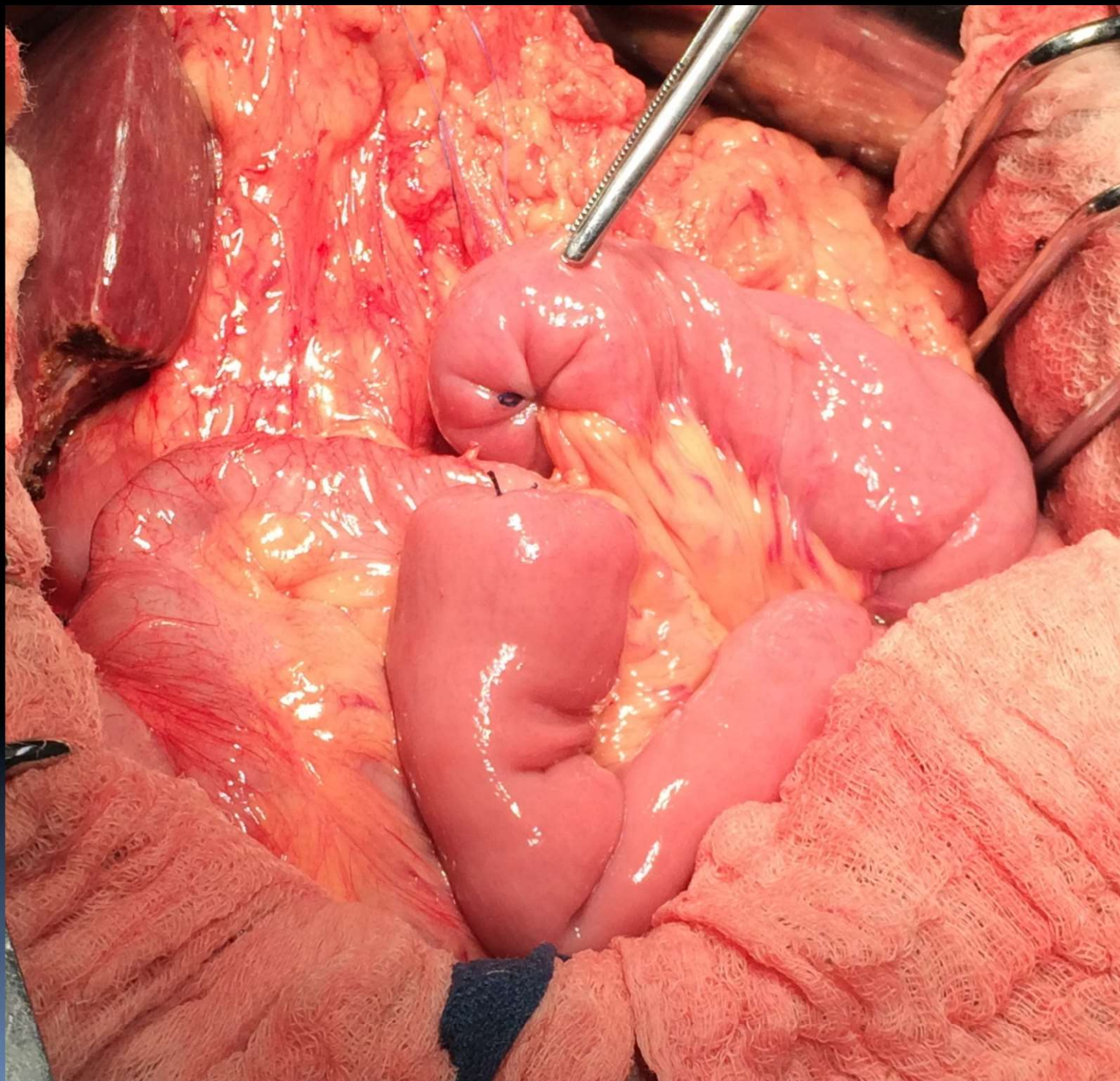


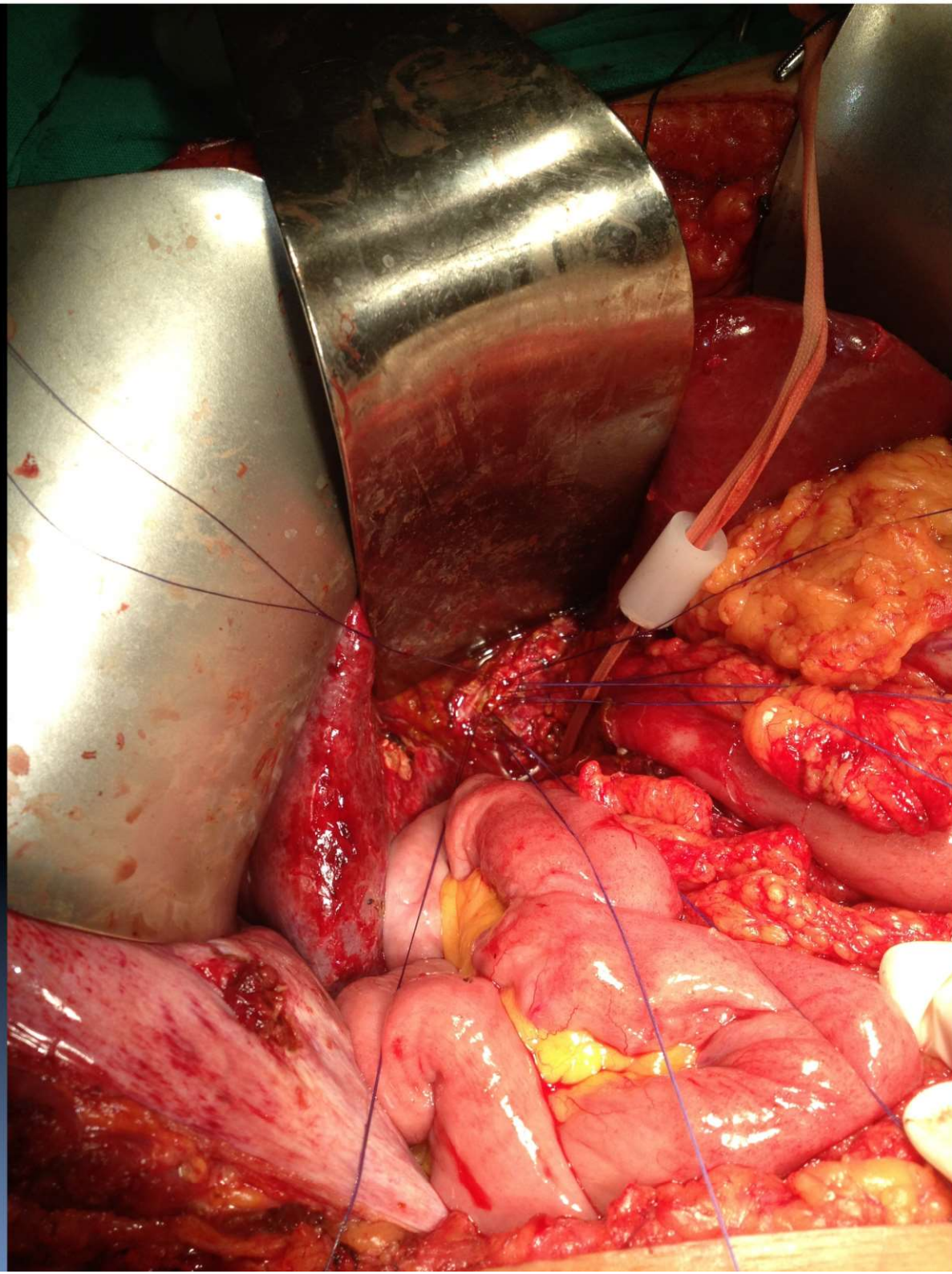




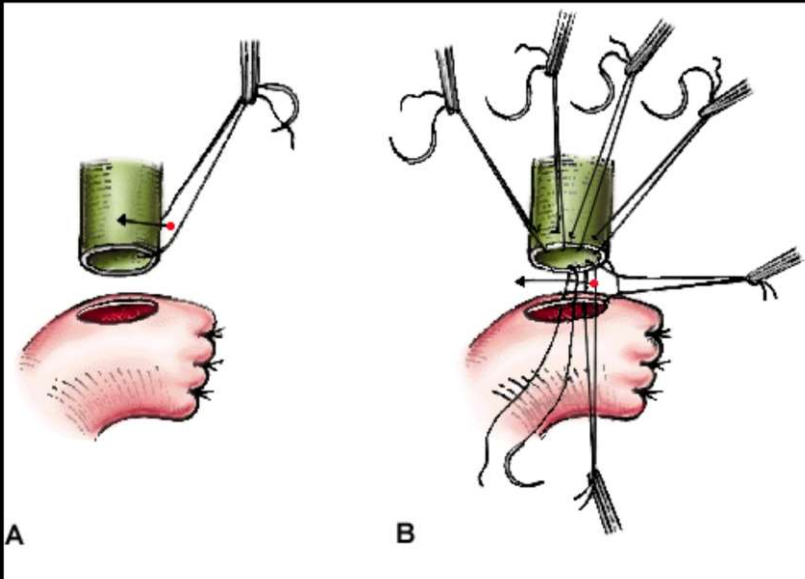




