

XXIV Semana Brasileira do Aparelho Digestivo



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Estratégias para diminuir as complicações das anastomoses biliodigestivas

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Anastomoses biliodigestivas

Trato biliar:

Ducto hepático

Colédoco

Trato gastrointestinal

Duodeno

Jejuno

COMPLICATIONS

Bile leakage

Stricture

Cholangites

RESEARCH



Risk factors for postoperative bile leakage and mortality following bilio-enteric anastomosis: a prospective cohort study

Table 1 Univariate analysis of risk factors for bile leakage

	Total population		No bile leakage (n=77)		Biliary leakage (n=30)		P Value
	N	%	N	%	N	%	
Age	60,88 ± 12,38 years		60,03 ± 12,98 years		63,07±10,59		
Sex							
Male	53	49,5%	39	50,6%	14	46,7%	P=0.771
Female	54	50,5%	38	49,4%	16	53,3%	
Diagnostic and pathology							
Benignant (ref)	39	35,5%	34	44,2%	5	16,7%	P=0.011
Malignant	68	64,5%	43	55,8%	25	83,3%	
ASA >2	8	7,5%	6	7,8%	2	6,7%	P=0.174
BMI	23,50 ± 4,25 kg/m ²		23,50 ± 4,25 kg/m ²		23,29±4,40 kg/m ²		0.744
Comorbidities							
Diabetics	32	29,9%	20	26%	12	40%	P=0.158
HTA	36	33,6%	27	35,1%	9	30%	P=0.619
Cardiopathy	6	5,6%	4	5,2%	2	6,7%	P=0.767
Dysthyroidism	7	6,5%	6	7,8%	1	3,3%	P=0.416
Asthma	3	2,8%	3	3,9%	0	0%	P=0.999
Tabagisme	39	36,4%	29	37,7%	10	33,3%	P=0.676
Chemotherapy	2	1,9%	2	2,6%	0	0%	P=0.999
Kidney injury	1	0,9%	1	1,3%	0	0%	P=0.999
Blood lost	40 ± 61 ml		31± 44 ml		63± 86 ml		P=0.021
Bile duct measured mm	18 ± 8 mm		17 ± 8 mm		19 ± 7 mm		P=0.264
Blood Transfusion (yes/No)	14	13,1%	6	7,8%	8	26,6%	P=0.014
Blood transfusion							

Incidence and Risk Factors of Cholangitis after Hepaticojejunostomy

Table 4 Cox proportional hazards model identifying factors associated with development of biliary-enteric anastomotic stricture after biliary-enteric anastomosis

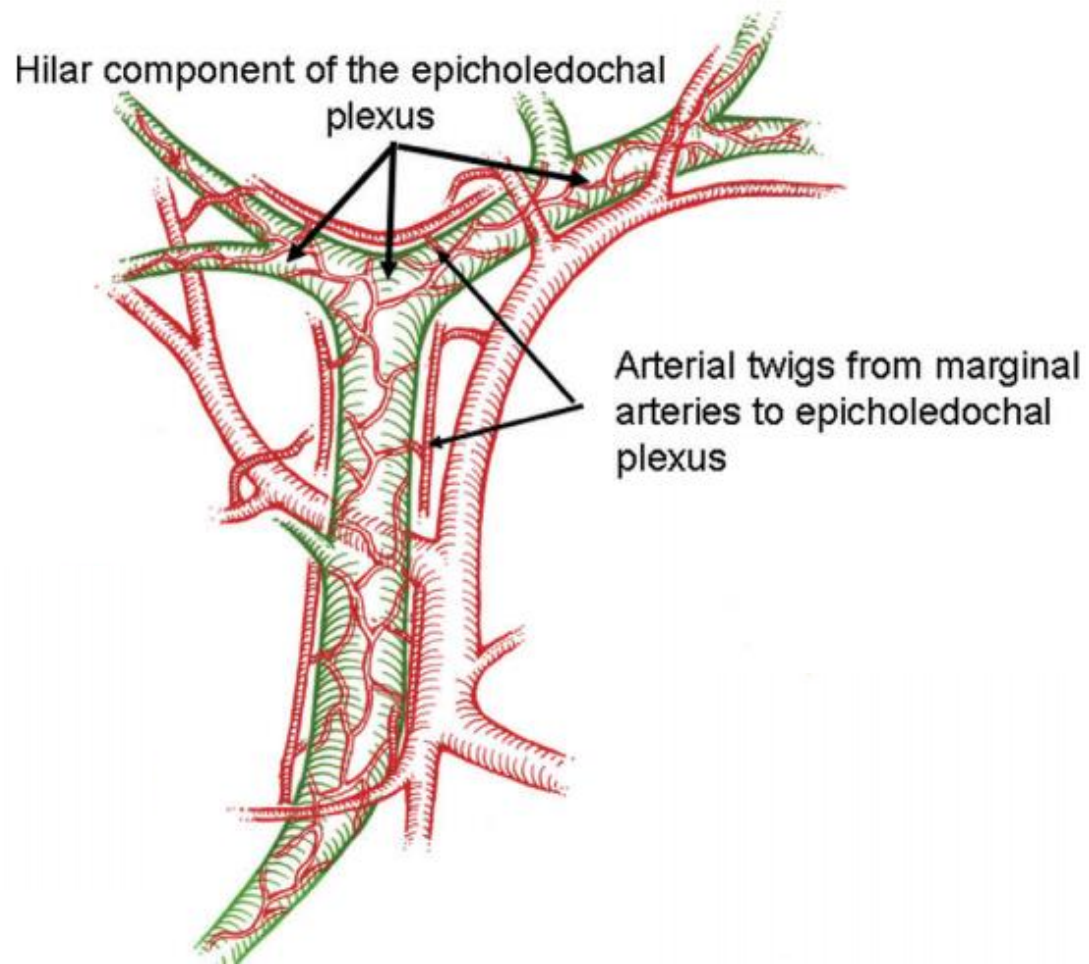
Characteristics N (%)	Univariate (ref: Group A)		Multivariate	
	Stricture group <i>N</i> = 26	<i>P</i> value	Hazards ratio (95% CI)	<i>P</i> value
Age	70 (47–84)*	0.746		
Gender (male/female)	19/7	0.169		
Body mass index	24.6 (18.8–31.7)*	0.011	2.967 (1.287–6.803)**	0.011
Charlson comorbidity index >3	9 (34.6)	0.037	1.135 (0.789–1.634)	0.495
Benign diseases	8 (30.8)	0.026	3.986 (1.139–13.953)	0.031
Jaundice at operation	5 (19.2)	0.403		
Preoperative biliary drainage	11 (42.3)	0.191		
Operation type		0.905		
Pancreaticoduodenectomy	18 (69.2)			
Bile duct resection	2 (7.7)			
Liver resection	6 (23.1)			
Operation time (min)	279 (166–466)*	0.871		
Blood loss volume (mL)	490 (40–1690)*	0.885		
Transfusion	6 (23.1)	0.612		
C-D classification >III	16 (61.5)	0.001	2.681 (1.164–6.172)	0.021

*median (range)

** Receiver operator characteristics curve analysis indicated an optimal cut-off body mass index value of 24.3 kg/m², yielding 59.3% sensitivity and 73.2% specificity (*P* = 0.007)

C-D classification: Clavien-Dindo classification

ANASTOMOSE



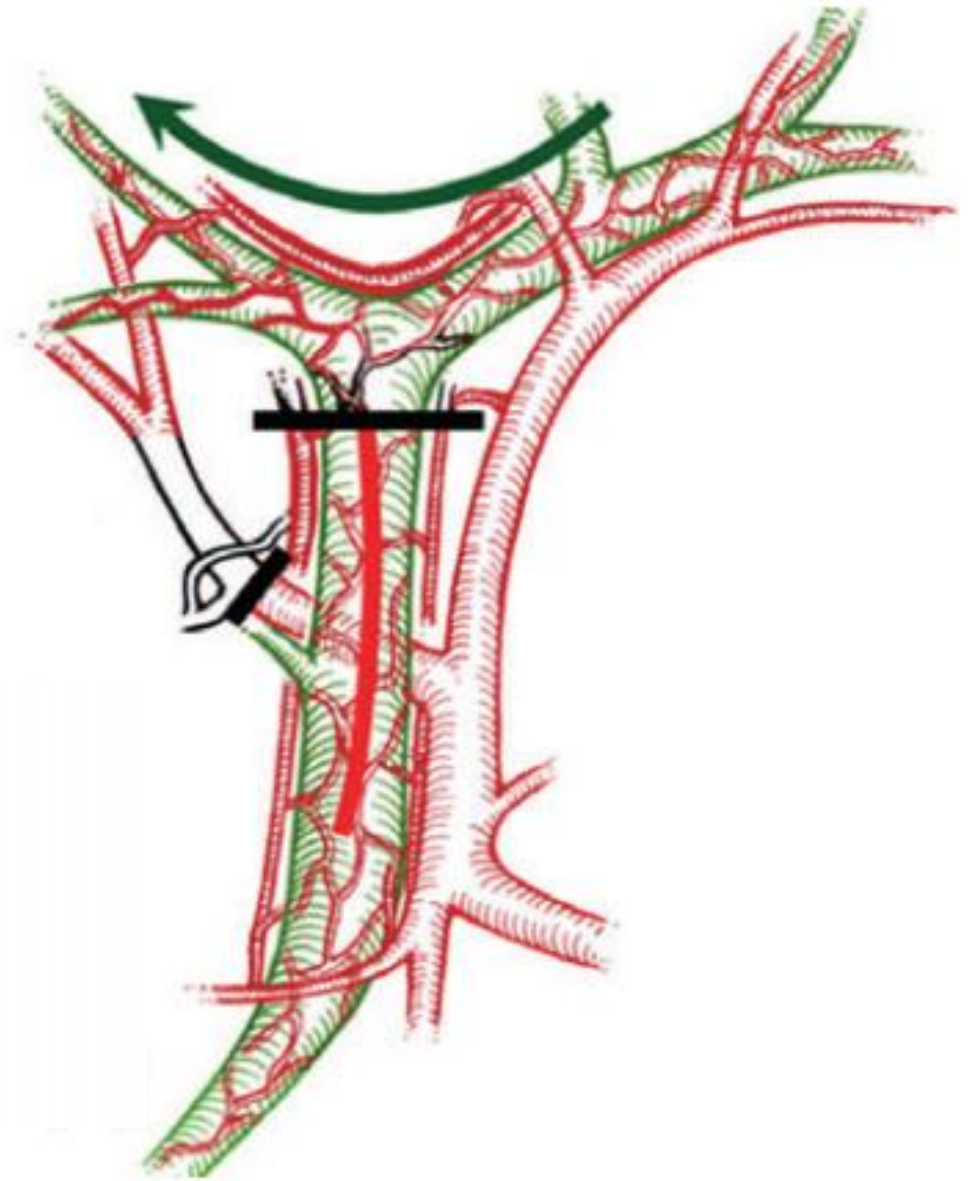
Evitar disseção excessiva

Comprometer a vascularização marginal

ANASTOMOSE

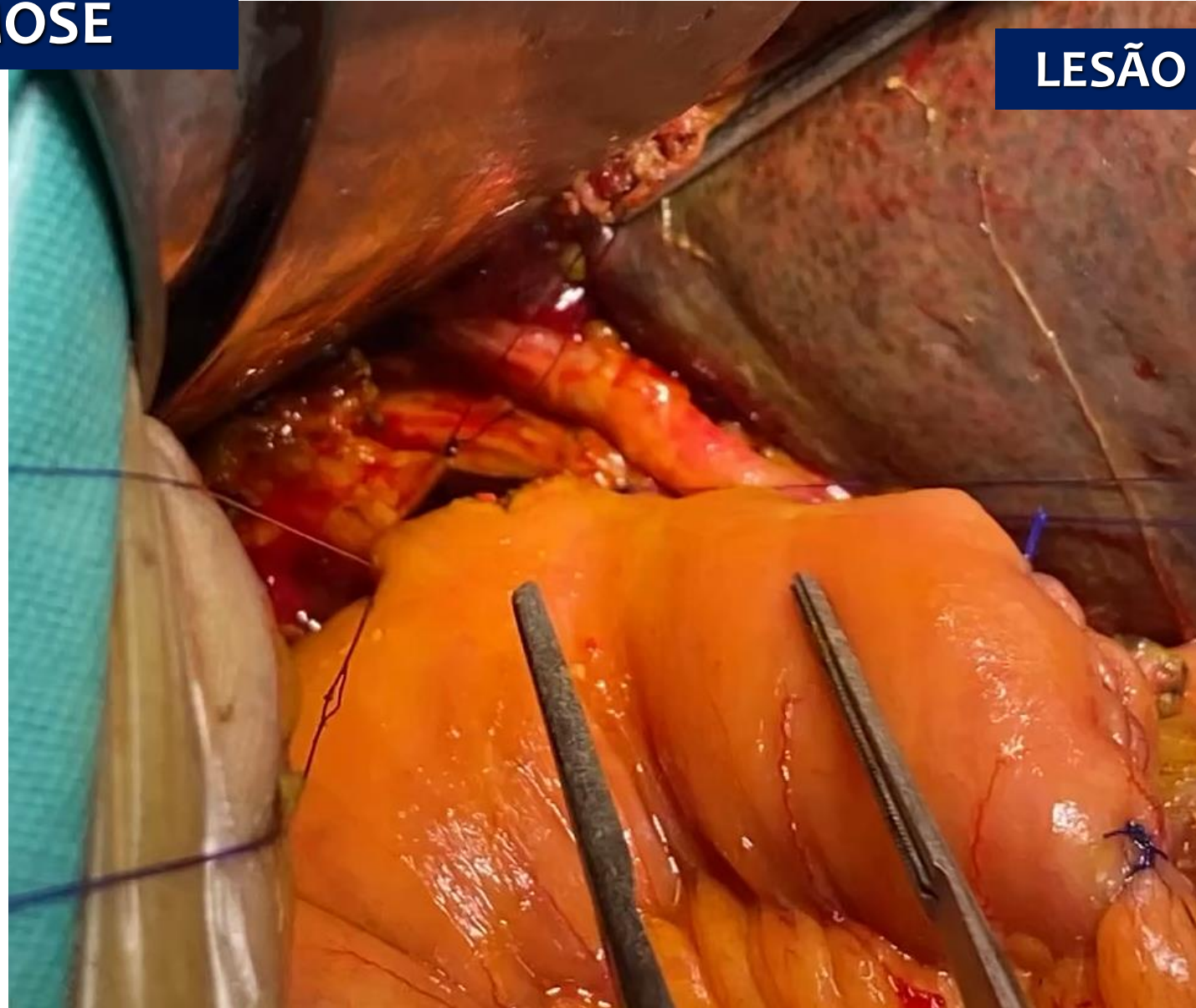
< 2 cm da confluência

Evitar comprometimento da
vascularização hilar

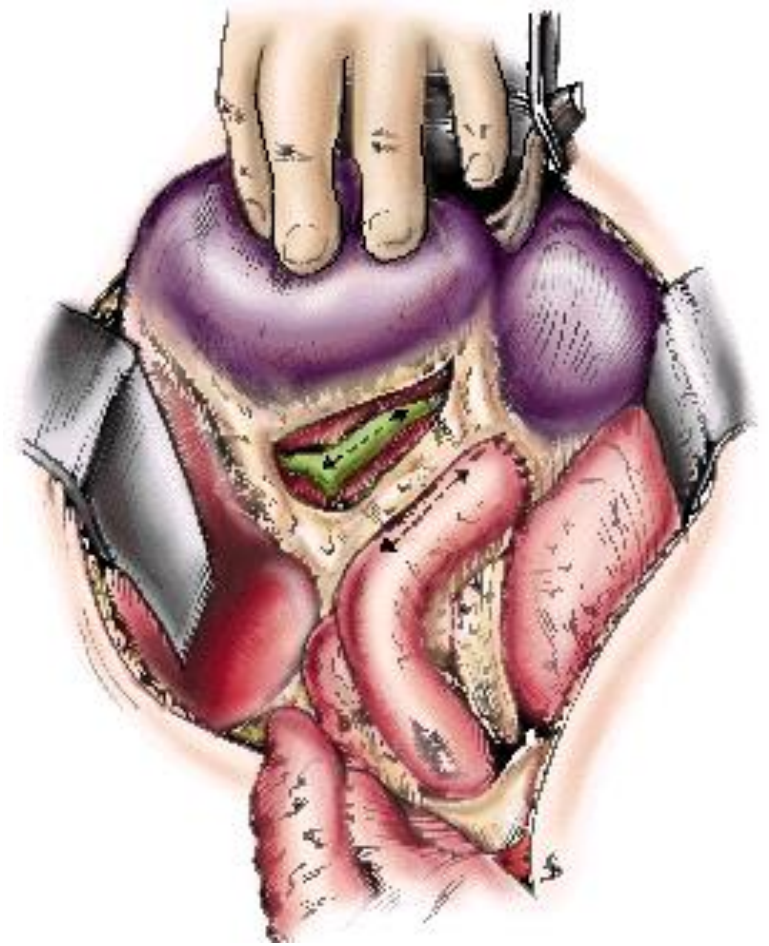
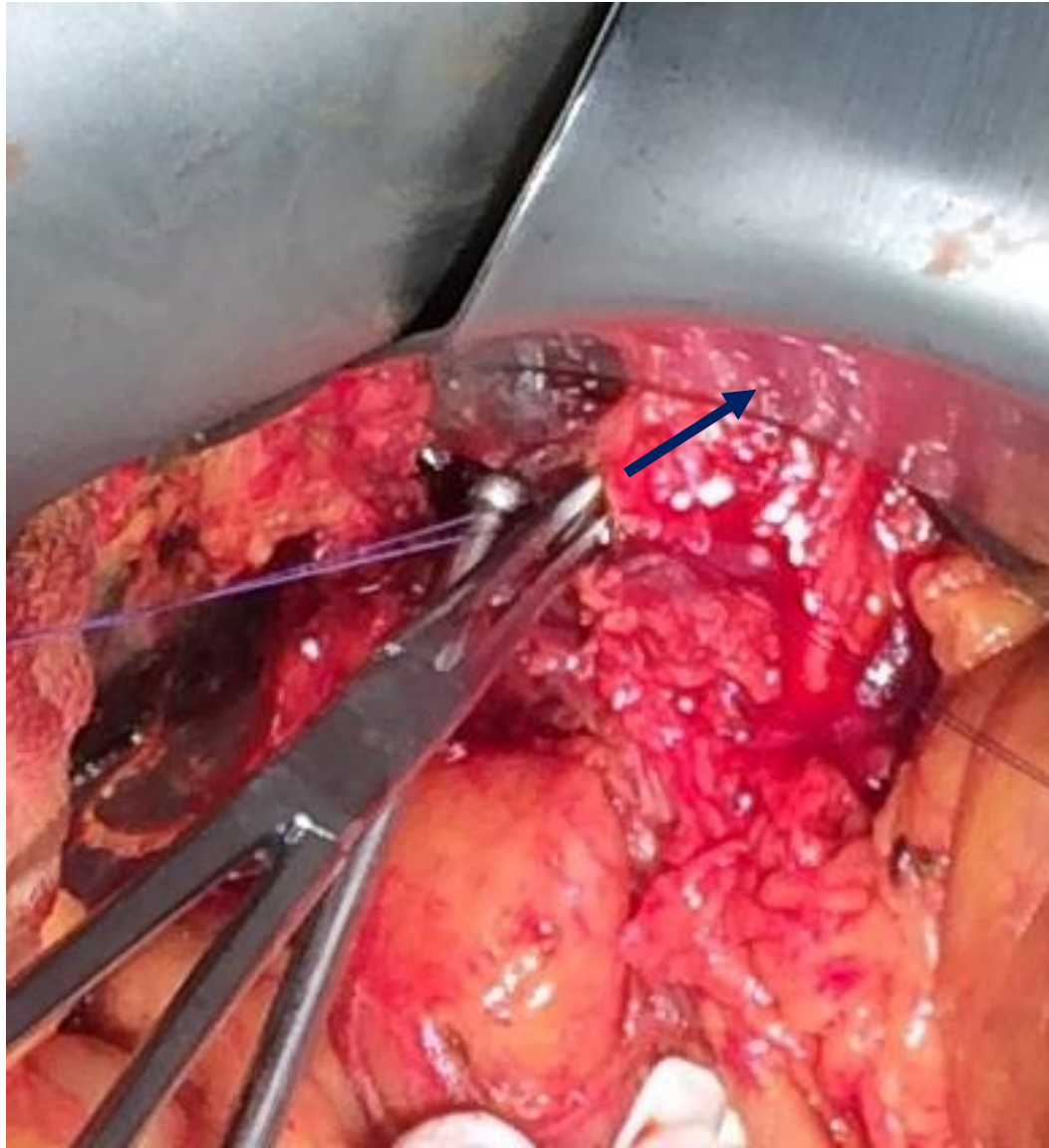


