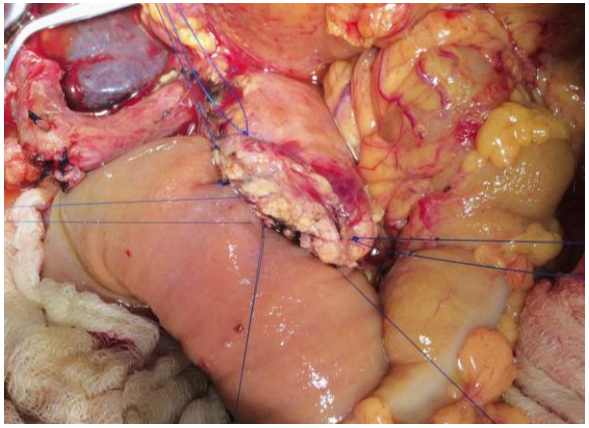
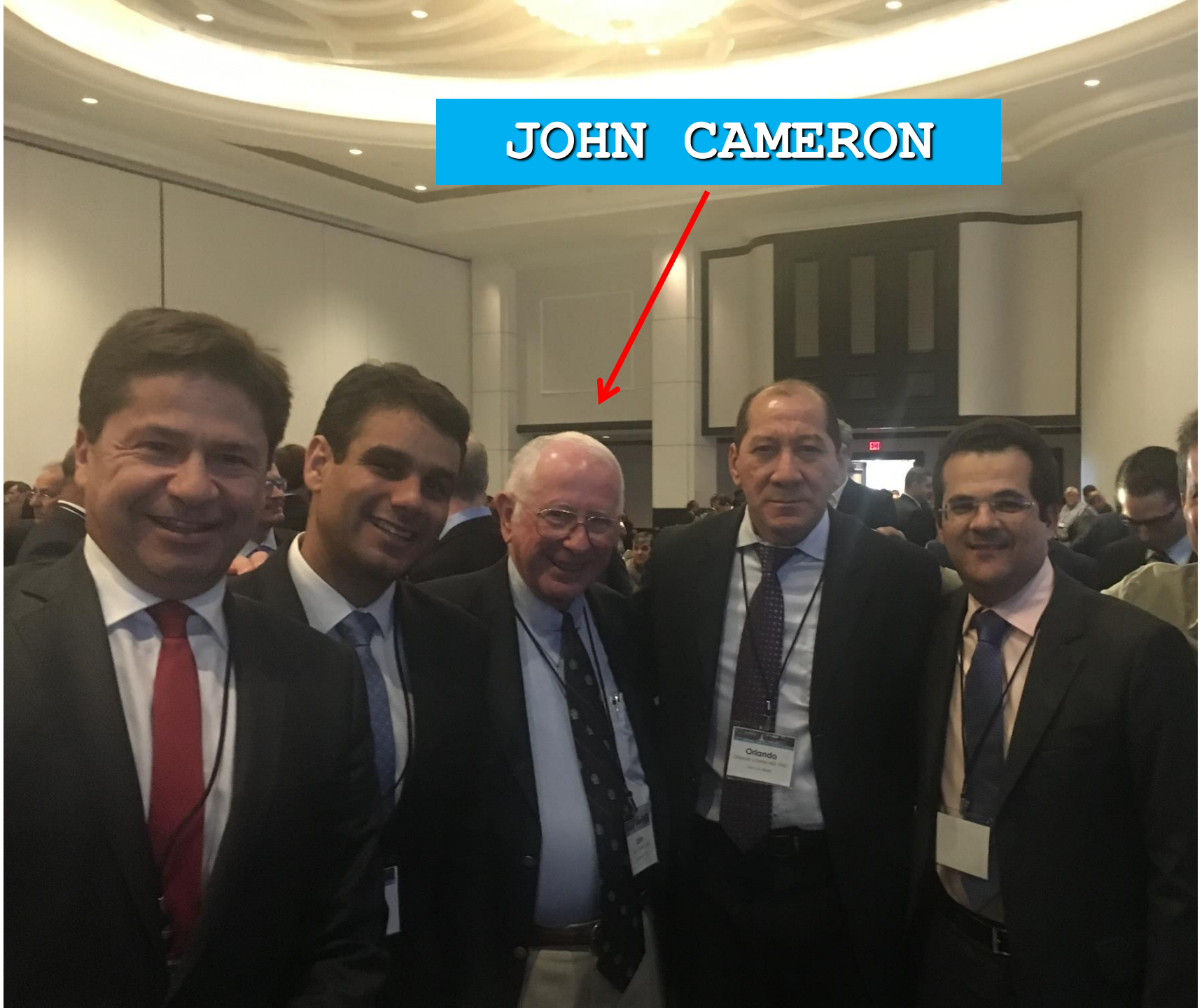
II CONGRESSO DO COMPLEXO HOSPITALAR DA UFPA/EBSERH
13 e 14 DE SETEMBRO DE 2018



DUODENOPANCREATECTOMIA: ASPECTOS ATUAIS

Orlando Jorge M. Torres
Professor Titular e Chefe do Serviço de
Cirurgia do Aparelho Digestivo
Unidade Hepatopancreatobiliar
Universidade Federal Maranhão - Brasil


JOHN CAMERON

Two Thousand Consecutive Pancreaticoduodenectomies

John L Cameron, MD, FACS, Jin He, MD, PhD

BACKGROUND: The first successful local resection of a periampullary tumor was performed by Halsted in 1898. Kausch performed the first regional resection in 1909, and the operation was popularized by Whipple in 1935. The operation was infrequently performed until the 1980s and 1990s.

STUDY DESIGN: Two thousand consecutive pancreaticoduodenectomies performed by 1 surgeon (JLC) from the 1960s to the 2000s were retrospectively reviewed from a prospectively maintained database. The first 1,000 were performed over a period of 34 years, the second 1,000 over a period of 9 years.

RESULTS: The most common indication throughout was adenocarcinoma of the head of the pancreas (PDAC, 46%). Benign intraductal papillary mutinous neoplasm (IPMN) increased from

Cameron JL, He J. J Am Coll Surg 2015;220:530-6.

Table 4. Morbidity

Complication	n	%
Delayed gastric emptying	410	21
Postoperative pancreatic fistula	295	15
Wound infection	222	11
Cardiac event	69	3
Pneumonia	38	2
Delayed bleeding	32	2
Chyle leak	28	1
Any complication	894	45

Cameron JL, He J. J Am Coll Surg 2015;220:530-6.

Original article

Outcomes after extended pancreatectomy in patients with borderline resectable and locally advanced pancreatic cancer

W. Hartwig[1,2], A. Gluth[1,2], U. Hinz[1], D. Koliogiannis[1,2], O. Strobel[1], T. Hackert[1], J. Werner[1,2] and M. W. Büchler[1]

Departments of General, Visceral and Transplantation Surgery, [1]University of Heidelberg, Heidelberg, and [2]University of Munich, Munich, Germany
Correspondence to: Professor M. W. Büchler, Department of General, Visceral and Transplantation Surgery, University of Heidelberg, Im Neuenheimer Feld 110, 69120 Heidelberg, Germany (e-mail: markus.buechler@med.uni-heidelberg.de)

Hartwig W, et al. Br J Surg 2016

ABCDDV/

ABCD Arq Bras Cir Dig
2017;30(3):
DOI:

Original Article

PANCREATODUODENECTOMY: BRAZILIAN PRACTICE PATTERNS*

*Duodenopancreatectomia: prática padrão do Brasil**

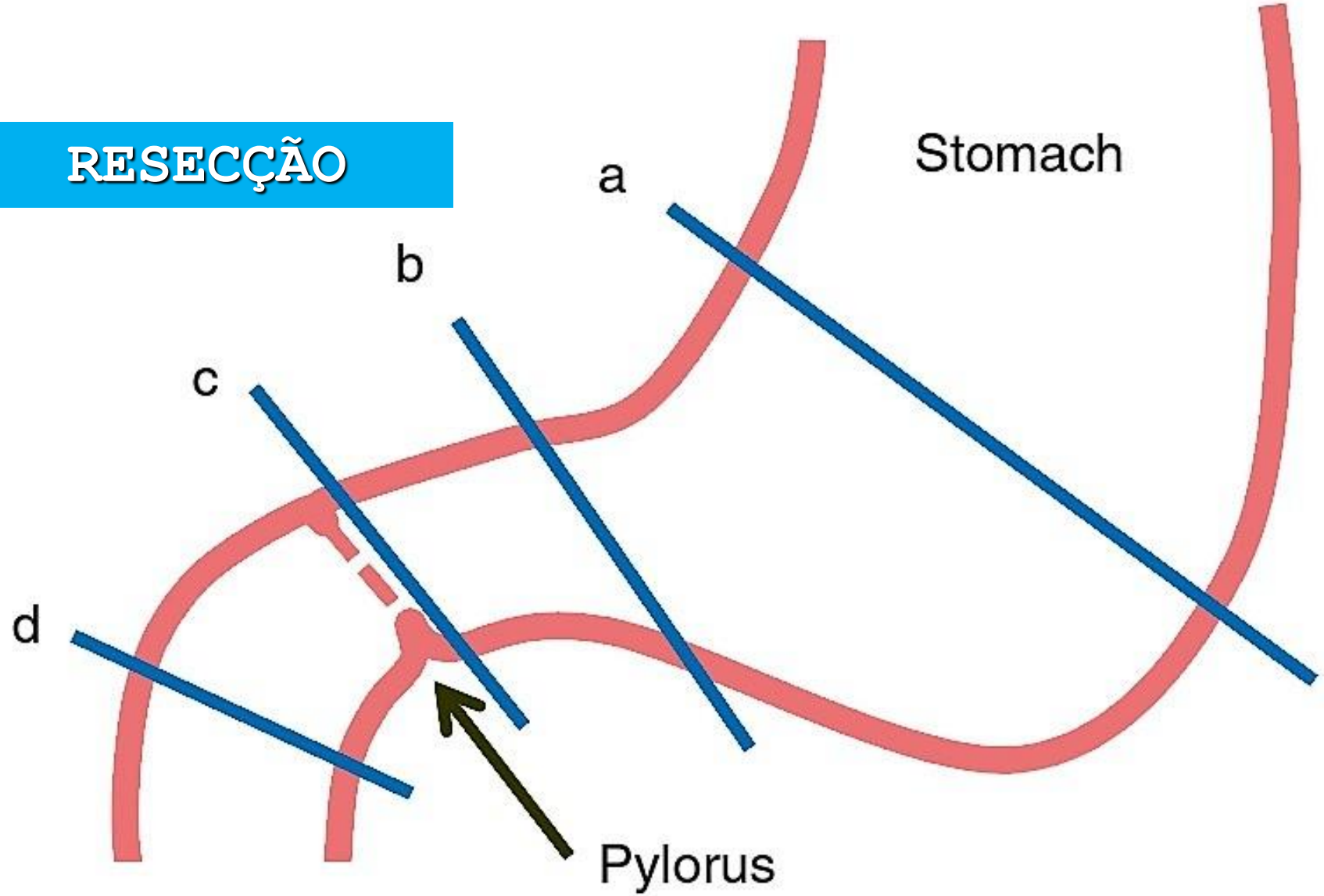
Orlando Jorge M **TORRES**[1], Eduardo de Souza M **FERNANDES**[2], Rodrigo Rodrigues **VASQUES**[1], Fabio Luís **WAECHTER**[3], Paulo Cezar G. **AMARAL**[4], Marcelo Bruno de **REZENDE**[5], Roland Montenegro **COSTA**[6], André Luís **MONTAGNINI**[7]

From the [1]Department of Surgery, Federal University of Maranhão, São Luis, MA;

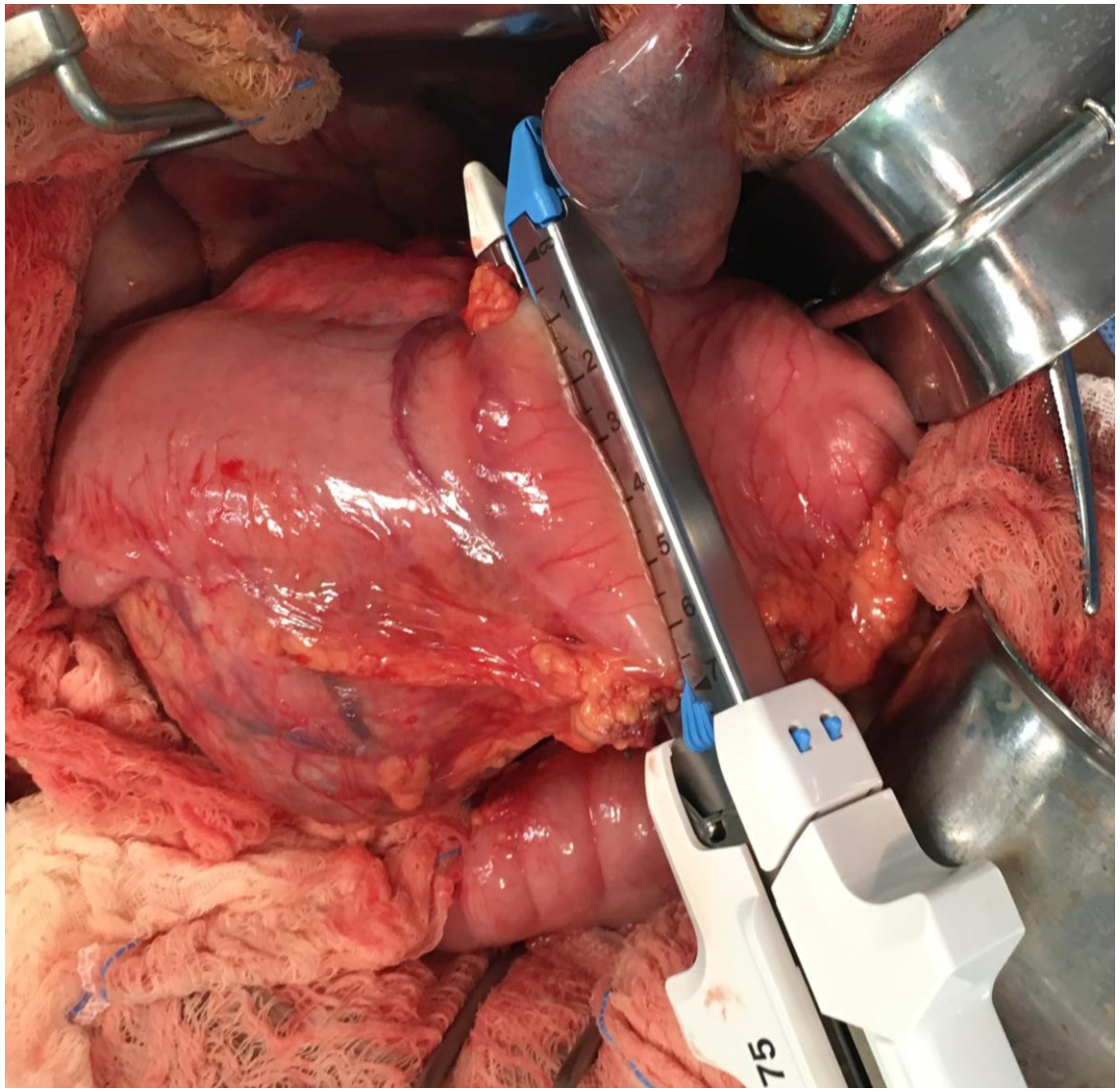
ABSTRACT - ***Background***: Pancreatoduodenectomy is a technically challenging surgical procedure with an incidence of postoperative complications ranging from 30% to 61%. The

RETARDO NO ESVAZIAMENTO GÁSTRICO

RESECÇÃO



RETARDO NO ESVAZIAMENTO GÁSTRICO



RETARDO NO ESVAZIAMENTO GÁSTRICO

- 19 – 61%
- Promovendo
  - Desconforto
  - Aumento do tempo de internação
  - > risco de complicação respiratória
  - Aumento do custo hospitalar
  - Menor qualidade de vida

Fujii T, et al. Ann Surg Oncol 2012;19:176-83.

RETARDO NO ESVAZIAMENTO GÁSTRICO

- **Piloroespasmo**
  - **Ruptura do Sistema Nervoso Vagal**
  - **Diminuição do suprimento vascular**
  - **Isquemia antropilórica**

Fujii T, et al. Ann Surg Oncol 2012;19:176-83.

SSPPD

Ann Surg Oncol (2012) 19:176–183
DOI 10.1245/s10434-011-1901-2

Annals of
SURGICAL ONCOLOGY
OFFICIAL JOURNAL OF THE SOCIETY OF SURGICAL ONCOLOGY

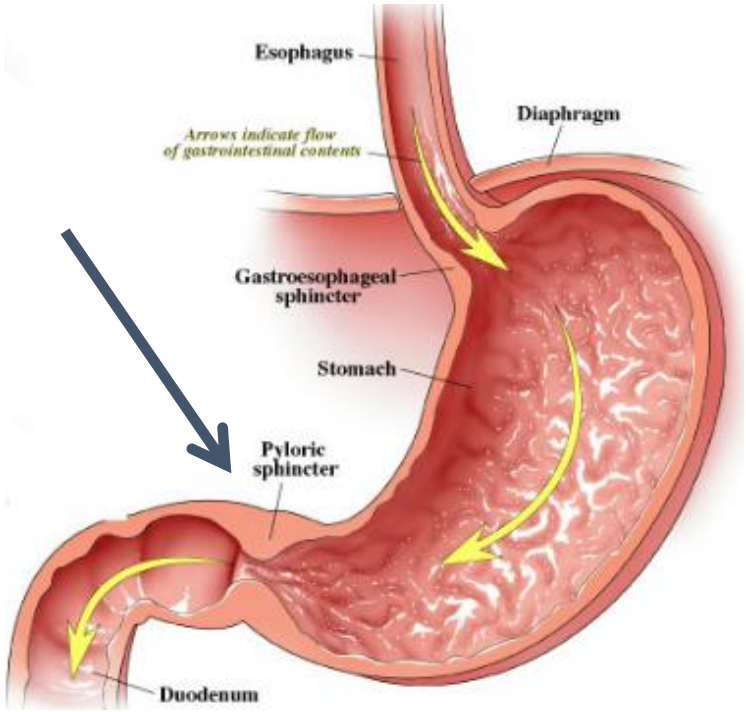
ORIGINAL ARTICLE – PANCREATIC TUMORS

Preservation of the Pyloric Ring Has Little Value in Surgery for Pancreatic Head Cancer: A Comparative Study Comparing Three Surgical Procedures

Tsutomu Fujii, MD, PhD, FACS[1], Mitsuro Kanda, MD, PhD[1], Yasuhiro Kodera, MD, PhD, FACS[1], Shunji Nagai, MD, PhD[1], Tevfik T. Sahin, MD[1], Masamichi Hayashi, MD[1], Akiyuki Kanzaki, MD[1], Suguru Yamada, MD, PhD[1], Hiroyuki Sugimoto, MD, PhD[1], Shuji Nomoto, MD, PhD[1], Shin Takeda, MD, PhD[1], Satoshi Morita, PhD[2], and Akimasa Nakao, MD, PhD, FACS[1]

Fujii T, et al. Ann Surg Oncol 2012;19:176-83.