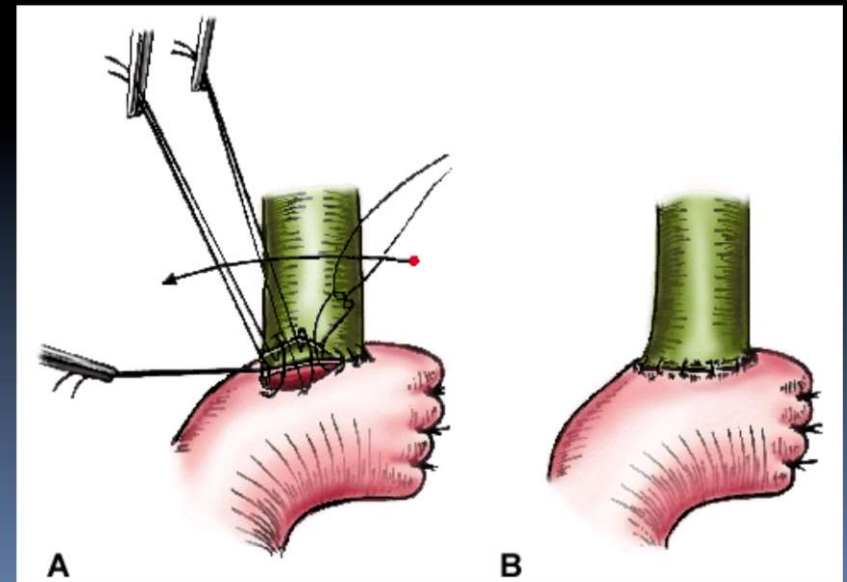
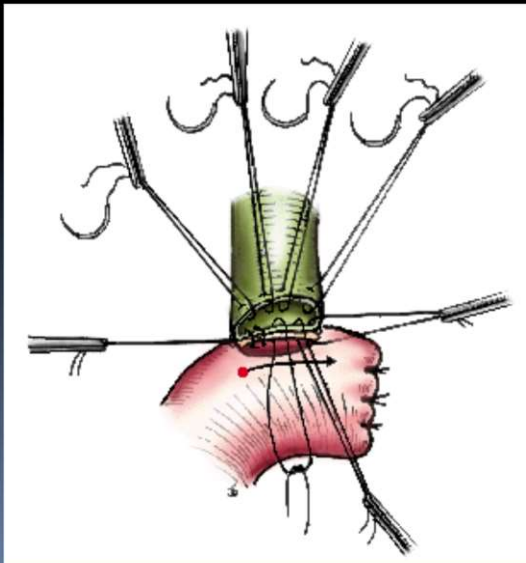
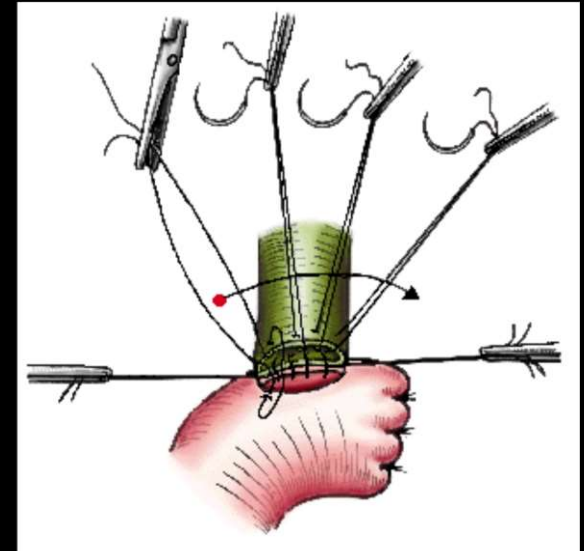