ANASTOMOSE

LESÃO DE VIA BILIAR



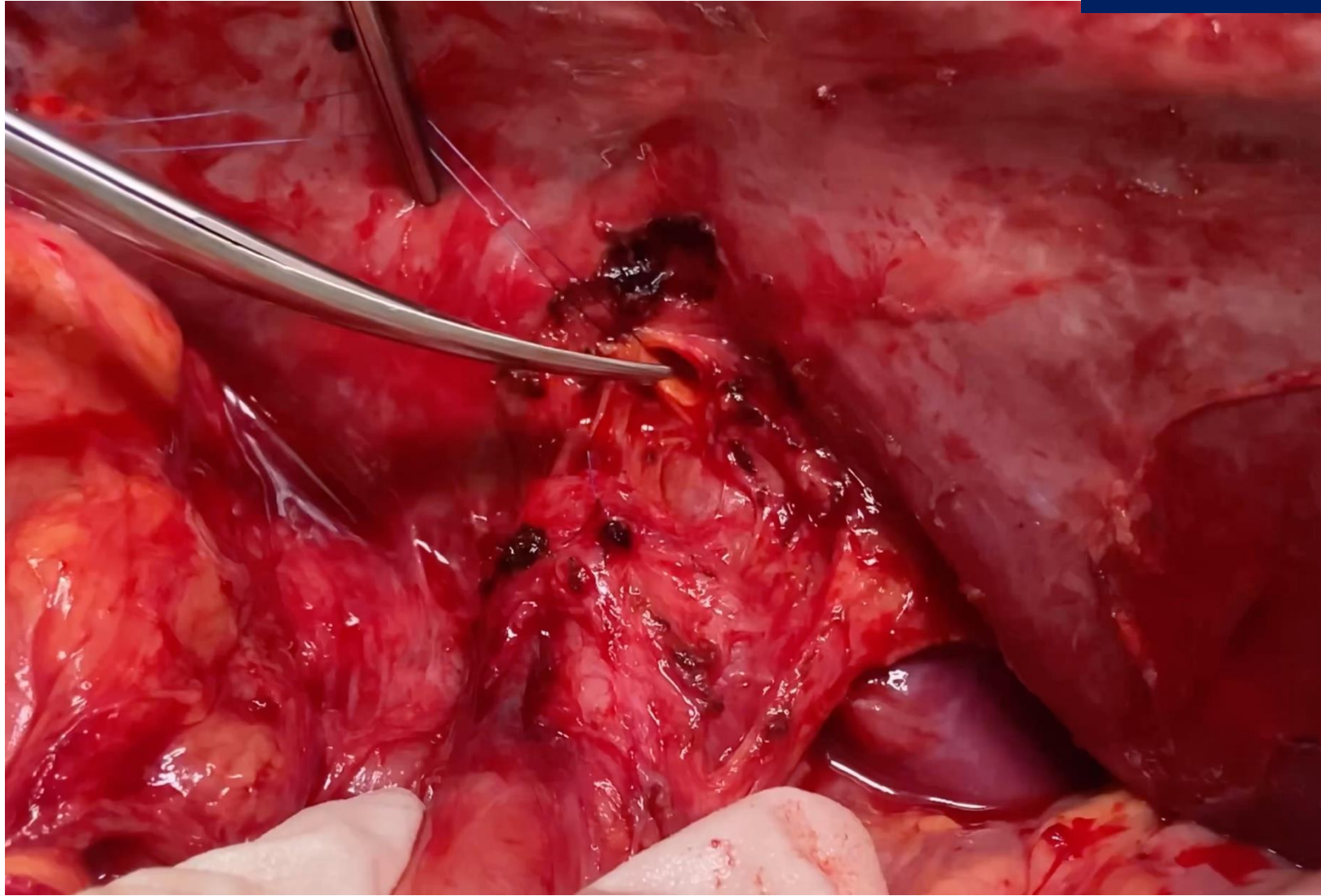
DUCTO HEPÁTICO ESQUERDO



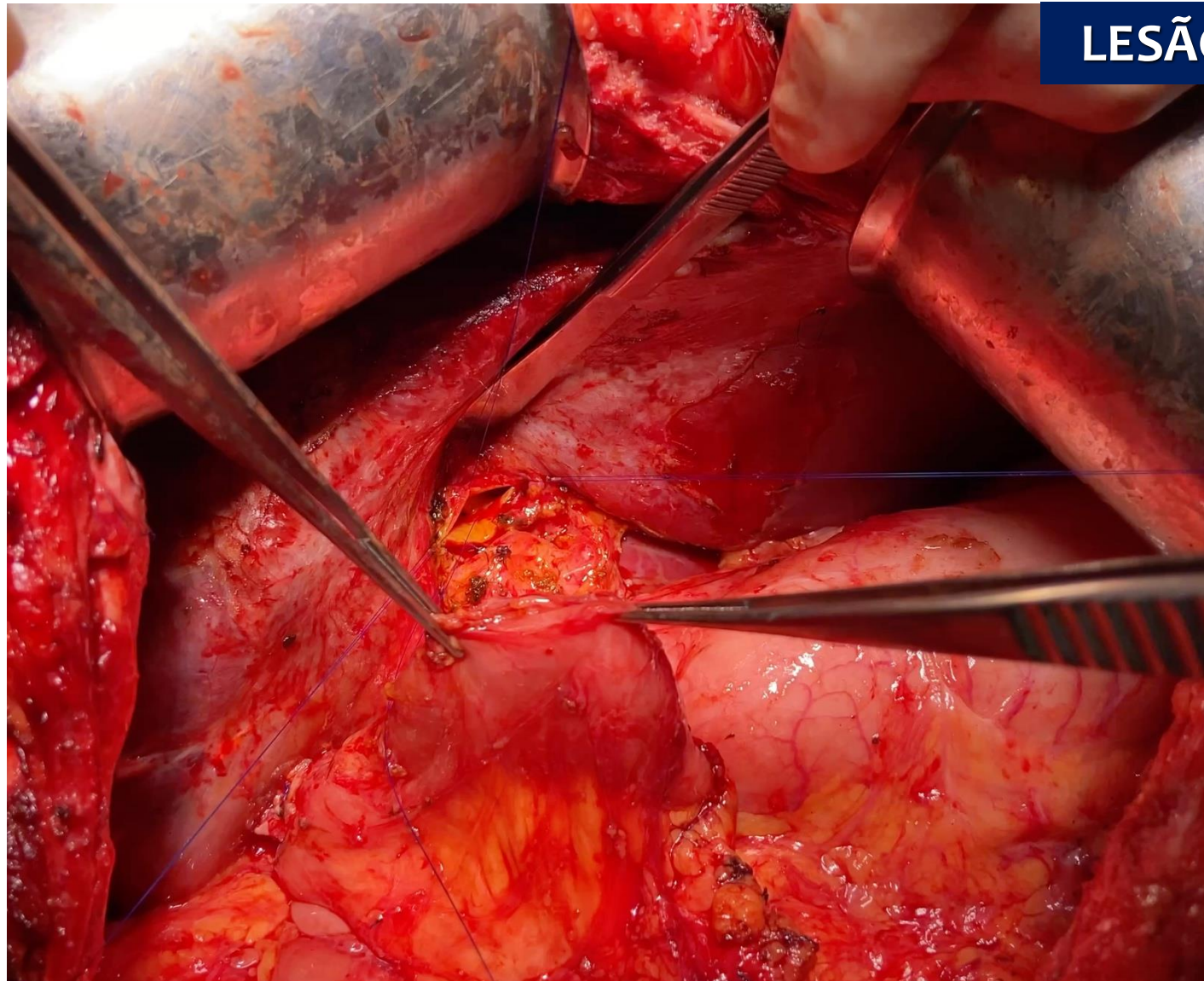
Abertura do ducto

AMPLIAÇÃO À ESQUERDA

LESÃO DE VIA BILIAR



LESÃO DE VIA BILIAR



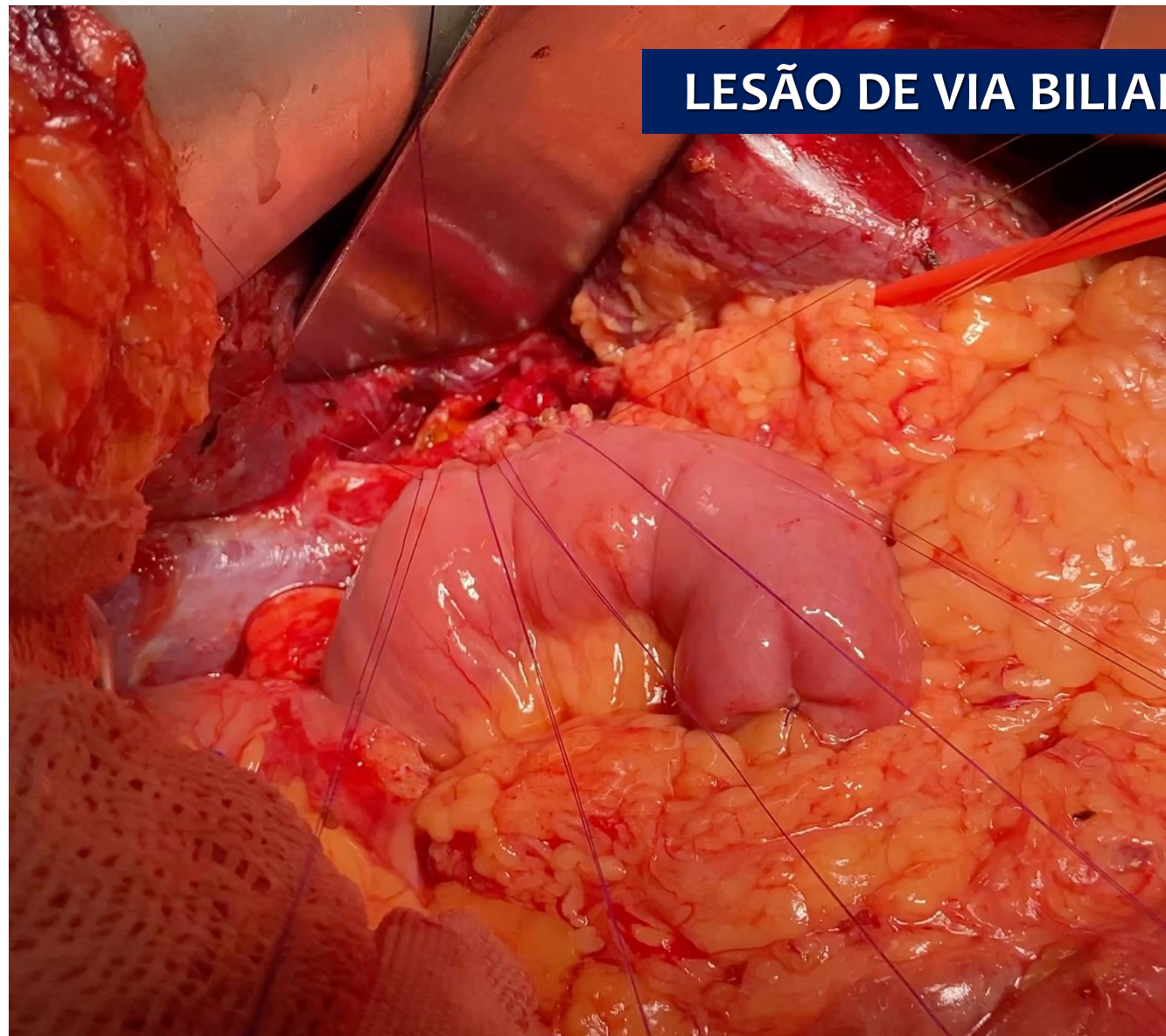
ANASTOMOSE

Pontos separados?

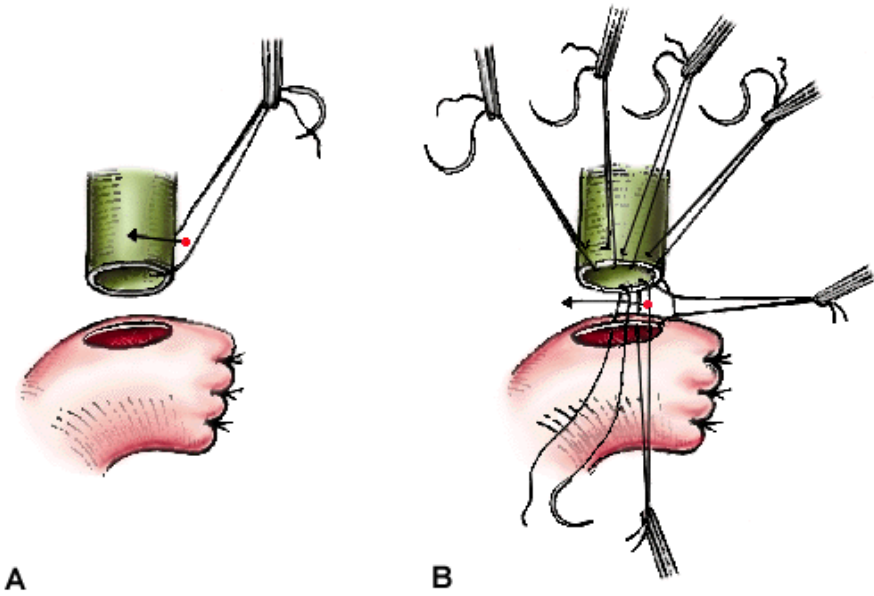
Risco de isquemia
Estenose subsequente

$\geq 15\text{mm}$ contínuo/separado
 $< 15\text{mm}$ separado

LESÃO DE VIA BILIAR

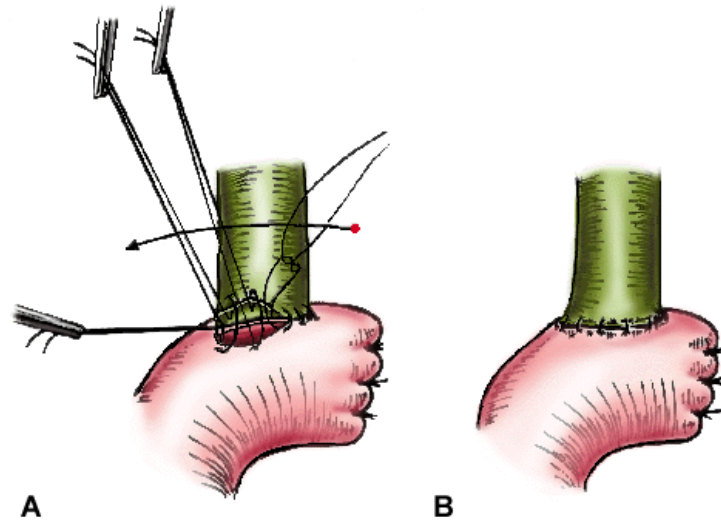
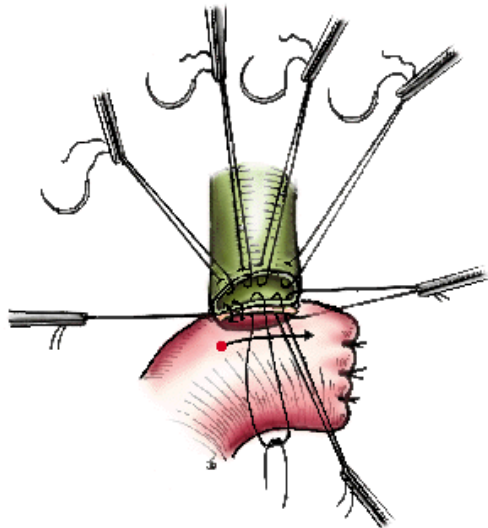
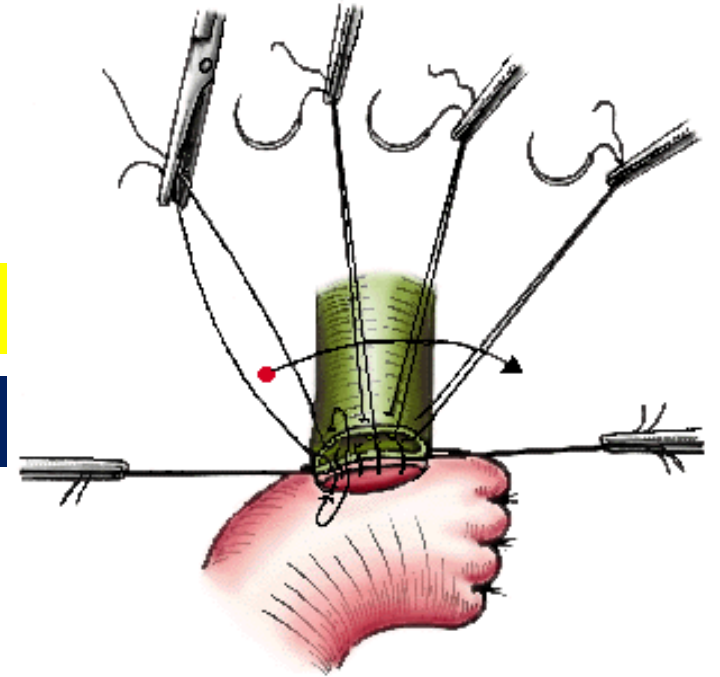