Diâmetro da saída gástrica



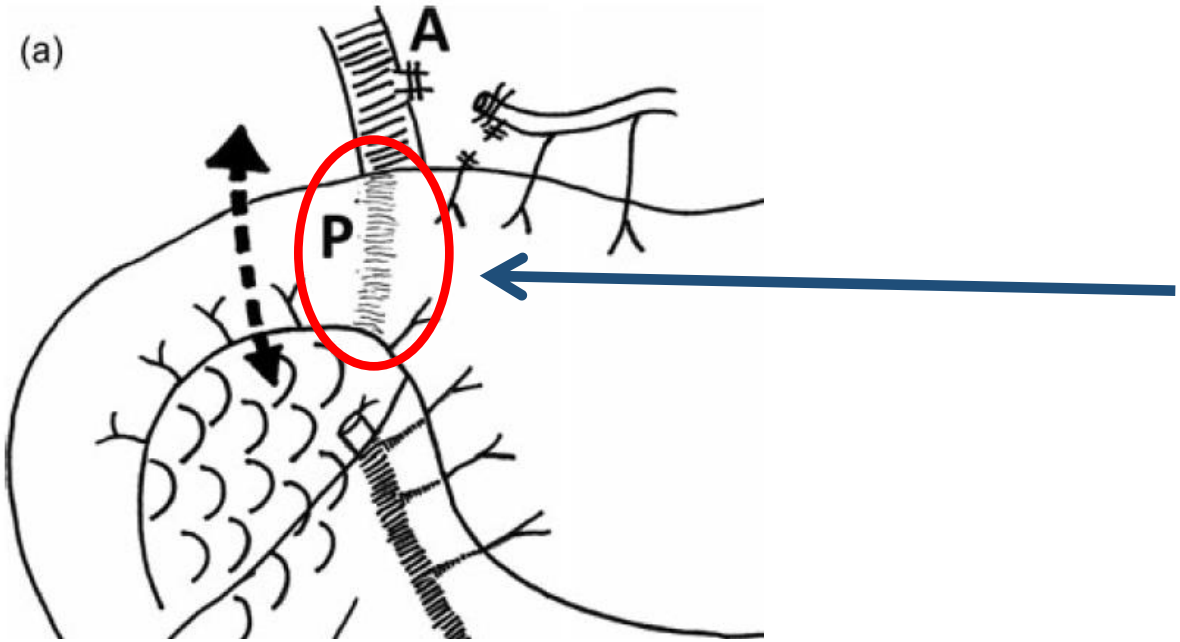
PPPD 33 ± 5mm

SSPPD 47 ± 7mm

p< 0,0001

Fujii T, et al. Ann Surg Oncol 2012;19:176-83.

Diâmetro da saída gástrica



A possibilidade de ajustar o diâmetro da saída gástrica é um dos benefícios da SSPPPD

Fujii T, et al. Ann Surg Oncol 2012;19:176-83.

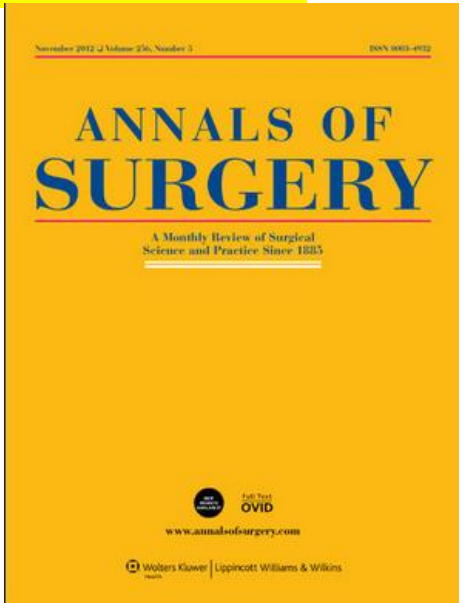
ORIGINAL ARTICLE

Pylorus Ring Resection Reduces Delayed Gastric Emptying in Patients Undergoing Pancreatoduodenectomy

A Prospective, Randomized, Controlled Trial of Pylorus-Resecting Versus Pylorus-Preserving Pancreatoduodenectomy

Manabu Kawai, MD, Masaji Tani, MD, Seiko Hirono, MD, Motoki Miyazawa, MD, Atsushi Shimizu, MD, Kazuhisa Uchiyama, MD, and Hiroki Yamaue, MD

Prospectivo randomizado e controlado



Kawai M, et al. Ann Surg 2011;253:495-501

Conclusões

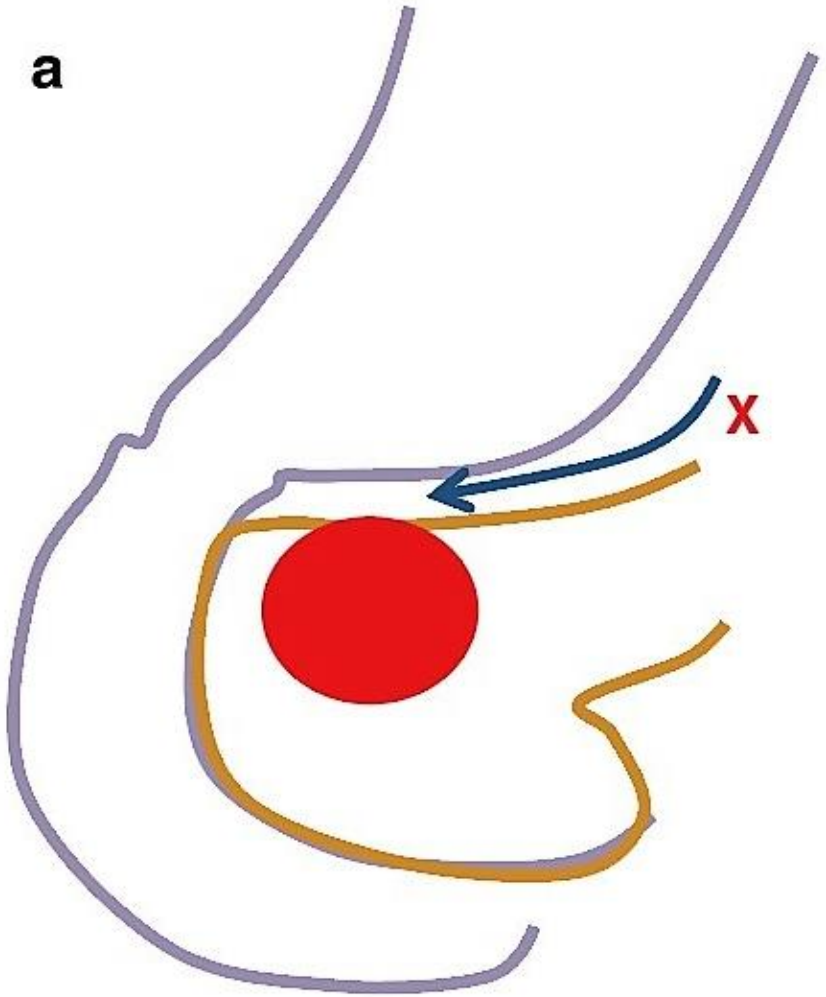
Conclusion: Pylorus-resecting pancreatoduodenectomy significantly reduces of the incidence of DGE compared with PpPD.

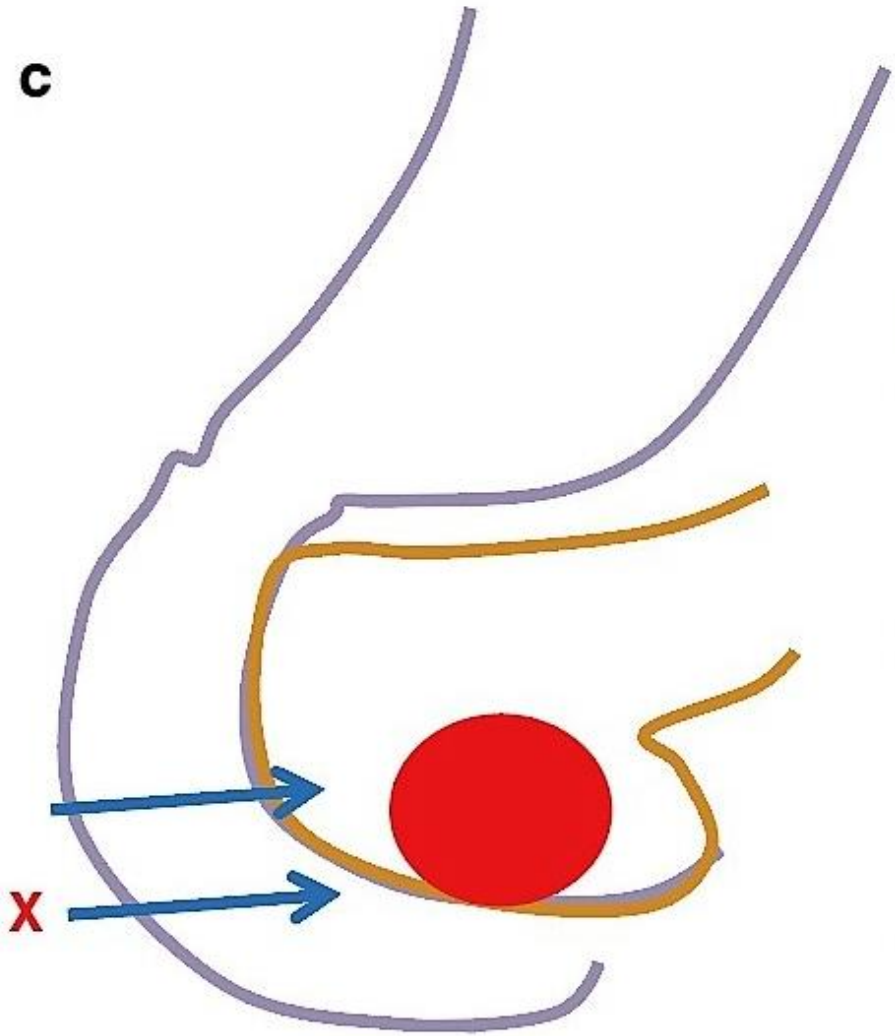
Recomendação A

Fortemente recomendado

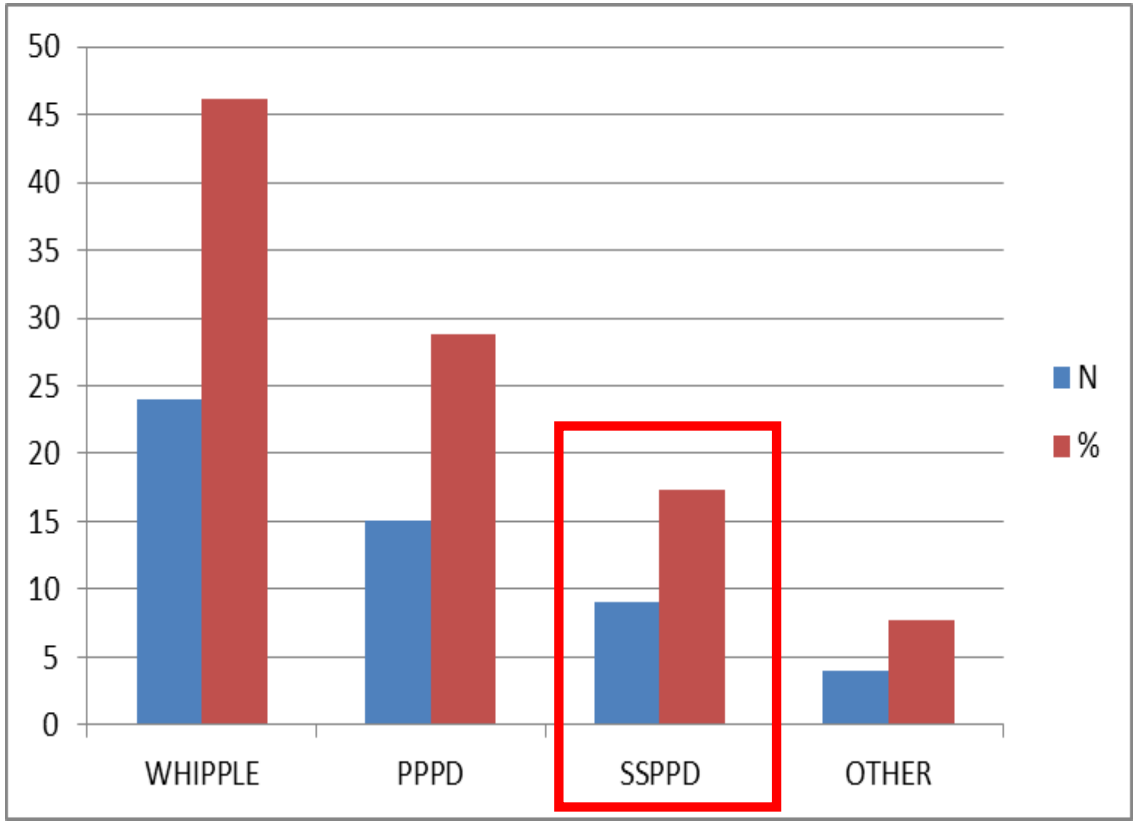
Kawai M, et al. Ann Surg 2011;253:495-501

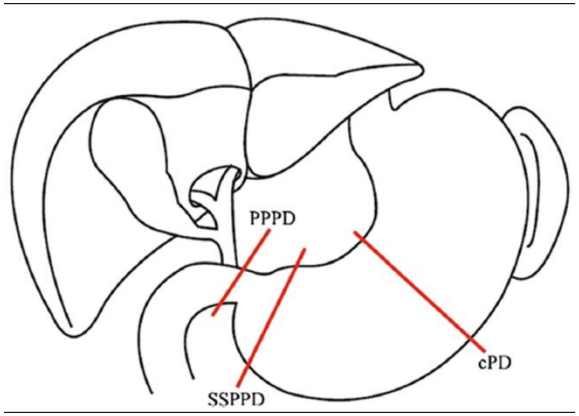
DISSECÇÃO





RESECTION





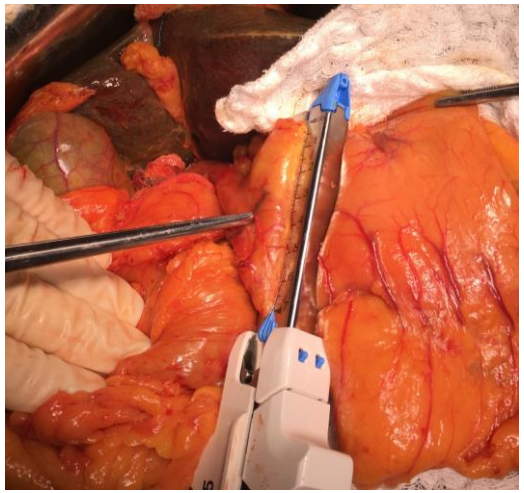


FIGURE 2 – Type of resection (%)

Pylorus-preserving – 28%

Torres et al. Arq Bras Cir Dig 2017;30(3).

ABCDDV/1175

ABCD Arq Bras Cir Dig
2016;29(2):71-72
DOI: /10.1590/0102-6720201600020001

Editorial

THE OBITUARY OF THE PYLORUS-PRESERVING PANCREATODUODENECTOMY

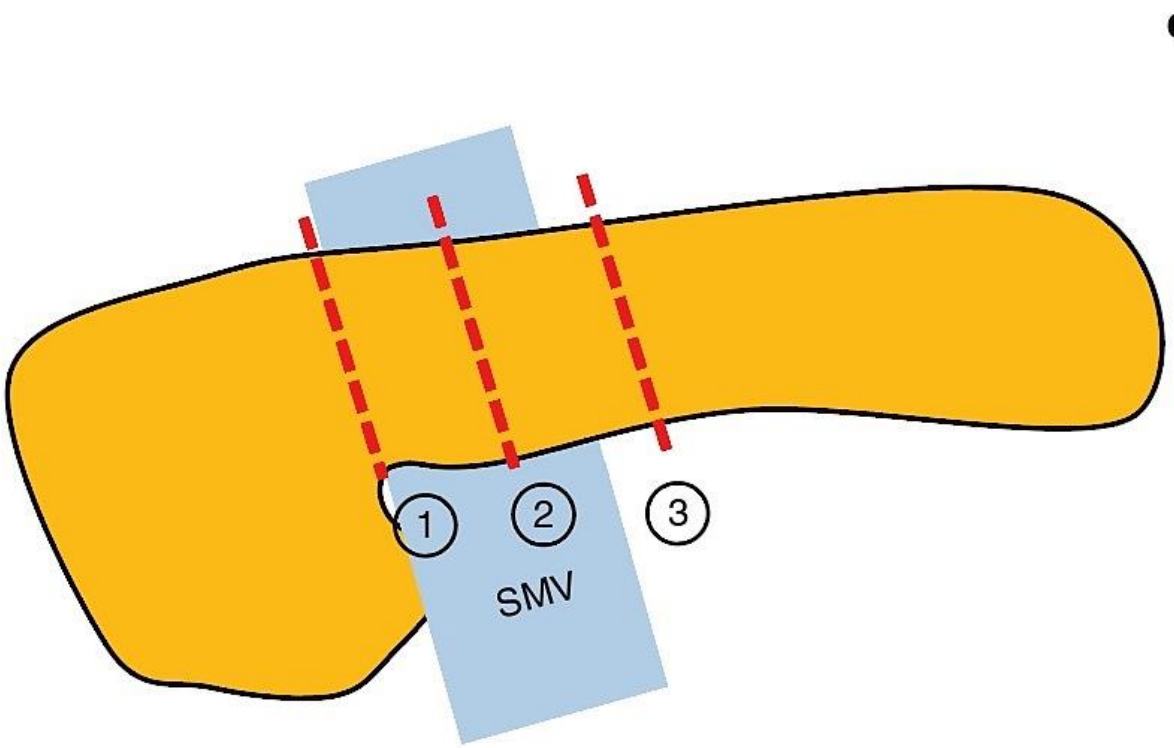
O obituário da duodenopancreatectomia com preservação pilórica

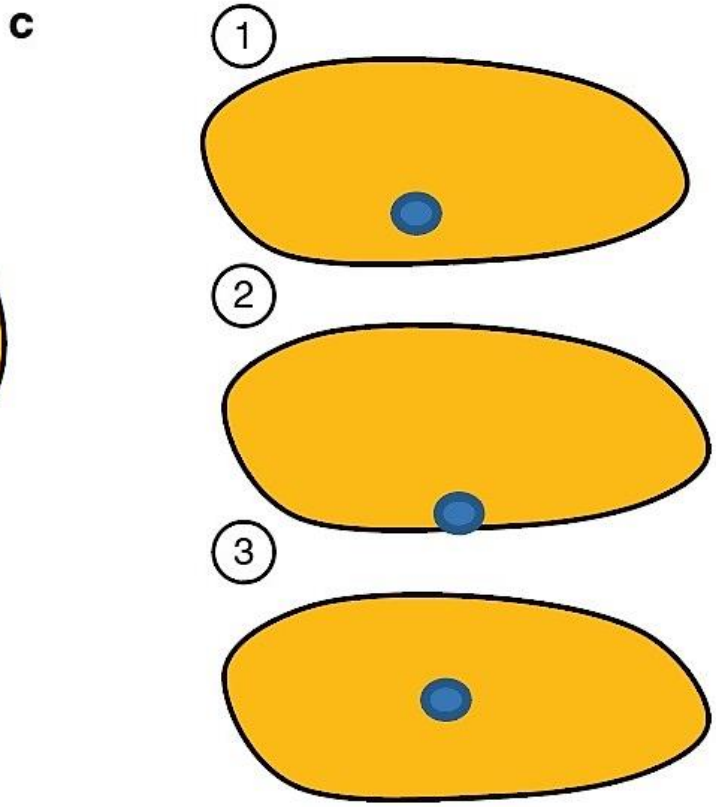
Orlando Jorge Martins **TORRES**, Rodrigo Rodrigues **VASQUES**, Camila Cristina S. **TORRES**
From the Department of Surgery, Federal University of Maranhão, São Luiz, MA, Brazil

Pancreatoduodenectomy is the treatment of choice for patients with benign and malignant disease of pancreatic head. Classic pancreatoduodenectomy was described by Whipple originally and included distal hemigastrectomy. Pylorus-preserving pancreatoduodenectomy (pylorus-preserving) was popularized in the late 1970s for benign disease and it included full preservation of the pylorus. However, delayed gastric emptying after pylorus-preserving is a frustrating complication. Its incidence varying from 19% to 61% in previous series and it results in discomfort, prolonged length of stay and increases the risk of respiratory complications. Delayed gastric emptying contributes to increased hospital costs and decreased quality of life. There has been no evidence from prospective studies and meta-analyses to indicate the superiority of pylorus preserving in terms of quality of life or delayed gastric emptying[2,4,5,7].