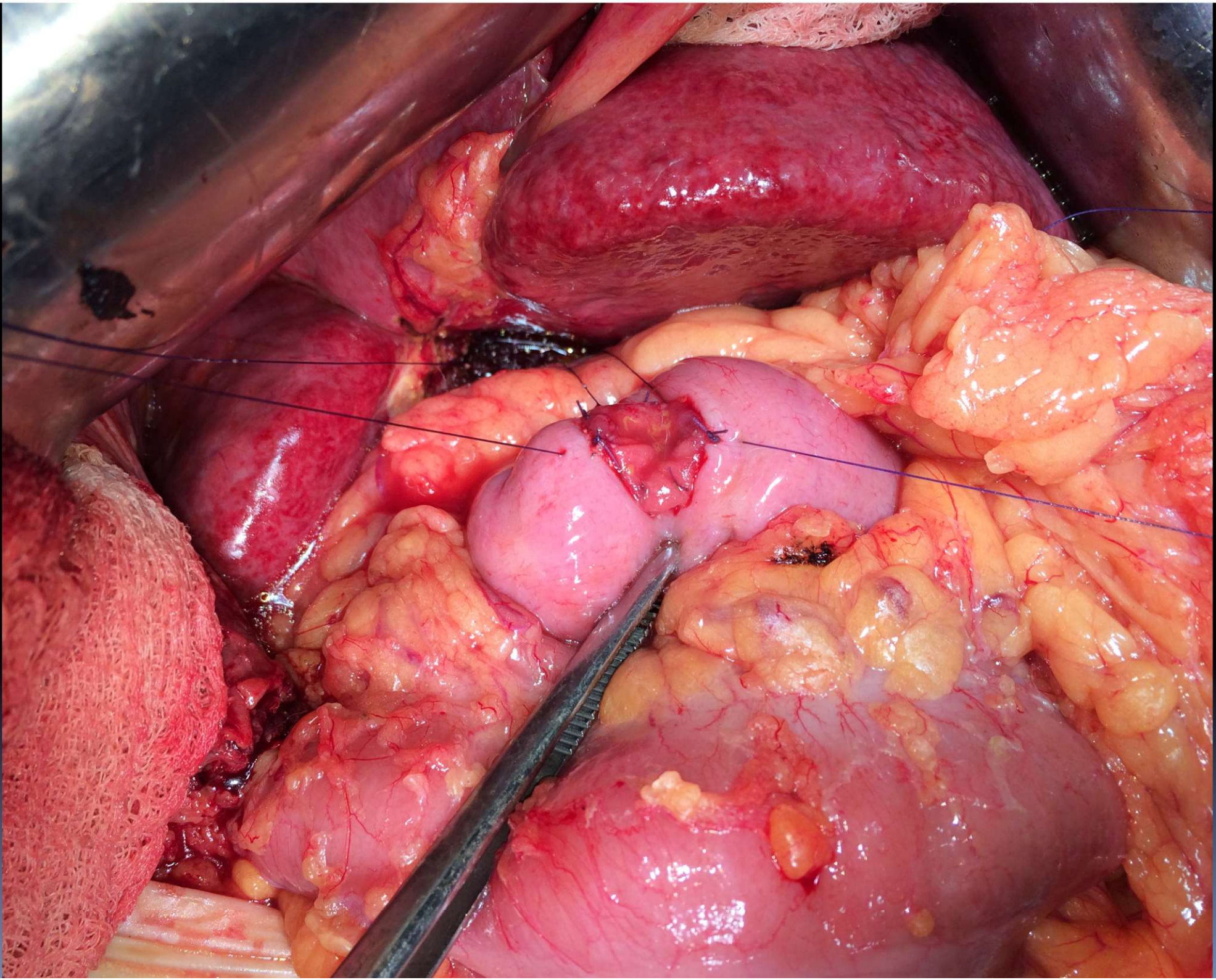


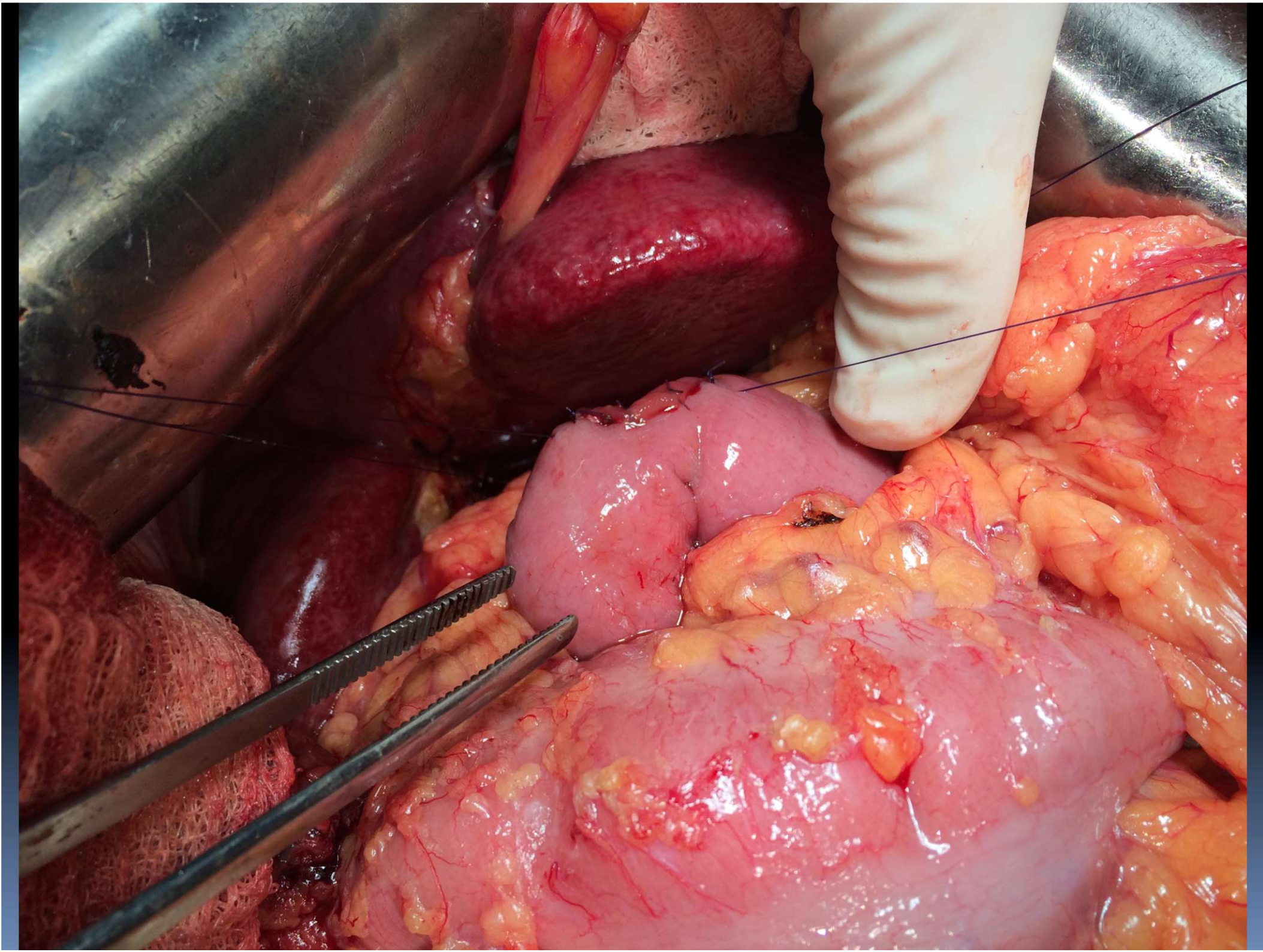
Anastomose bilio-entérique