ANASTOMOSE



Pontos separados

< 15mm



Interrupted versus continuous suture technique for biliary-enteric anastomosis: randomized clinical trial

Table 3 Short-term complications

	Continuous suture (n = 41)	Interrupted suture (n = 39)	P	OR	95% c.i.
Biliary-enteric anastomosis -associated complications					
Cholestasis	1 (2.4)	0 (0.0)	1.000	0.98	0.93–1.02
Bile leakage	6 (14.6)	4 (10.3)	0.738	0.67	0.17–2.57
Cholangitis	1 (2.4)	0 (0.0)	1.000	0.98	0.93–1.02
Liver abscess	3 (7.3)	0 (0.0)	0.241	0.93	0.85–1.01
30-day mortality	1 (2.4)	0 (0.0)	1.000	0.98	0.93–1.02
Blood test results (POD1)					
Bilirubin level (mg/dl), median (range)	19.3 (10.4–33.5)	19.9 (9.4–83.9)	0.433	1.01	1.00–1.02
ALP level (U/l), median (range)	1.4 (1.–3.1)	1.8 (1.1–3.6)	0.523	1.02	0.88–1.19
AST level (U/l), median (range)	1.4 (1.–2.5)	1.4 (1.2–2.2)	0.725	0.95	0.85–1.07
ALT level (U/l), median (range)	1.2 (0.6–2.3)	1.2 (0.8–2.0)	0.977	0.95	0.81–1.11
GGT level (U/l), median (range)	1.9 (0.7–5.0)	3.4 (0.9–6.8)	0.114	1.02	0.94–1.12
Drainage bilirubin level (mg/dl), median (range)	13.3 (10.2–21.6)	22.4 (10.4–60.6)	0.217	1.01	0.99–1.02
Blood test results (POD3)					
Bilirubin level (mg/dl), median (range)	9.3 (5.7–21.5)	12.2 (7.9–36.6)	0.070	1.01	1.00–1.03
ALP level (U/l), median (range)	1.4 (1.0–2.6)	1.6 (1.2–3.1)	0.308	1.05	0.83–1.34
AST level (U/l), median (range)	0.7 (0.6–1.2)	0.8 (0.6–1.2)	0.534	1.16	0.93–1.44
ALT level (U/l), median (range)	0.8 (0.5–1.4)	0.9 (0.6–1.5)	0.638	1.06	0.90–1.25
GGT level (U/l), median (range)	1.1 (0.6–2.4)	2.3 (0.7–5.2)	0.100	1.04	0.91–1.19
Drainage bilirubin level (mg/dl), median (range)	15.4 (11.8–24.6)	14.6 (11.0–49.2)	0.418	1.00	0.99–1.01

Values are n (%) unless otherwise indicated. c.i., confidence interval; POD, postoperative day; ALP, alkaline phosphatase; AST, aspartate transaminase; ALT, alanine aminotransferase; GGT, γ -glutamyl transferase.

Interrupted versus continuous suture technique for biliary-enteric anastomosis: randomized clinical trial

Table 4 Long-term complications

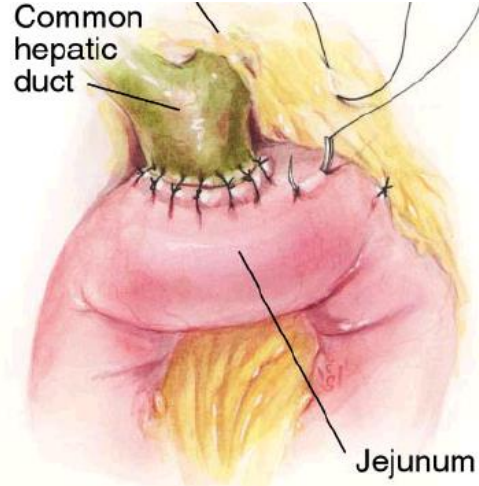
	Continuous suture (n = 41)	Interrupted suture (n = 39)	P	OR	95% c.i.
Blood test results (6 months after surgery)					
Bilirubin level (mg/dl), median (range)	7.0 (5.9–12.9)	8.9 (5.8–12.2)	0.687	1.01	1.0–1.03
ALP level (U/l), median (range)	2.0 (1.7–3.6)	2.1 (1.5–4.2)	0.838	1.05	0.83–1.34
AST level (U/l), median (range)	0.5 (0.4–0.9)	0.5 (0.4–0.7)	0.455	1.16	0.93–1.44
ALT level (U/l), median (range)	0.4 (0.3–0.8)	0.5 (0.4–0.8)	0.383	1.06	0.9–1.25
GGT level (U/l), median (range)	0.7 (0.5–1.9)	1.4 (0.7–4.4)	0.099	1.04	0.91–1.19
24 months after surgery					
Biliary-enteric anastomosis stenosis	0 (0.0)	0 (0.0)	1.000		
Cholestasis	2 (4.9)	3 (7.7)	0.940	1.63	0.26–10.29
Jaundice	1 (2.4)	4 (10.3)	0.409	4.57	0.49–42.85

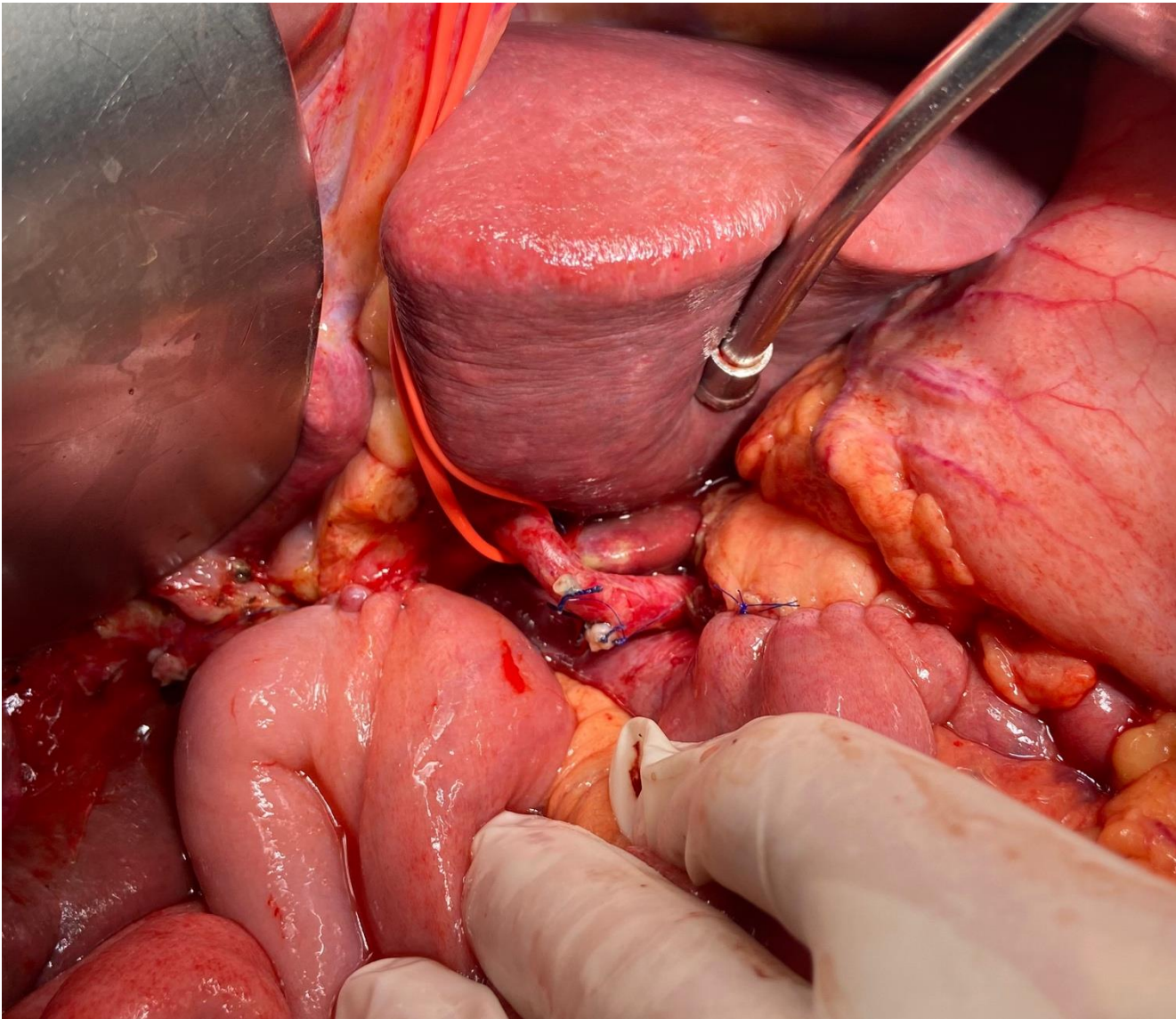
Values are n (%) unless otherwise indicated. c.i., confidence interval; ALP, alkaline phosphatase; AST, aspartate transaminase; ALT, alanine aminotransferase; GGT, γ -glutamyl transferase.

PONTOS DE SUSTENTAÇÃO



Reduzir a tensão na anastomose





DUODENOPANCREATECTOMIA

15-20 cm da anastomose pancreática

$\geq 15\text{mm}$ contínuo/separado
 $< 15\text{mm}$ separado

ORIGINAL ARTICLE

Postoperative biliary anastomotic strictures after pancreaticoduodenectomy

Table 3 Univariate and Multivariate analysis on Predictive Factors of early - biliary strictures (BASs)

Variables	Univariate analysis			Multivariable analysis	
	Early BAS (N = 19)	Late BAS (N = 84)	P-Value	Odds ratio (95% CI)	P-value
Age, Age, ≥ 60 years	10 (15.9)	53 (84.1)	0.398		
History of Diabetes Mellitus, present	3 (20.0)	12 (80.0)	0.867		
History of Hypertension, present	8 (20.5)	31 (79.5)	0.673		
Jaundice, present	1 (4.3)	22 (95.7)	0.048	0.12 (0.01–1.39)	0.089
Past Abdominal Surgery	5 (20.0)	20 (80.0)	0.818		
Neoadjuvant therapy, received	5 (19.2)	21 (80.8)	0.905		
Neoadjuvant radiation, received	3 (21.4)	11 (78.6)	0.757		
Laparoscopic surgery, performed	6 (46.2)	7 (53.9)	0.006	2.37 (0.36–15.71)	0.371
Pylorus preservation, performed	6 (18.2)	27 (81.8)	0.962		
Vascular resection, performed	2 (50.0)	2 (50.0)	0.097		
Multiorgan resection, performed	2 (18.2)	9 (81.8)	0.981		
Suture type, Vicryl	8 (10.9)	65 (89.0)	0.002	0.20 (0.05–0.93)	0.041
Pathology, PDAC	7 (14.0)	43 (86.0)	0.258		
Adjuvant therapy	2 (11.1)	16 (88.9)	0.377		
Adjuvant radiation	5 (20.8)	19 (79.2)	0.731		
DGE, present	3 (15.8)	16 (84.2)	0.640		
POPF, present	8 (25.0)	24 (75.0)	0.316		
Bile leakage	9 (60.0)	6 (40.0)	<0.001	16.49 (3.28–82.94)	0.001

*All p-values <0.05 considered to be significant
 DGE: Delayed gastric emptying, POPF: Postoperative pancreatic fistula, PDAC; Pancreatic ductal adenocarcinoma