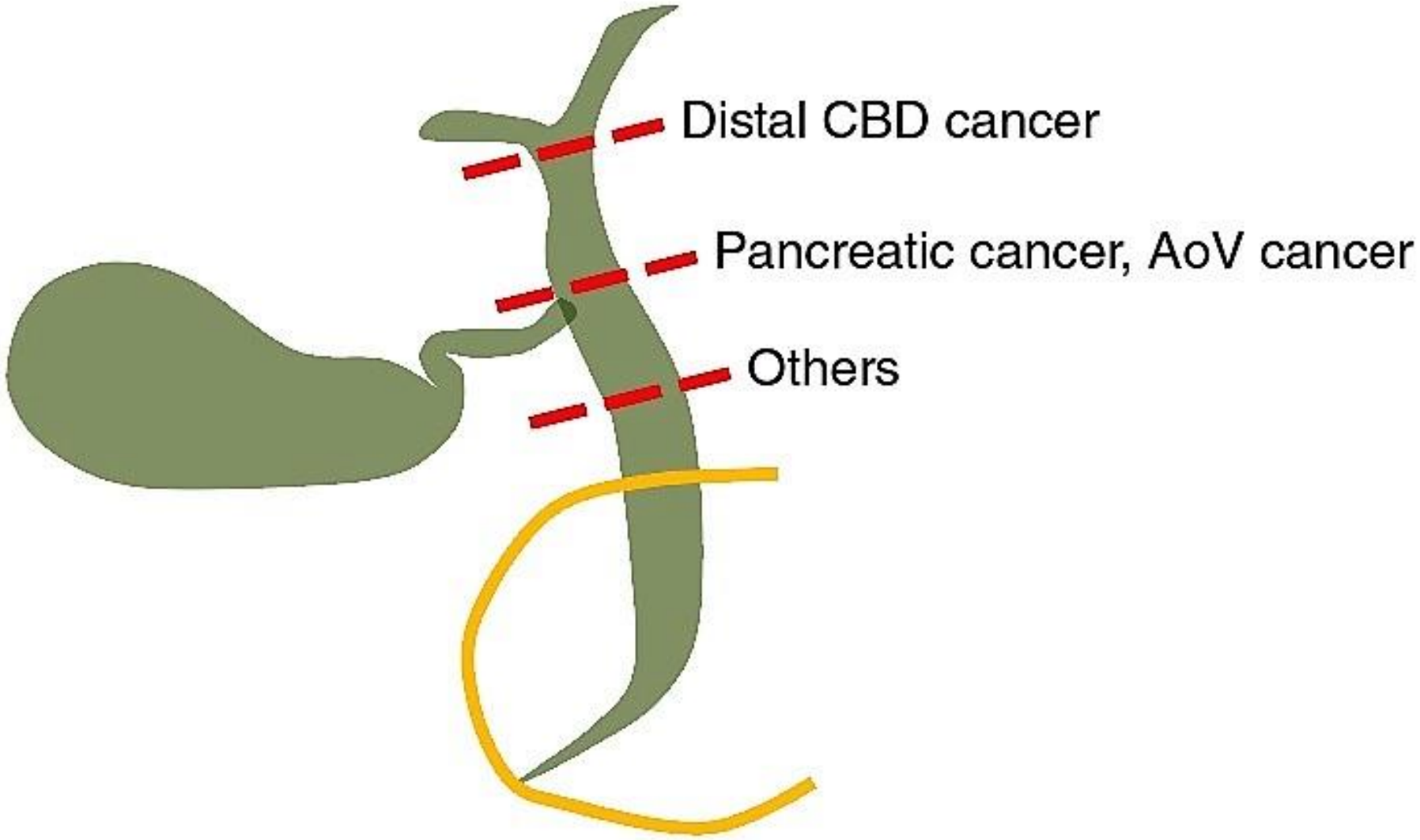
More recently, and mostly in Japan since the late 1990s, subtotal stomach-preserving pancreatoduodenectomy (stomach-preserving) in which the pyloric ring and 2 cm of the distal stomach only is removed with preservation of about 90% of the

TRANSECÇÃO DO PÂNCREAS

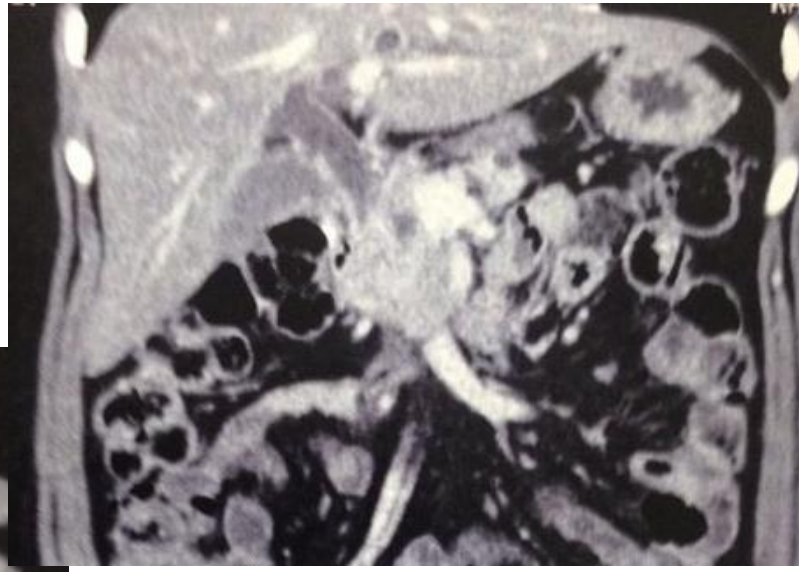


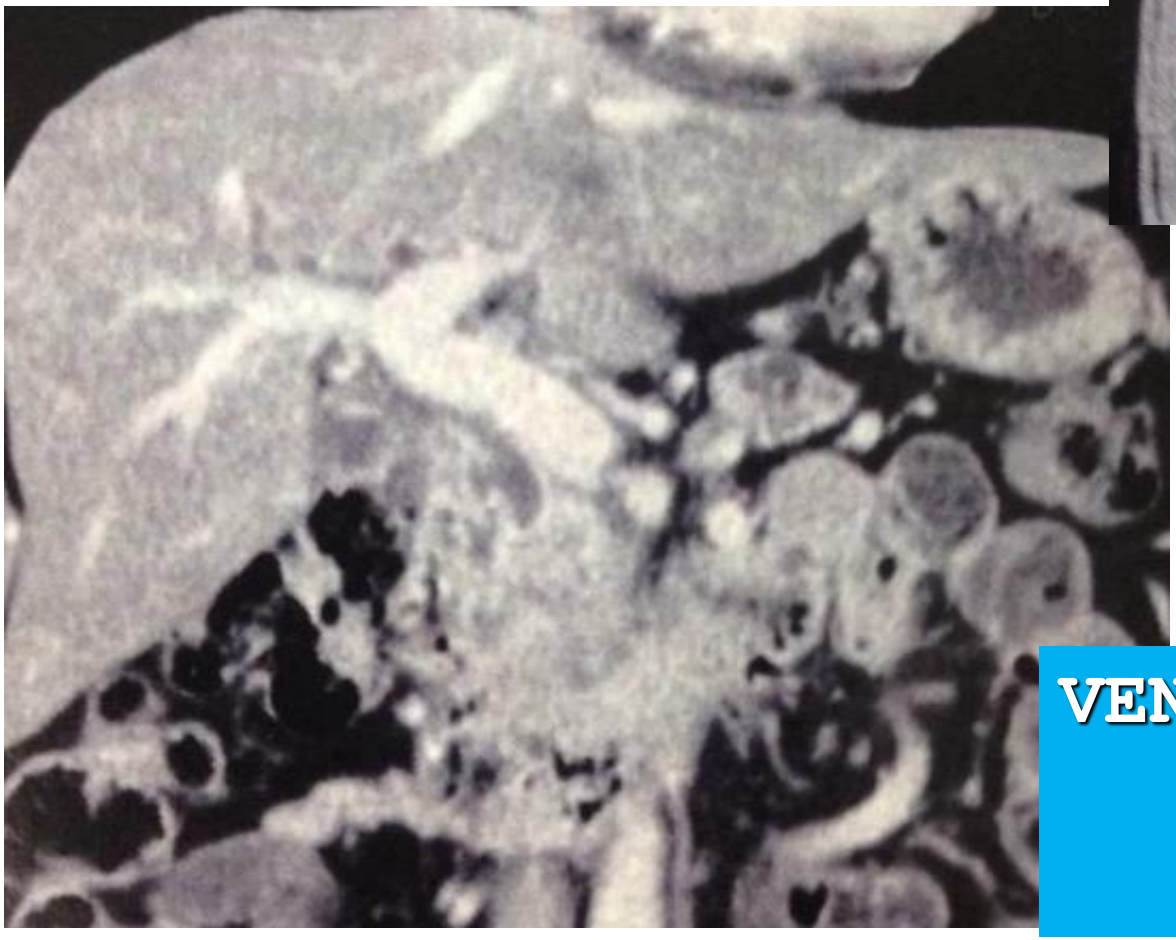


RESSECÇÃO DA VIA BILIAR



RESSECÇÃO VASCULAR



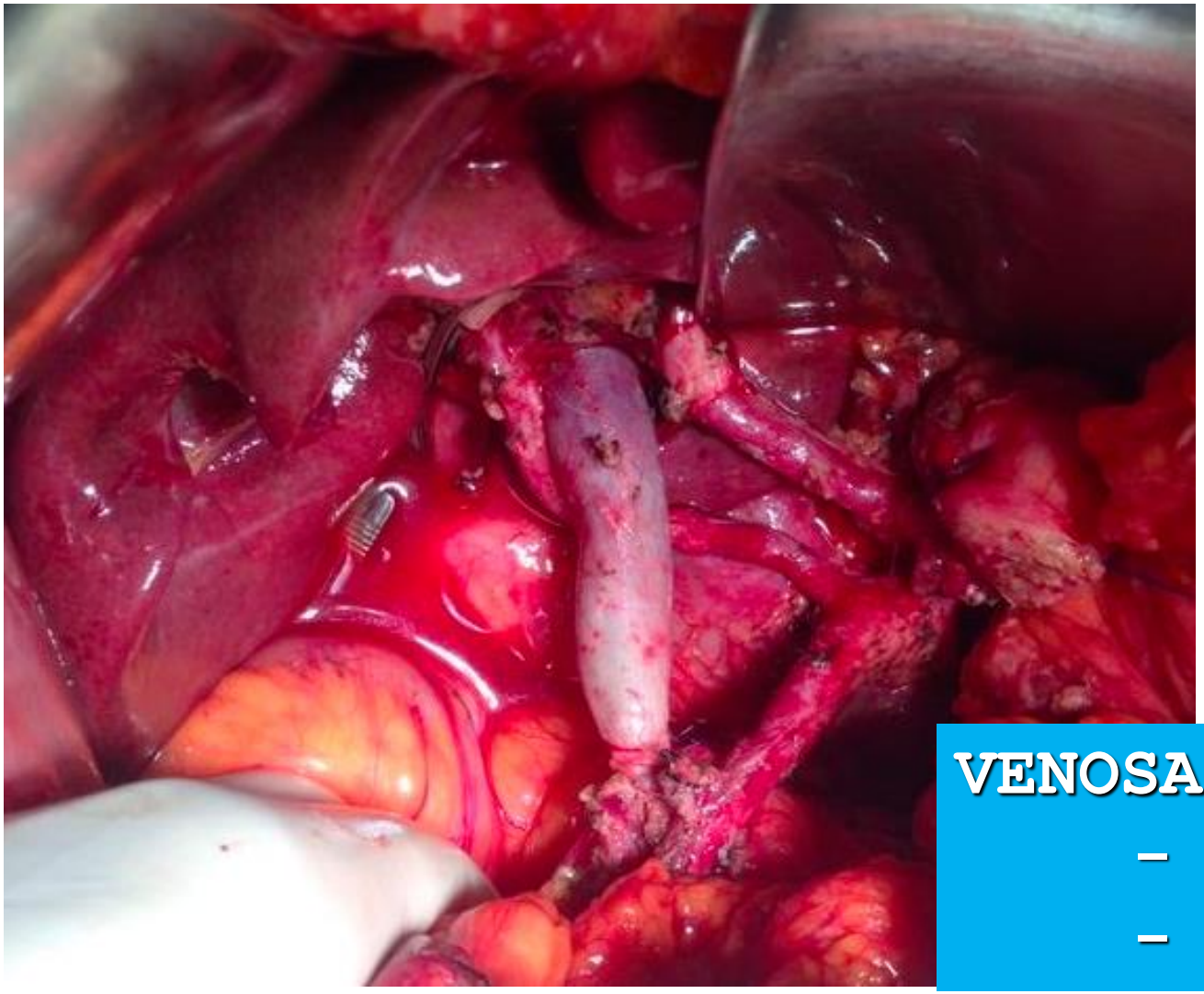


VENOSA

- Porta
- Mesentérica

Torres et al. Arq Bras Cir Dig 2017;30(3).

