



JX CONGRESSO BRASILEIRO DE CIRURGIA DO
FÍGADO, PÂNCREAS E VIAS BILIARES

03 E 05 DE OUTUBRO DE 2019
HOTEL OURO MINAS - BH

MANEJO DE FÍSTULAS BILIARES E PANCREÁTICAS

Orlando Jorge M. Torres

Professor Titular e Chefe do Serviço de
Cirurgia do Aparelho Digestivo
Unidade Hepatopancreatobiliar
Universidade Federal Maranhão - Brasil

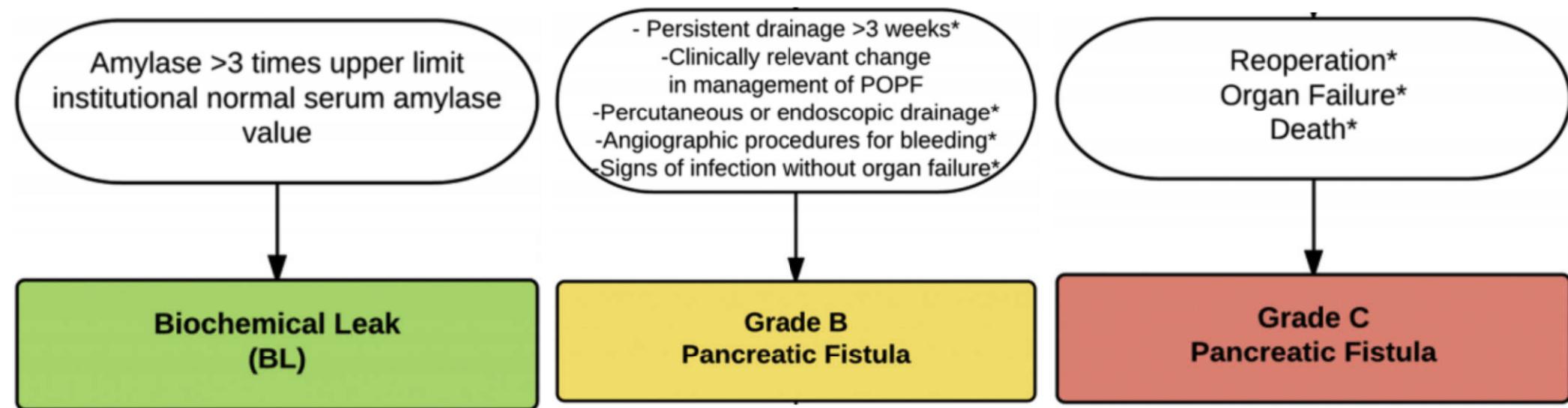
FÍSTULA PANCREÁTICA

ISGPs

Event	BL (NO POPF)	Grade B POPF*	Grade C POPF*
<input type="checkbox"/> Increased amylase activity > 3 times upper limit Institutional normal serum value	<input type="checkbox"/> YES	<input type="checkbox"/> YES	<input type="checkbox"/> YES
<input type="checkbox"/> Persisting peripancreatic drainage > 3 weeks	<input type="checkbox"/> NO	<input type="checkbox"/> YES	<input type="checkbox"/> YES
<input type="checkbox"/> Clinically relevant change in management of POPF#	<input type="checkbox"/> NO	<input type="checkbox"/> YES	<input type="checkbox"/> YES
<input type="checkbox"/> POPF percutaneous or endoscopic specific interventions for collections	<input type="checkbox"/> NO	<input type="checkbox"/> YES	<input type="checkbox"/> YES
<input type="checkbox"/> Angiographic procedures for POPF related bleeding	<input type="checkbox"/> NO	<input type="checkbox"/> YES	<input type="checkbox"/> YES
<input type="checkbox"/> Reoperation for POPF	<input type="checkbox"/> NO	<input type="checkbox"/> NO	<input type="checkbox"/> YES
<input type="checkbox"/> Signs of infection related to POPF	<input type="checkbox"/> NO	<input type="checkbox"/> YES, without organ failure	<input type="checkbox"/> YES, with organ failure
<input type="checkbox"/> POPF related organ failure^	<input type="checkbox"/> NO	<input type="checkbox"/> NO	<input type="checkbox"/> YES
<input type="checkbox"/> POPF related death	<input type="checkbox"/> NO	<input type="checkbox"/> NO	<input type="checkbox"/> YES

FÍSTULA PANCREÁTICA

ISGPs



USO DE DRENO



- Desprezível 0
- Baixo 1-3
- Moderado 4-6
- Alto 7-10

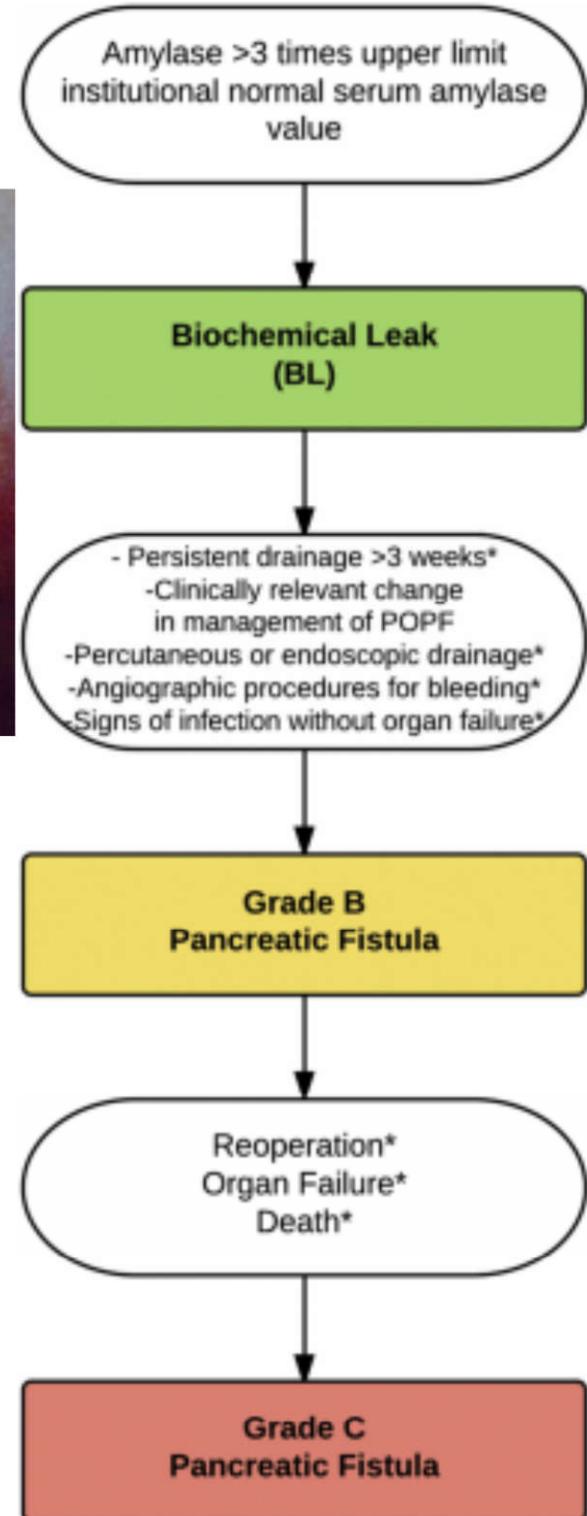
Table 2. Fistula Risk Score for Prediction of Clinically Relevant Pancreatic Fistula after Pancreatoduodenectomy (Model III)

Risk factor	Parameter	Points*
Gland texture	Firm	0
	Soft	2
Pathology	Pancreatic adenocarcinoma or pancreatitis	0
	Ampullary, duodenal, cystic, islet cell	1
Pancreatic duct diameter, mm	≥5	0
	4	1
	3	2
	2	3
	≤1	4
Intraoperative blood loss, mL	≤400	0
	401–700	1
	701–1,000	2
	>1,000	3

*Total 0 to 10 points.

Anastomose

FÍSTULA PANCREÁTICA



Dosar a amilase do dreno

Comparar com a amilase sérica (3º DPO)

Fistula pancreática:

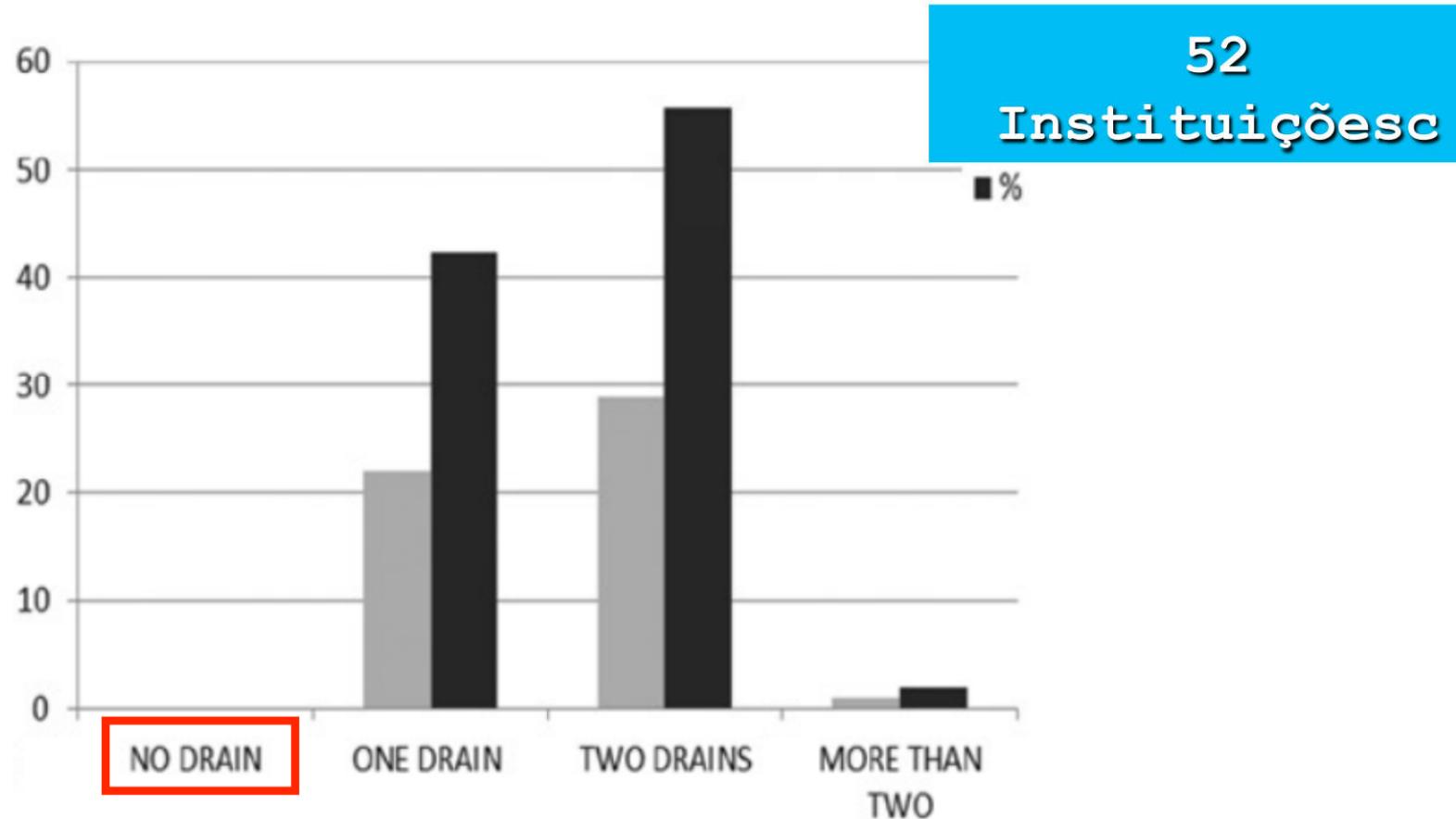
Amilase do dreno > 3x a amilase sérica

Brazilian Study Group on HPB Cancer

PANCREATODUODENECTOMY: BRAZILIAN PRACTICE PATTERNS*

*Duodenopancreatectomia: prática padrão do Brasil**

Orlando Jorge M **TORRES**¹, Eduardo de Souza M **FERNANDES**², Rodrigo Rodrigues **VASQUES**¹, Fabio Luís **WAECHTER**³,
Paulo Cezar G. **AMARAL**⁴, Marcelo Bruno de **REZENDE**⁵, Roland Montenegro **COSTA**⁶, André Luís **MONTAGNINI**⁷





Markus Buchler

Não drena



UniversitätsKlinikum Heidelberg



Total Pancreatectomy for Primary Pancreatic Neoplasms

Renaissance of an Unpopular Operation

Werner Hartwig, MD,* Alexander Gluth, MD,* Ulf Hinz, MSc,*† Frank Bergmann, MD,‡
Pauline E. R. Spronk, MSc,* Thilo Hackert, MD,* Jens Werner, MD,* and Markus W. Büchler, MD*

- ❑ 596
- ❑ 17 pacientes
- ❑ Comorbidades (risco)
 - Se fistula - óbito
- ❑ Risco elevado de fistula
 - Pâncreas muito mole
 - Pâncreas lipomatoso
 - Reconstrução arterial

FÍSTULA PANCREÁTICA



Contents lists available at ScienceDirect

Surgery

journal homepage: www.elsevier.com/locate/surg



Postoperative pancreatic fistula: Microbial growth determines outcome

Martin Loos, MD^a, Oliver Strobel, MD^a, Matthias Legominski, MD^a, Maximilian Dietrich, MD^a, Ulf Hinz, MSc^a, Thorsten Brenner, MD^b, Alexandra Heininger, MD^c, Markus A. Weigand, MD^b, Markus W. Büchler, MD^{a,*}, Thilo Hackert, MD^a

INFECÇÃO

FÍSTULA PANCREÁTICA

Table 2
POPF with microbial growth*.

Isolates n (%)	POPF with positive cultures (n=138)	PD (n=138)	DP (n=72)	P value
<i>Enterococcus</i> spp.	85 (40.5)	59 (42.8)	26 (36)	.352
<i>Enterococcus faecium</i>	52 (24.8)	39 (28.3)	13 (18)	.104
<i>Enterococcus faecalis</i>	20 (9.5)	11 (8)	9 (13)	.289
<i>Candida</i> spp.	68 (32.4)	53 (38.4)	15 (21)	.010
<i>Candida albicans</i>	51 (24.3)	39 (28.3)	12 (17)	.063
<i>Non-albicans</i>	17 (8.1)	14 (10.1)	3 (4)	.132
<i>Escherichia coli</i>	56 (26.7)	41 (29.7)	15 (21)	.167
<i>Staphylococcus</i> spp.	42 (20)	14 (10.2)	28 (39)	<.001
<i>Coagulase-negative staphylococci</i>	34 (16.2)	11 (8)	23 (32)	<.001
<i>Staphylococcus aureus</i>	8 (3.8)	3 (2.2)	5 (7)	.086
<i>Klebsiella pneumoniae</i>	25 (11.9)	22 (15.9)	3 (4)	.012
<i>Klebsiella oxytoca</i>	5 (2.4)	4 (2.9)	1	.496
<i>Bacteroides</i> spp.	18 (8.6)	9 (6.5)	9 (13)	.142
<i>Enterobacter</i> spp.	13 (6.2)	9 (6.5)	4 (6)	.783
<i>Citrobacter</i> spp.	19 (9)	17 (12.3)	2	.022
<i>Streptococcus</i> spp.	19 (9)	14 (10.1)	5 (7)	.443
<i>Others</i>	61 (29)	42 (30)	19 (26)	.305

* A total of 411 isolates were found in 210 patients with an average of 1.96 isolates per patient (2.1 isolates per patient after PD; 1.8 isolates per patient after DP). Parentheses indicate percentage.

FÍSTULA PANCREÁTICA

Table 5

Outcome analysis of patients with POPF with microbial growth.

Parameter	<i>Enterococcus faecium</i> (n = 52)	<i>Candida albicans</i> (n = 51)	<i>Escherichia coli</i> (n = 56)	<i>Coagulase-negative staphylococci</i> (n = 34)	<i>Klebsiella pneumoniae</i> (n=25)
PPH (%)	29 (56)	23 (45)	21 (38)	15 (44)	10 (40)
Sepsis (%)	30 (58)	27 (53)	23 (41)	12 (35)	9 (36)
Reoperation (%)	33 (64)	28 (55)	29 (52)	18 (53)	13 (52)
90-day mortality (%)	15 (29)	16 (31)	10 (18)	5 (9)	5 (20)

FÍSTULA PANCREÁTICA

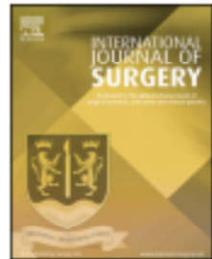
- Manejo conservador agressivo
- Procedimentos de intervenção
- Cirurgia

TRATAMENTO CONSERVADOR

- Tratamento do íleo pós-operatório
- Tratamento da infecção abdominal
- Reavaliação a intervalos curtos
- Zerar dieta oral
- Hidratação adequada
- Nutrição
 - Sonda nasojejunal
 - Jejunostomia
 - Nutrição parenteral
- Antimicrobianos
 - Empírico
- Exames de imagem

INTERVENÇÃO





Surgical management and outcome of grade-C pancreatic fistulas after pancreaticoduodenectomy: A retrospective multicenter cohort study



Tao Ma^{a,1}, Xueli Bai^{a,1}, Wen Chen^a, Mengyi Lao^a, Gang Jin^b, Kailian Zheng^b, Deliang Fu^c, Feng Yang^c, Renyi Qin^d, Xu Li^d, Wenhui Lou^e, Lei Zhang^e, Kuirong Jiang^f, Pengfei Wu^f, Chenghao Shao^g, Anan Liu^g, Yinmo Yang^h, Yongsu Ma^h, Heshui Wuⁱ, Tingbo Liang^{a,*}

<https://doi.org/10.1016/j.hpb.2019.01.006>

HPB

ORIGINAL ARTICLE

Surgical management of the grade C pancreatic fistula after pancreaticoduodenectomy

Marek Wroński¹, Włodzimierz Cebulski¹, Bartosz Witkowski², Tomasz Guzel¹, Dominika Karkocha¹, Gustaw Lech¹ & Maciej Słodkowski¹

FÍSTULA GRAU C

Ma T, et al. Int J Surg 2019;68:27-34

Wronski M, et al. HPB 2019

FÍSTULA PANCREÁTICA

POPF-related interventions or events of this cohort (n = 68).

Type	Number (%)
Re-laparotomy	53 (77.9)
Completion pancreatectomy	2 (3.77)
Simple peritoneal drainage	15 (28.3)
External wirsungostomy	20 (37.7)
Re-pancreaticojejunostomy	15 (28.3)
Pancreaticogastrostomy	1 (1.89)
Non-operative cases	15 (22.1)
Cardiac failure	1 (1.47)
Respiratory failure	3 (4.41)
Mortality attributable to POPF	11 (16.2)