VIA BILIAR INTRA-HEPÁTICA



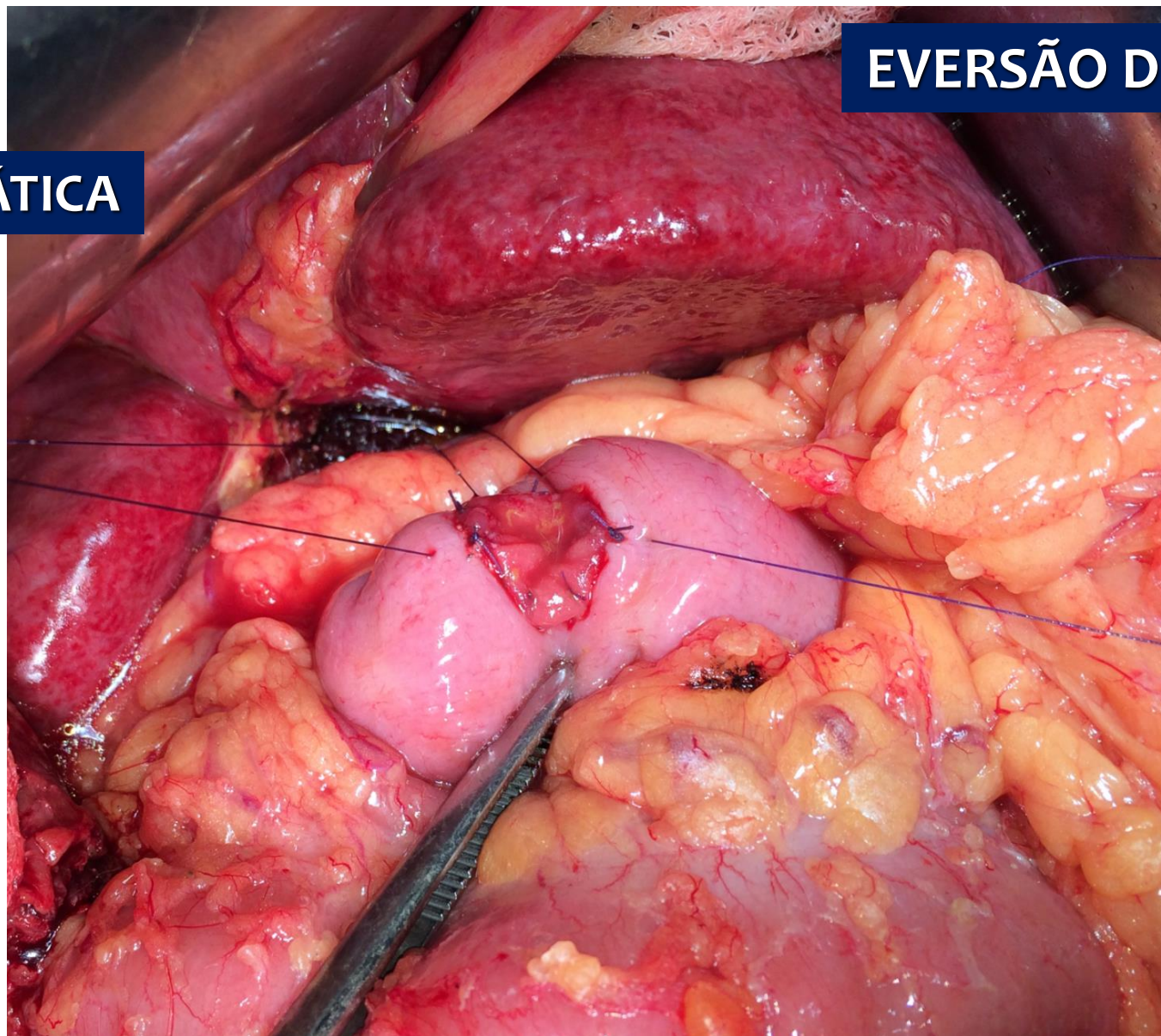
LESÃO DE VIA BILIAR

EVERSÃO DE MUCOSA

Técnica de Blalock

VIA BILIAR INTRA-HEPÁTICA

EVERSÃO DE MUCOSA

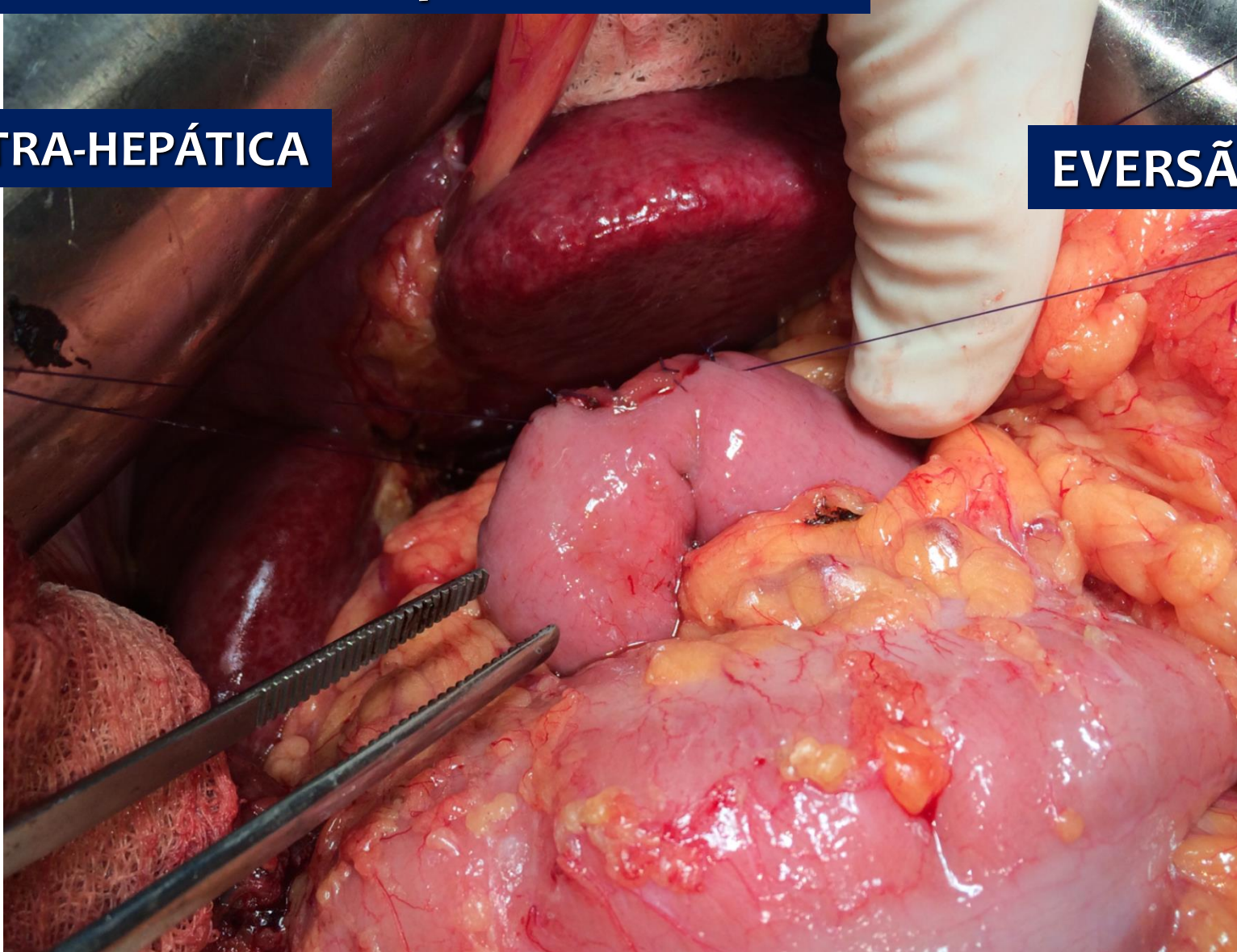


Técnica de Blalock

ANASTOMOSE NO PARÊNQUIMA HEPÁTICO

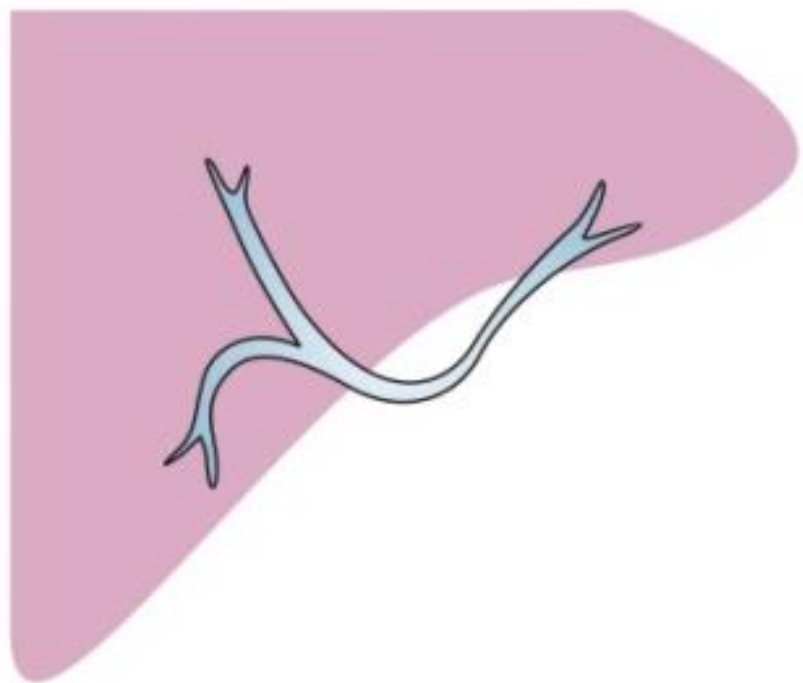
VIA BILIAR INTRA-HEPÁTICA

EVERSÃO DE MUCOSA



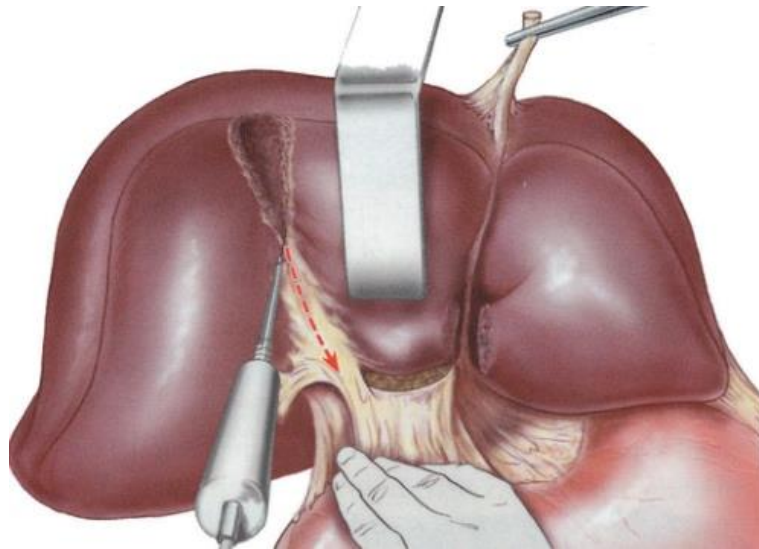
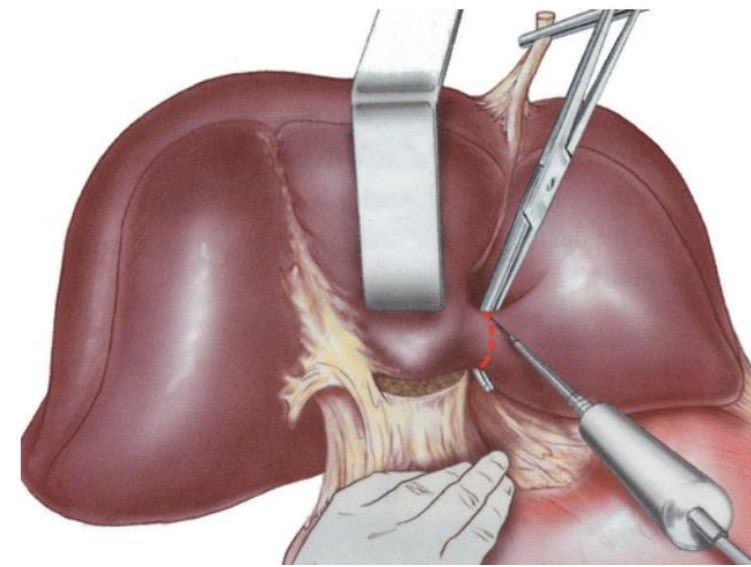
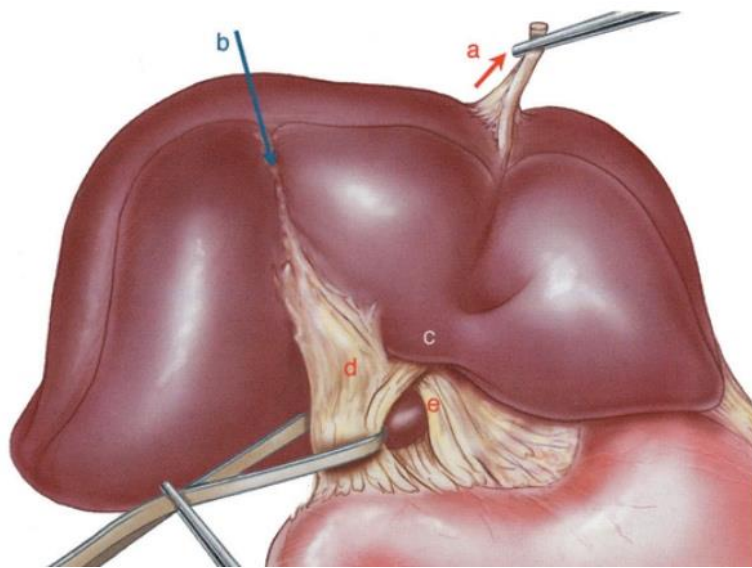
Técnica de Blalock

ANASTOMOSE ESQUERDA



LESÕES E3

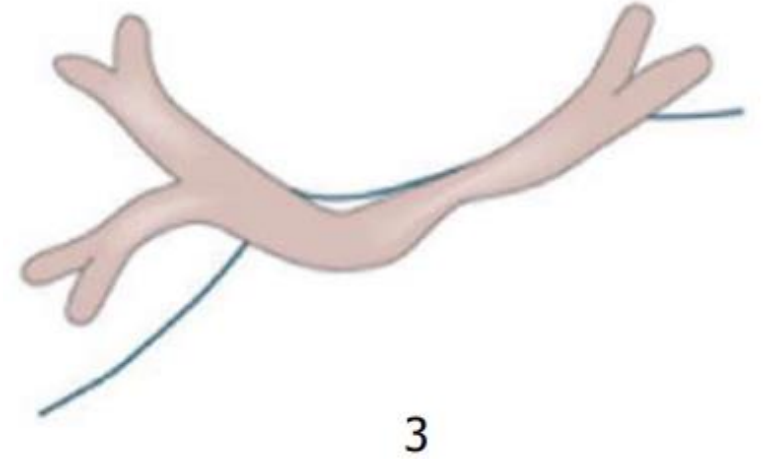
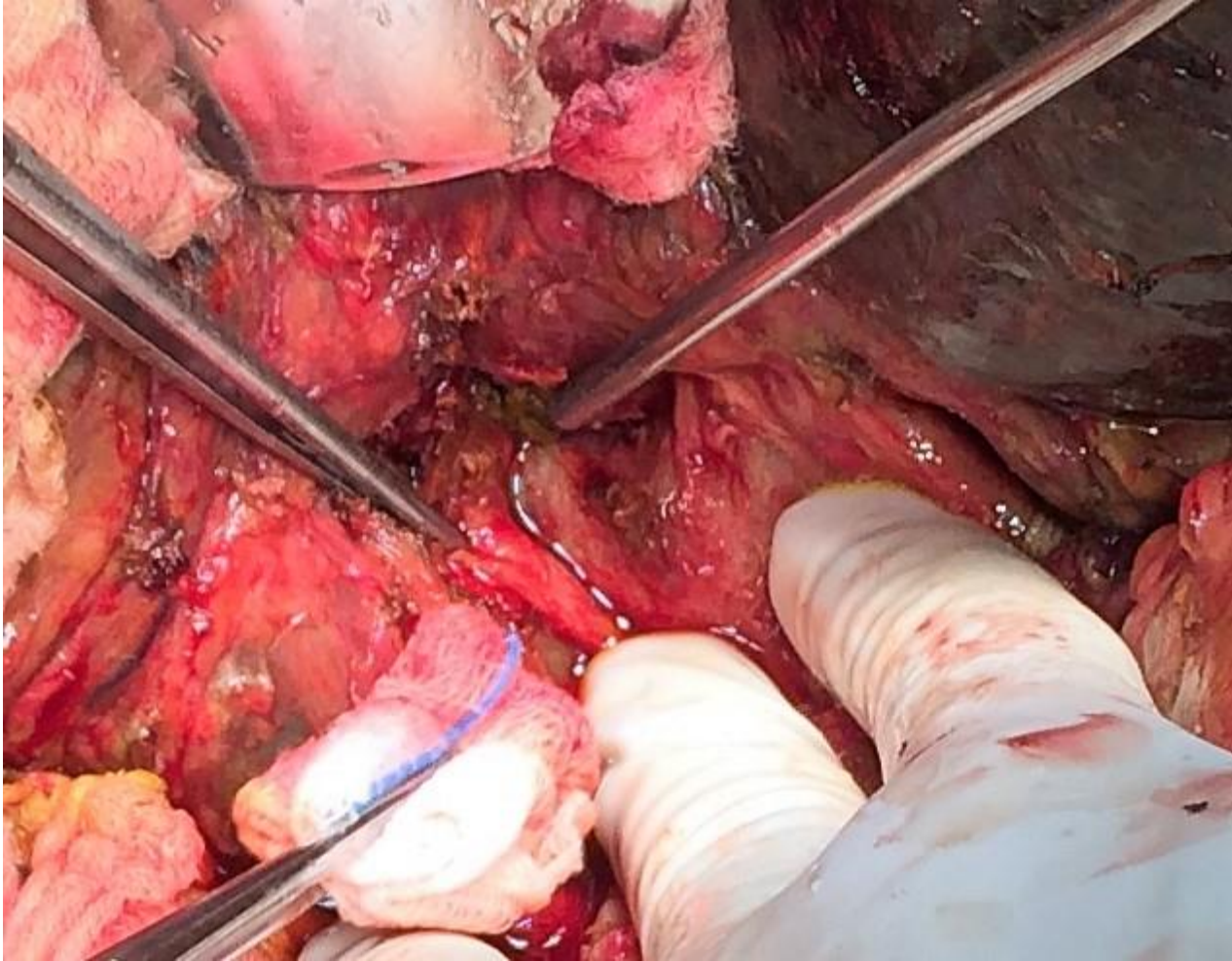
Confluência íntegra



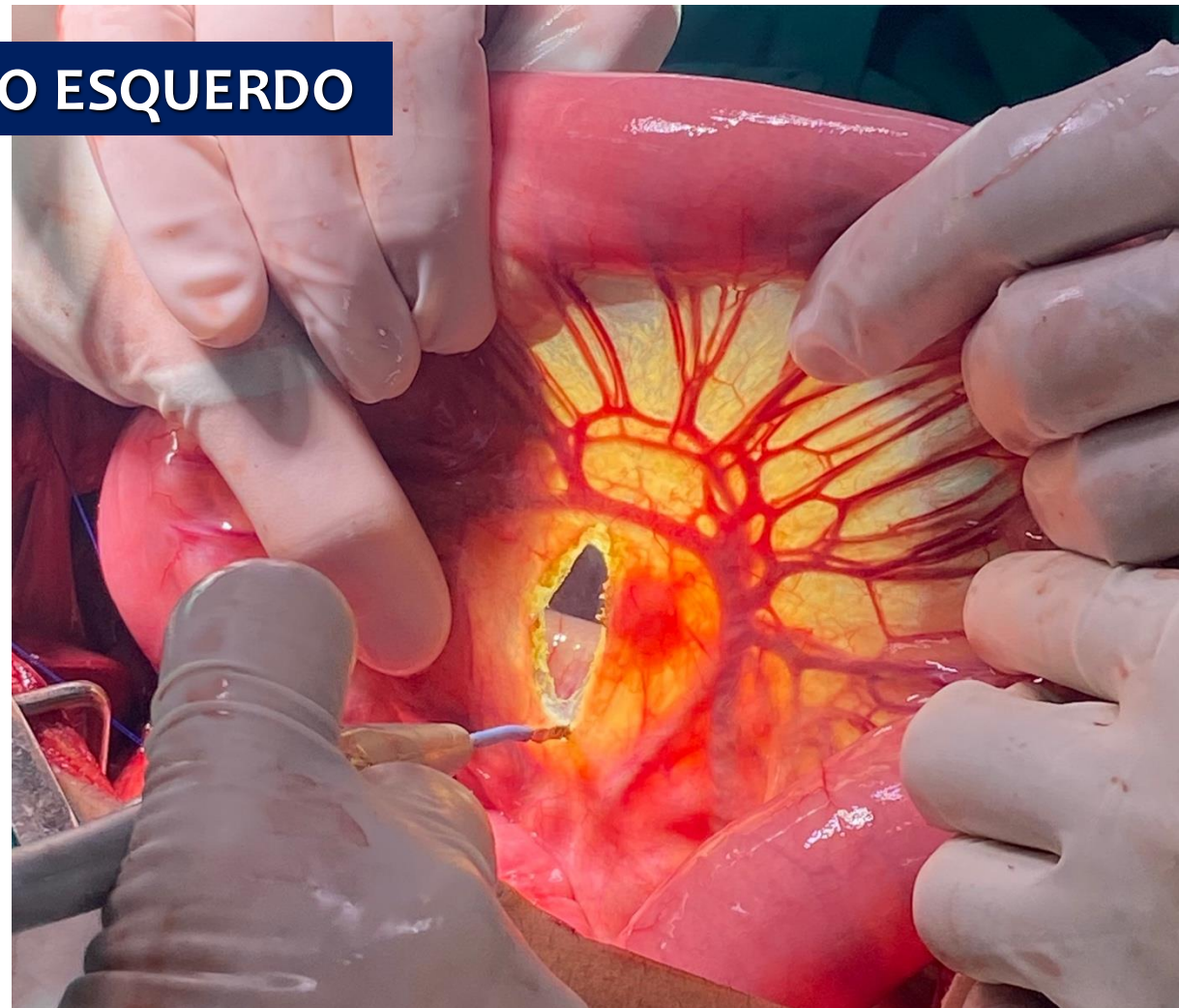
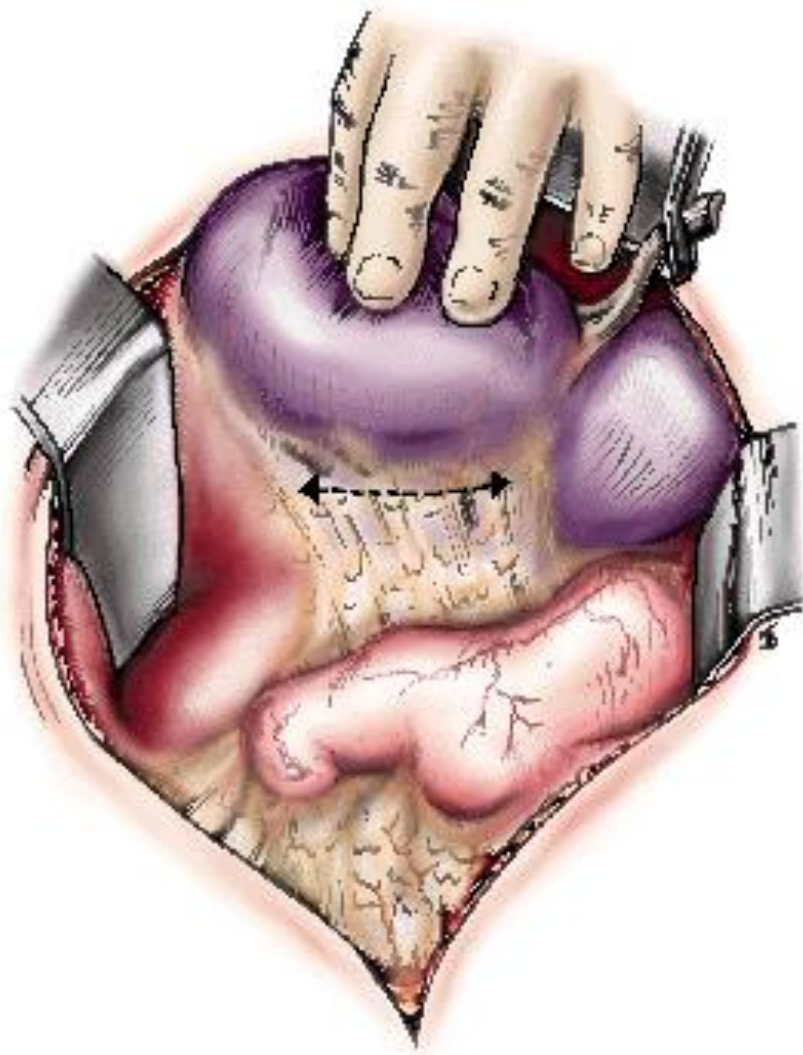
Confluência íntegra