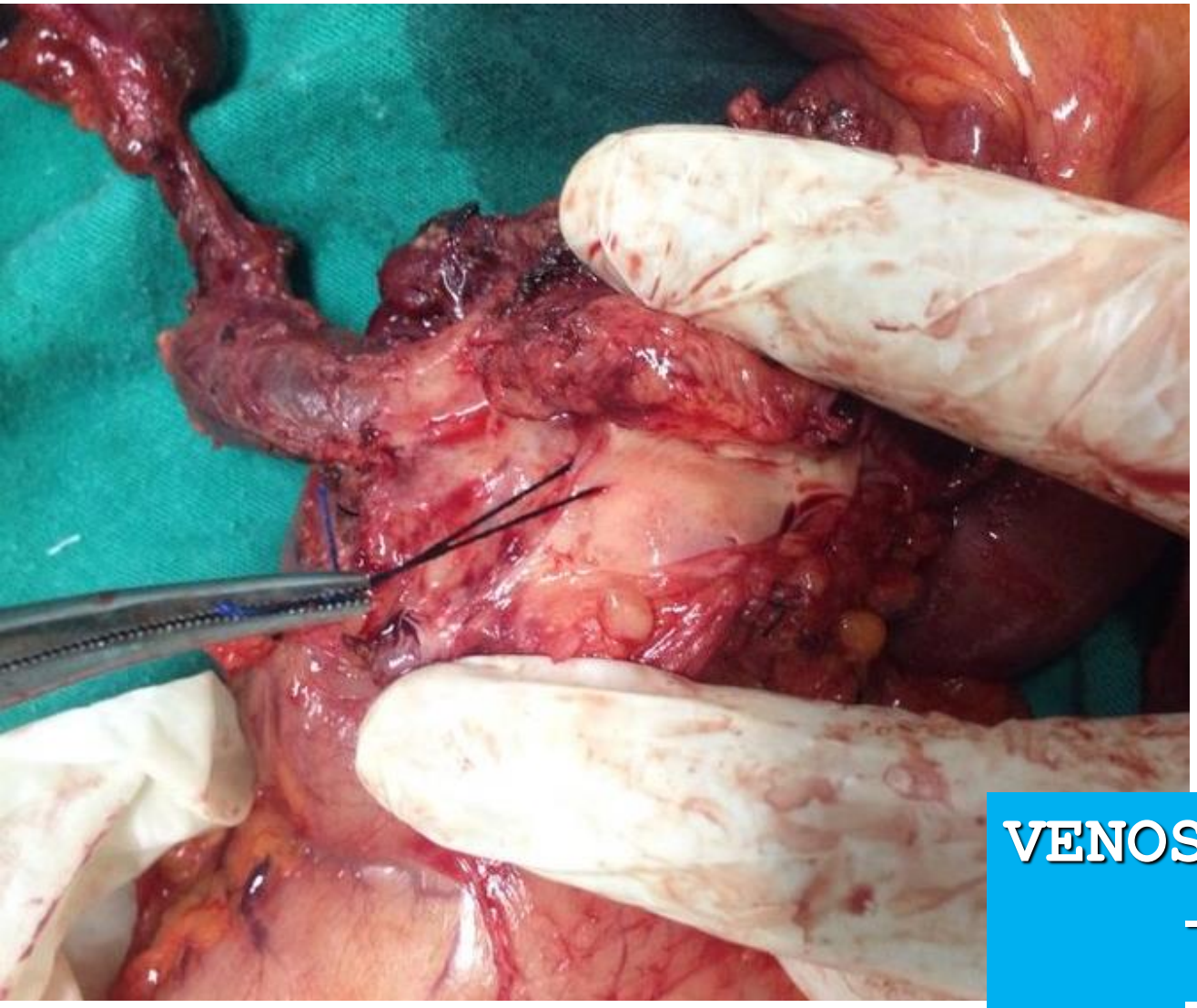
RESSECÇÃO VASCULAR



VENOSA

- Porta
- Mesentérica

RESSECÇÃO VASCULAR

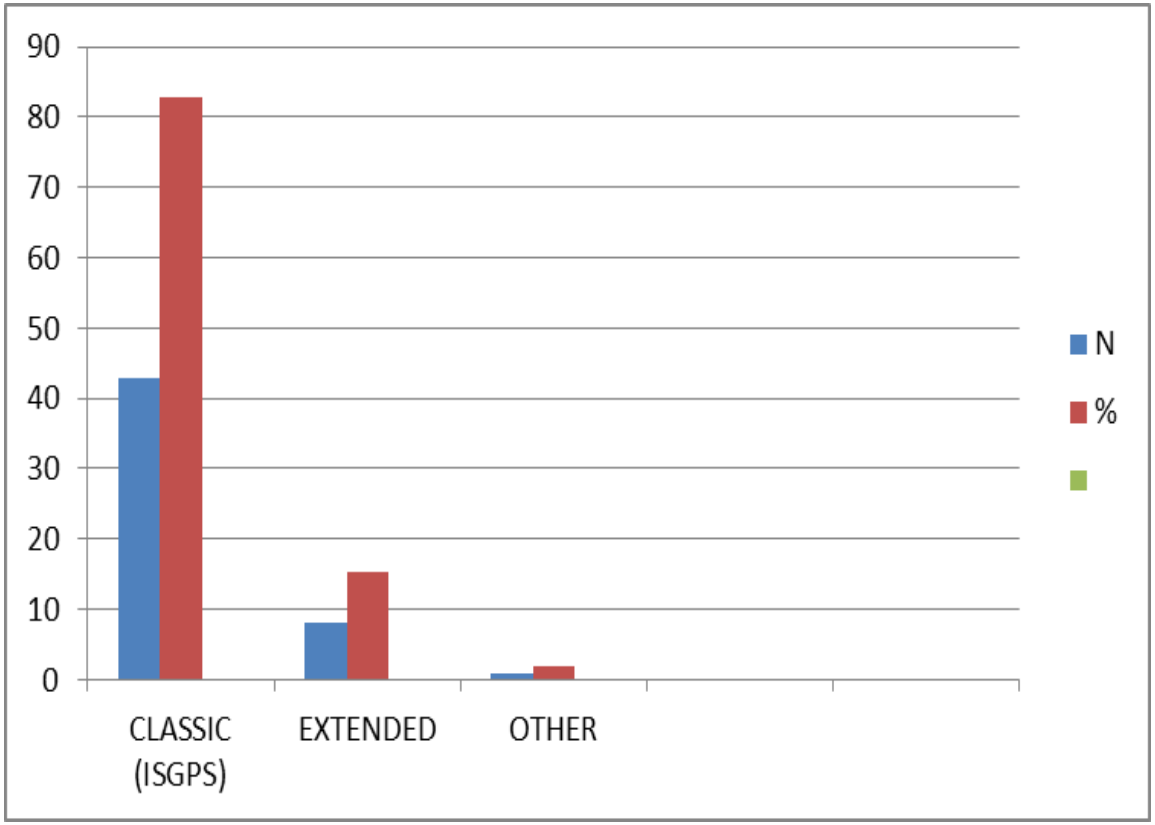


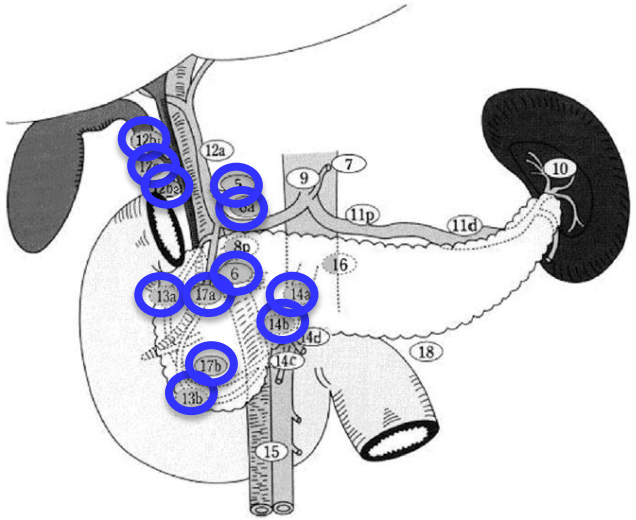
VENOSA

- Porta
- Mesentérica

LYMPHADENECTOMY

- 5, 6, 8a, 12b1, 12b2, 12c, 13a, 13b,14a, 14b, 17a, and 17b.



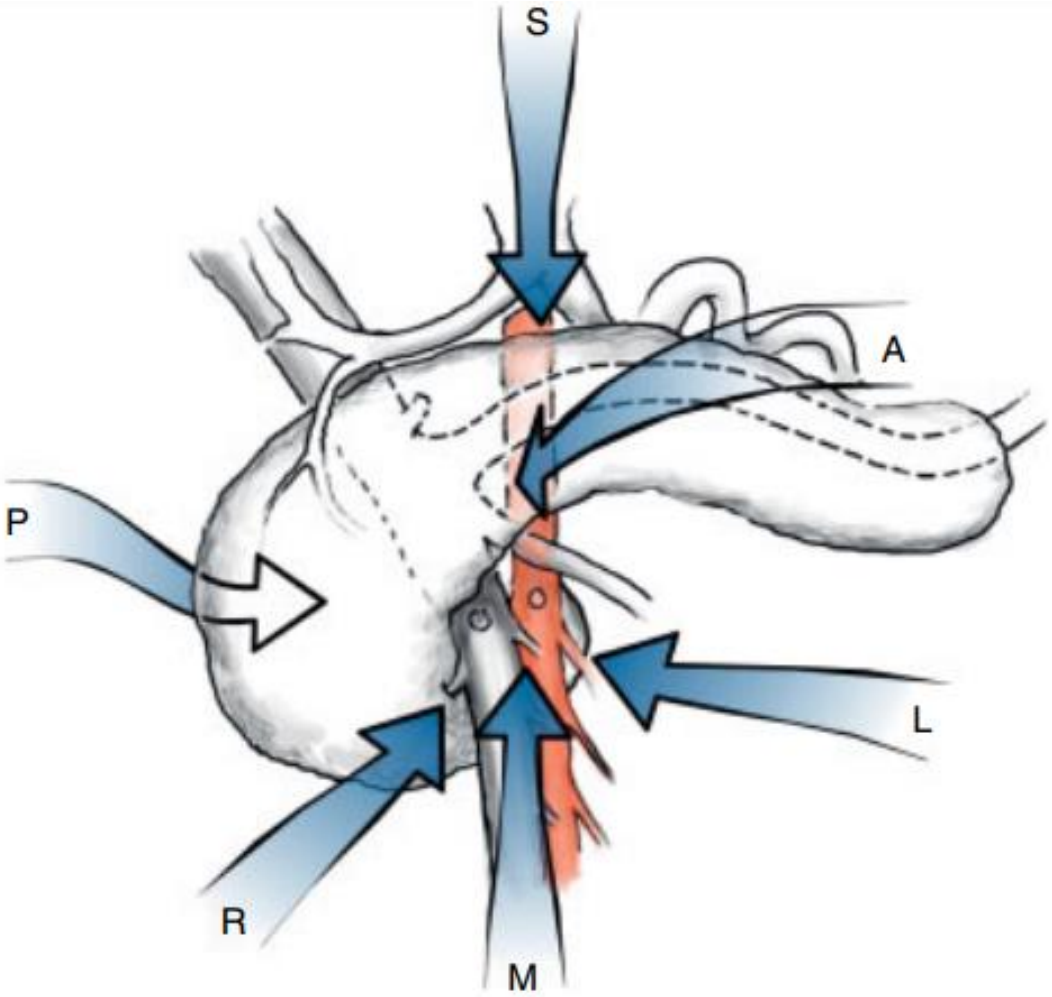


ISGPS

FIGURE 3 – Type of lymphadenectomy performed in Brazil (%)

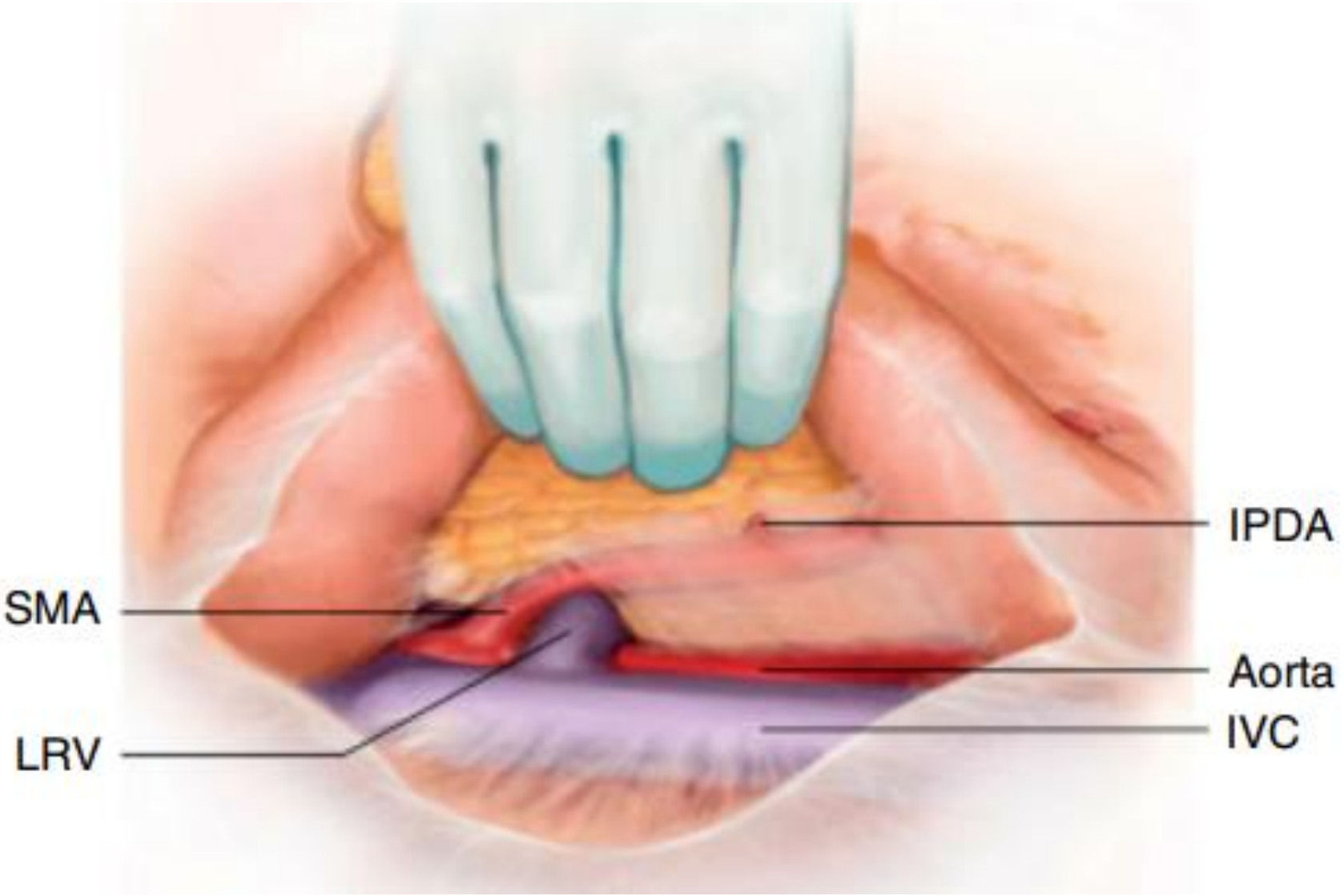
Torres et al. Arq Bras Cir Dig 2017;30(3).