RE-LAPAROTOMIA

FÍSTULA PANCREÁTICA

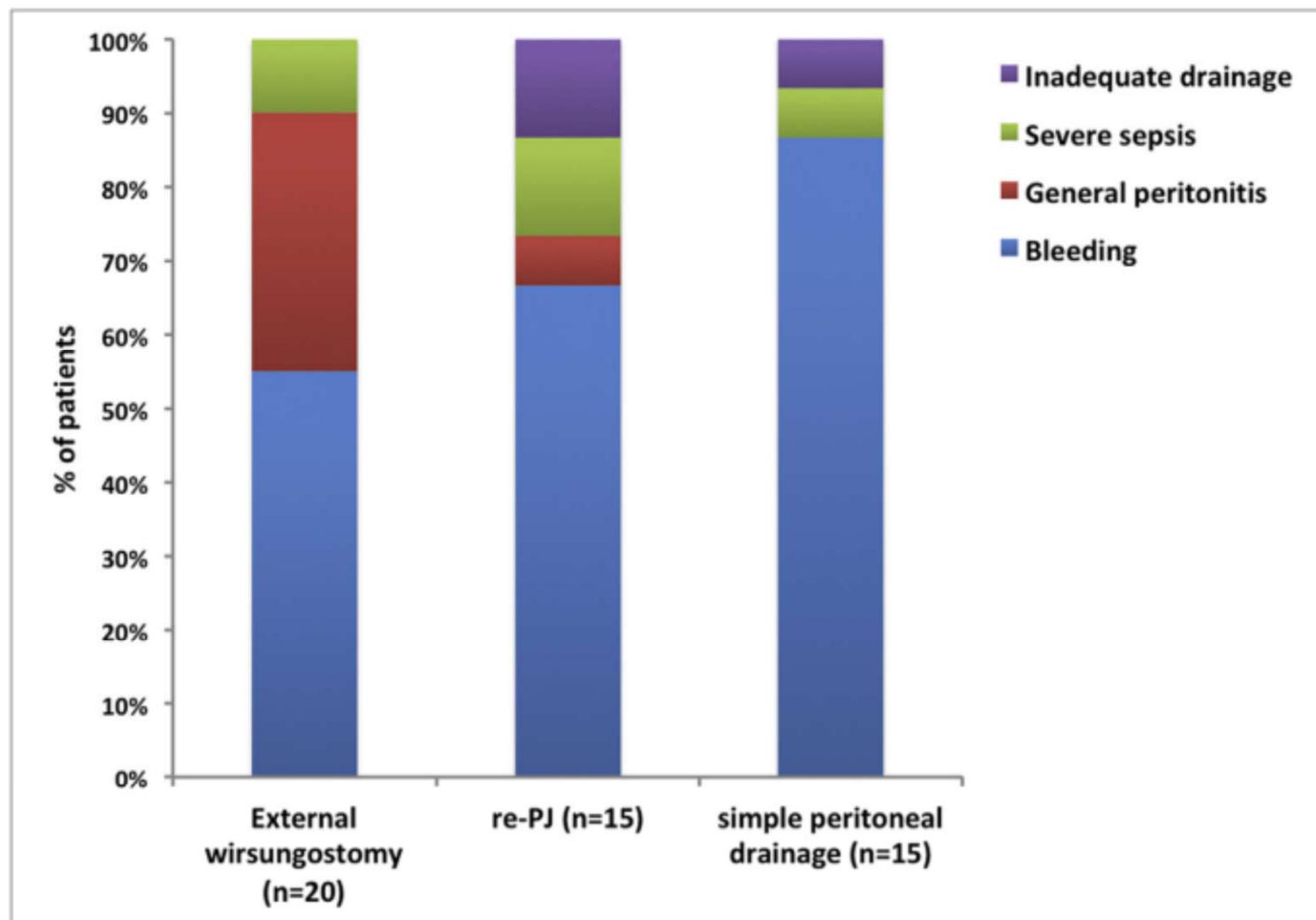


Fig. 2. Indicators of re-laparotomy using the three most frequently used surgical strategies in this cohort. A

SANGRAMENTO

RE-LAPAROTOMIA

Multivariate analysis of predictors of unfavorable outcomes after re-laparotomy (n = 53).

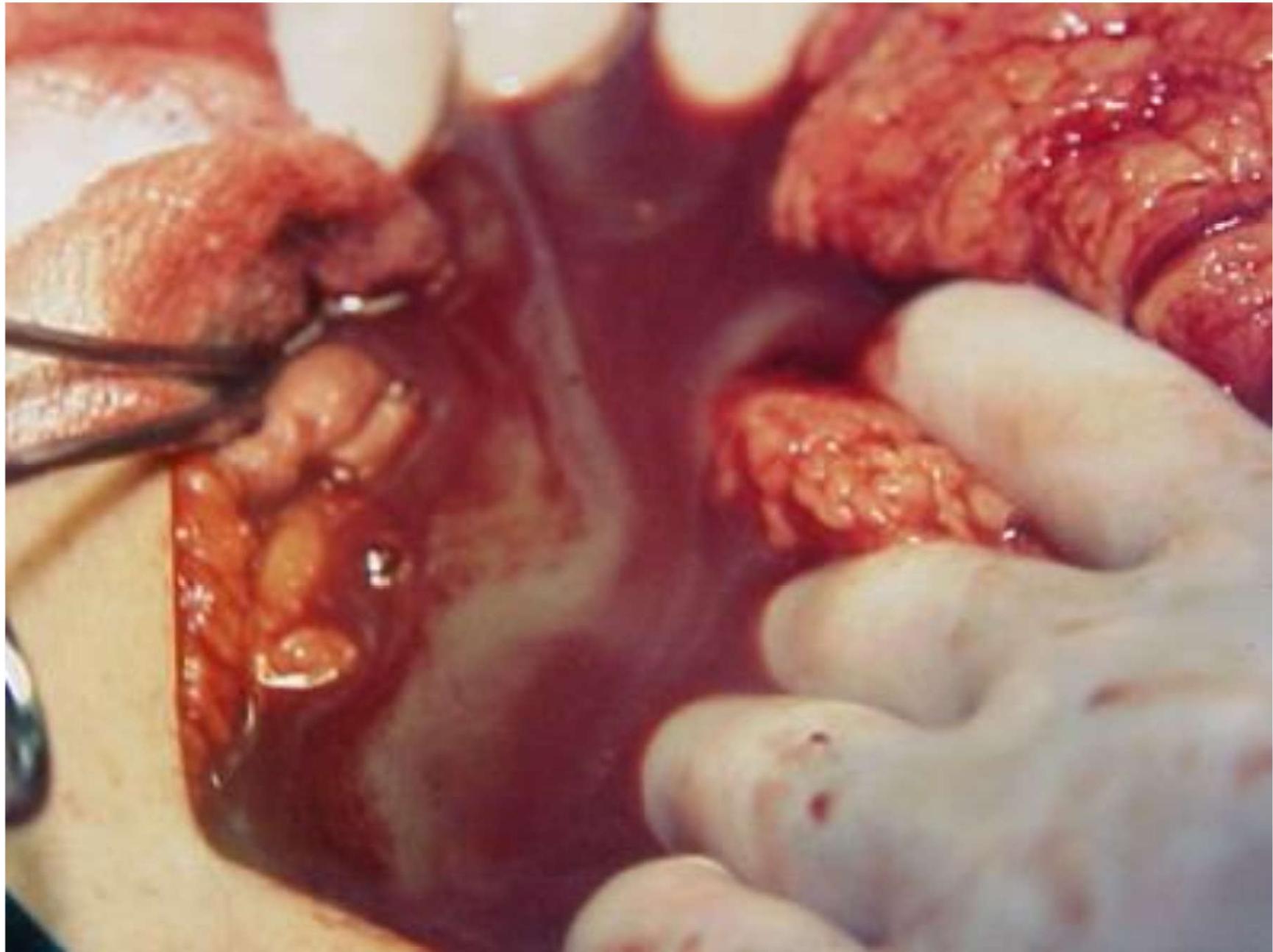
Characteristic	Univariable		Multivariable	
	OR (95% CI)	P	OR (95% CI)	P
Additional organ resection during PD				
No	Ref	0.047	Ref	0.438
Yes	7.37 (0.80–68.16)		4.66 (0.36–59.72)	
Prolonged high drain amylase level				
No	Ref	0.022	Ref	0.025
Yes	0.22 (0.06–0.85)		0.20 (0.05–0.82)	
High fever ($\geq 39^{\circ}\text{C}$) before re-laparotomy				
No	Ref	0.098	Ref	0.376
Yes	2.74 (0.82–9.19)		1.96 (0.44–8.69)	

CI indicated confidential interval; OR, odds ratio; PD, pancreaticoduodenectomy; POPF, postoperative pancreatic fistula.

REOPERAÇÃO

- **Cirurgia:**
 - Debridamento e drenagem
 - Reparo no local de vazamento
 - Realização de uma nova anastomose
 - Intervenção no ducto pancreático
 - Pancreatostomia com tubo externo
 - Ressecção da anastomose
 - Ligadura do remanescente
 - Oclusão do remanescente
 - Totalização da pancreatectomia