LESÕES E₃

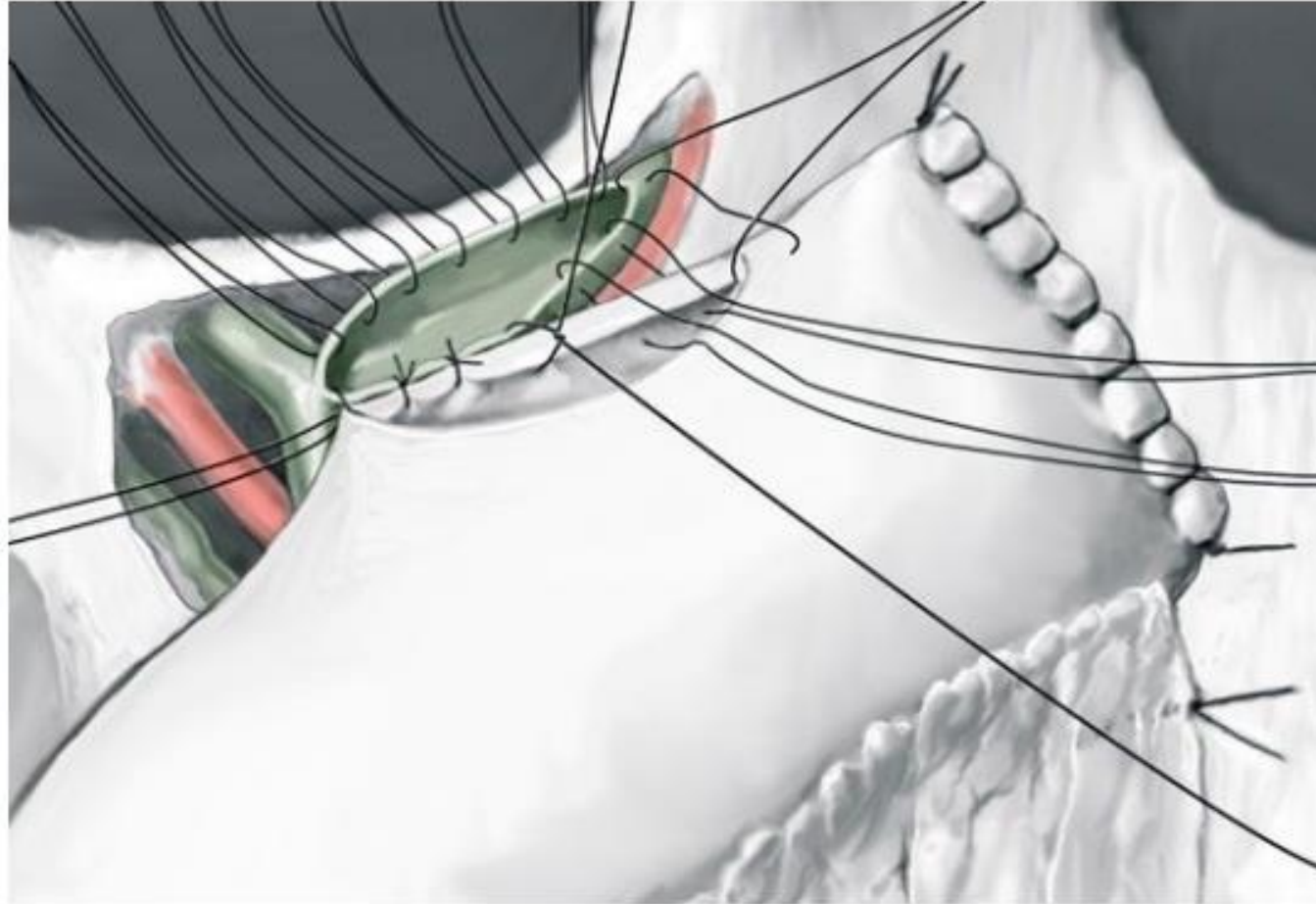
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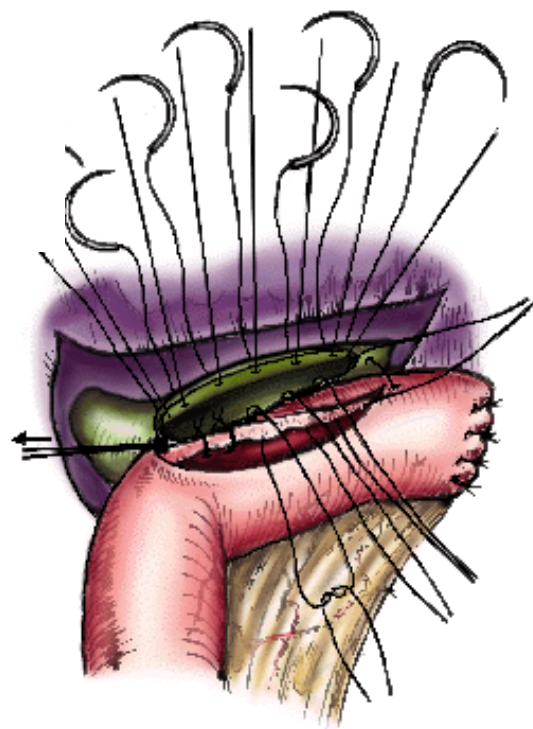
ANASTOMOSE COM O DUCTO HEPÁTICO ESQUERDO



ANASTOMOSE COM O DUCTO HEPÁTICO ESQUERDO



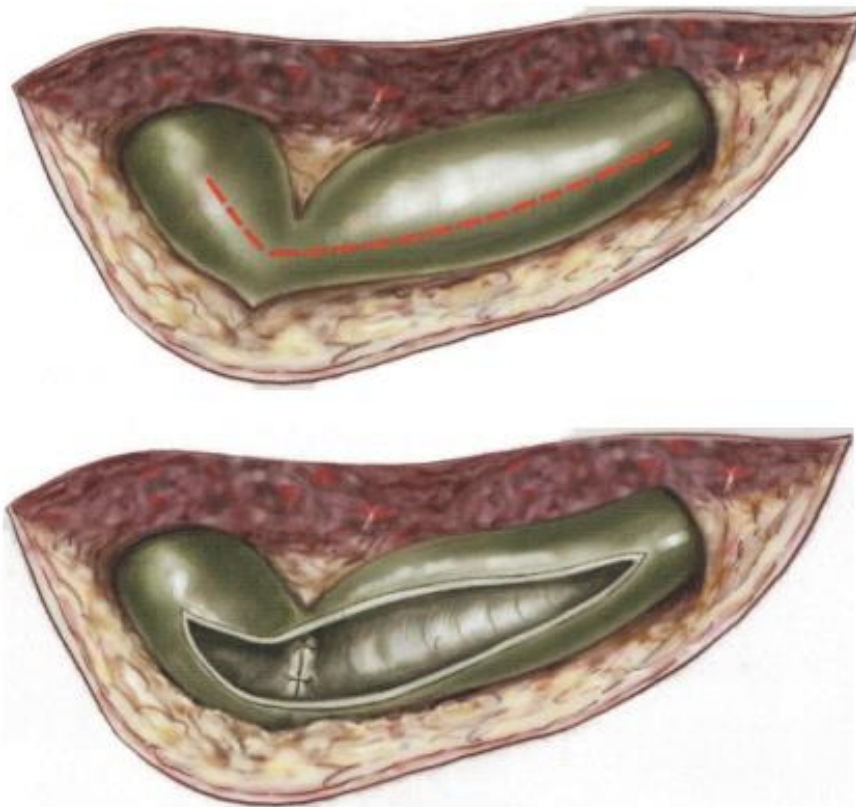
REBAIXAMENTO DA PLACA HILAR



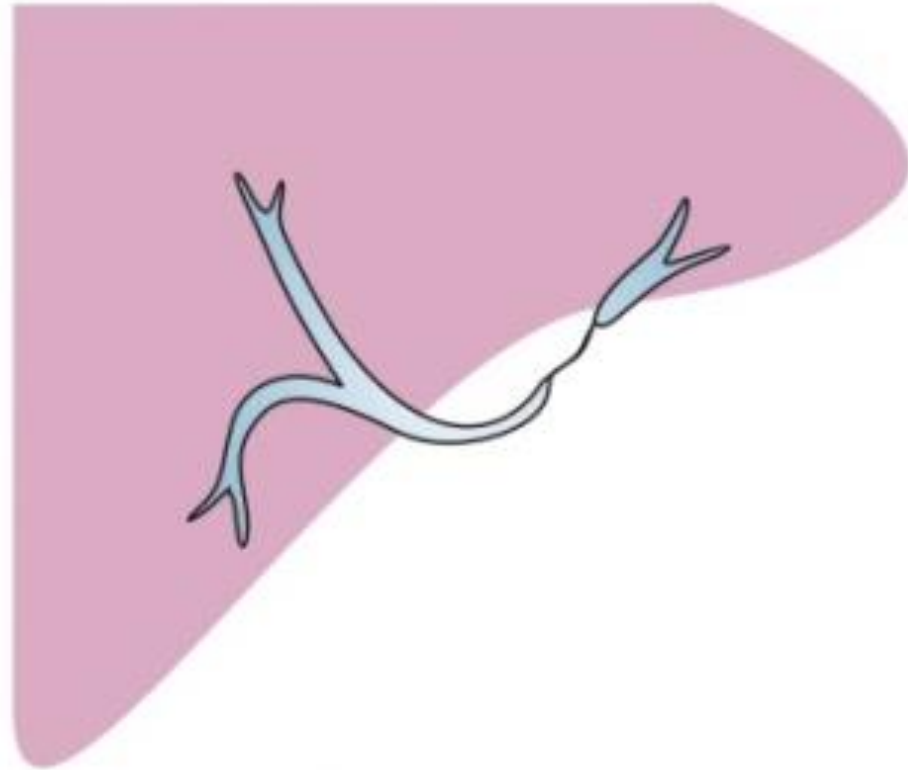
Base do segmento IV



ANASTOMOSE COM O DUCTO HEPÁTICO ESQUERDO



DUCTOS SEPARADOS

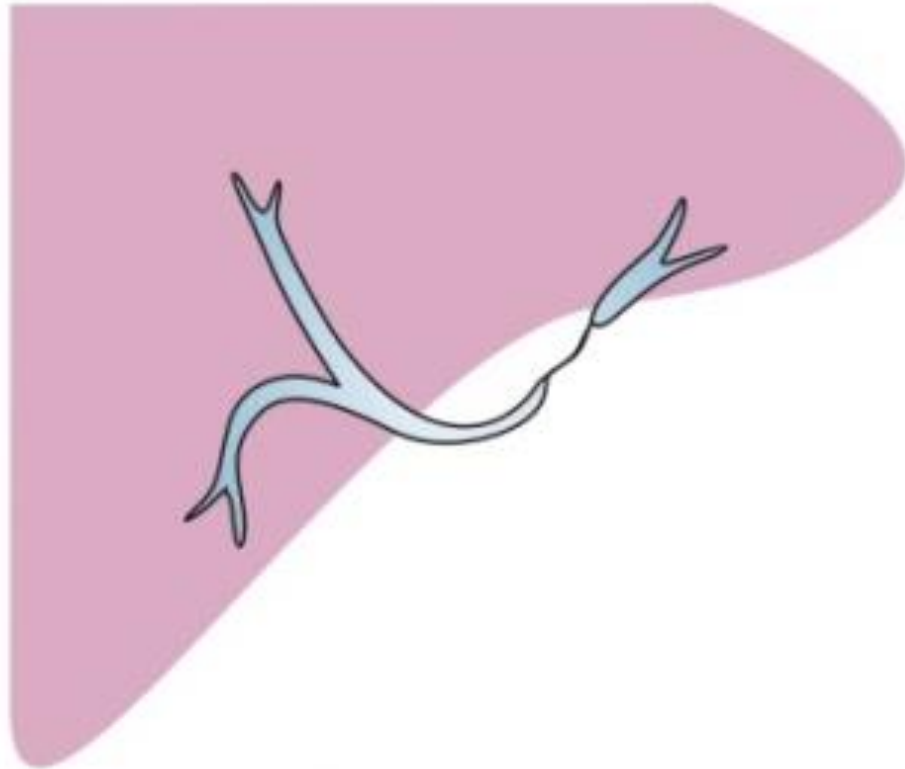


LESÕES E4

LESÃO DE VIA BILIAR

- Ductos próximos
- Ductos afastados

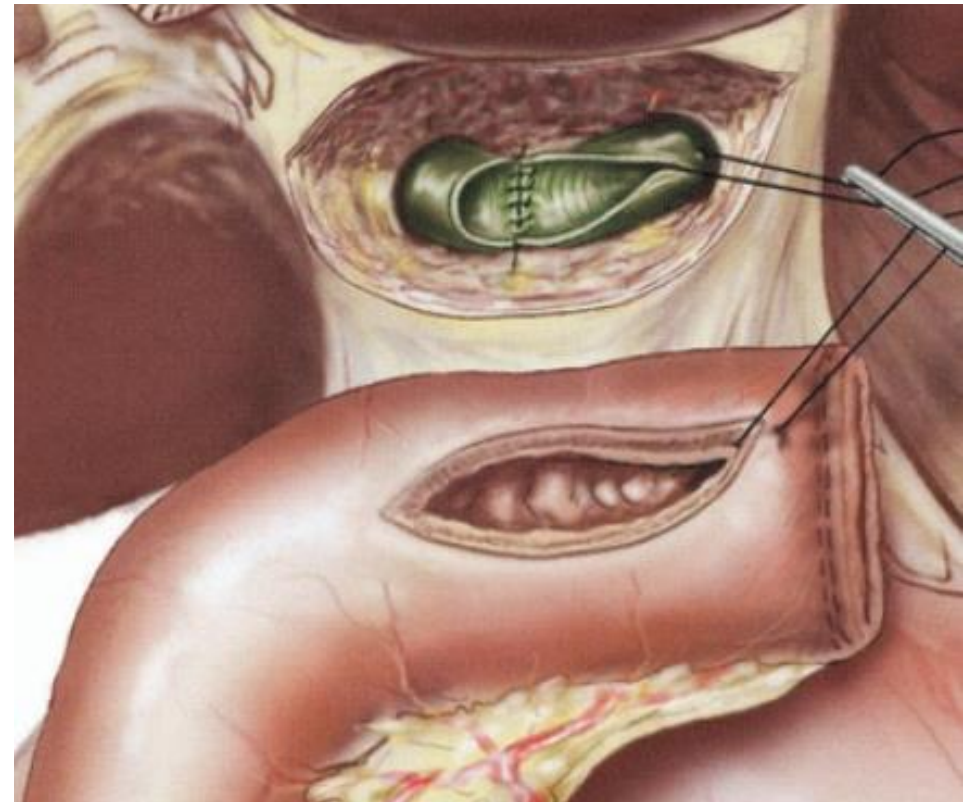
DUCTOS SEPARADOS



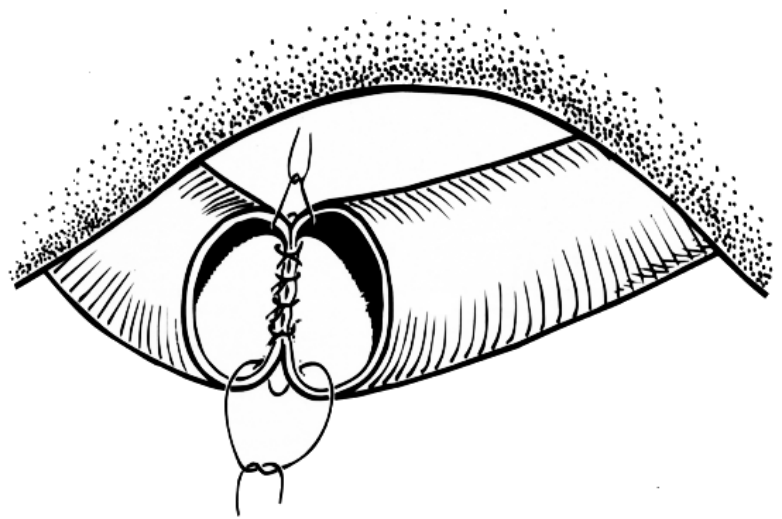
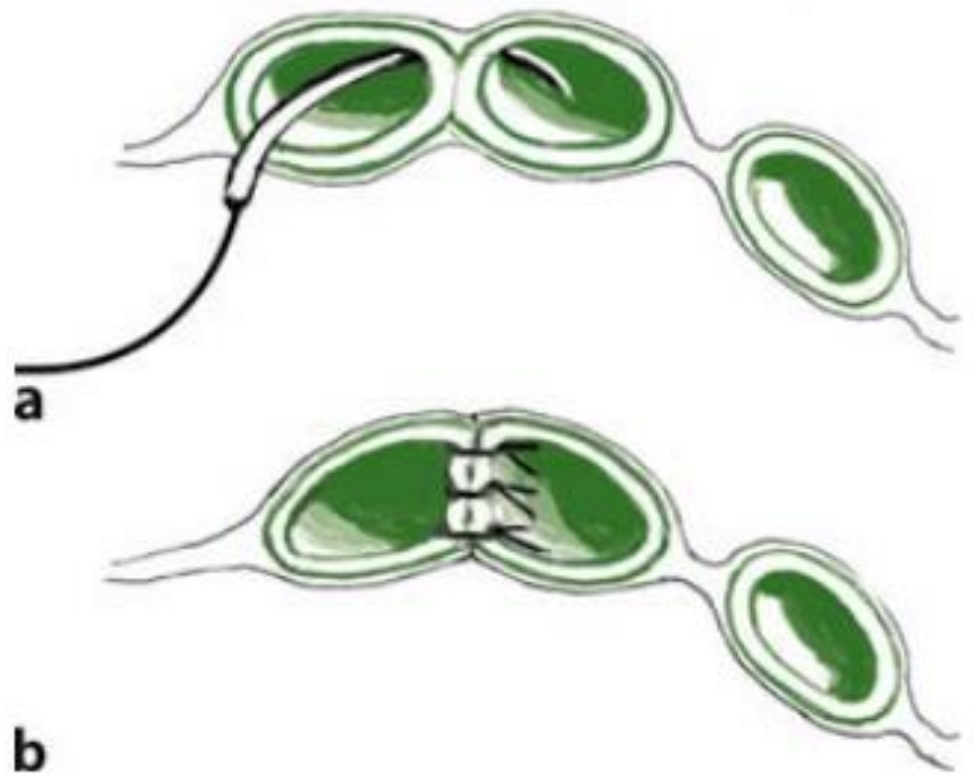
LESÕES E4