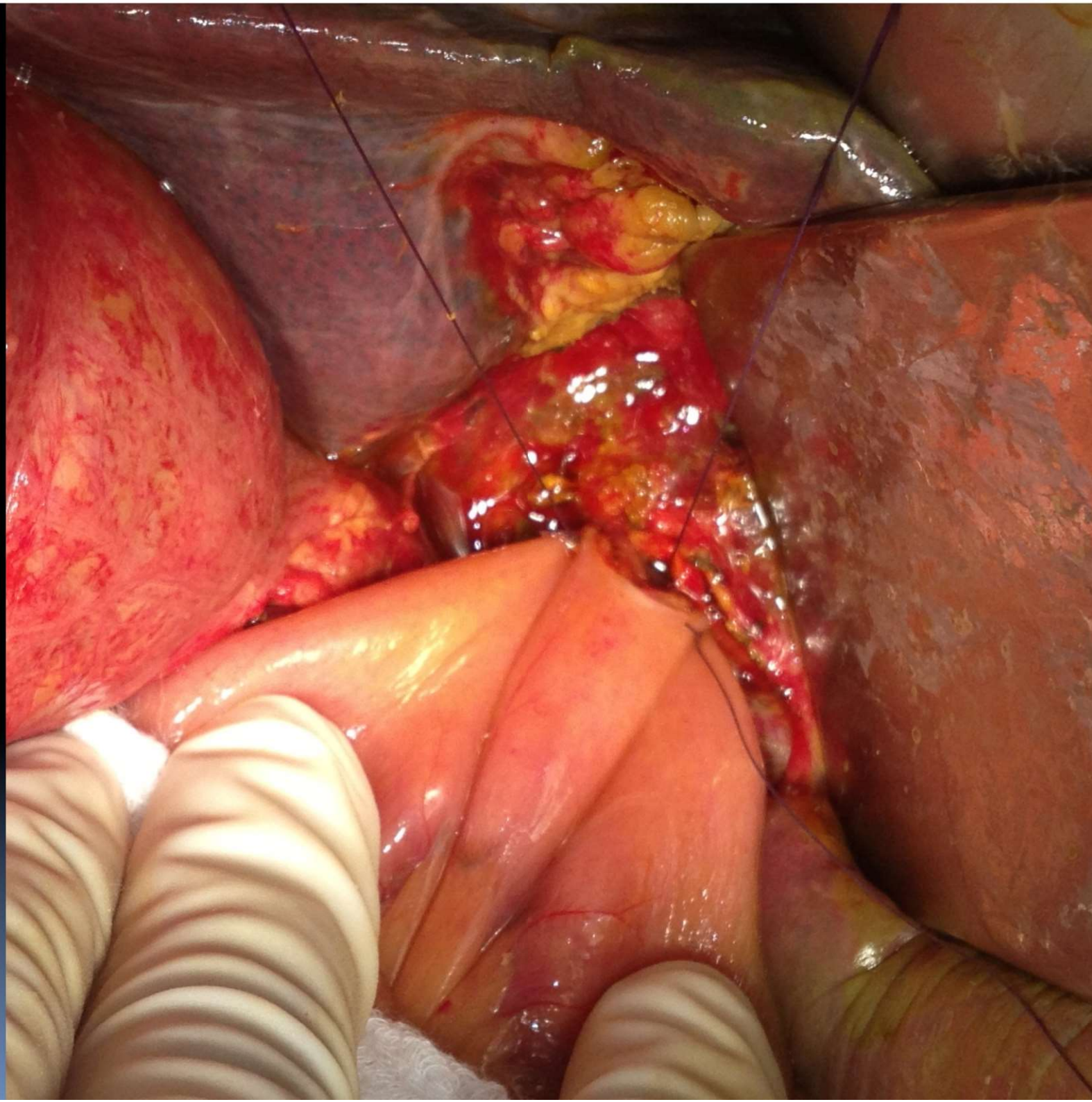


Y de Roux



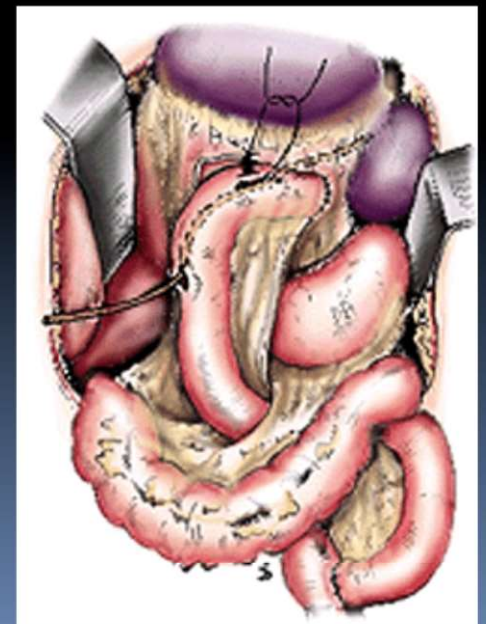
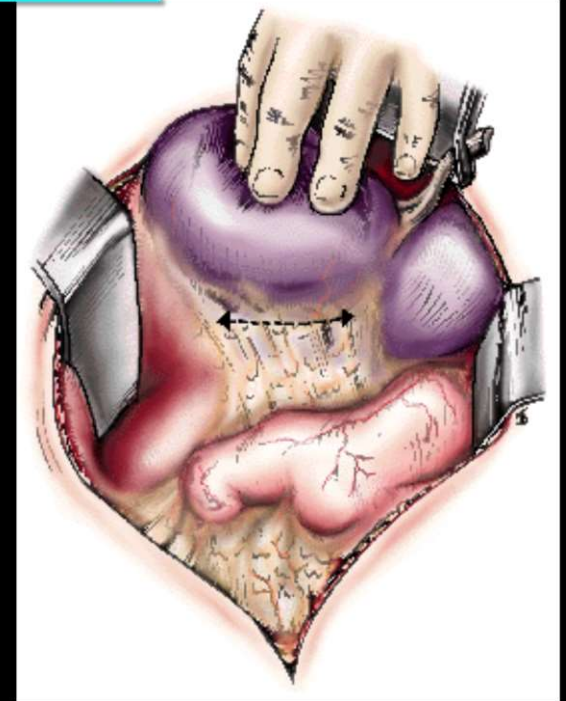