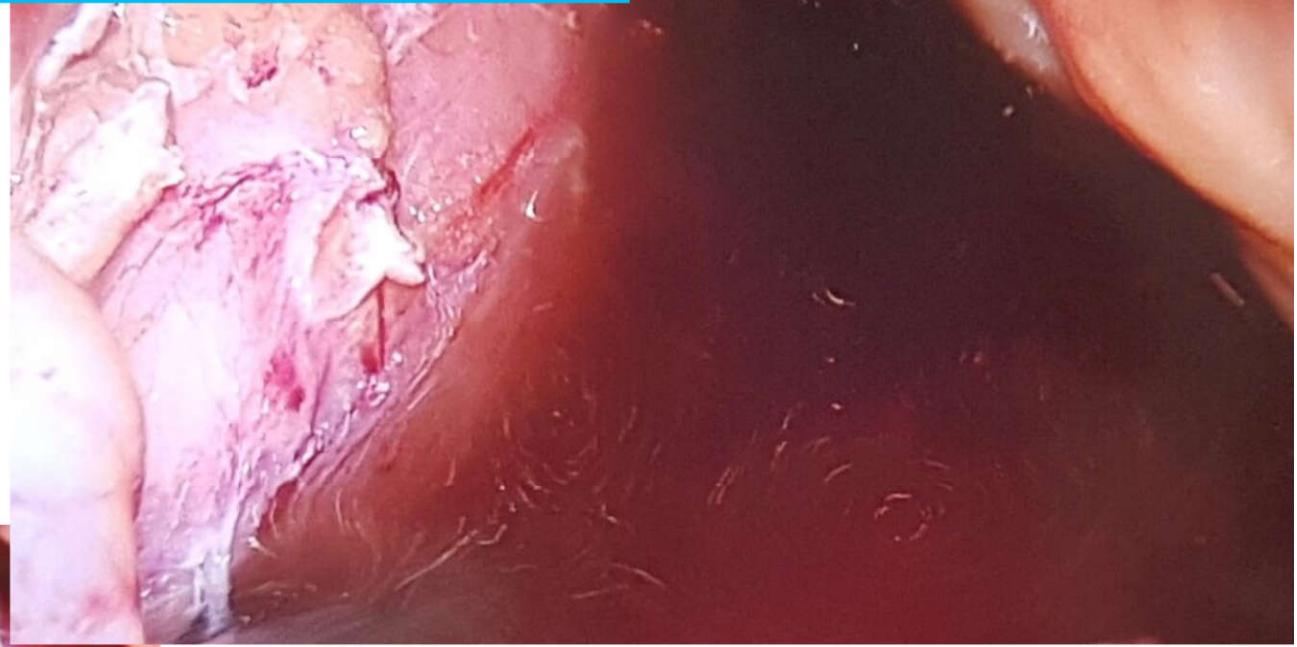
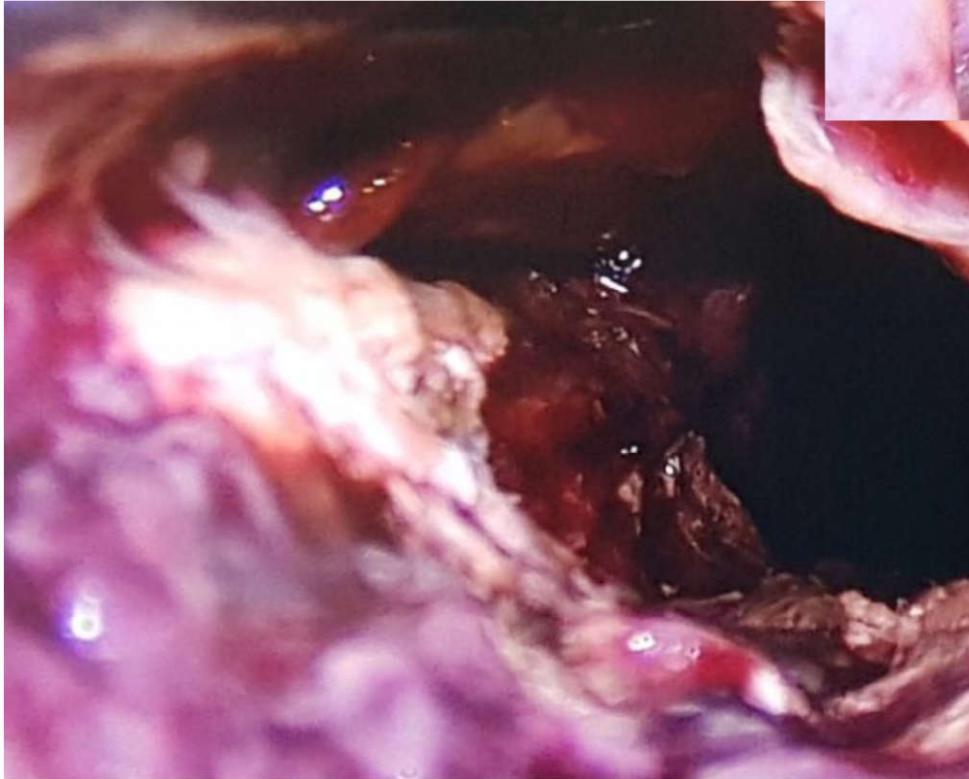
DEBRIDAMENTO E DRENAGEM



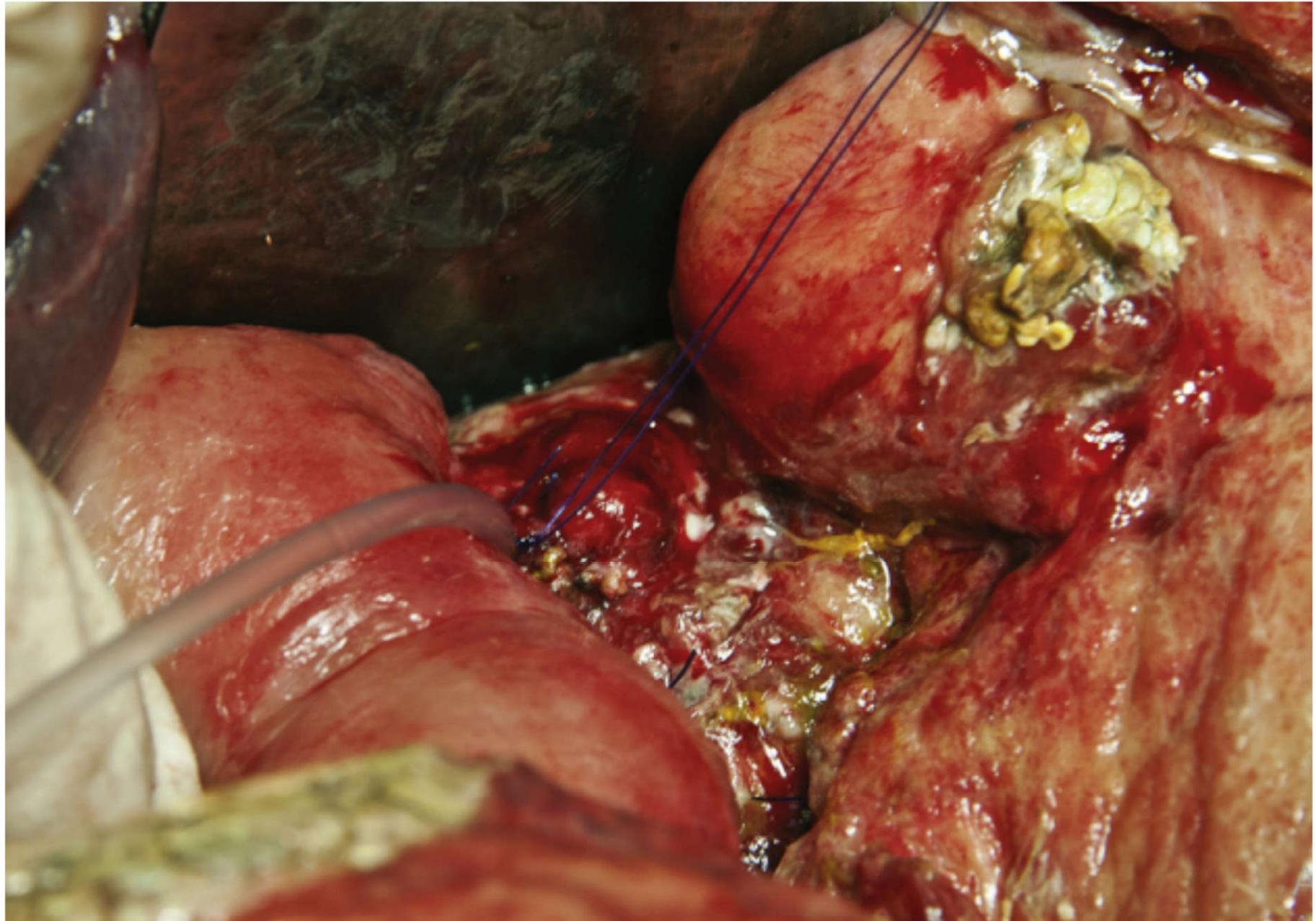
DEBRIDAMENTO E DRENAGEM



DEBRIDAMENTO E DRENAGEM



WIRSUNGOSTOMIA



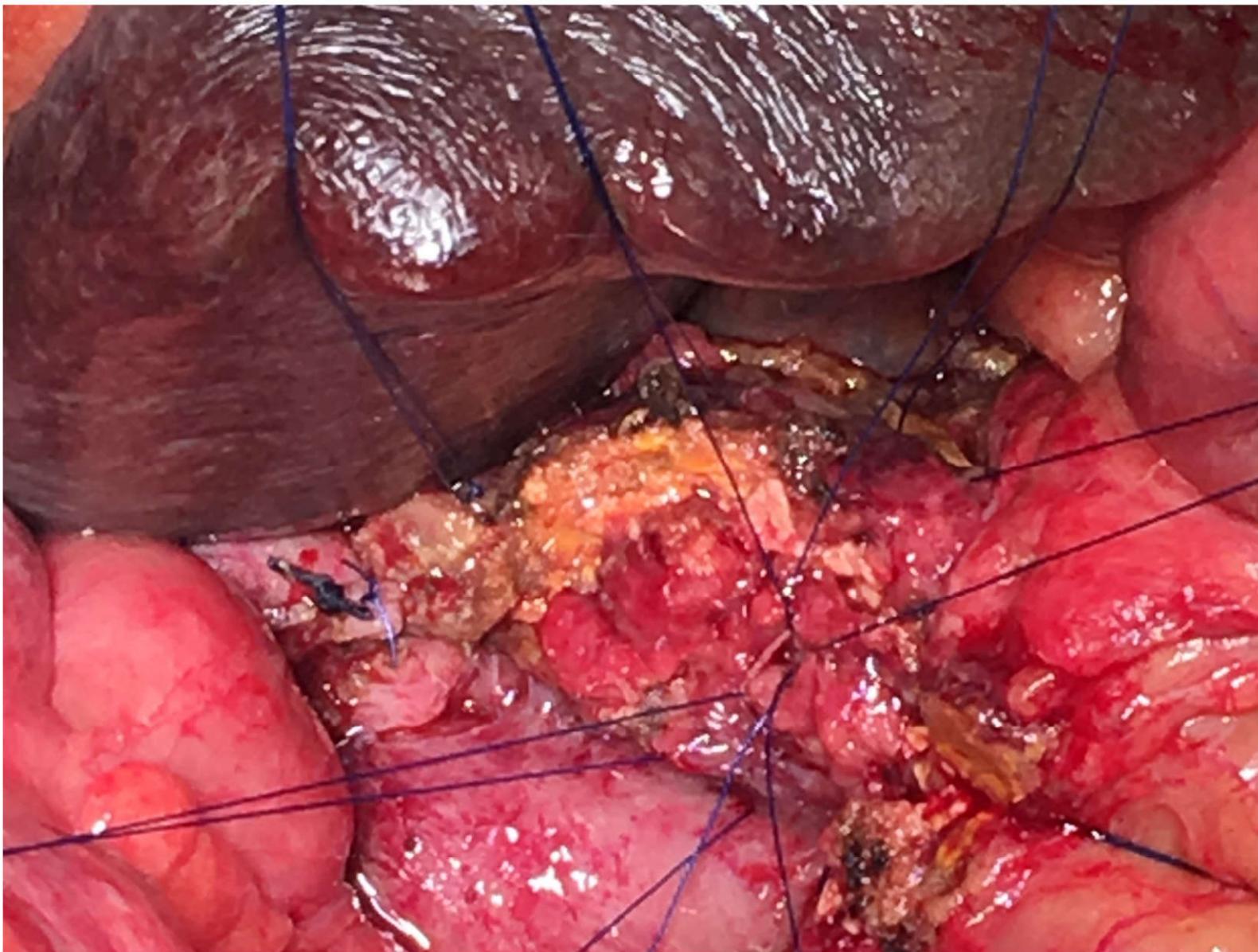
RESSECÇÃO DO INTESTINO



NOVA ANASTOMOSE



NOVA ANASTOMOSE



LIGADURA DO DUCTO PANCREÁTICO

ABCD Arq Bras C/r Dig, São Paulo
14(2):101-103, 2001

RELATO DO CASO

MANAGEMENT OF POSTOPERATIVE PANCREATIC FISTULA BY LIGATION OF THE PANCREATIC DUCT

Orlando Jorge Martins TORRES, Alzira de Alencar Lima LINS, Paulo Márcio Sousa NUNES and Itaguacy Rodrigues COELHO