ARTERY FIRST

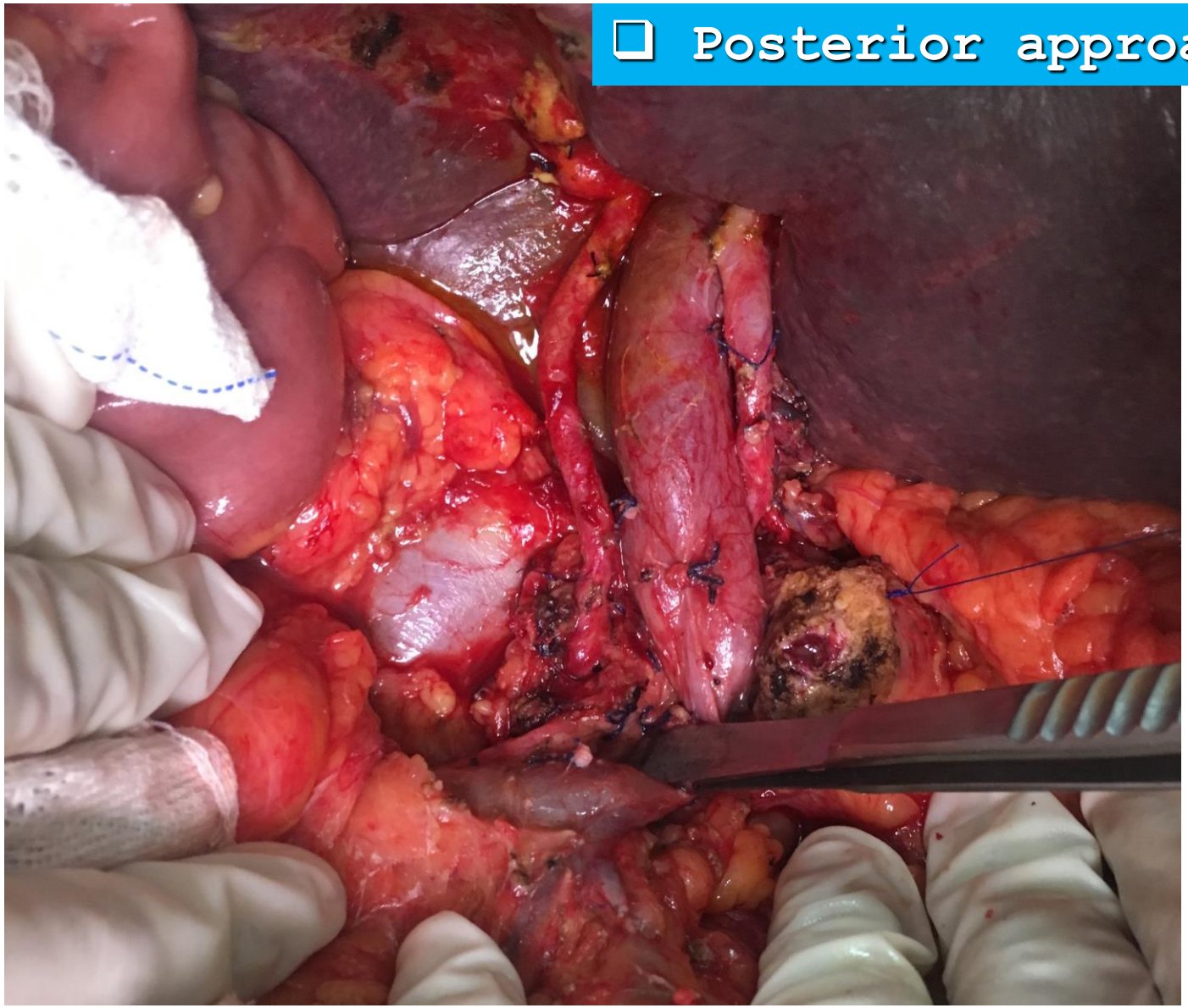


- Superior
- Anterior
- Posterior
- Posterior esquerdo
- Uncinado
- Mesentérica

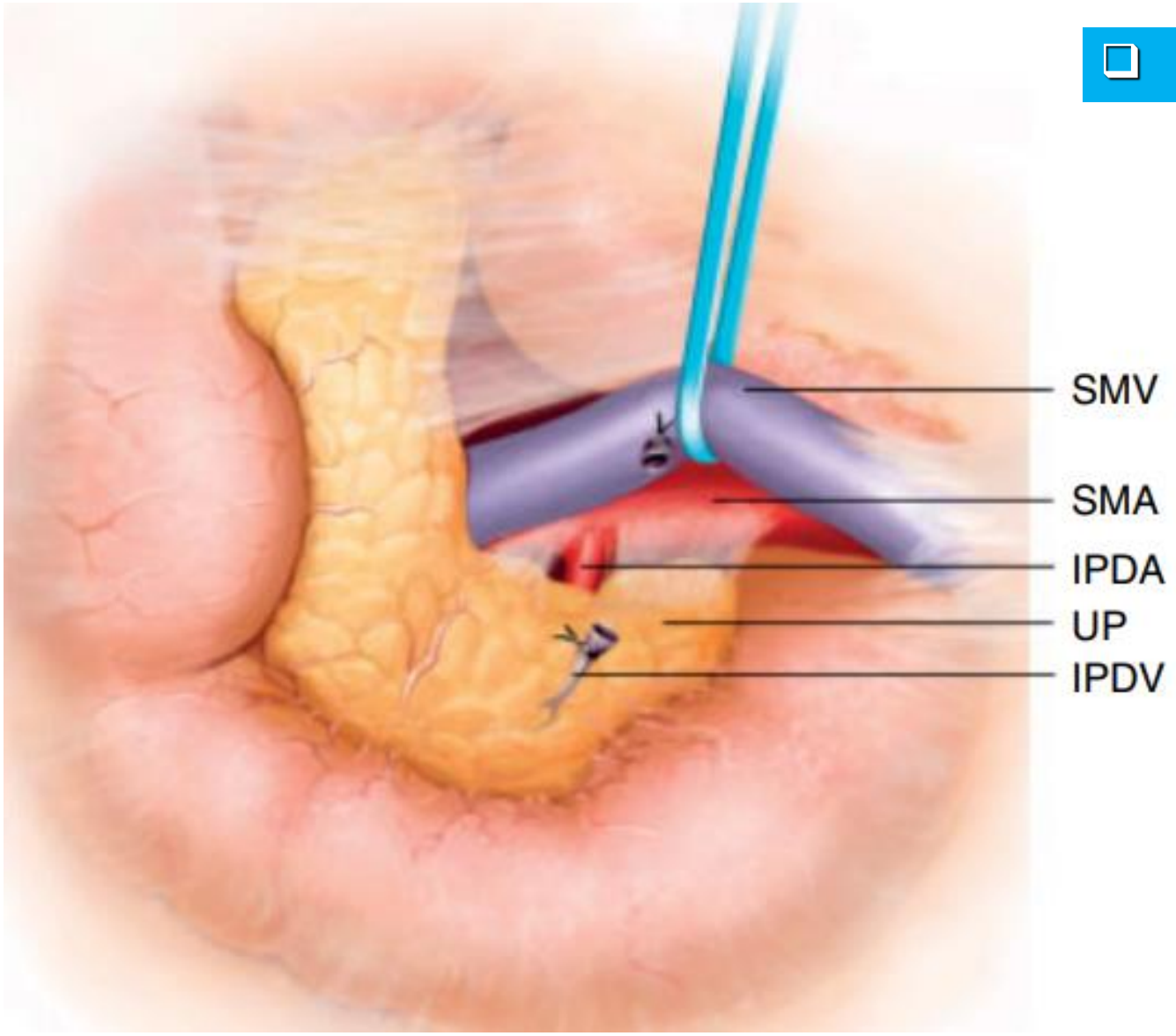
❑ Posterior



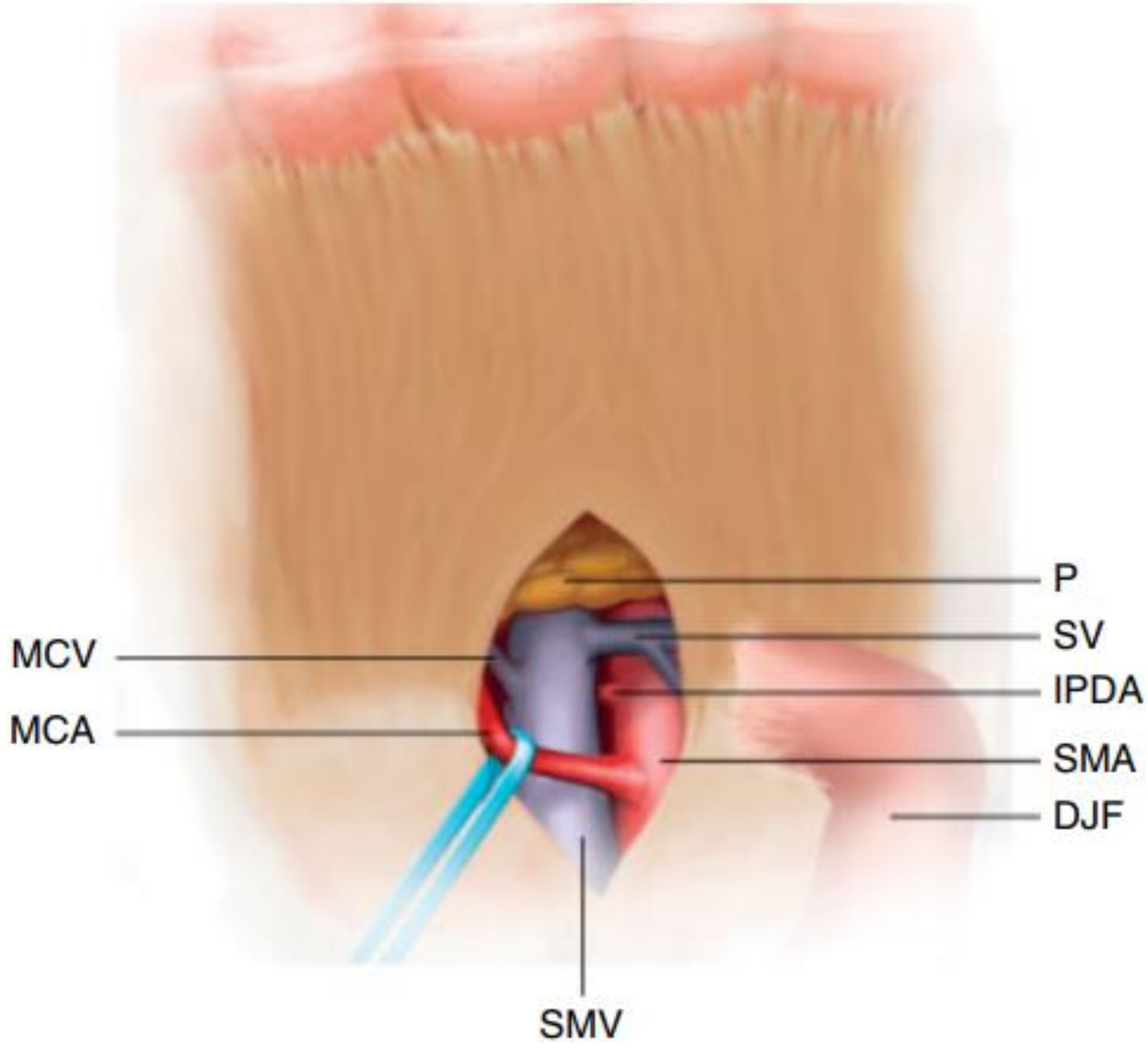
❑ Posterior approach



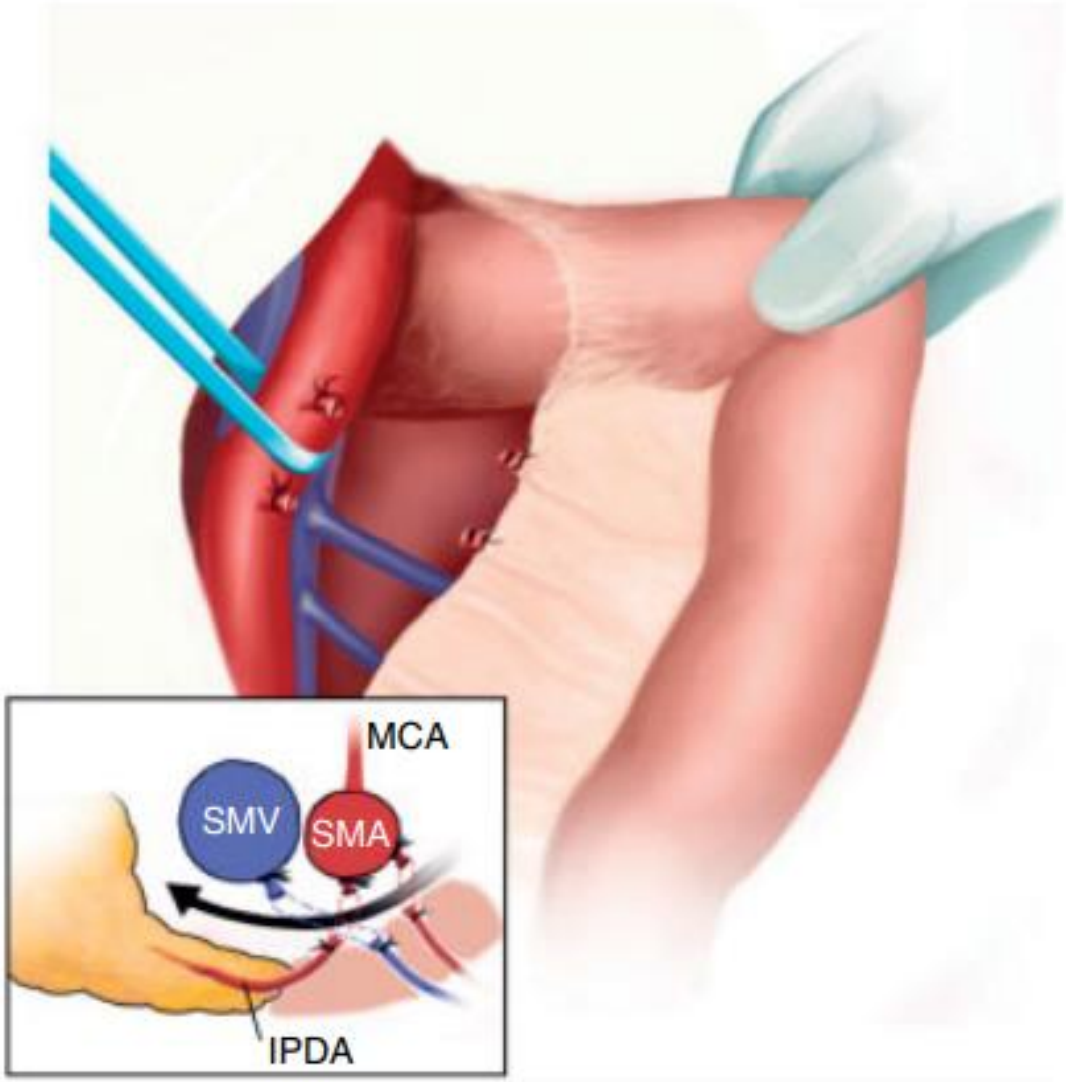
❑ Uncinado



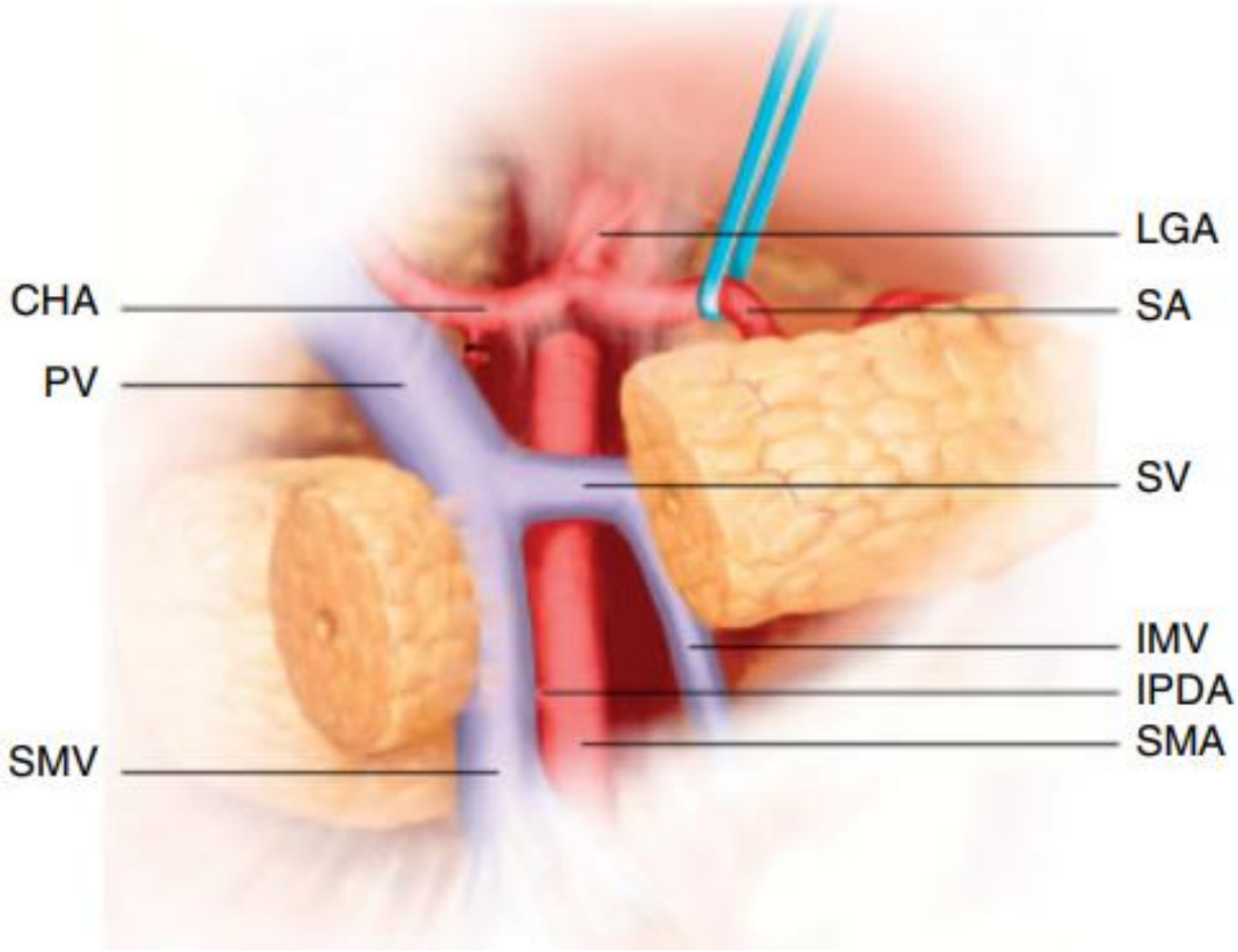
❑ Mesentérica



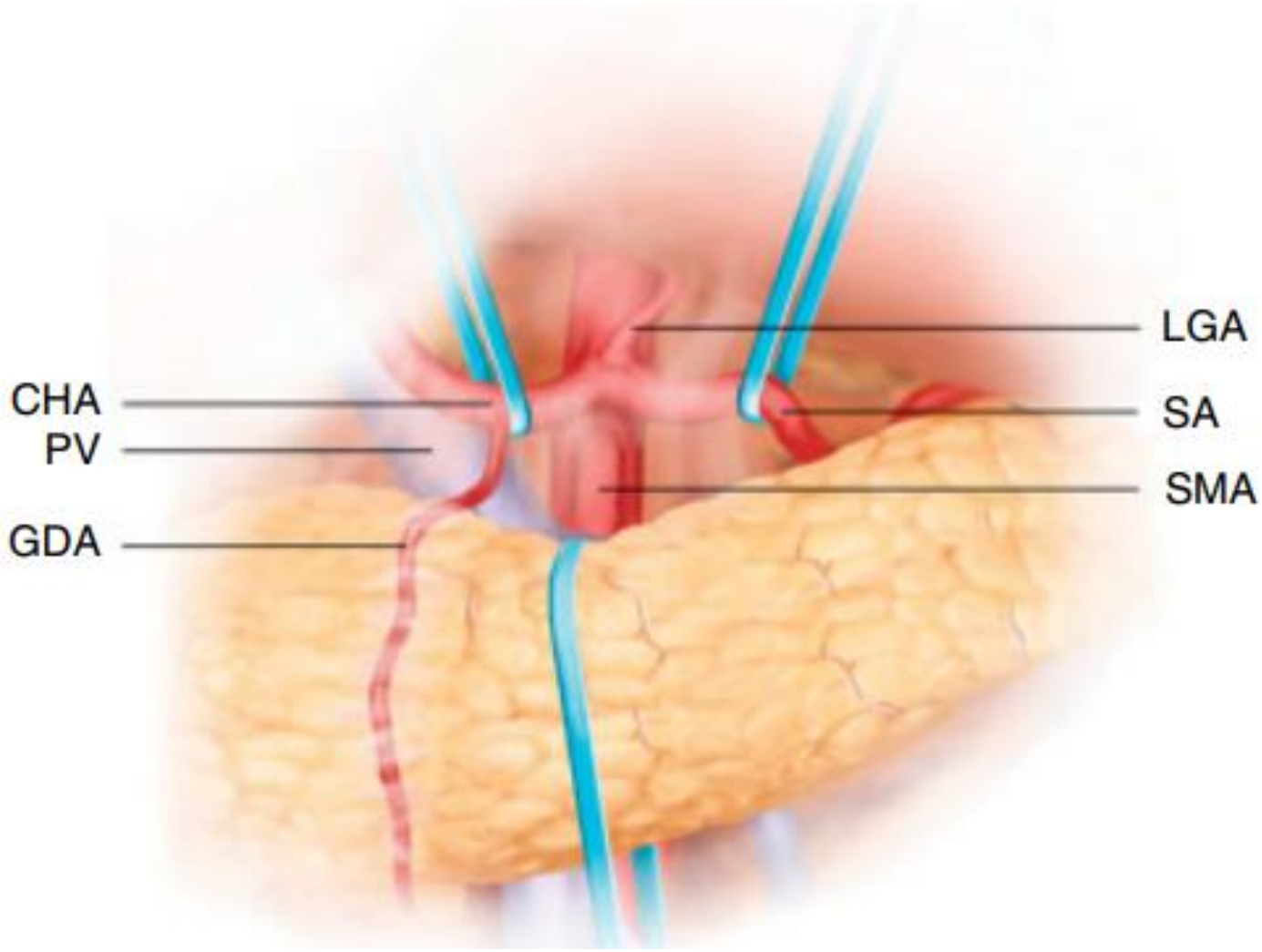
❑ Posterior esquerdo



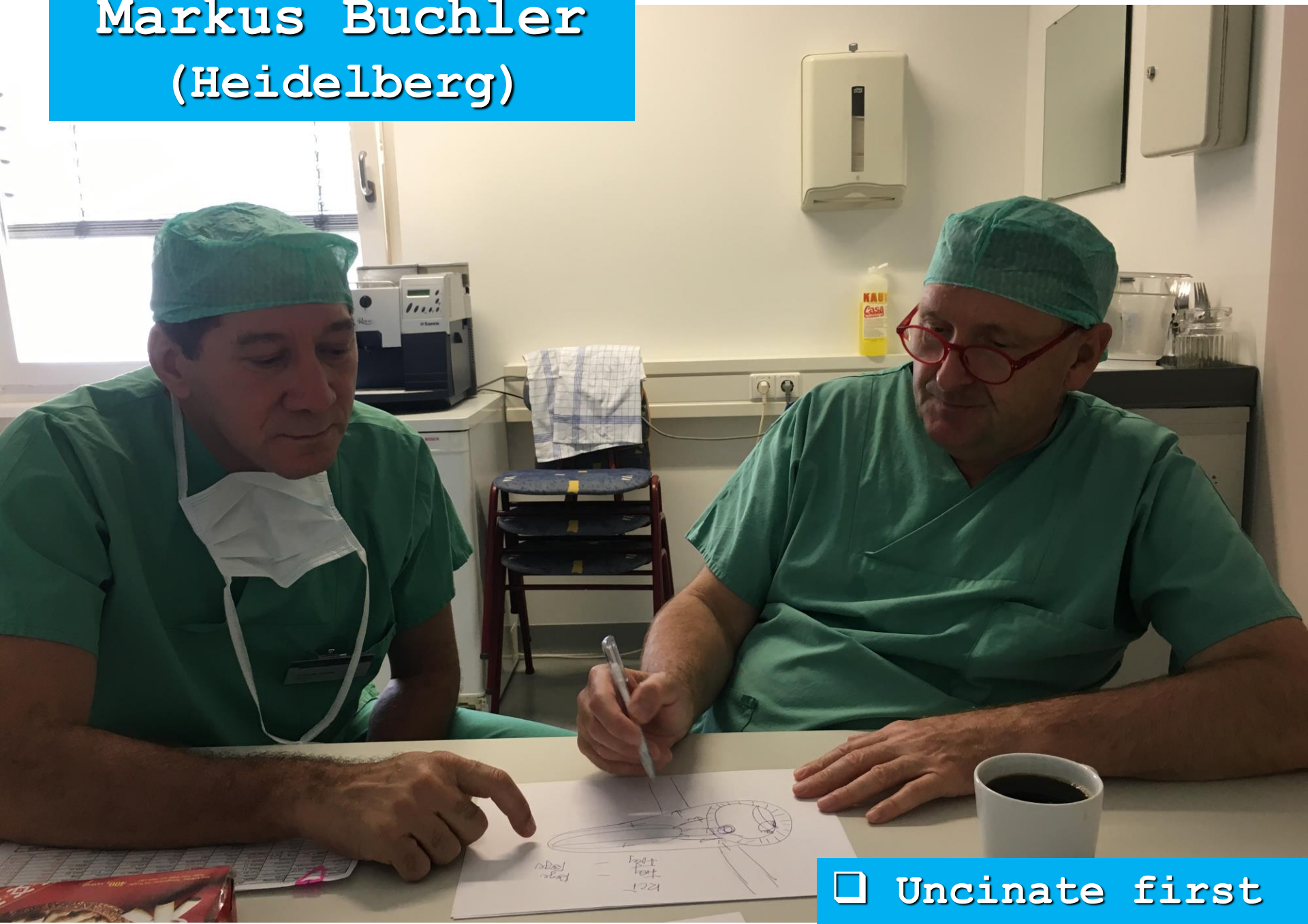
❑ Anterior



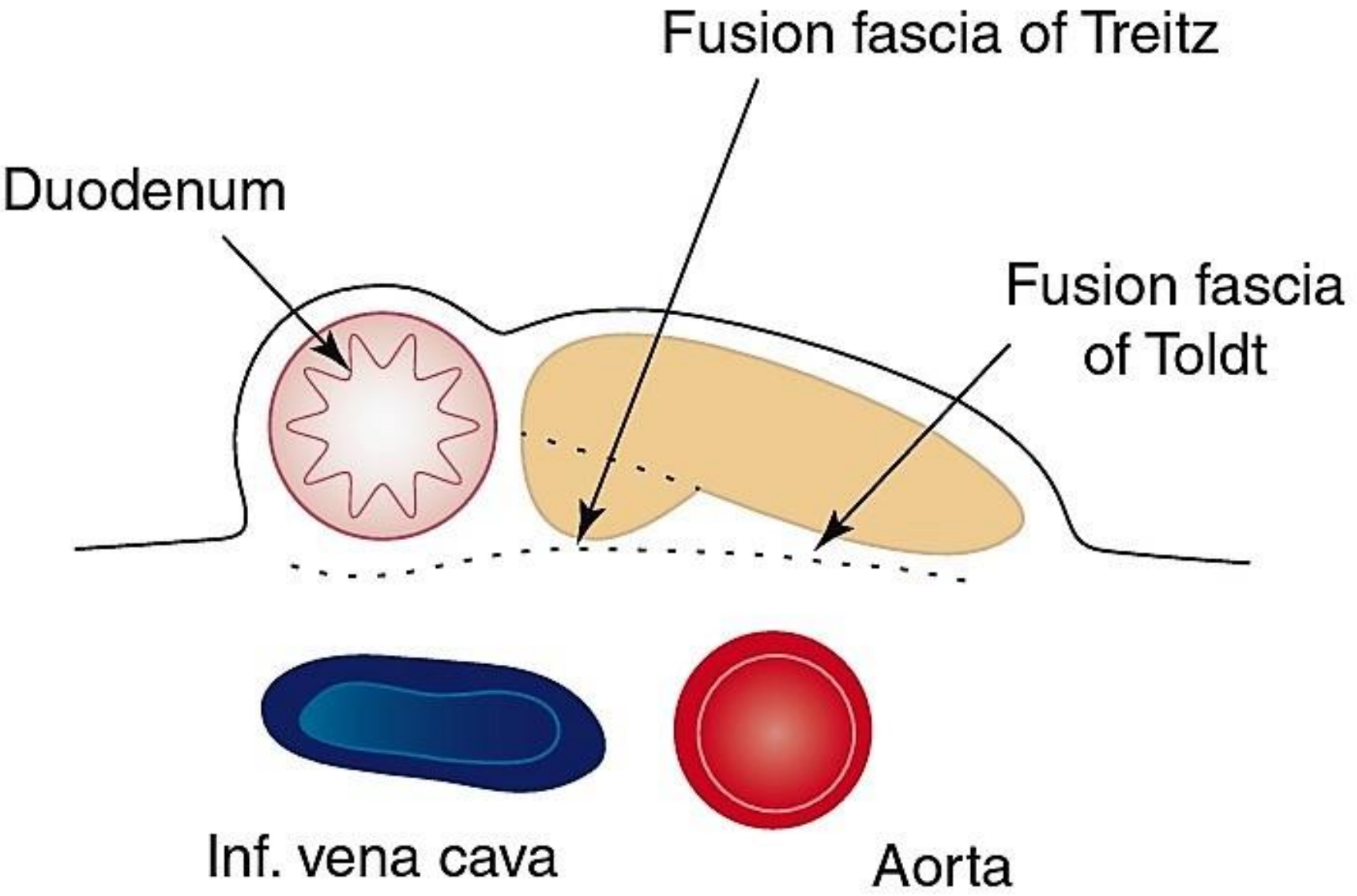
❑ Superior

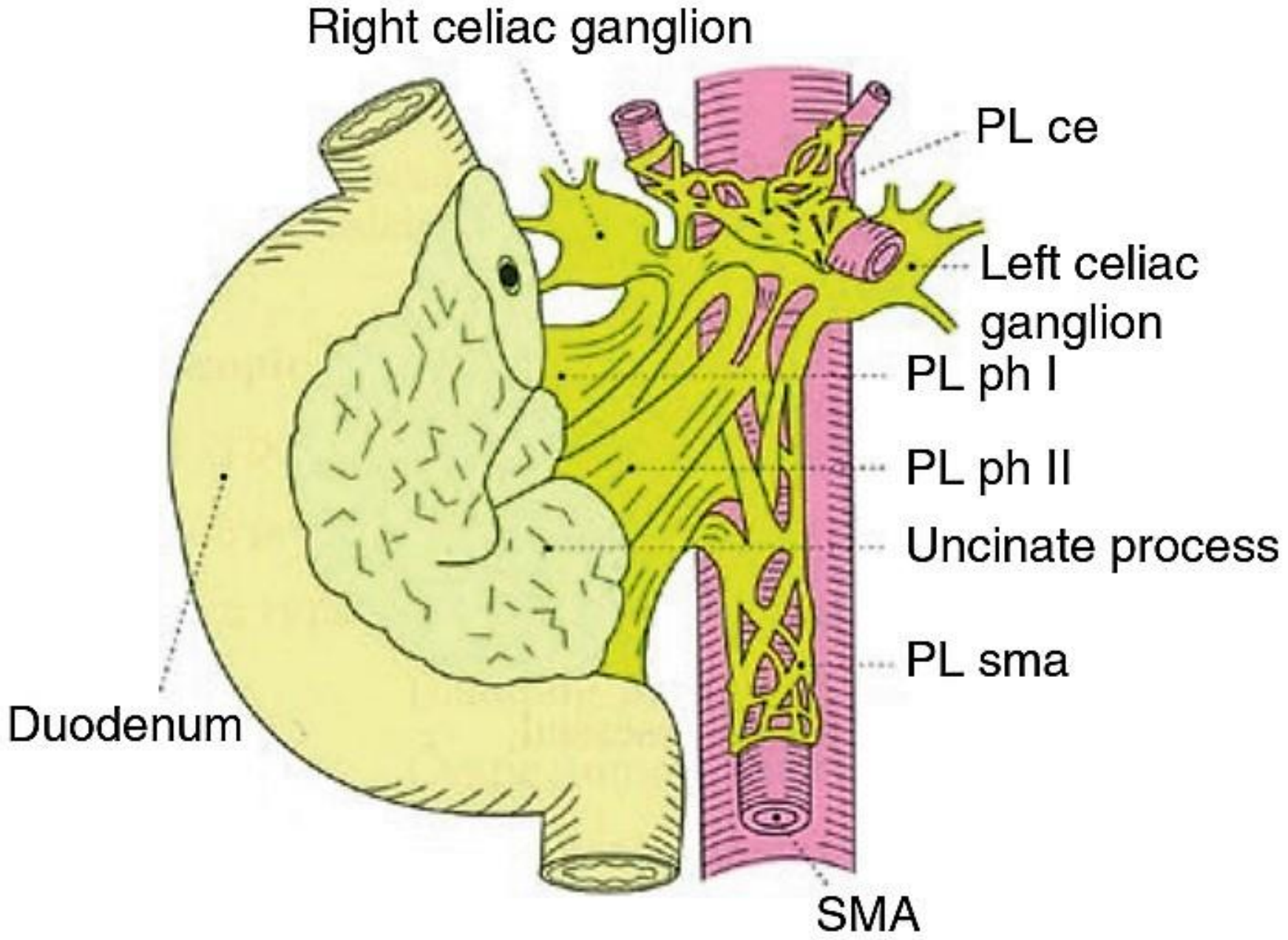


Markus Buchler (Heidelberg)