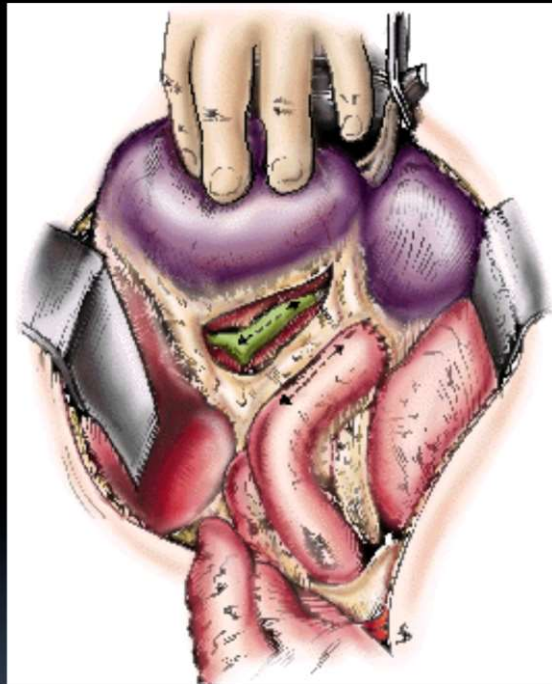
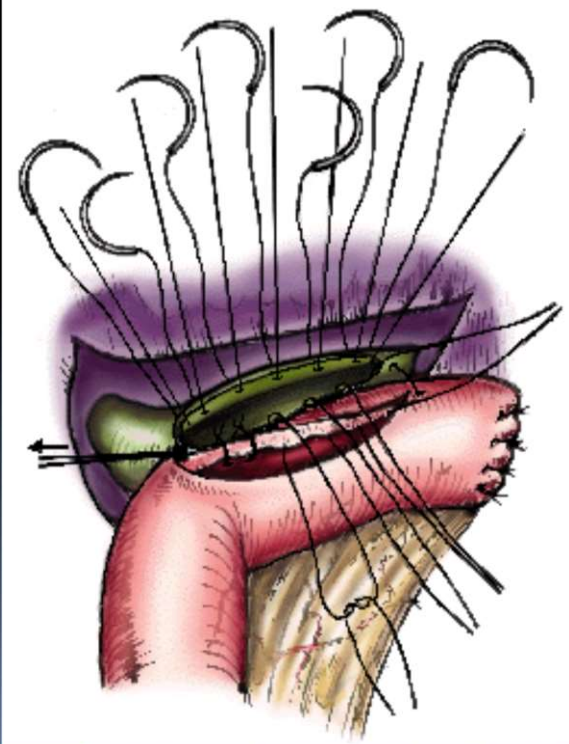
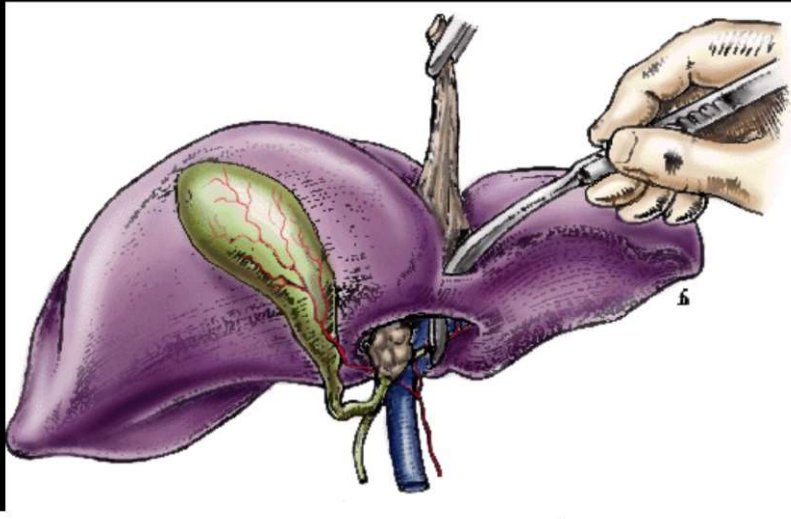