Ductos próximos

DUCTOPLASTIA

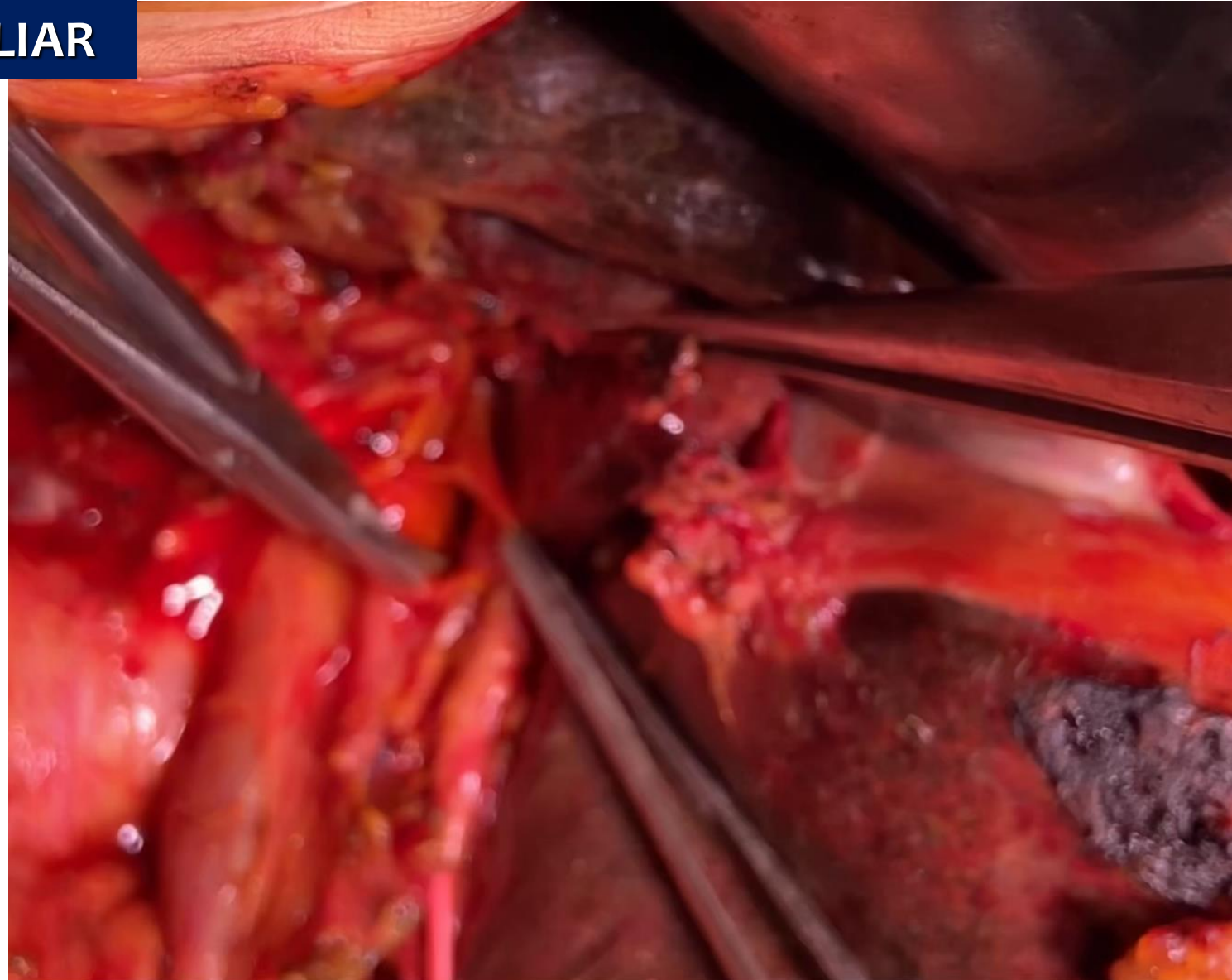


DUCTOS PRÓXIMOS



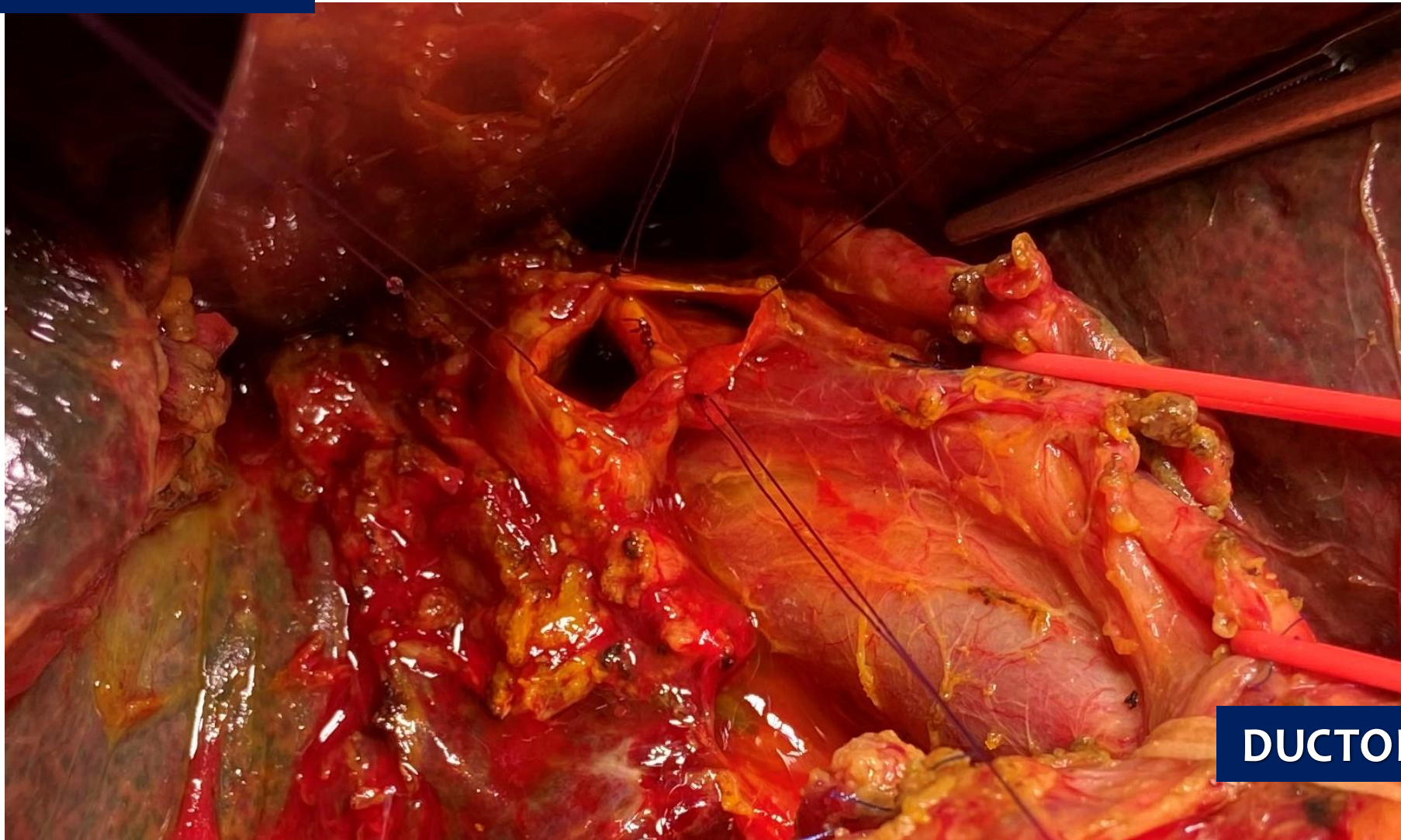
DUCTOPLASTIA

LESÃO DE VIA BILIAR



DUCTOPLASTIA

LESÃO DE VIA BILIAR



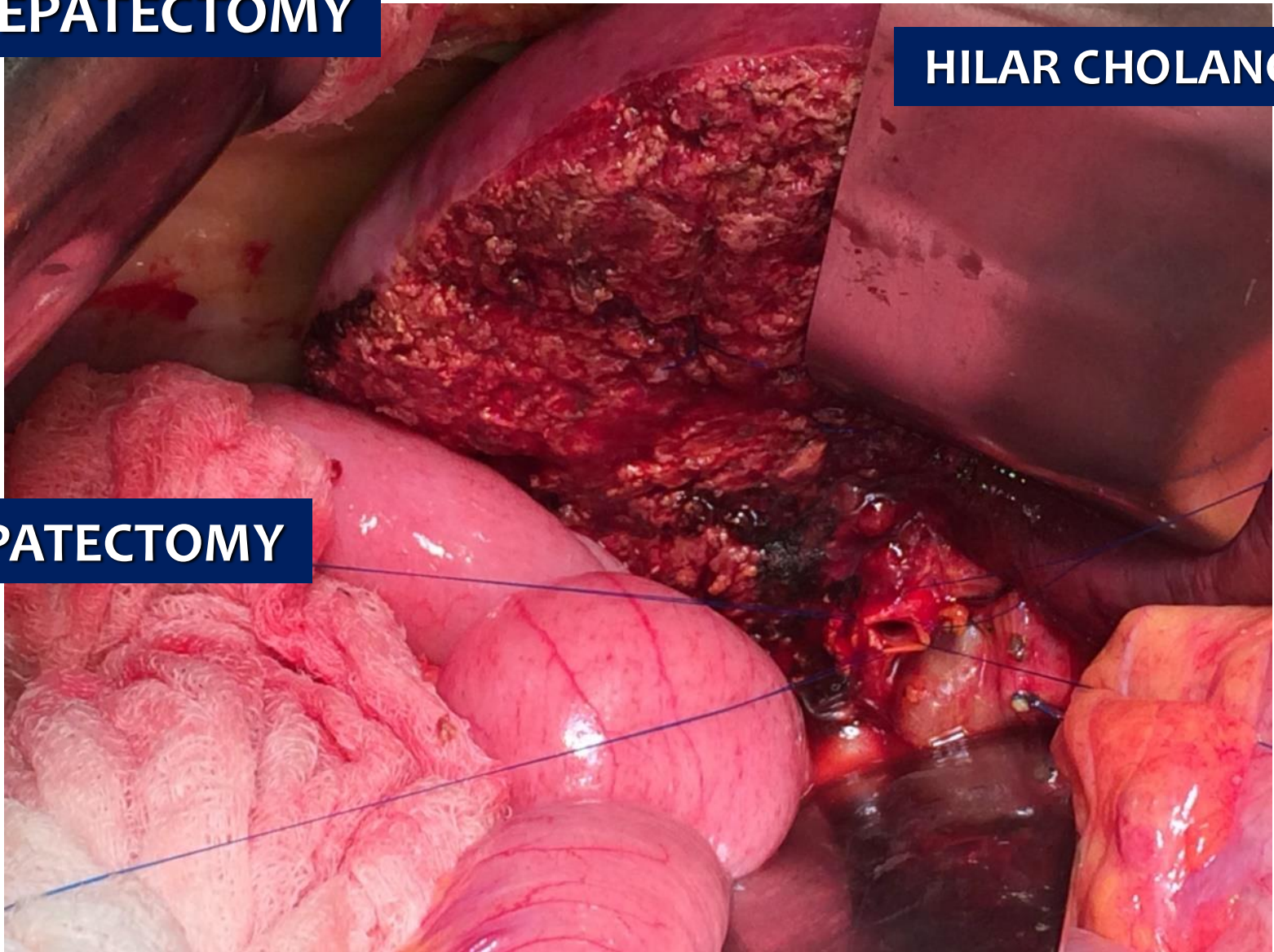
DUCTOPLASTIA

RIGHT HEPATECTOMY

HILAR CHOLANGIOCARCINOMA

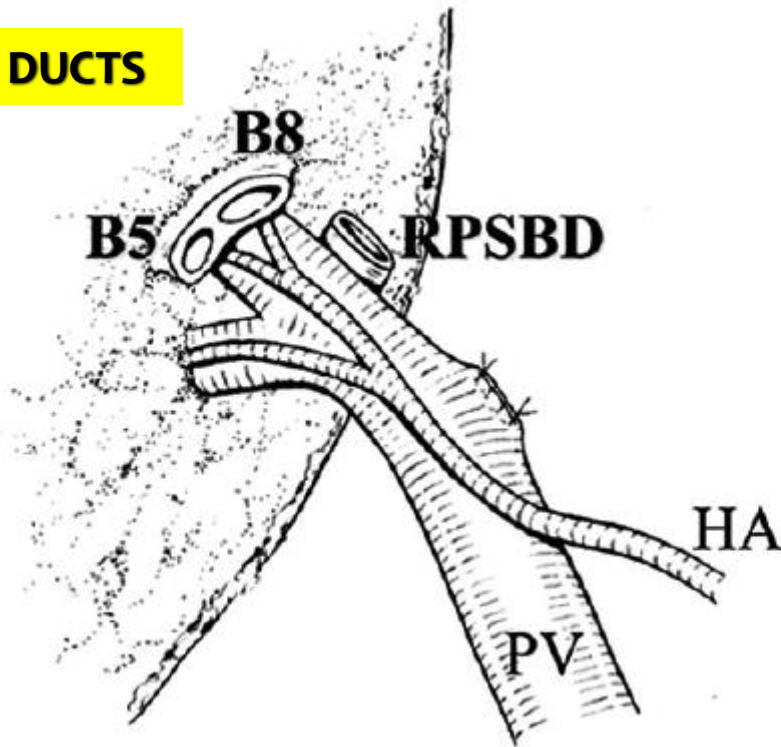
BILE DUCTS

RIGHT HEPATECTOMY

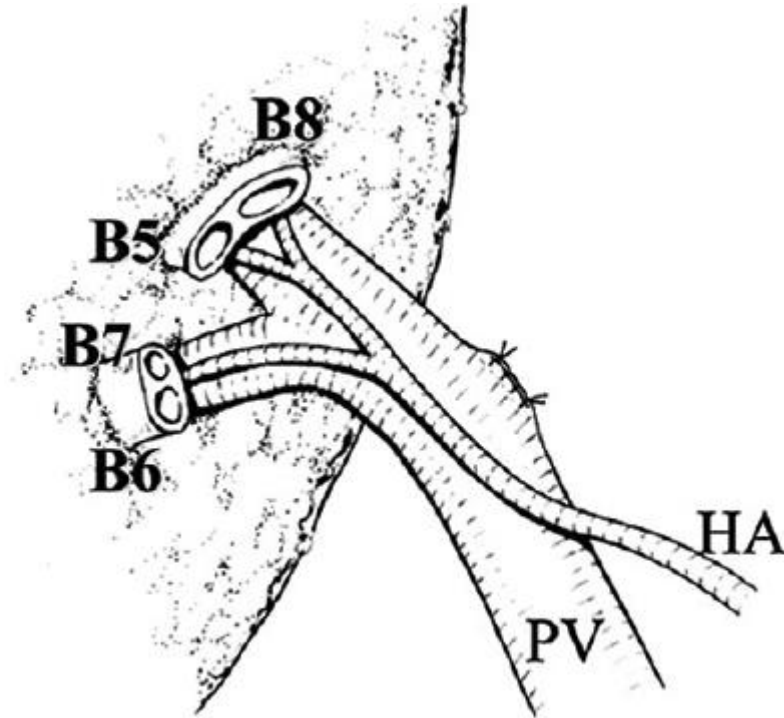


Clinical Significance of Biliary Vascular Anatomy of the Right Liver for Hilar Cholangiocarcinoma Applied to Left Hemihepatectomy

BILE DUCTS



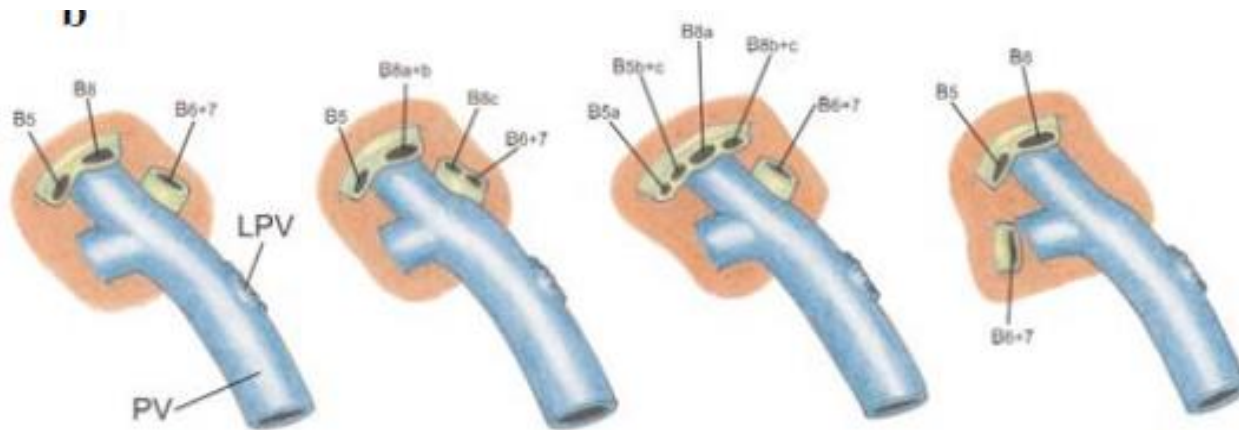
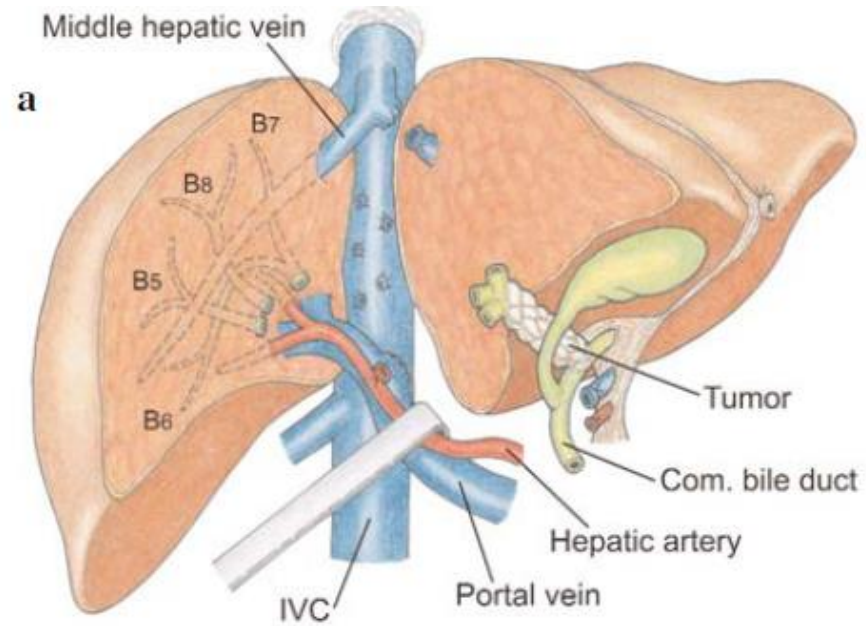
Supraportal type