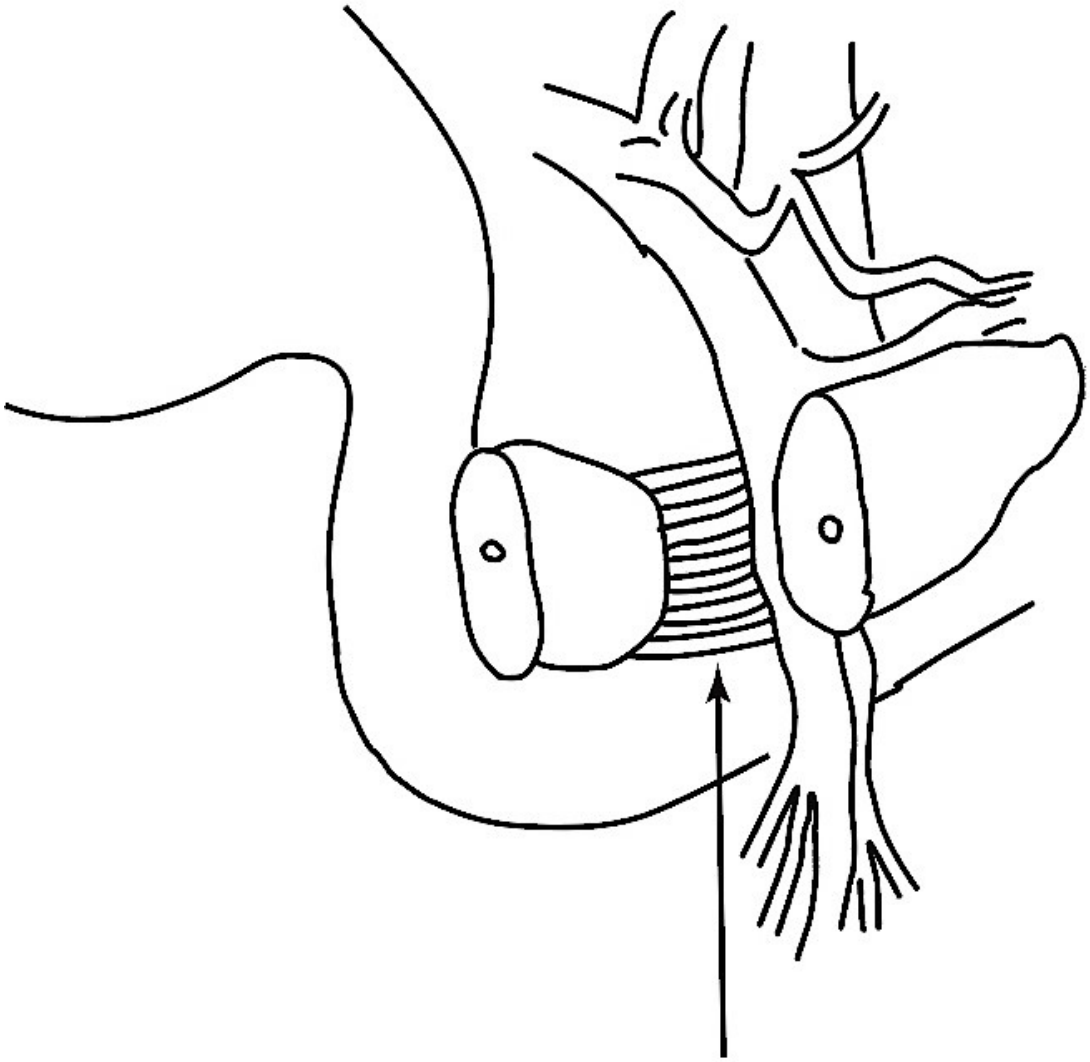


- ❑ Uncinate first


Fusion fascia of Treitz
Duodenum
Fusion fascia
of Toldt
Inf. vena cava
Aorta


Right celiac ganglion
PL ce
Left celiac ganglion
PL ph I
PL ph II
Uncinate process
PL sma
Duodenum
SMA

MESOPÂNCREAS



Mesopancreas

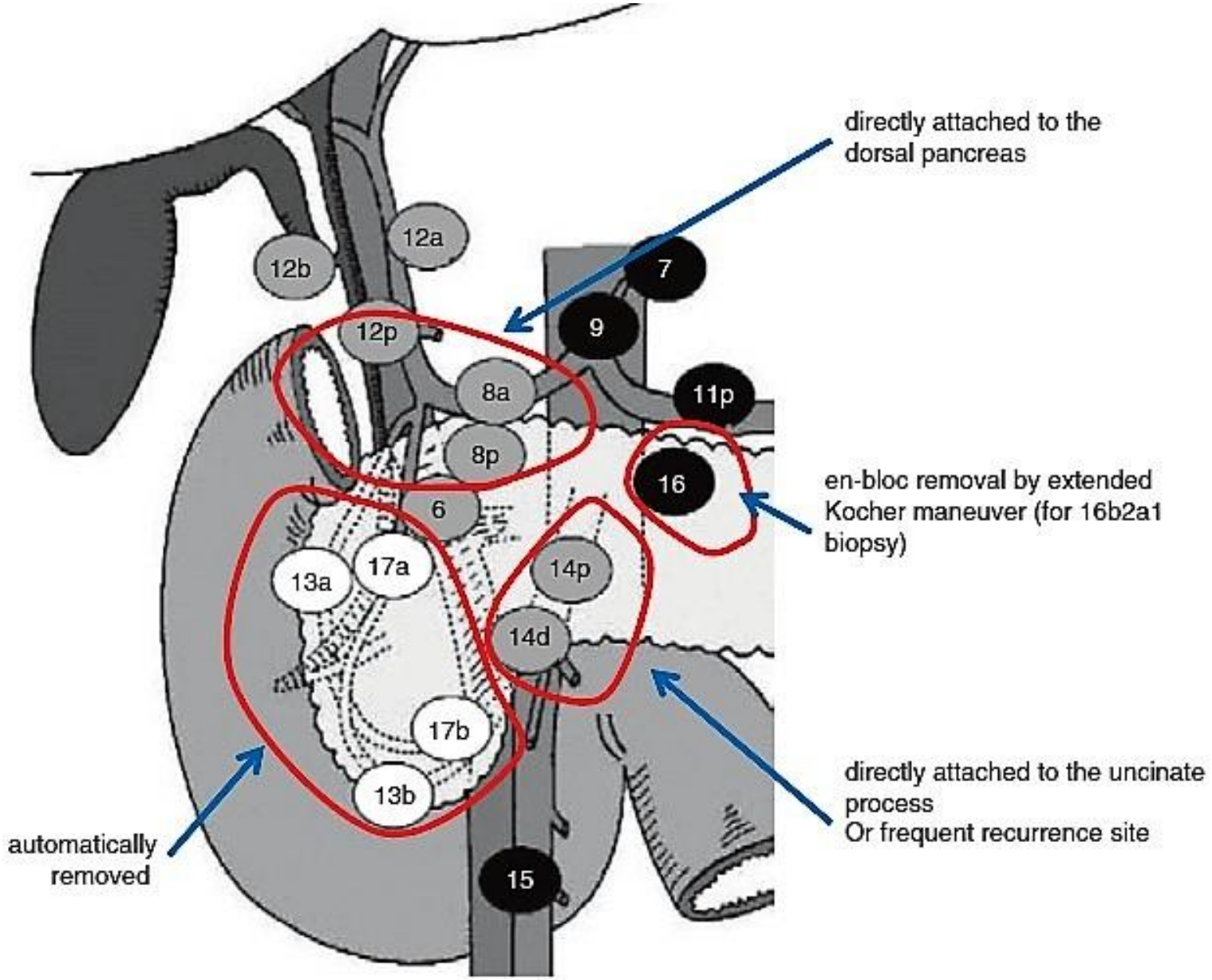


Fig. 23.13 Customized extent of LN dissection

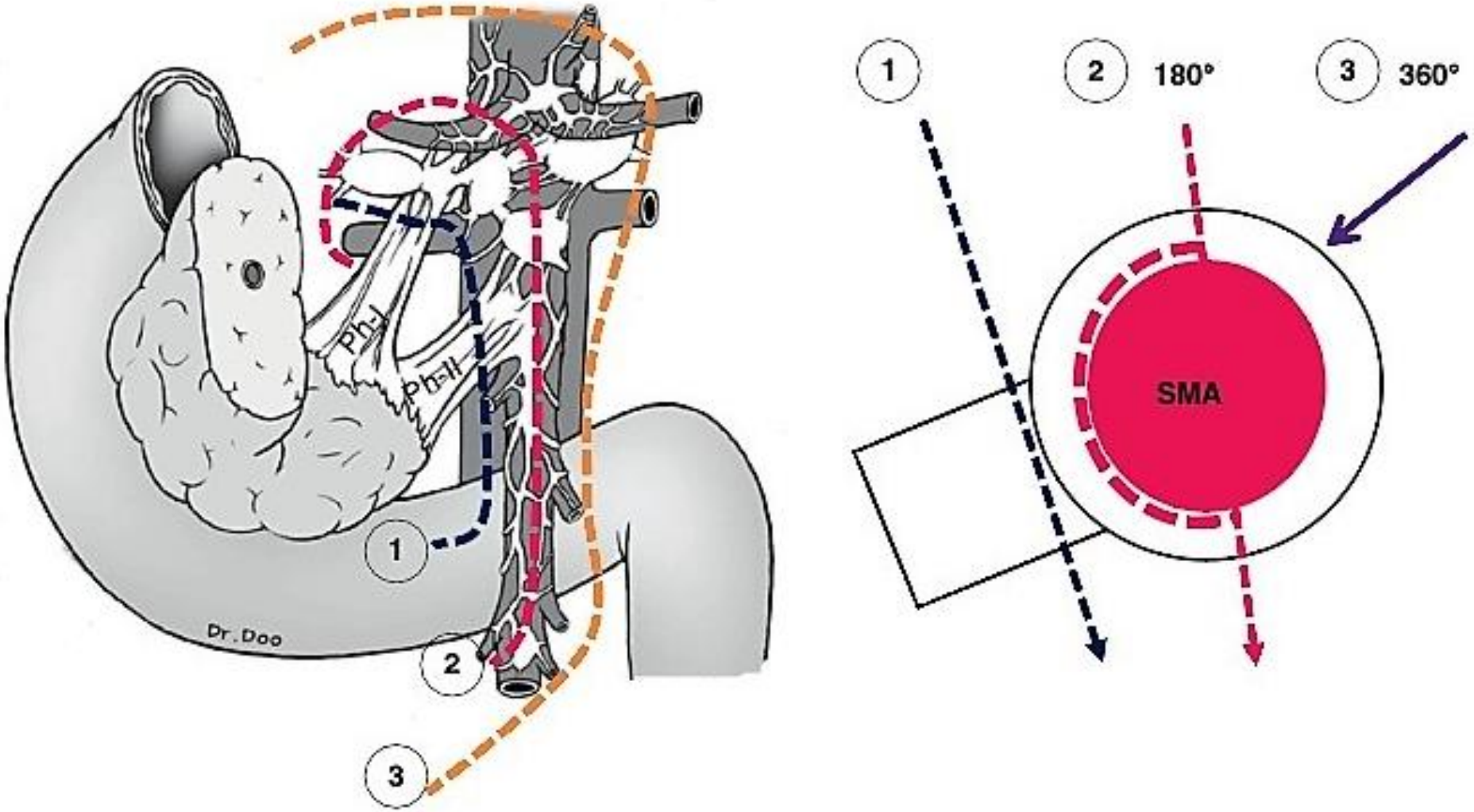


Fig. 23.14 Extent of nerve plexus dissection. There are three options for nerve plexus dissection. (1) Cutting nerve plexus at the level of pancreatic head plexus, (2) a right half removal, (3) a whole circumferential dissection