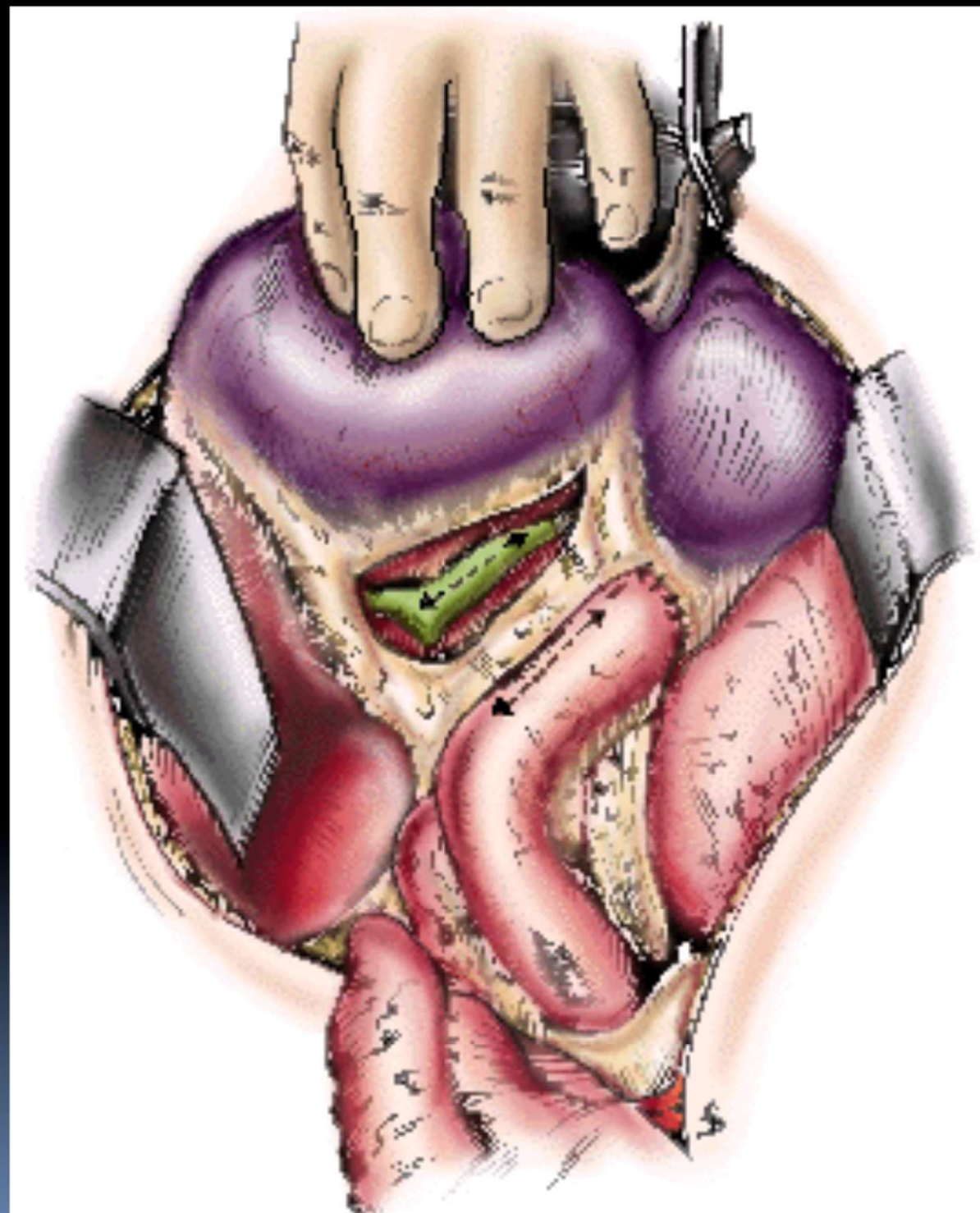




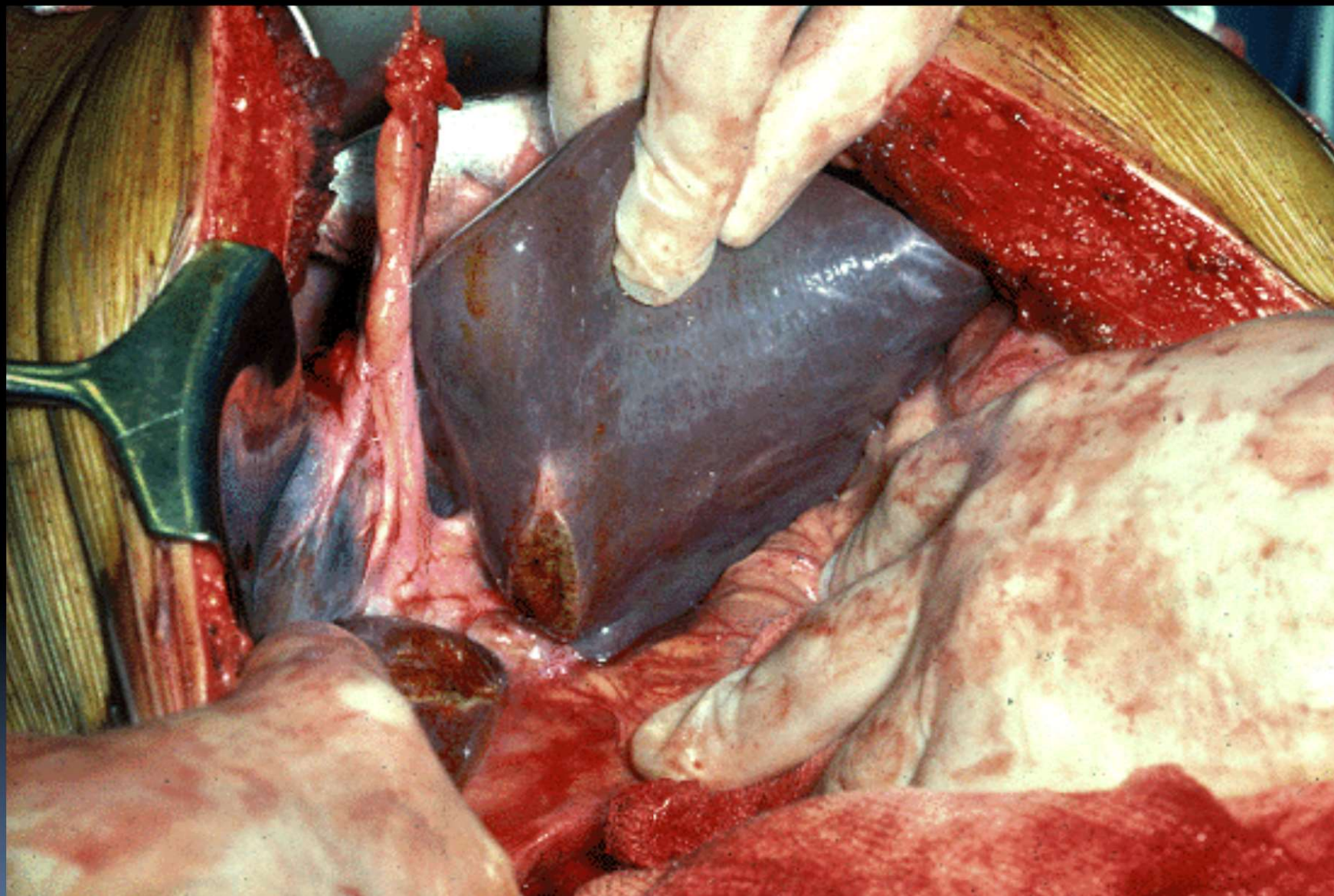
Abordagem do ducto hepático E



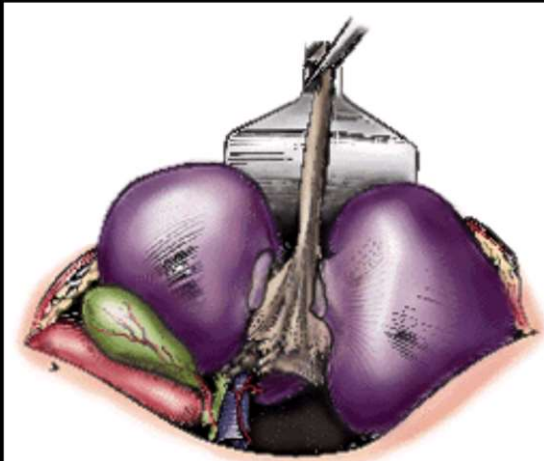
Hepp J, Couinaud C - La Presse Med 64: 947-948,1956