Infraportal type

HILAR CHOLANGIOCARCINOMA

LEFT HEPATECTOMY

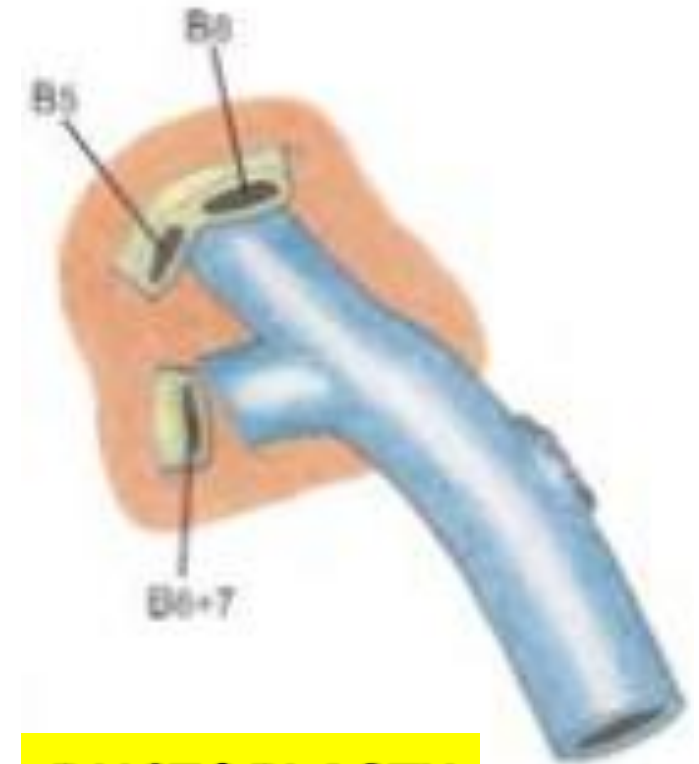


DUCTOPLASTY

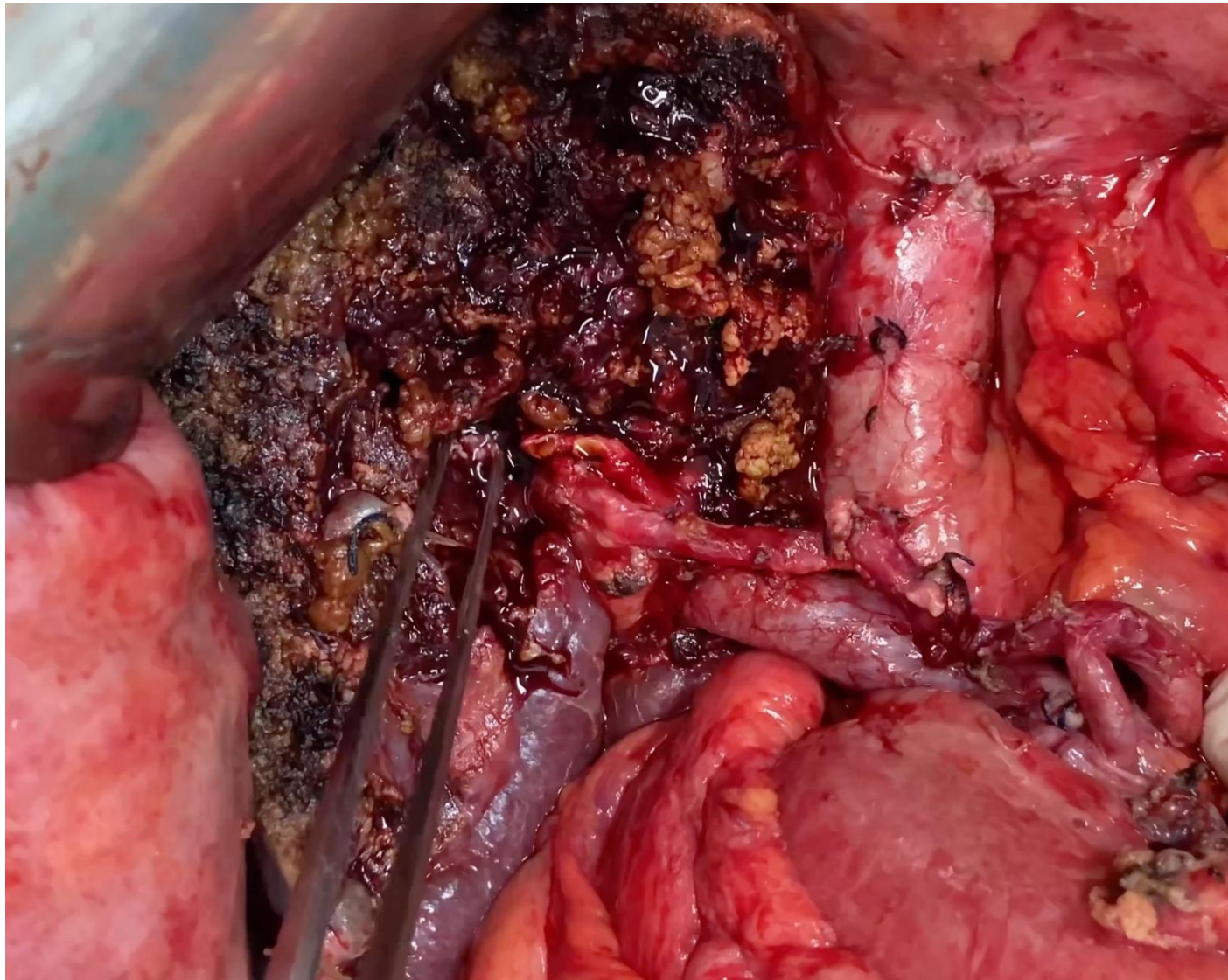
The right anterior and posterior bile duct (B5, B8/B6, B7) and different possibilities