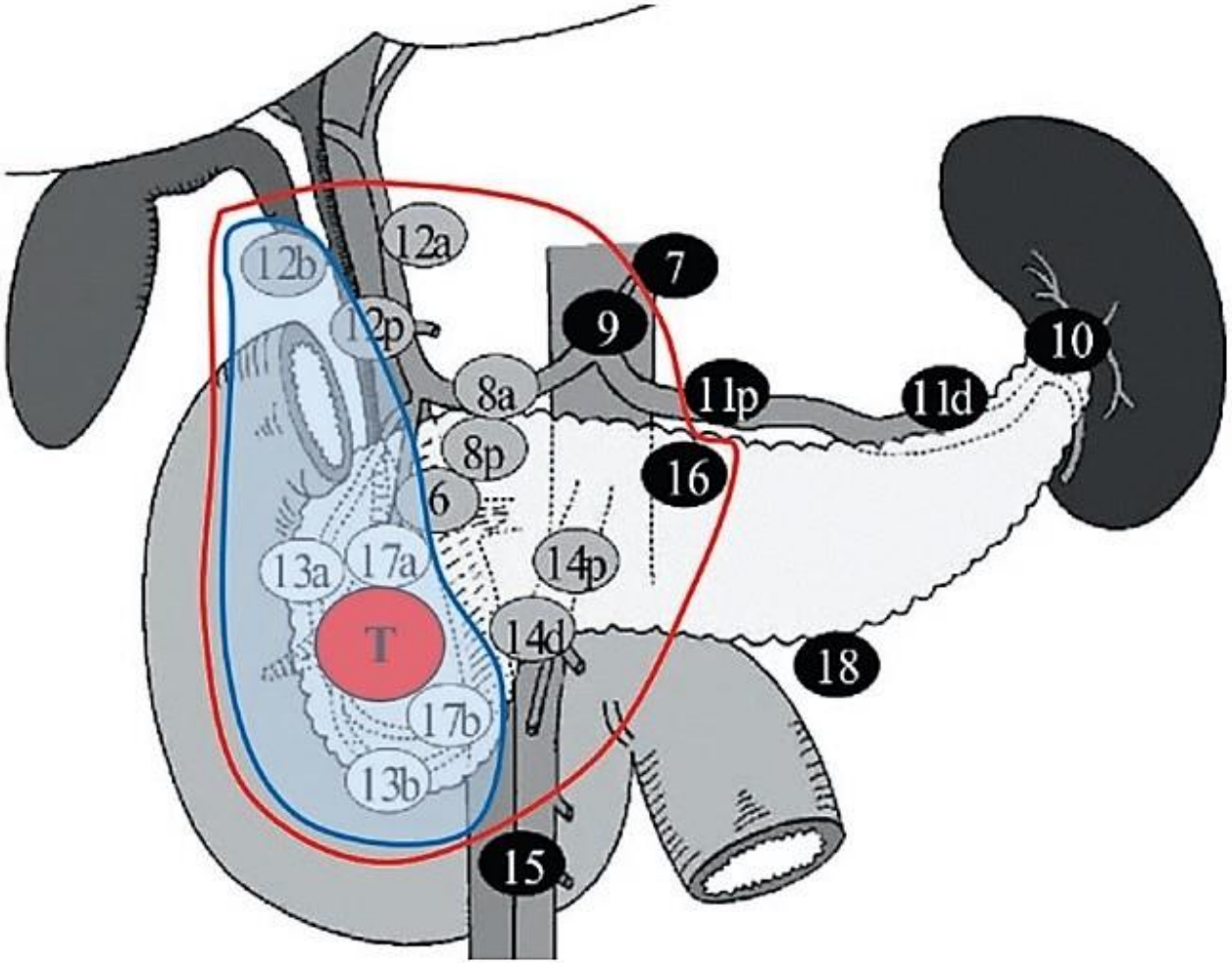
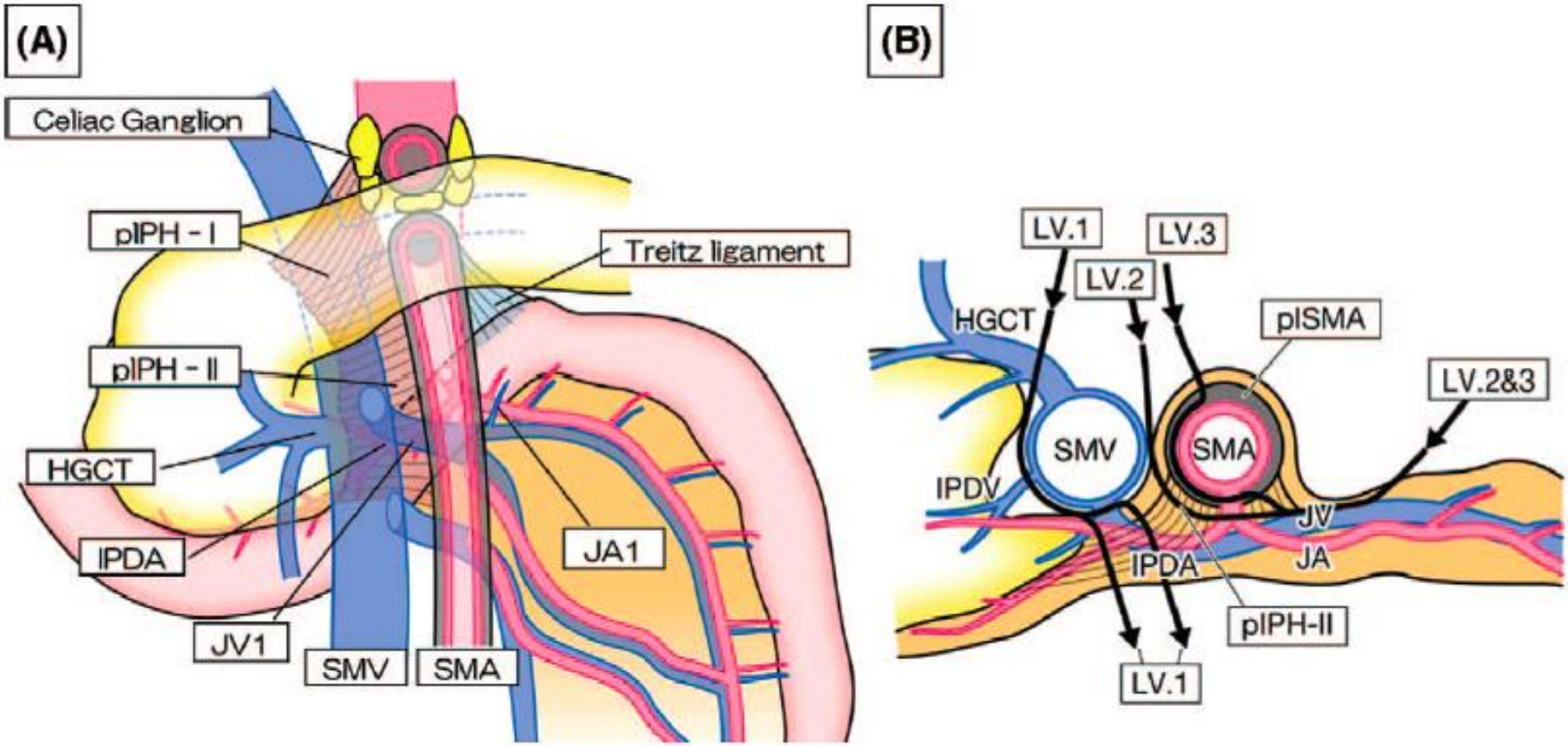


Table 23.1 Extent of LN dissection in reported RCTs: standard PD vs extended PD

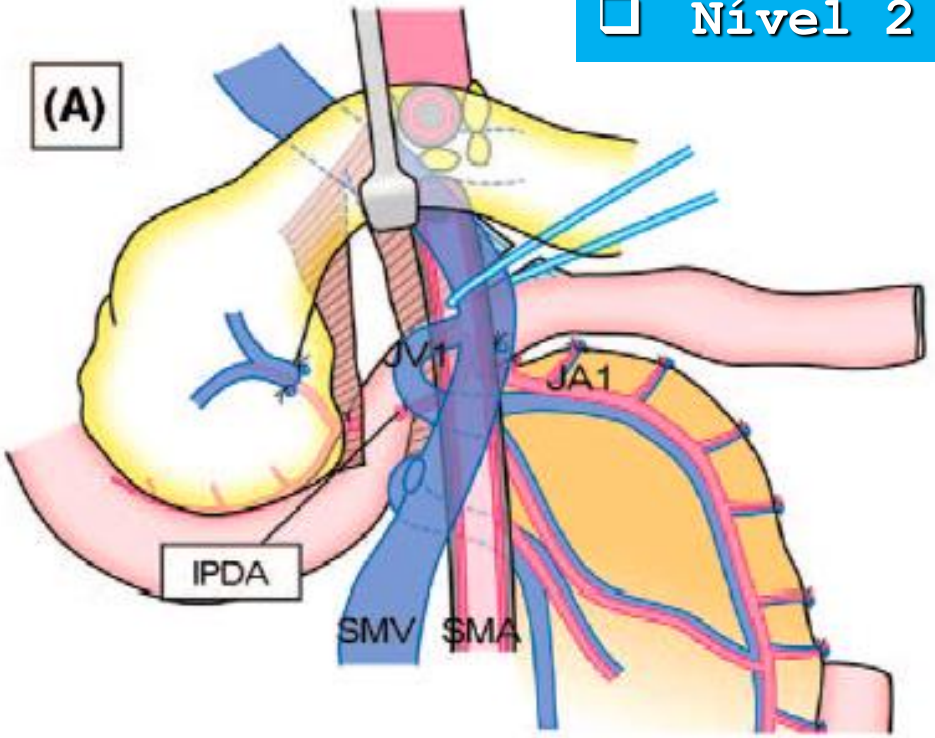
Standard/Extended	Pedrazzoli (Italy, 1998)	Yeo (JHI-USA, 2002)	Nimura (Japan, 2004)	Farnell (Mayo-USA, 2005)	Jang (Korea, 2013)
Extent of LN dissection	8, 13, 17 vs +9, 12, 14, 16	Regional vs +perigastric, 16a2+b1	13, 17 vs + 8, 9 , 12, 14, 16	12bc,13, 14ab vs +8, 9, 12a, 14cd, 16a, 2b	12b, c, 13, 17 vs + 8, 9, 12a, 14, 16a2, b1
Retrieved LN	13.3/19.8	17/28.5	13.3/40.1	15/36	17.3/33.7

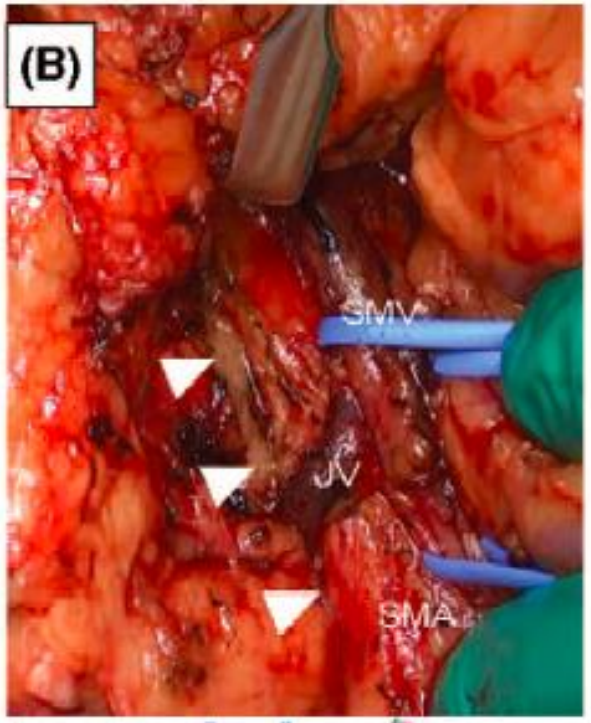
So far, 5 RCTs have compared between limited LN dissection and extended one. And all the studies failed to show any benefit of extended dissection, although there was a little difference in the extent of LN dissection in each study

❑ Nível 1


(A)
Celiac Ganglion
plPH - I
Treitz ligament
plPH - II
HGCT
IPDA
JV1
SMV
SMA
JA1
(B)
LV.1
LV.3
LV.2
HGCT
plSMA
LV.2&3
SMV
SMA
IPDV
JV
JA
IPDA
plPH-II
LV.1