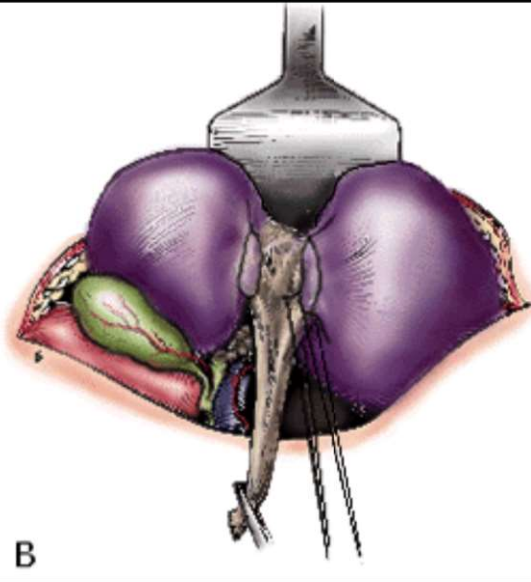
Rebaixamento da placa hilar



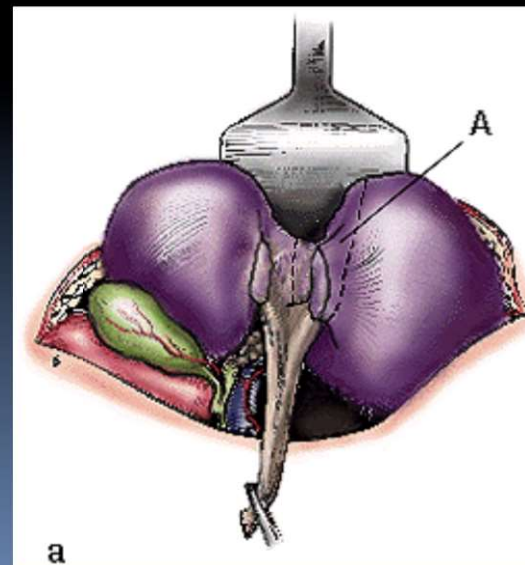
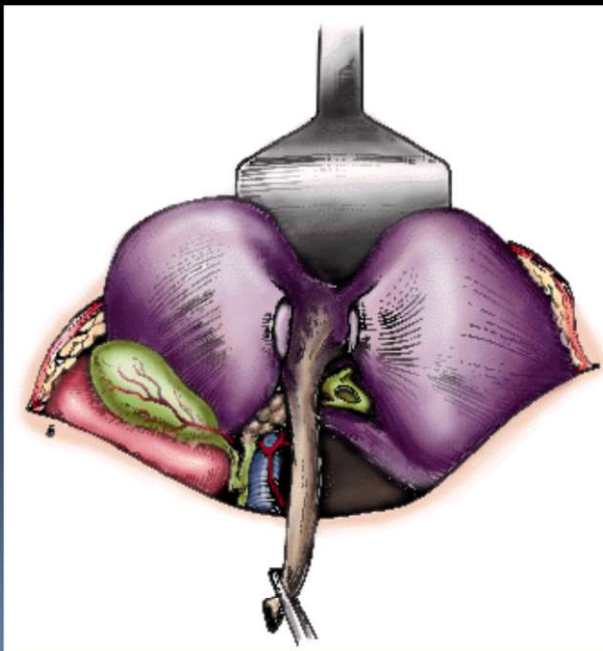
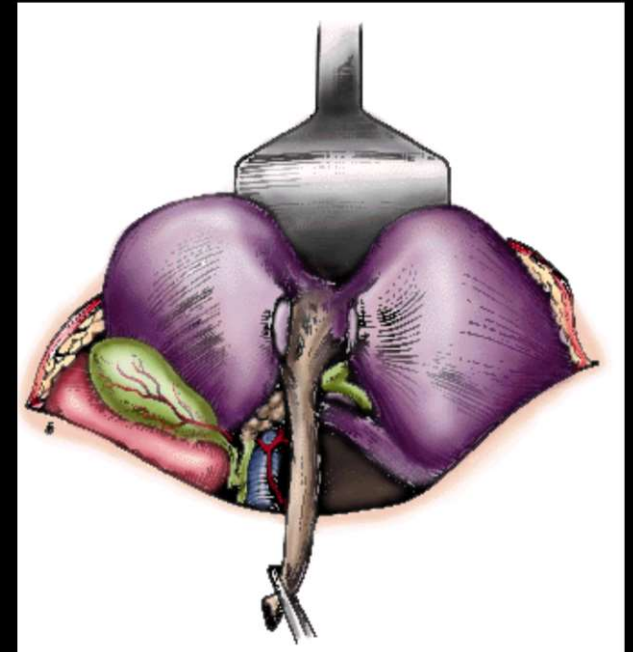
Exposição do ducto hepático esquerdo