HILAR CHOLANGIOCARCINOMA

LEFT HEPATECTOMY



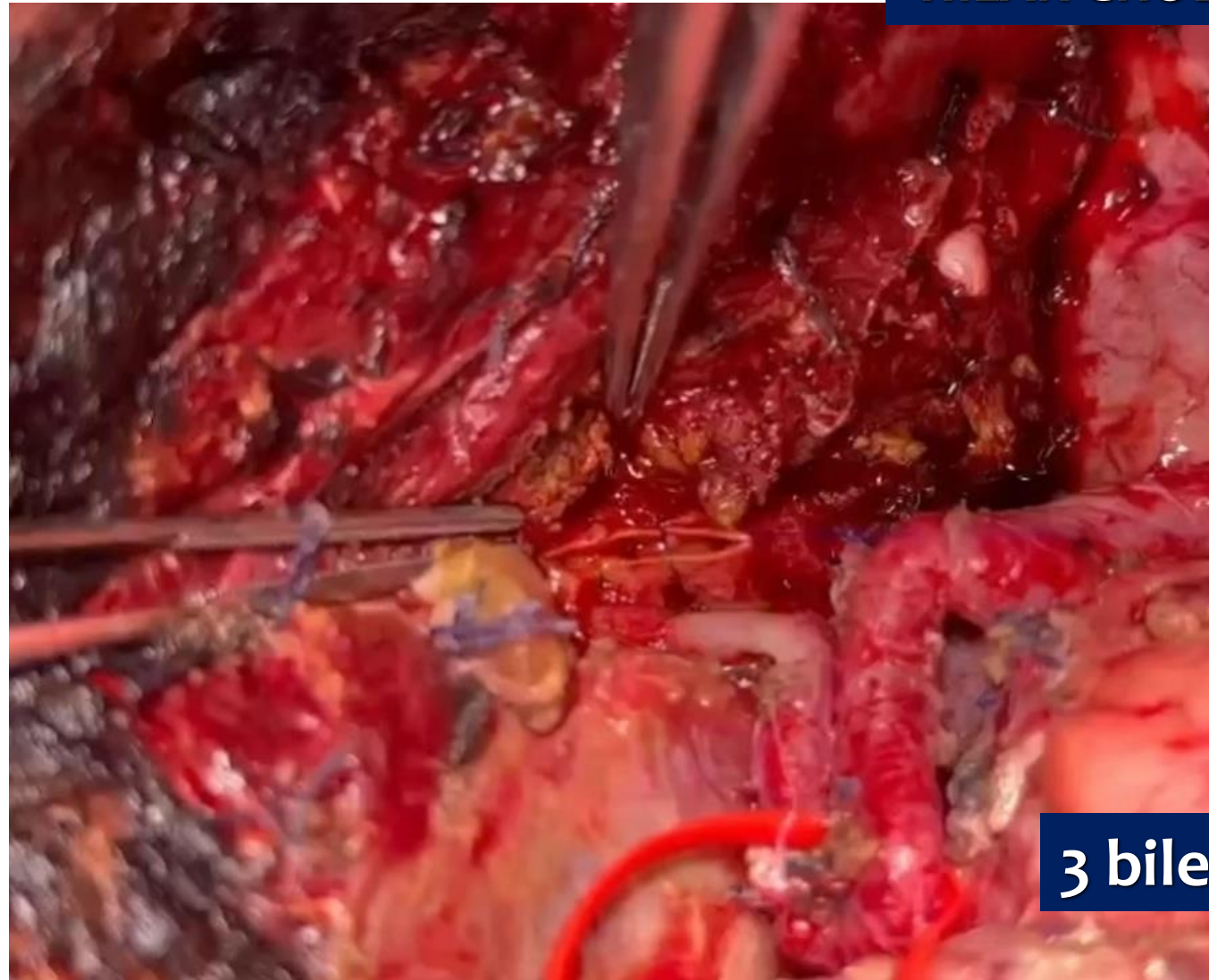
DUCTOPLASTY



INTRAHEPATIC ANASTOMOSIS

DUCTOPLASTY

HILAR CHOLANGIOCARCINOMA

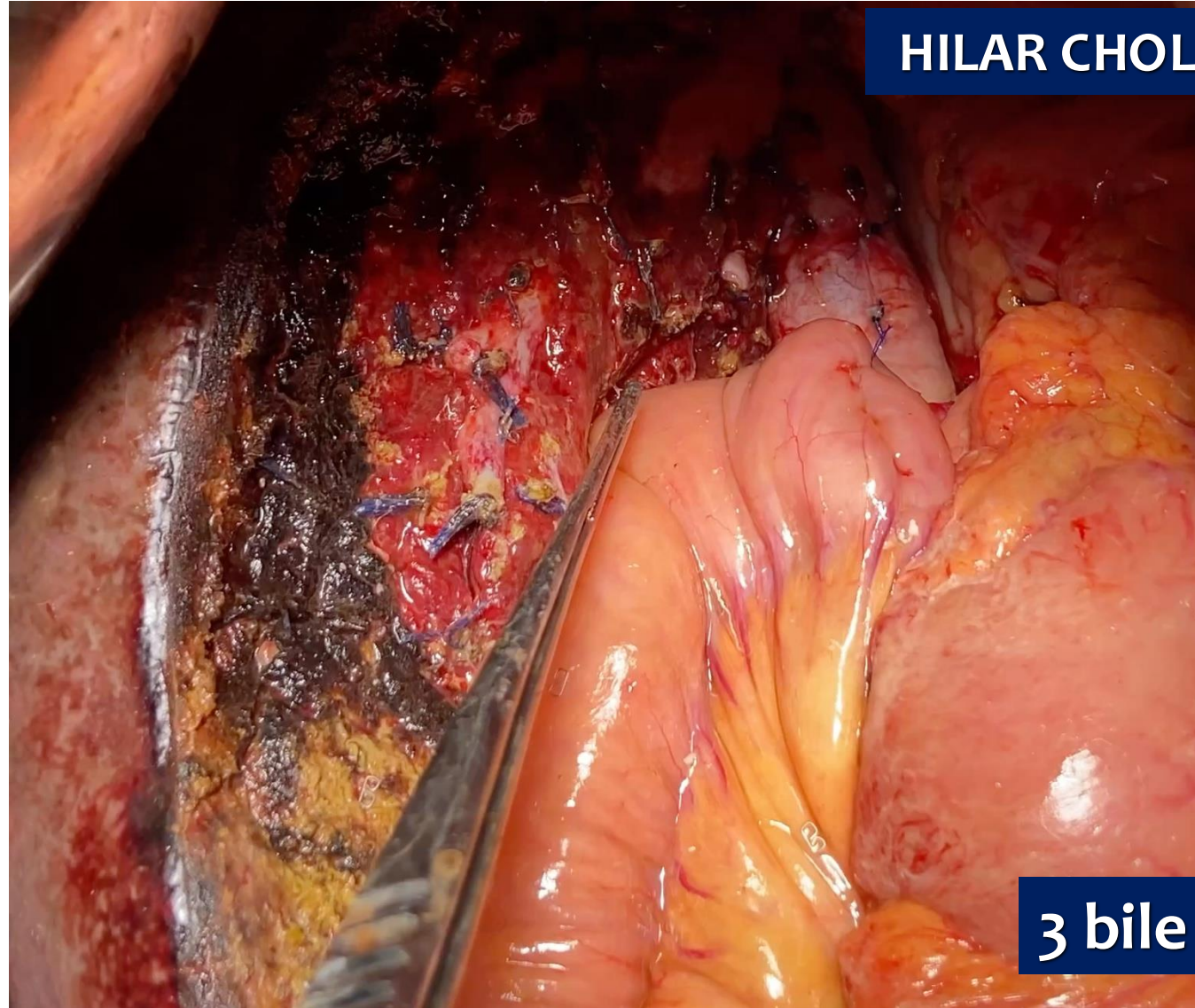


DUCTOPLASTY

3 bile ducts

DUCTOPLASTY

HILAR CHOLANGIOCARCINOMA

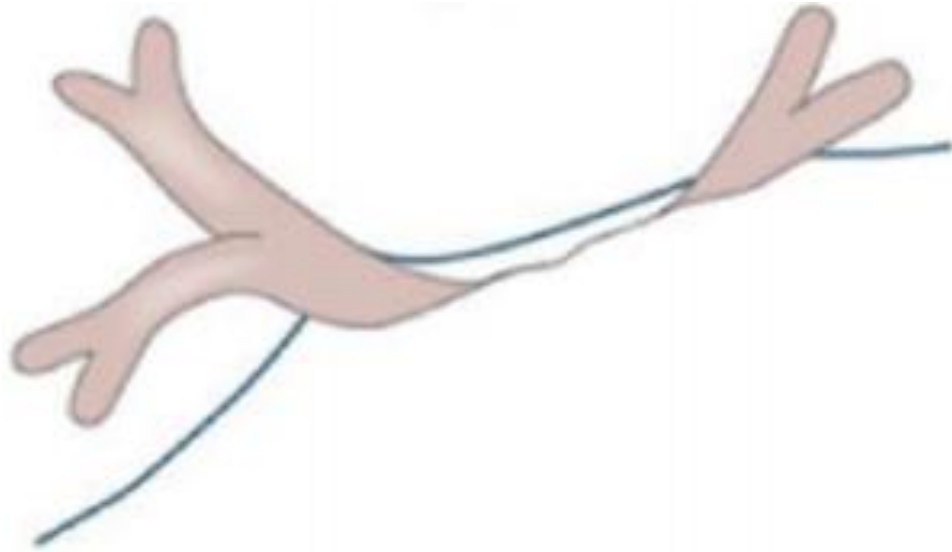


DUCTOPLASTY

3 bile ducts

DUCTOS SEPARADOS

Ductos afastados



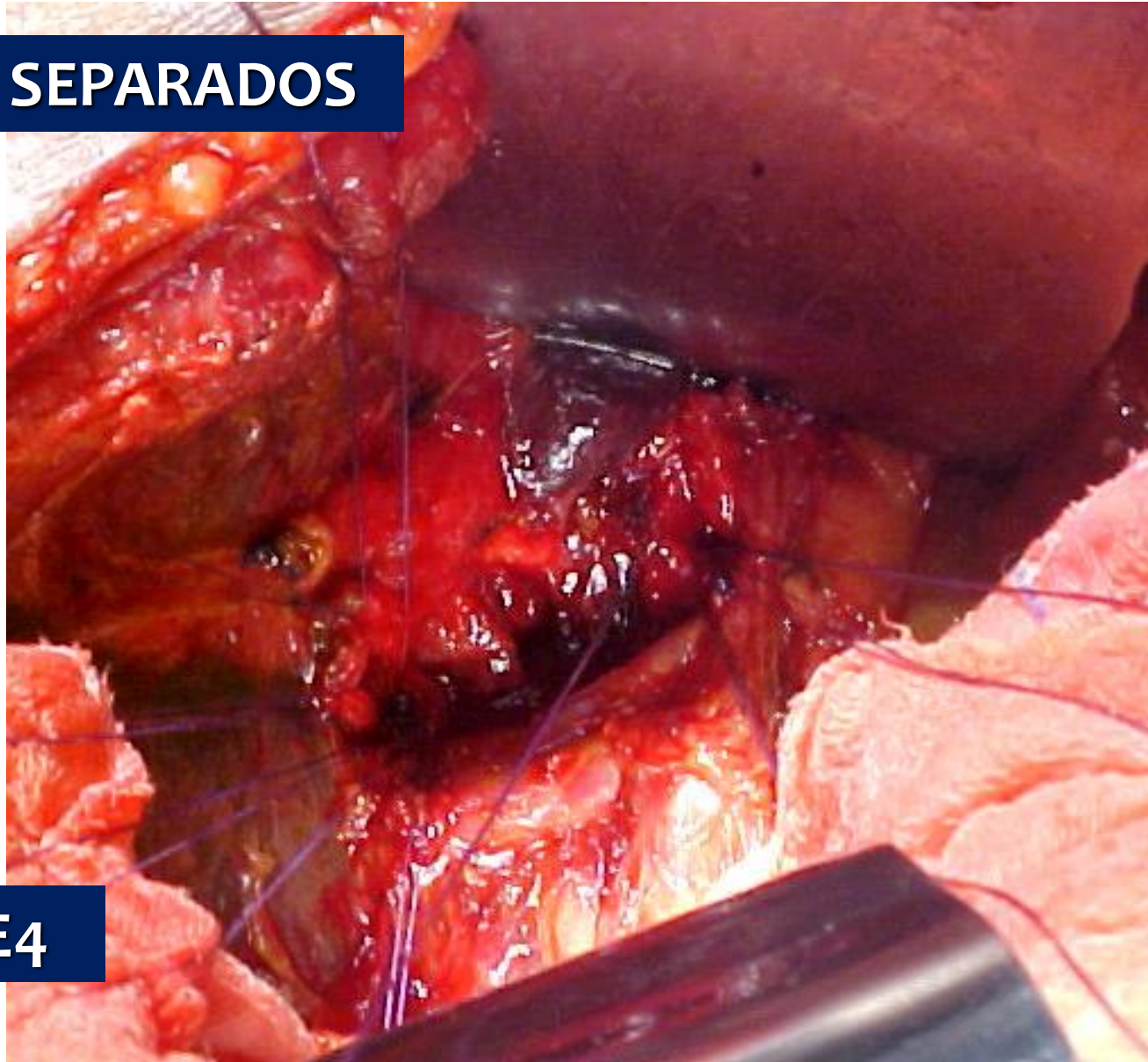
LESÕES E4

LESÃO DE VIA BILIAR

- Medir a distância do ducto
- Dupla anastomoses na alça

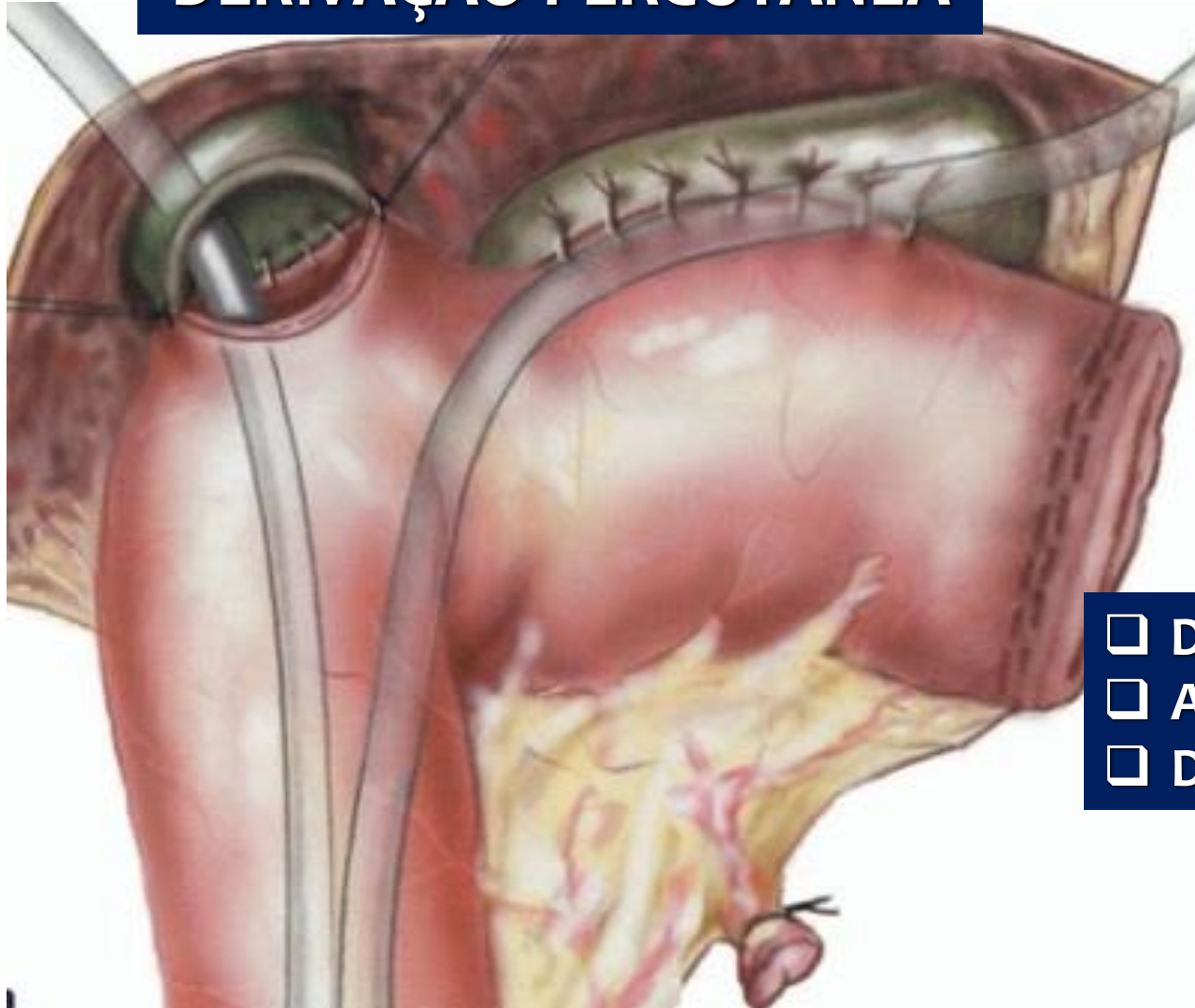
DUCTOS SEPARADOS

Ductos afastados



LESÕES E4

DERIVAÇÃO PERCUTÂNEA



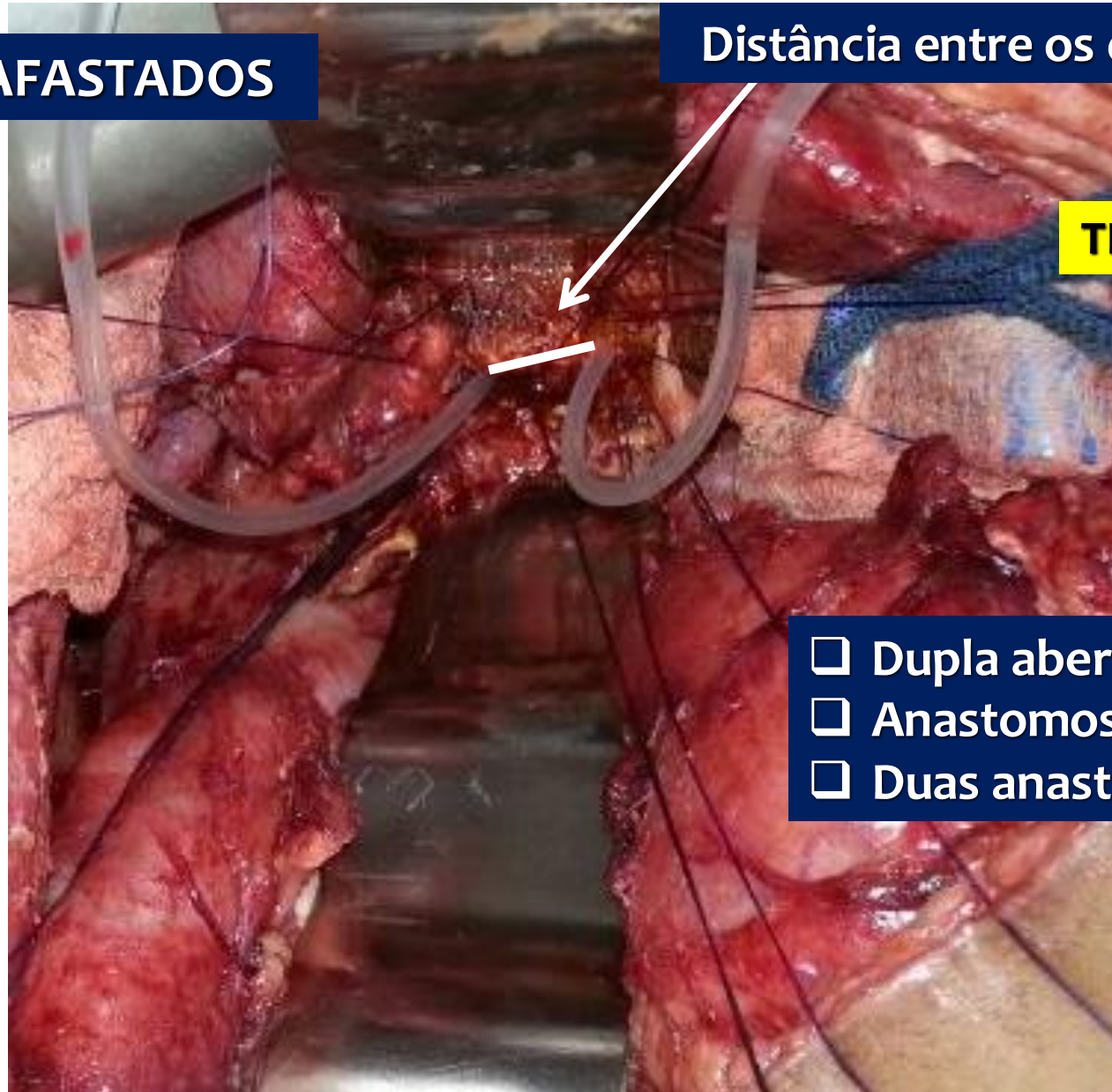
TRANSANASTOMOTIC STENT

- Dupla abertura no jejuno
- Anastomose com drenagem externa
- Duas anastomoses na alça

DUCTOS AFASTADOS

Distância entre os ductos

TRANSANASTOMOTIC STENT



- Dupla abertura no jejuno
- Anastomose com drenagem externa
- Duas anastomoses na alça



Eversão de mucosa

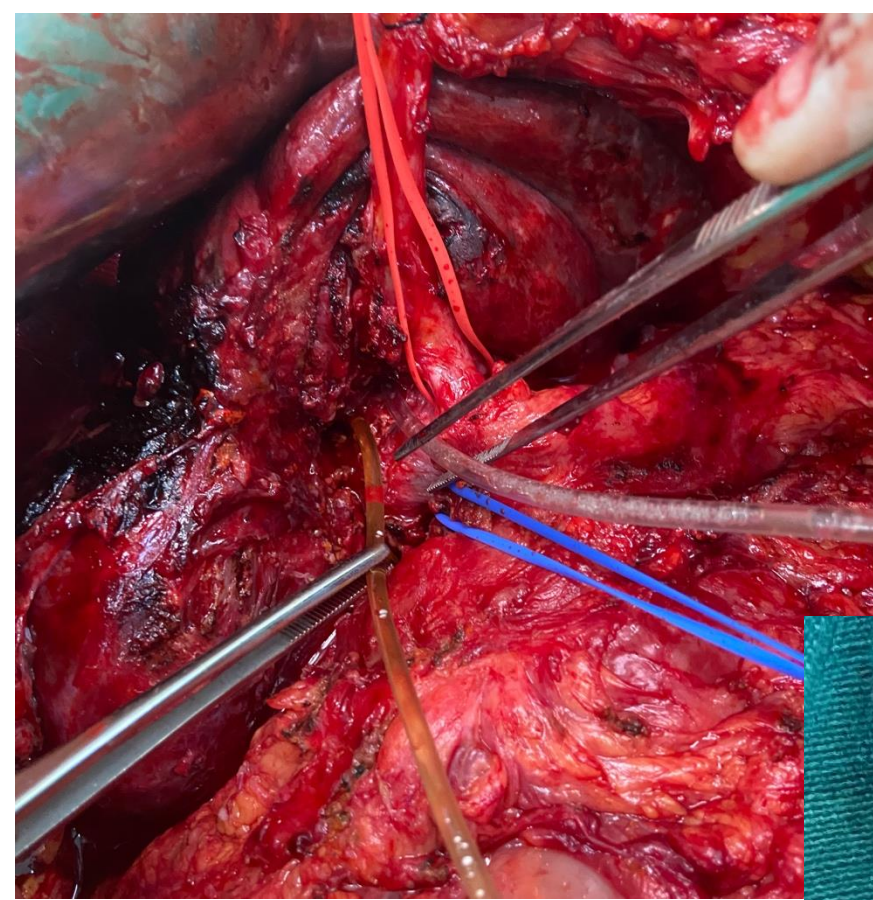
TRANSANASTOMOTIC STENT

Distância no jejunum

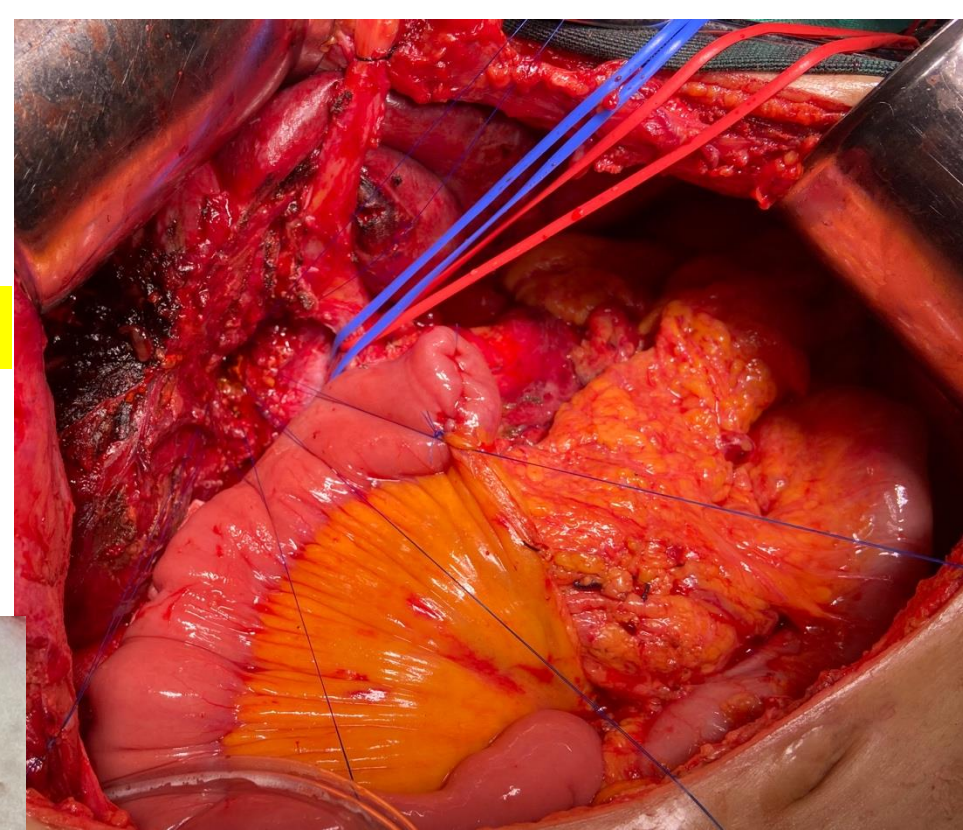
- Dupla abertura no jejunum
- Duas anastomoses na alça
- Anastomose com drenagem externa



☐ Anastomose com drenagem externa



TRANSANASTOMOTIC STENT

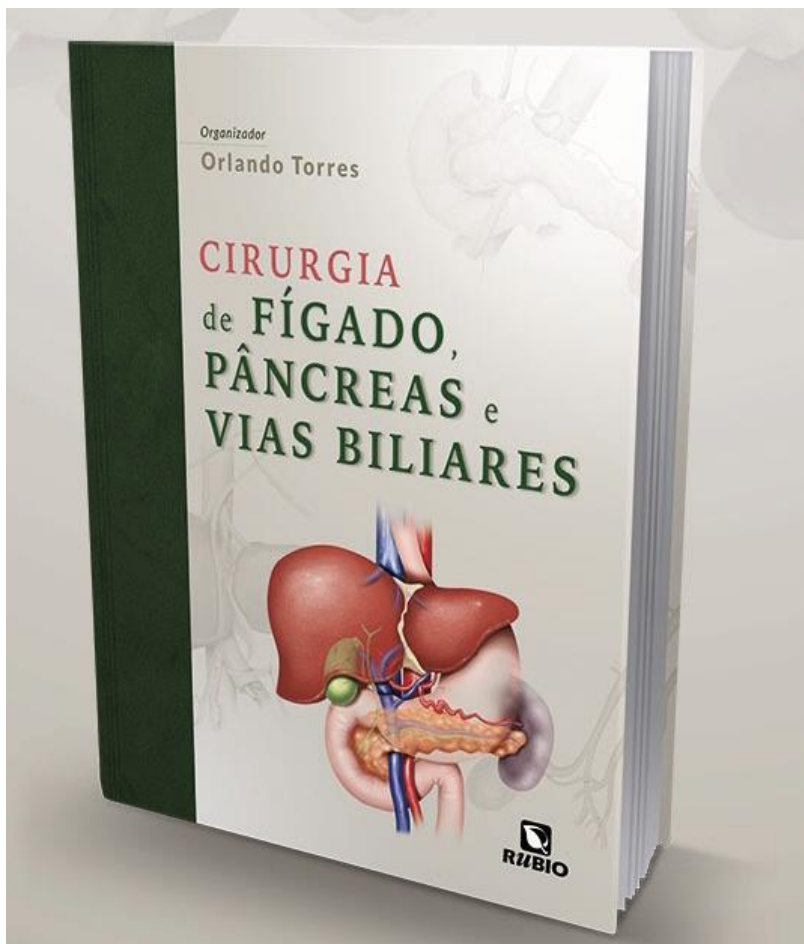


- Dupla abertura no jejunum
- Duas anastomoses na alça
- Anastomose com drenagem externa

HILAR CHOLANGIOCARCINOMA



INDIVIDUALIZED ANASTOMOSIS



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