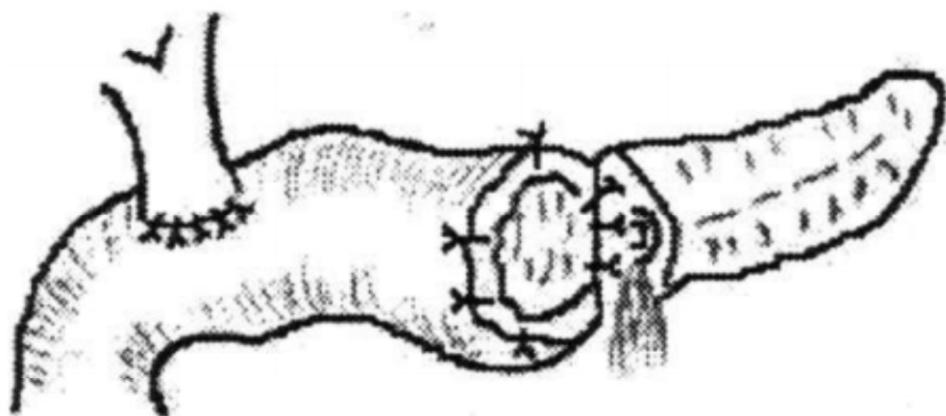


FIGURE 1 - Pancreaticojejunostomy and anastomotic leak

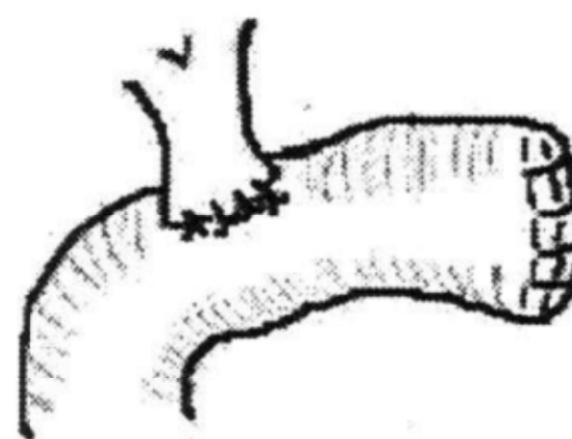


FIGURE 2 Closure of jejunal stump and pancreatic duct ligation.

TOTALIZAR A DUODENOPANCREATECTOMIA

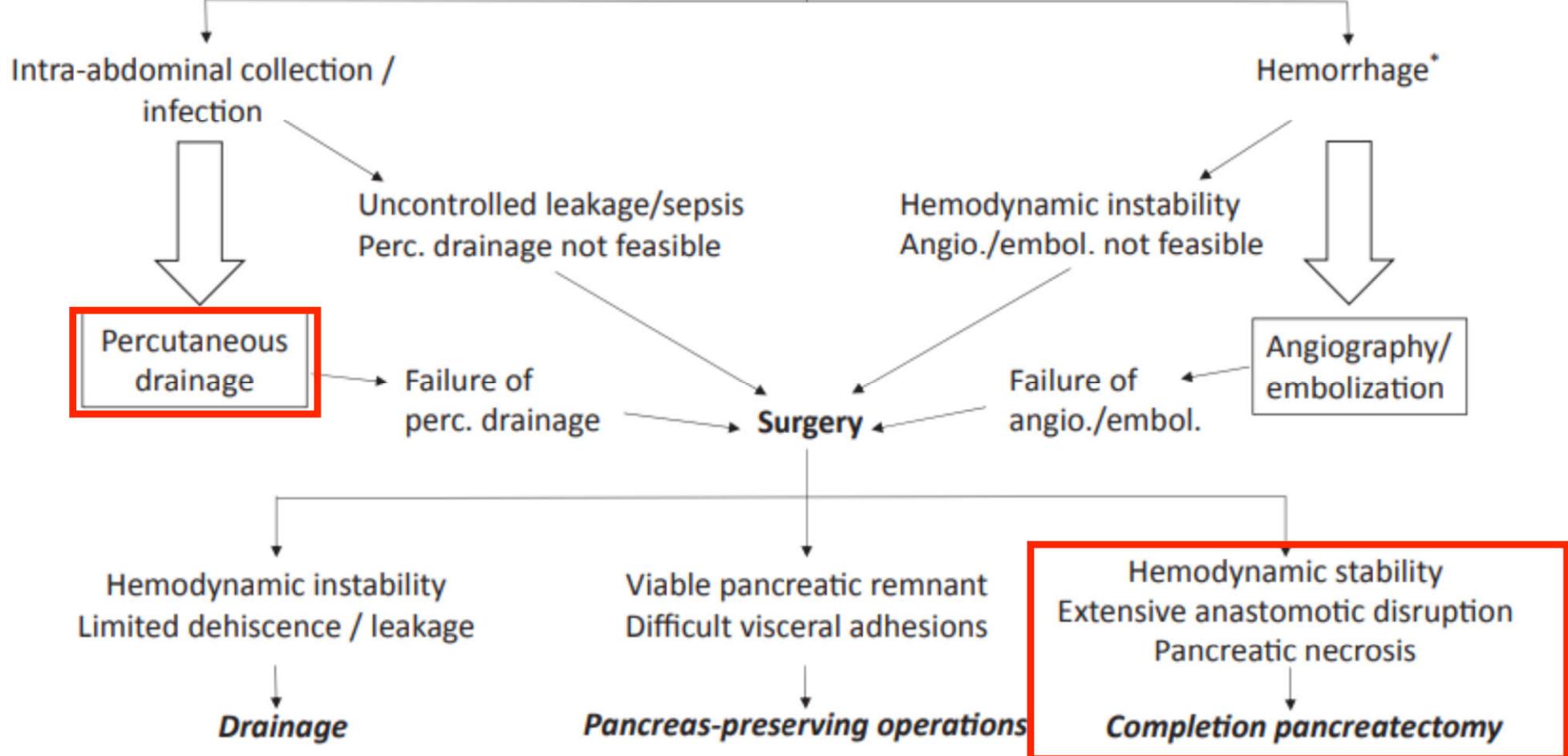


REVIEW ARTICLE

Completion pancreatectomy in the acute management of pancreatic fistula after pancreaticoduodenectomy: a systematic review and qualitative synthesis of the literature

Alexander K. Bressan, Michael Wahba, Elijah Dixon & Chad G. Ball

Post-duodenopancreatectomy pancreatic fistula



FÍSTULA PANCREÁTICA

Table 2 Perioperative data and outcome of treatment for severe pancreatic fistula after pancreateoduodenectomy

Variable	Simple Drainage (n = 16)	External wirsungostomy (n = 10)	Completion pancreatectomy (n = 17)	P1 Value	P2 Value
Time to relaparotomy since index PDT, days (IQR)	14 (11–18)	12.5 (4–14)	3 (2–9)	0.001	0.179
Indication for relaparotomy: sepsis vs. hemorrhage, n	13:3	9:1	14:3	0.935	0.589
Biliary anastomosis leakage, n (%)	2 (12.5)	2 (20.0)	1 (5.9)	0.509	0.260
Organ failure on the day of relaparotomy, n (%)	3 (18.8)	4 (40.0)	8 (50.0)*	0.063	0.619
Multiple organ failure on the day of relaparotomy, n (%)	1 (6.3)	3 (30.0)	2 (12.5)*	0.544	0.271
Duration of relaparotomy, min (IQR)	100 (85–132.5)	122.5 (95–125)	152.5 (127.5–217.5)	0.013	0.044
RBC transfusion, n (%)	5 (31.3)	3 (30.0)	12 (70.6)	0.024	0.040
Need of ICU stay, n (%)	6 (37.5)	8 (80.0)	13 (76.5)	0.024	0.831
ICU stay after relaparotomy, days (IQR)	2 (1–8)	4 (1–14)	3 (1–5)	0.948	0.767
LOS after relaparotomy, days (IQR)	23 (10.5–36)	24.5 (9–33)	27 (3–32)	0.858	0.641
Further reoperations, n (%)	9 (56.3)	0 (0)	4 (23.5)	0.055	0.097
Mortality, n (%)	9 (56.3)	5 (50)	8 (47.1)	0.598	0.883
New-onset DM in surviving patients, n (%)	3 (42.9)	0 (0)	9 (100)	0.009	0.000

FÍSTULA PANCREÁTICA

Table 3 Univariate and multivariate logistic regression analysis predictors of mortality for surgical treatment of the pancreatic fistula after pancreateoduodenectomy

Variable	OR	95% CI	P Value	Coefficient (β)	SE	OR	95% CI	P Value
Age	1.071	-0.004, 0.143	0.067	0.097	0.063	1.101	-0.027, 0.220	0.126
Gender	0.615	-1.699, 0.728	0.433					
BMI	1.078	-0.075, 0.226	0.327					
ASA	2.609	-0.152, 2.071	0.091					
Charlson comorbidity index	1.254	-0.290, 0.744	0.390					
CRP	1.005	-0.001, 0.013	0.132					
Leucocytosis	0.965	-0.106, 0.037	0.343					
Serum amylase	1.007	-0.003, 0.015	0.075					
Organ failure on the day of relaparotomy	15.437	1.034, 4.439	0.002	3.868	1.202	47.839	1.511, 6.225	0.001
Time to reoperation	0.935	-0.158, 0.025	0.158					
Necrosis of the pancreatic remnant	0.944	-1.593, 1.479	0.942					
Reason for relaparotomy	0.320	-2.906, 0.627	0.206					
Reintervention after relaparotomy	5.000	0.126, 3.092	0.033	3.137	1.164	23.043	0.856, 5.419	0.007
Intercept				-8.746	4.626		-17.813, 0.321	0.059

BMI – body mass index, ASA – American Society of Anesthesiologists class, CRP – C-reactive protein.