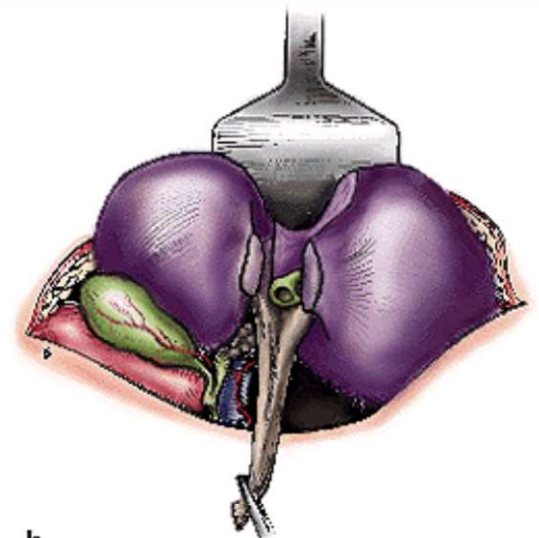
A



B



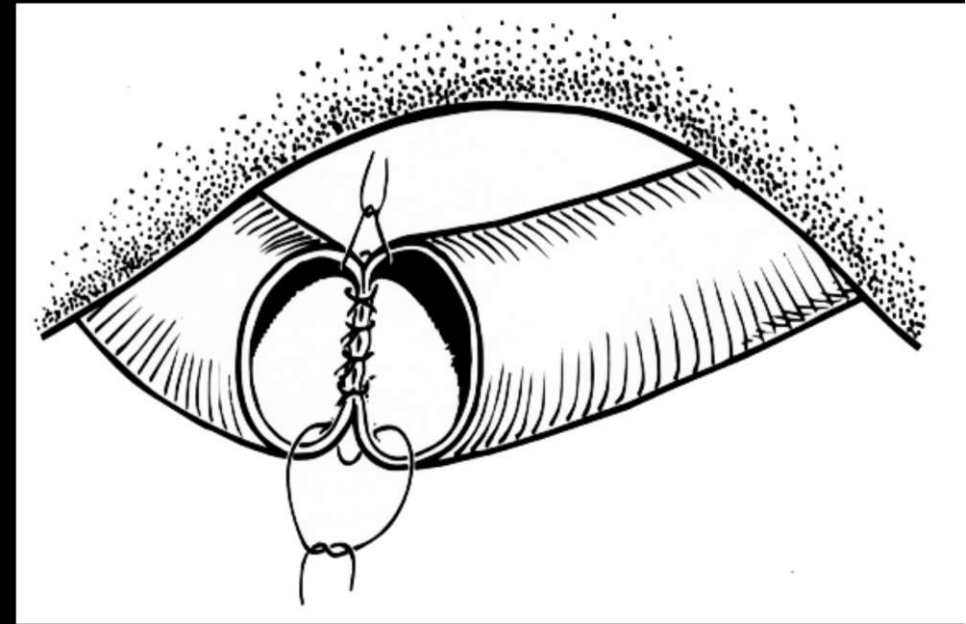
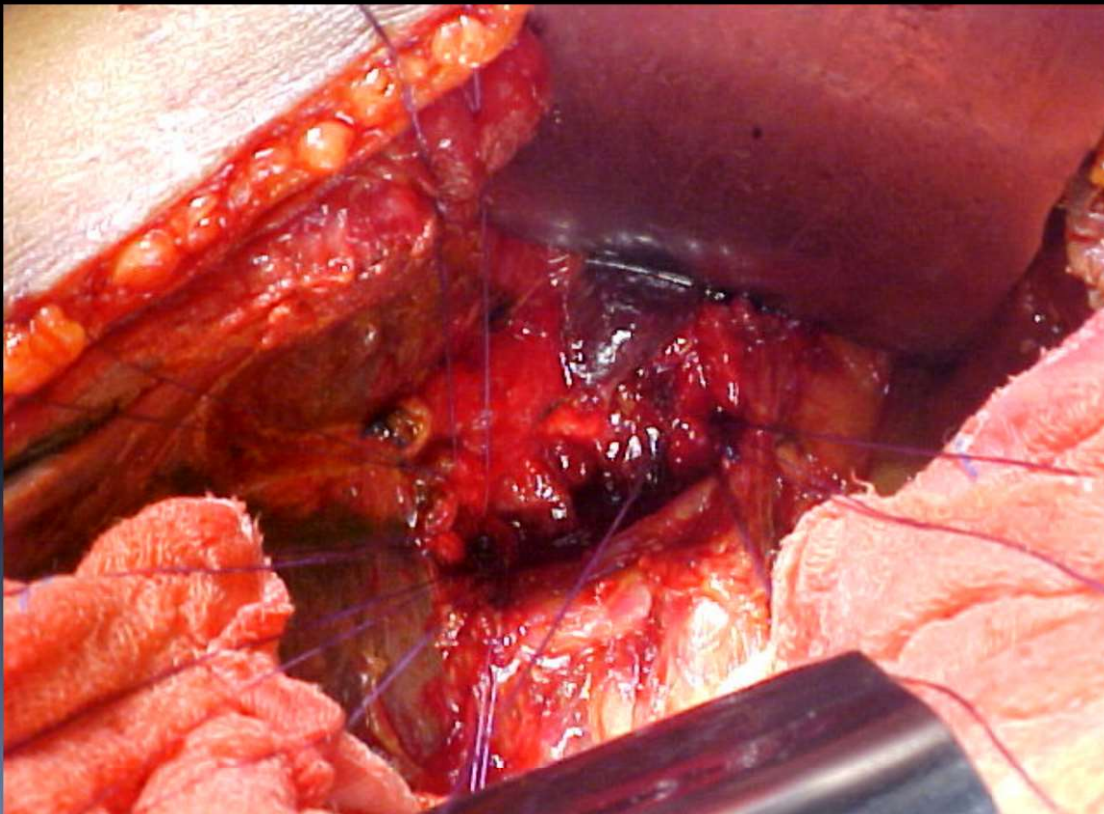
a



b

Reparo das lesões tipo E4/E5

- ❑ Reparo de diferentes ductos
- ❑ Unir ductos individualizados
- ❑ Controle US/Colangiografia



Equipe



The logo of the Brazilian Society of Geriatrics and Gerontology (SBGG) is a circular emblem. It features a stylized white bird, possibly a dove, in flight, set against a blue background. The emblem is surrounded by a yellow border, and the entire logo is set against a green background with white geometric shapes.

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