Mumbai 2016



ABCD DV/1330

ABCD Arq Bras Cir Dig
2017;30(4):260-263
DOI: /10.1590/0102-6720201700040008

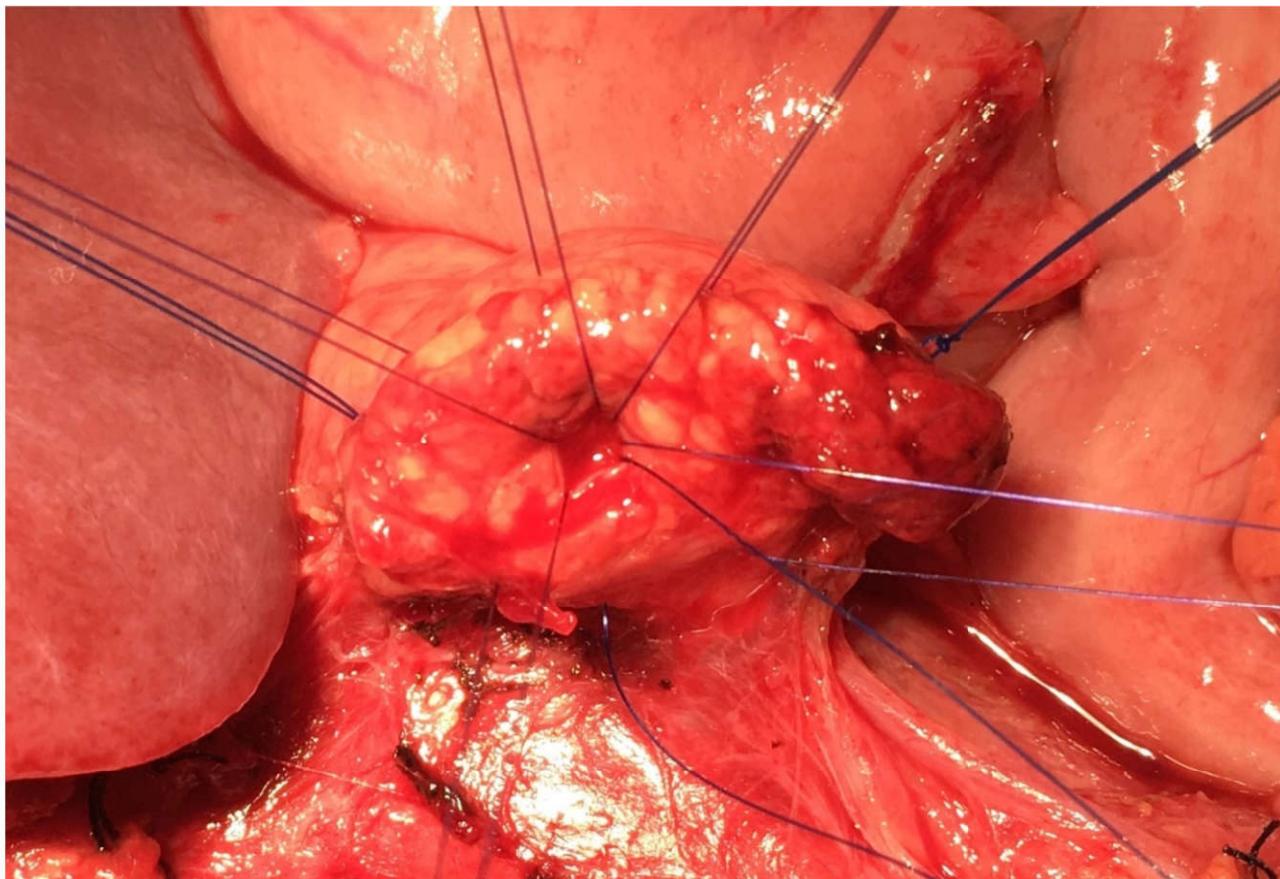
Original Article - Technique

MODIFIED HEIDELBERG TECHNIQUE FOR PANCREATIC ANASTOMOSIS

Anastomose pancreática pela técnica de Heidelberg modificada

Orlando Jorge M **TORRES**¹, Roberto C N da Cunha **COSTA**¹, Felipe F Macatrão **COSTA**¹, Romerito Fonseca **NEIVA**¹,
Tarik Soares **SULEIMAN**¹, Yglésio L Moyses S **SOUZA**¹, Shailesh V **SHRIKHANDE**²

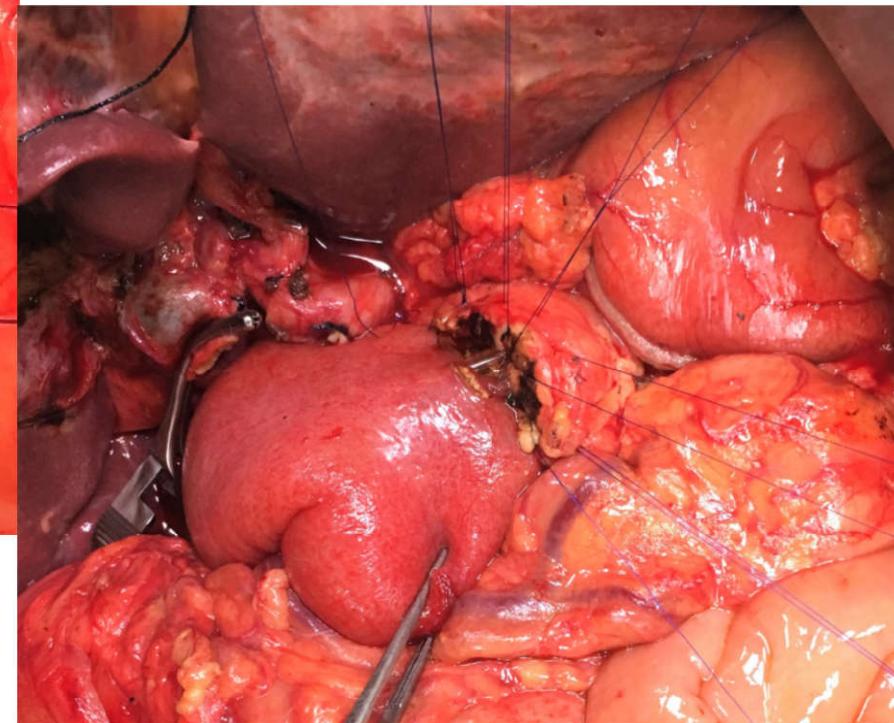
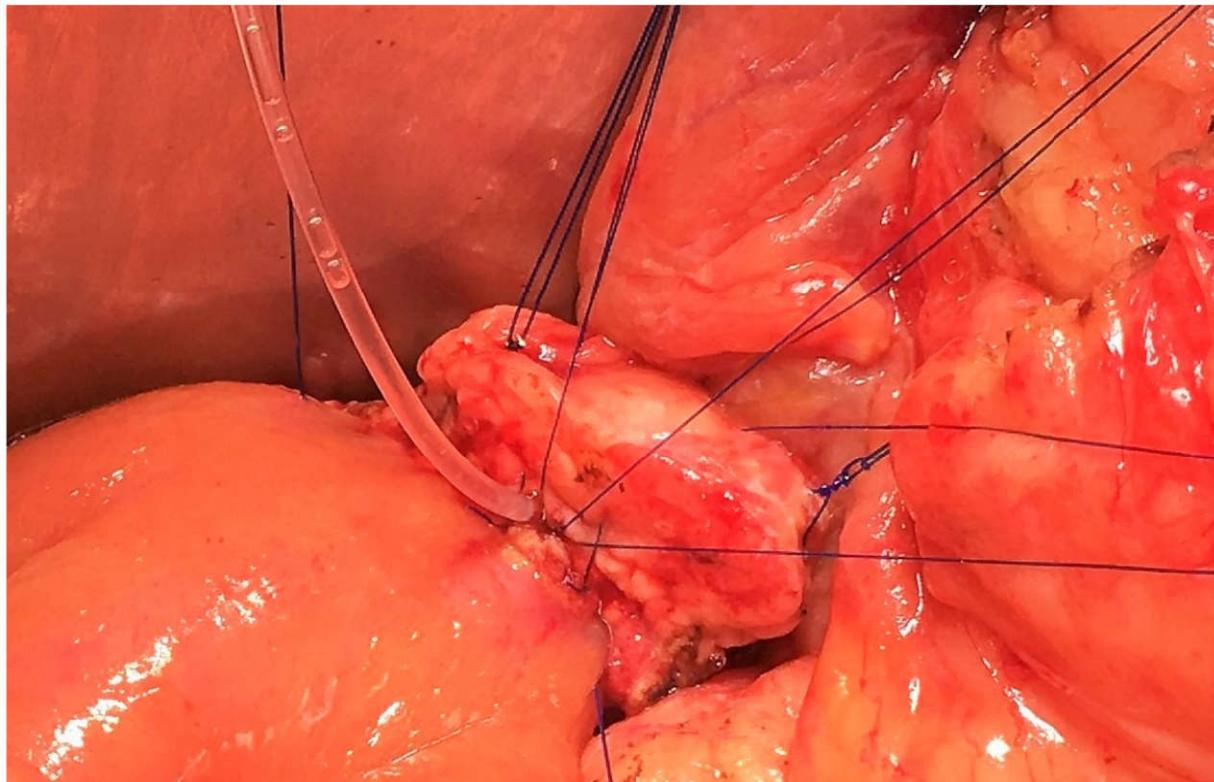
SUPRIMENTO SANGUÍNEO



- Incisão do pâncreas com lâmina fria
- Promover bom suprimento sanguíneo do pâncreas e intestino

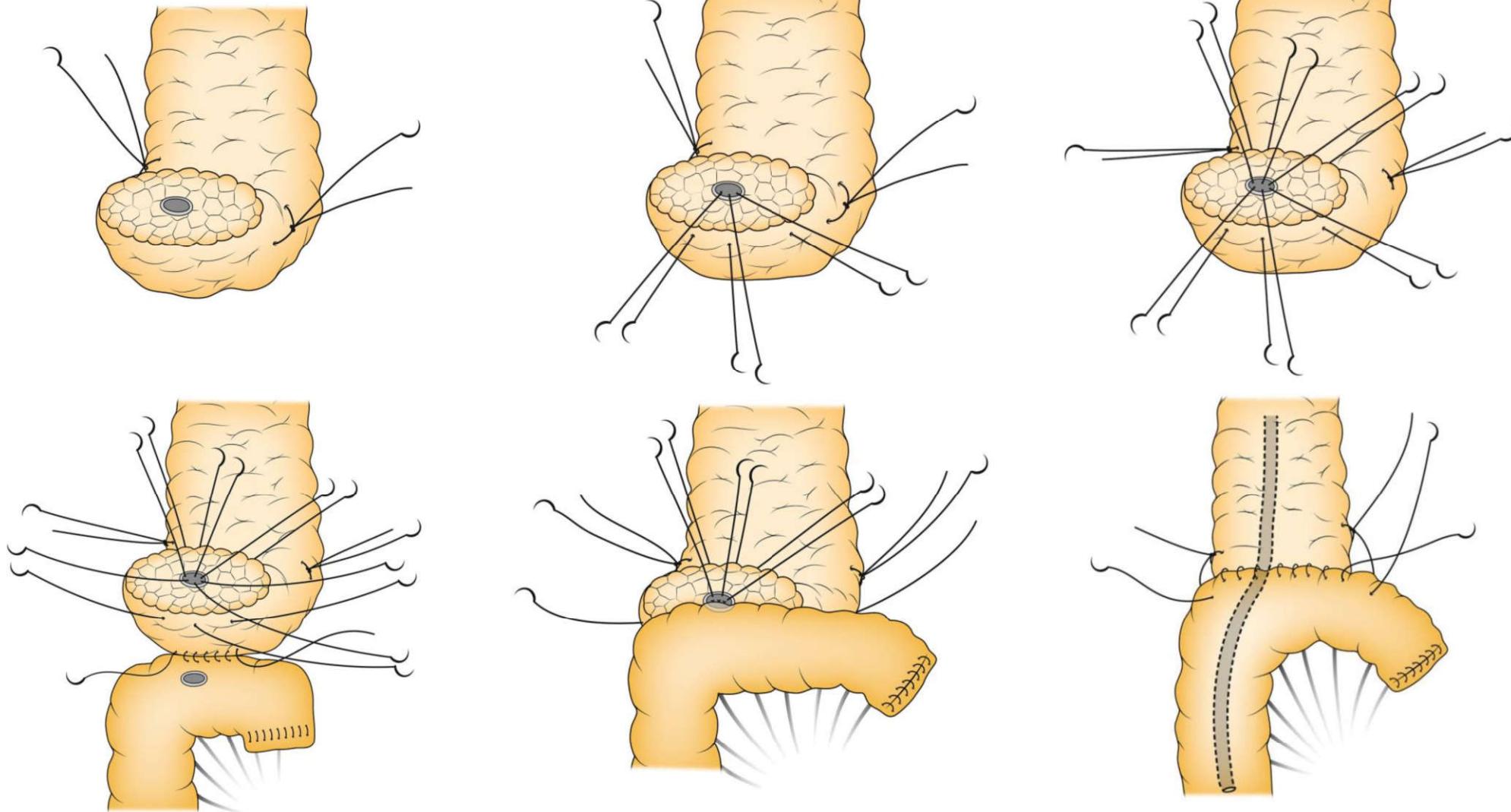


STENT



- Facilita a colocação precisa da sutura
- Deriva o suco pancreático longe do local da anastomose.
- Evita ou reduz a retenção de secreção pancreática no segmento inicial do jejuno enquanto a peristalse não está restaurada.
- Diminui o risco de oclusão inadvertida do ducto pancreático.
- Melhora a integridade da anastomose, reduzindo o risco de formação de estenose do ducto.
- Melhora a drenagem do pâncreas para a luz intestinal

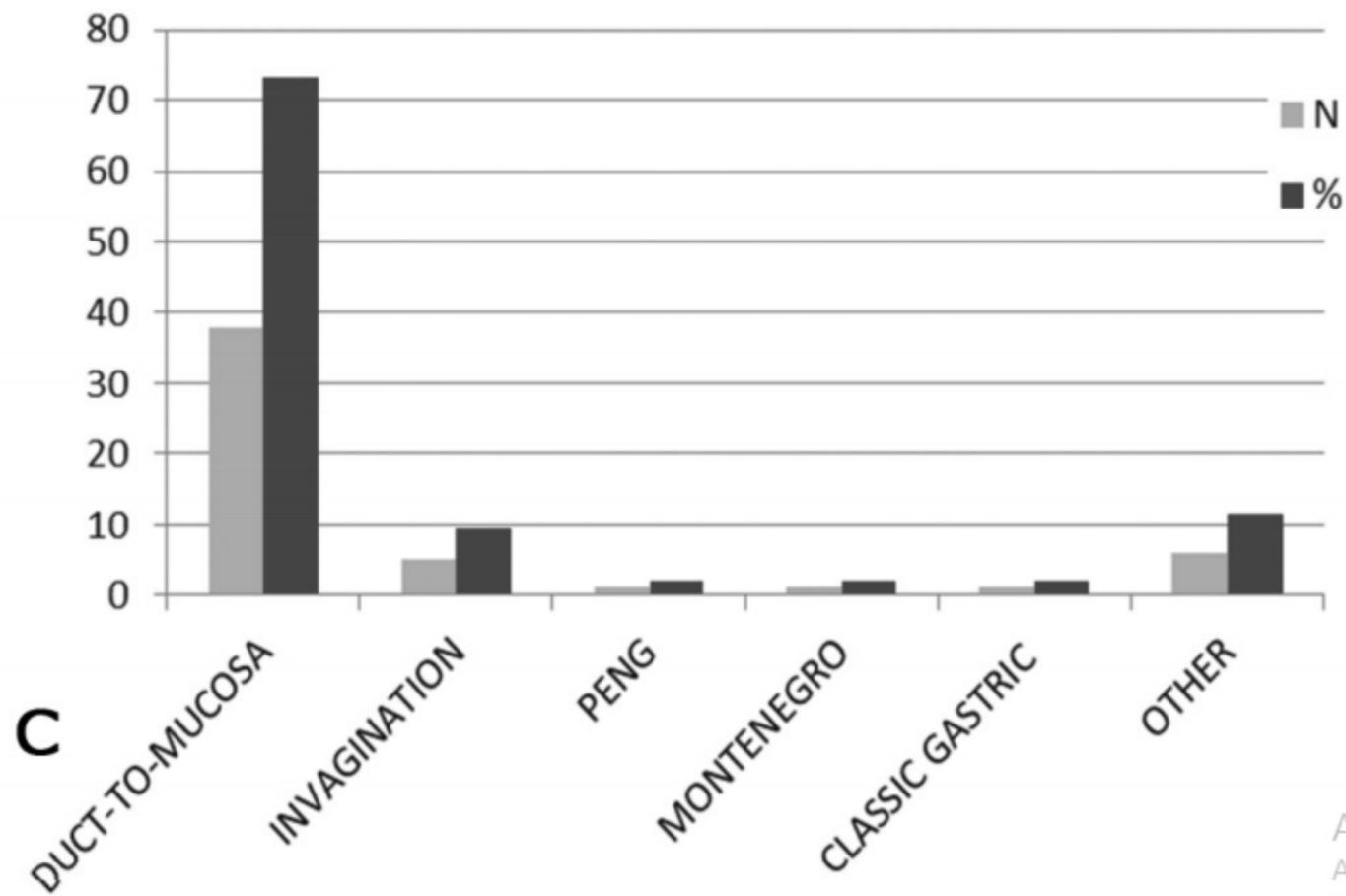
Anastomose pancreática



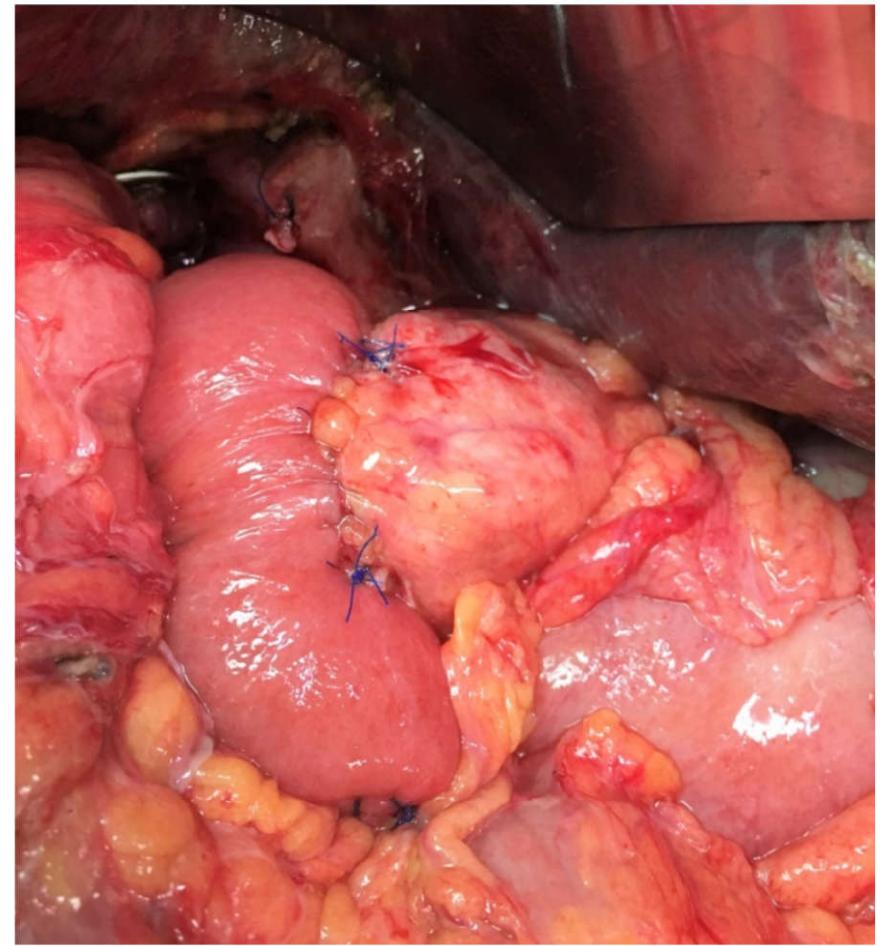
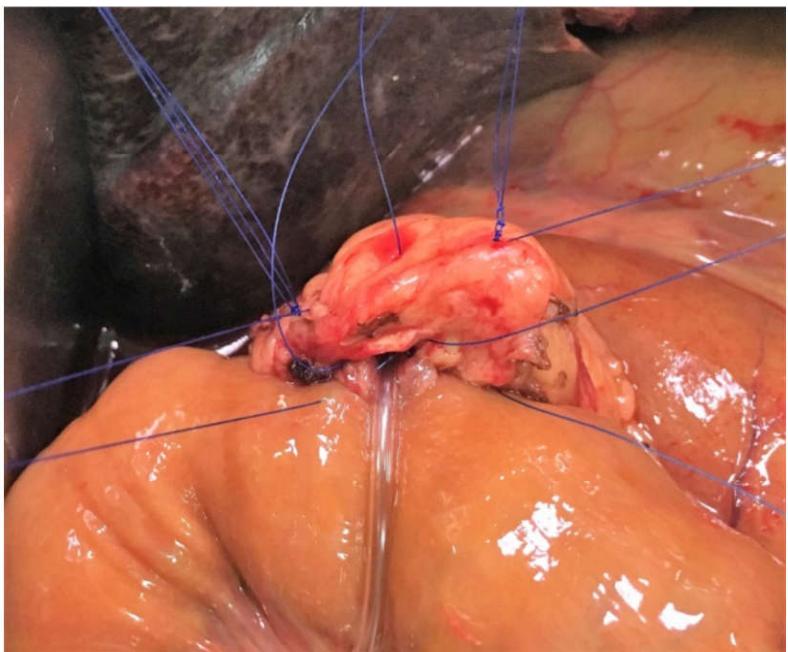
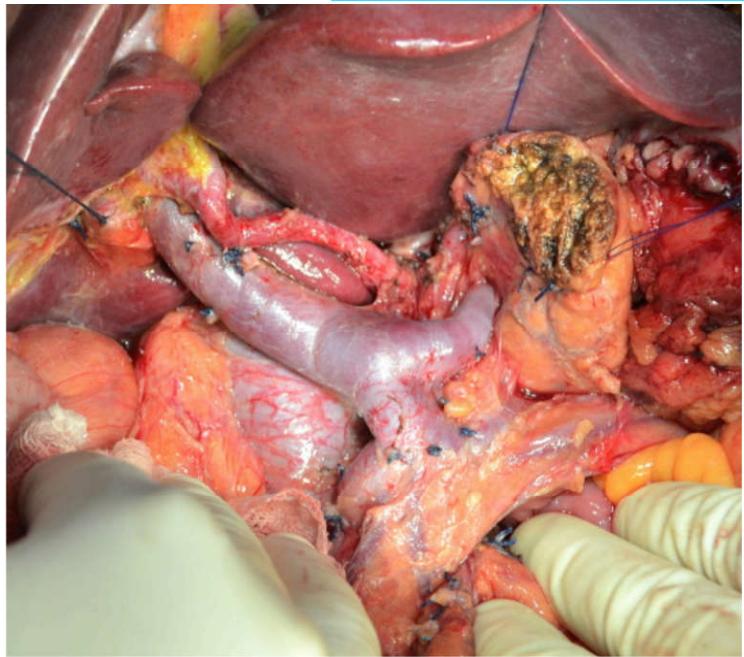
PANCREATODUODENECTOMY: BRAZILIAN PRACTICE PATTERNS*

*Duodenopancreatectomia: prática padrão do Brasil**

Orlando Jorge M TORRES¹, Eduardo de Souza M FERNANDES², Rodrigo Rodrigues VASQUES¹, Fabio Luís WAECHTER³,
Paulo Cesar G. AMARAL⁴, Marcelo Bruno de REZENDE⁵, Roland Montenegro COSTA⁶, André Luís MONTAGNINI⁷



Sutura de sustentação



ORIGINAL ARTICLE

Biliary fistula after pancreaticoduodenectomy: data from 1618 consecutive pancreaticoduodenectomies

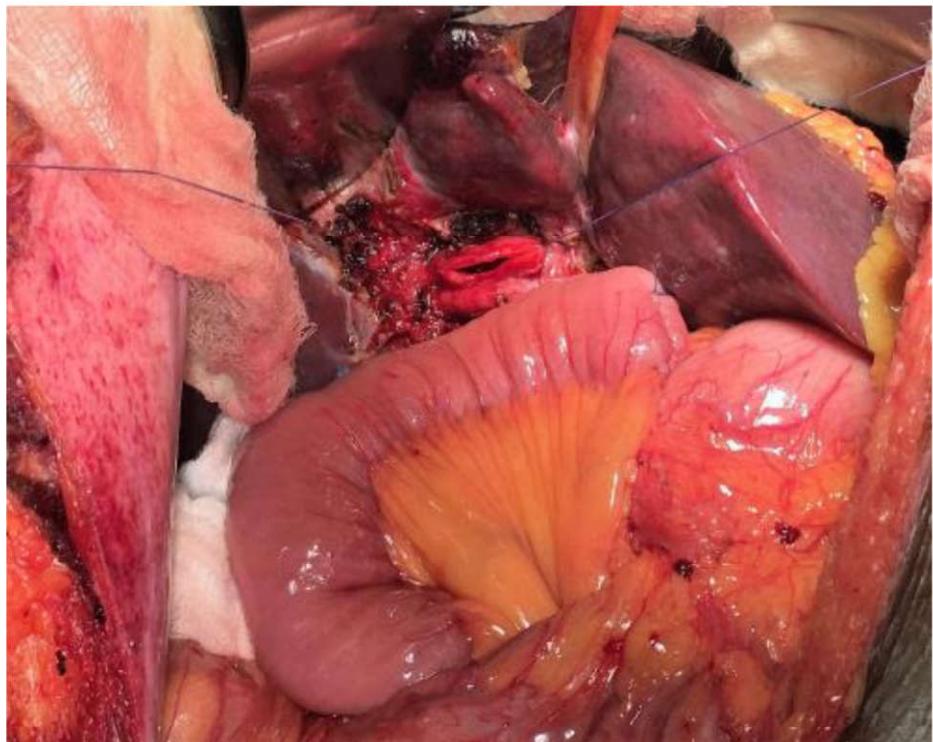
Stefano Andrianello, Giovanni Marchegiani, Giuseppe Malleo, Tommaso Pollini, Deborah Bonamini, Roberto Salvia, Claudio Bassi & Luca Landoni

FÍSTULA BILIAR



- É quando a concentração de bilirrubina no fluido do dreno é pelo menos 3 vezes a concentração de bilirrubina sérica, após o terceiro dia do período pós-operatório.

FÍSTULA BILIAR



REFLUXO DA FÍSTULA PANCREÁTICA

FÍSTULA BILIAR

Table 3 Post-operative outcome of BF with concomitant POPF

	Isolated BF (n = 36)	BF and POPF (n = 22)	POPF alone (n = 376)	p
DGE	3 (8.1%)	4 (17.4%)	47 (12.6%)	0.24
PPH	4 (11.1%)	14 (65%)	55 (14.5%)	<0.01
Mortality	0	8 (34.8%)	9 (2.4%)	<0.01
Pneumonia	10 (27%)	18 (82.6%)	115 (30.6%)	<0.01
Cardiac events	2 (5.4%)	9 (39.1%)	32 (8.4%)	0.02
LHS (median, days)	19	45	21	<0.01

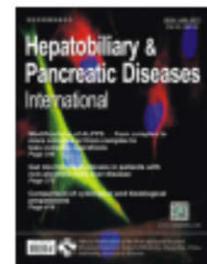
FÍSTULA BILIAR



Contents lists available at [ScienceDirect](#)

Hepatobiliary & Pancreatic Diseases International

journal homepage: www.elsevier.com/locate/hbpd



Original Article/Pancreas

Biliary leakage following pancreaticoduodenectomy: Prevalence, risk factors and management

Ayman El Nakeeb*, Mohamed El Sorogy, Hosam Hamed, Rami Said, Mohamad Elrefai, Helmy Ezzat, Waleed Askar, Ahmed M Elsabbagh

Gastroenterology Surgical Center, Mansoura University, Mansoura 35516, Egypt

FÍSTULA BILIAR

Table 4
Predictors of biliary leakage.

Variables	B	SE	Wald	P value
Gender (male)	-0.709	0.379	3.493	0.062
Body mass index > 25 kg/m ²	1.017	0.361	7.941	0.005
No history of preoperative ERCP	-0.747	0.358	4.349	0.037
Pancreatic duct diameter ≤ 3 mm	0.121	0.208	0.340	0.560
Time of hepaticojejunostomy reconstruction	0.236	0.038	37.957	<0.010

ERCP: endoscopic retrograde cholangiopancreatography.

FÍSTULA BILIAR

Table 5

Outcome of biliary leakage and management in the biliary leakage group ($n = 44$).

Variables	Values
Time of onset of biliary leakage (d)	2 (1-7)
Time of stoppage of biliary leakage (d)	15 (10-45)
Amount of biliary leakage (mL)	2000 (800-15,000)
Presentation	
Bile in the drain	44 (100%)
Collection	17 (38.6%)
Peritonitis	4 (9.1%)
Non-surgical treatment	
Maintenance of abdominal drain for long time	10 (22.7%)
Withdrawal of the drain and re-positioning	13 (29.5%)
Ultrasound-guided tubal drainage	17 (38.6%)
Surgical treatment	
Surgical drainage	3 (6.8%)
Re-hepaticojejunostomy over external stent	1 (2.3%)



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