❑ Nível 2


(A)
JV1
JA1
IPDA
SMV
SMA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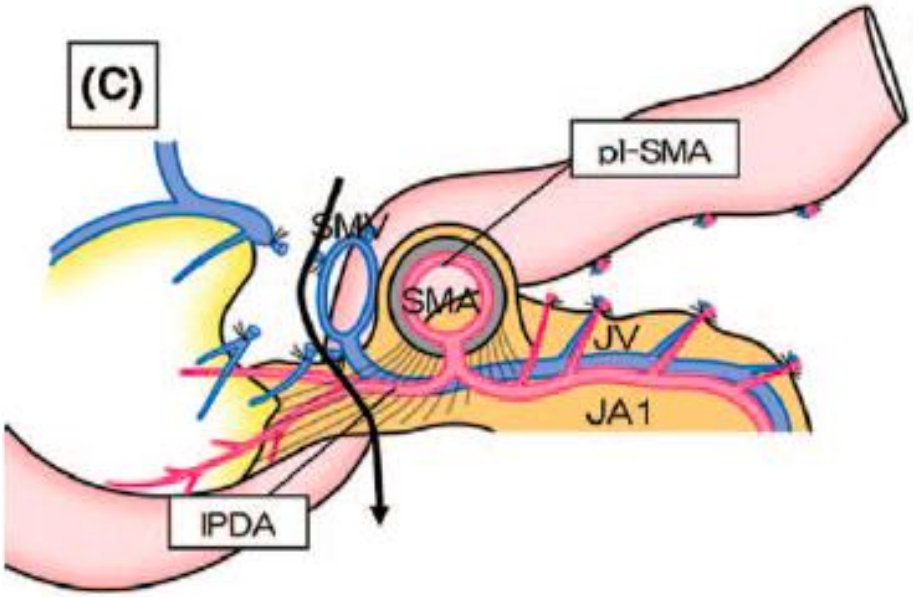
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pl-SMA
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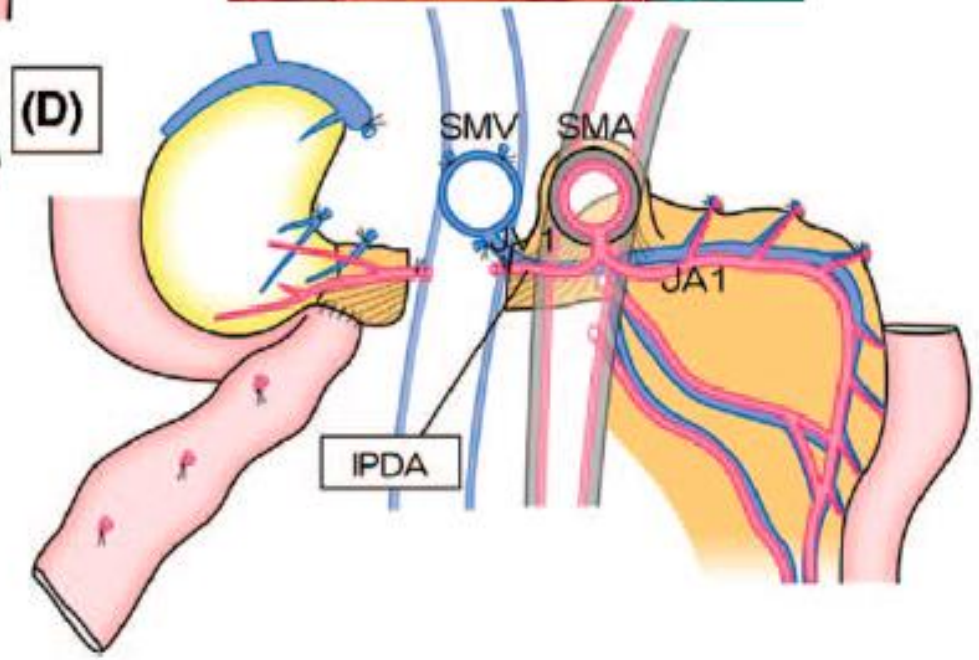
SMA
JV
JA1
IPDA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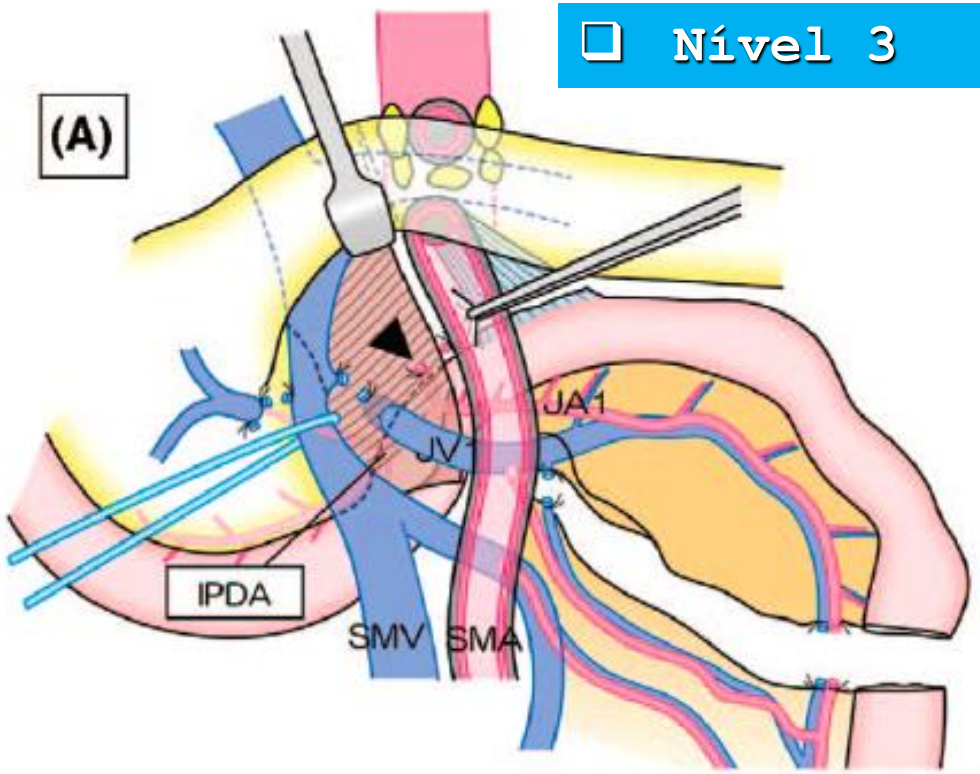
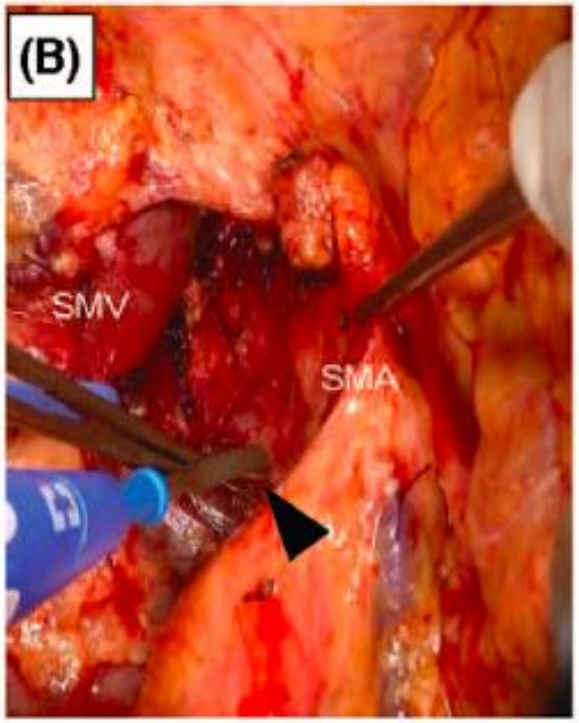
SMA
JV1
JA1
IPDA

❑ Nível 3


(A)
JA1
JV
IPDA
SMV
SMA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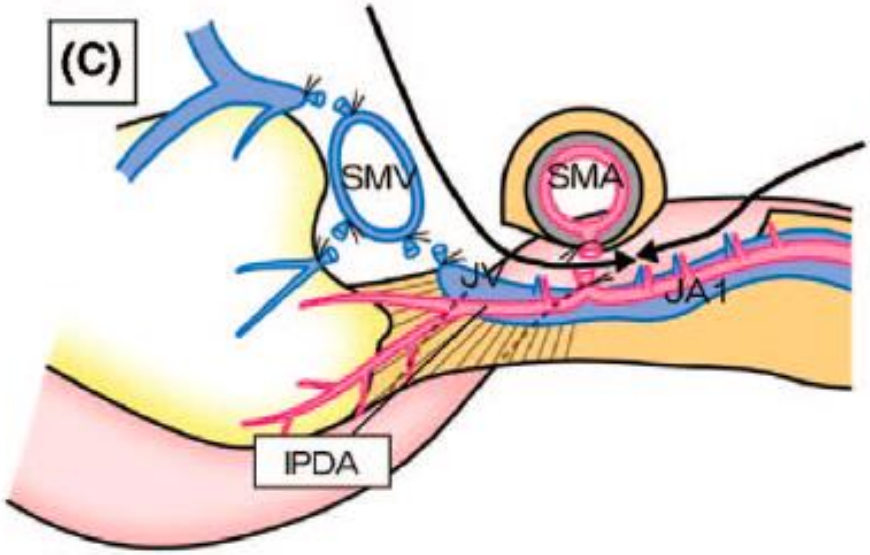
SMV
SMA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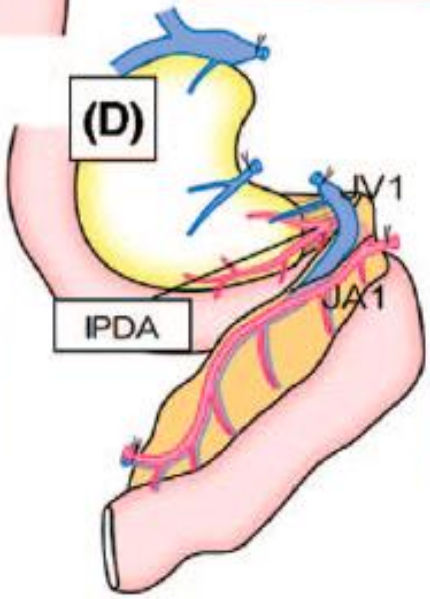
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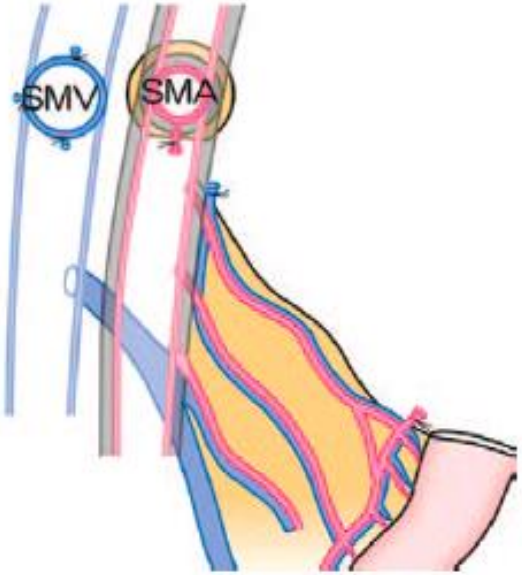
JV1
JA1
IPDA


SMV
SMA

http://dx.doi.org/10.1016/j.hpb.2017.07.007 HPB

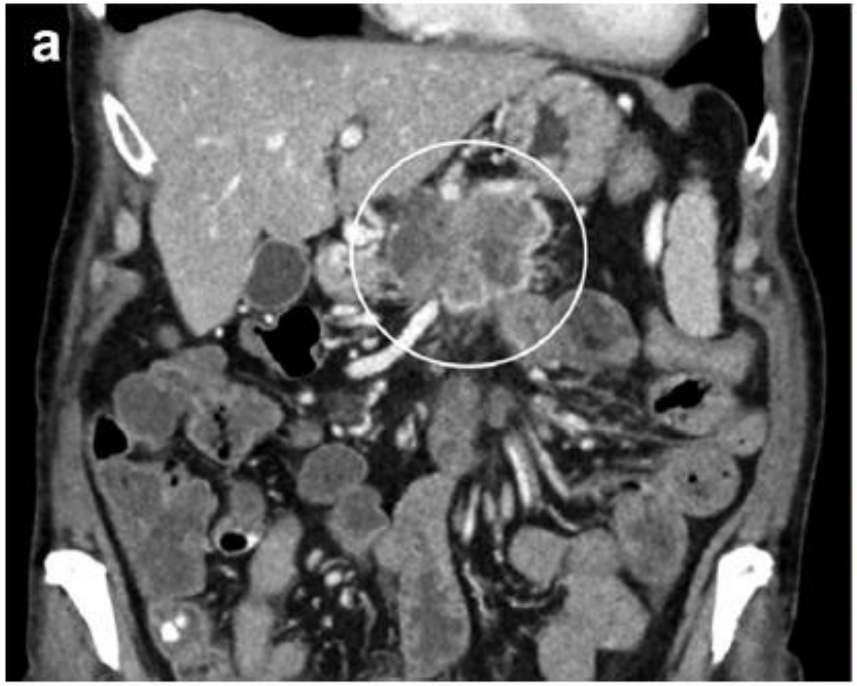
ORIGINAL ARTICLE

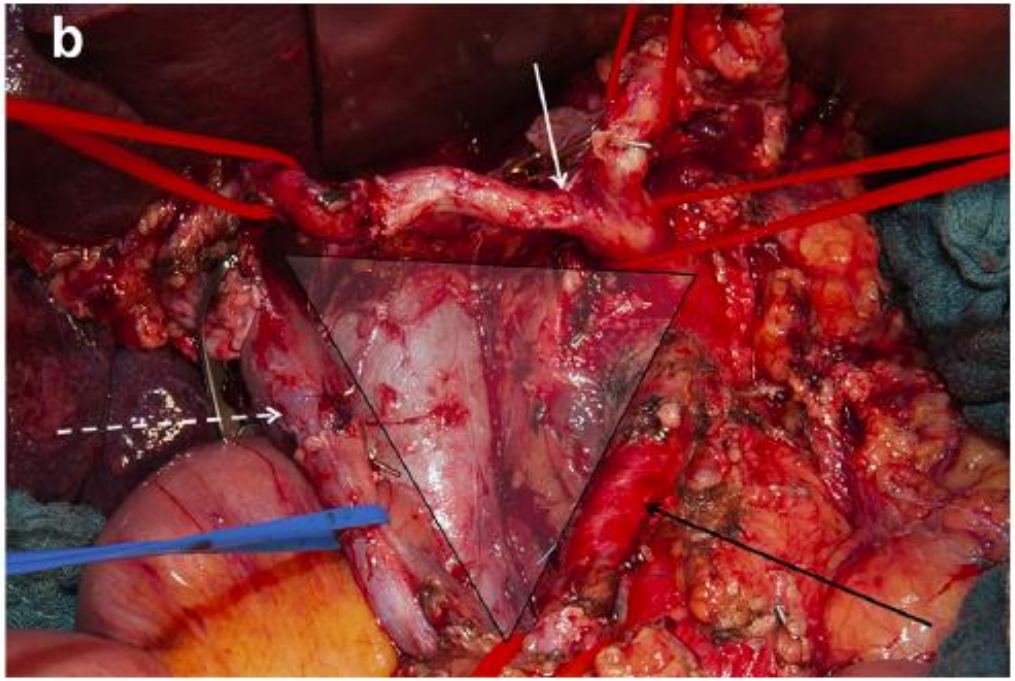
The TRIANGLE operation – radical surgery after neoadjuvant treatment for advanced pancreatic cancer: a single arm observational study

Thilo Hackert, Oliver Strobel, Christoph W. Michalski, André L. Mihaljevic, Arianeb Mehrabi, Beat Müller-Stich, Christoph Berchtold, Alexis Ulrich & Markus W. Büchler

Department of General, Visceral and Transplantation Surgery, University of Heidelberg, Heidelberg, Germany

TRIÂNGULO





Hackert T et al. HPB 2017

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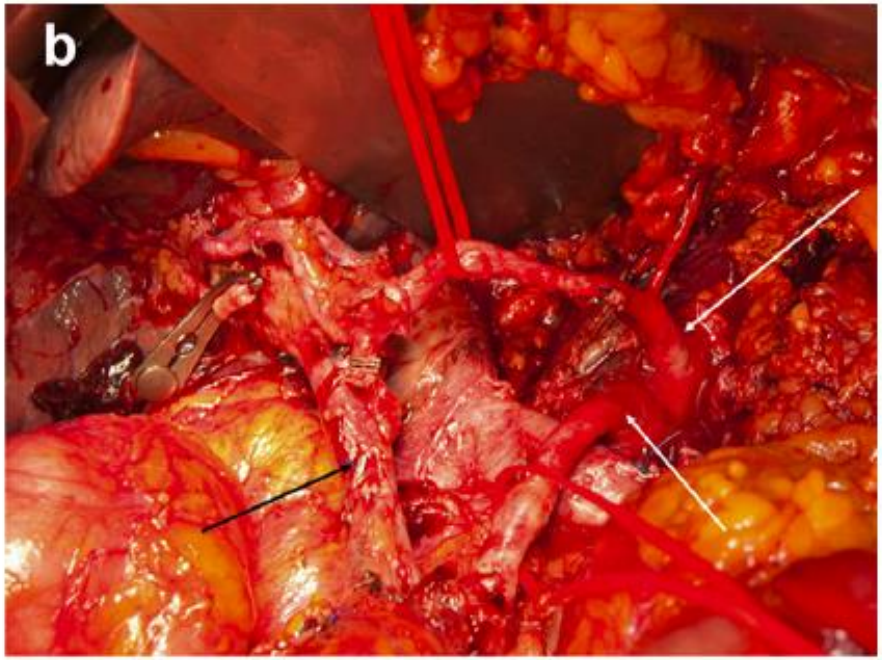

Hackert T et al. HPB 2017

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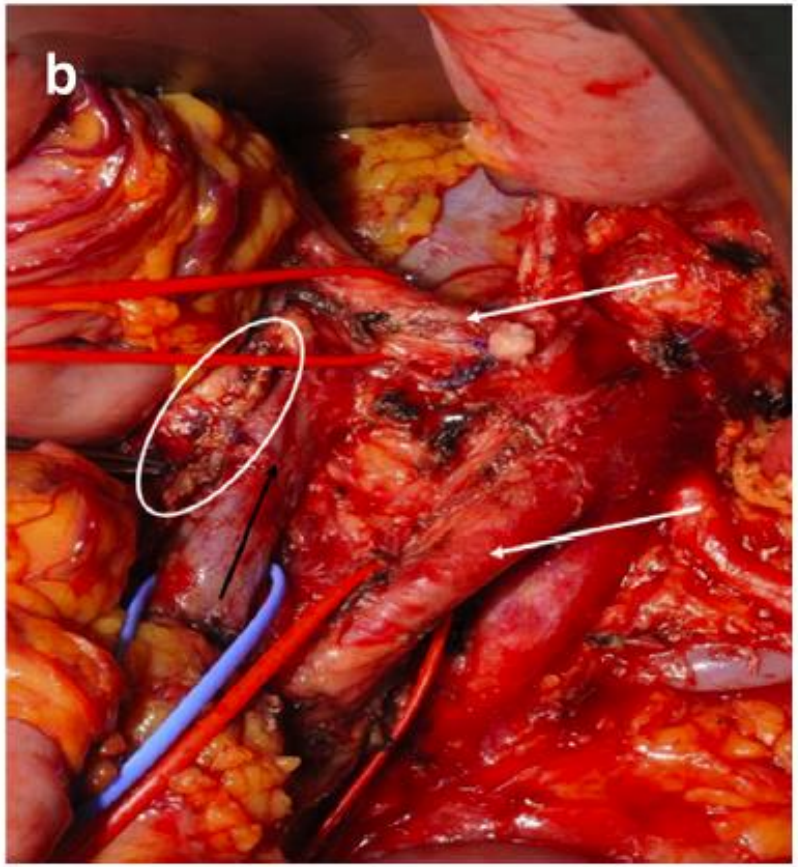

Hackert T et al. HPB 2017

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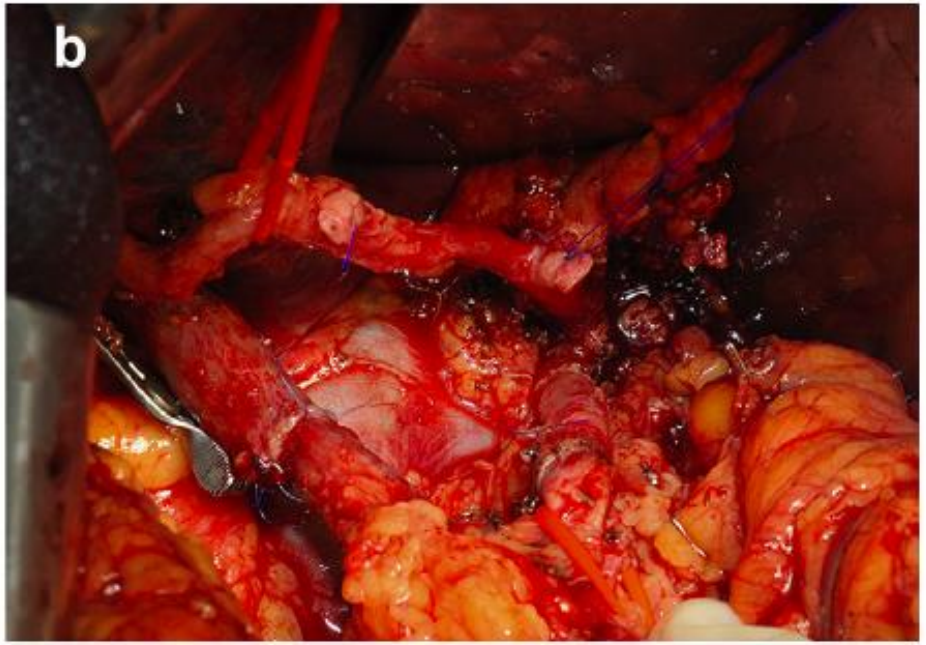


Hackert T et al. HPB 2017

How I Do It

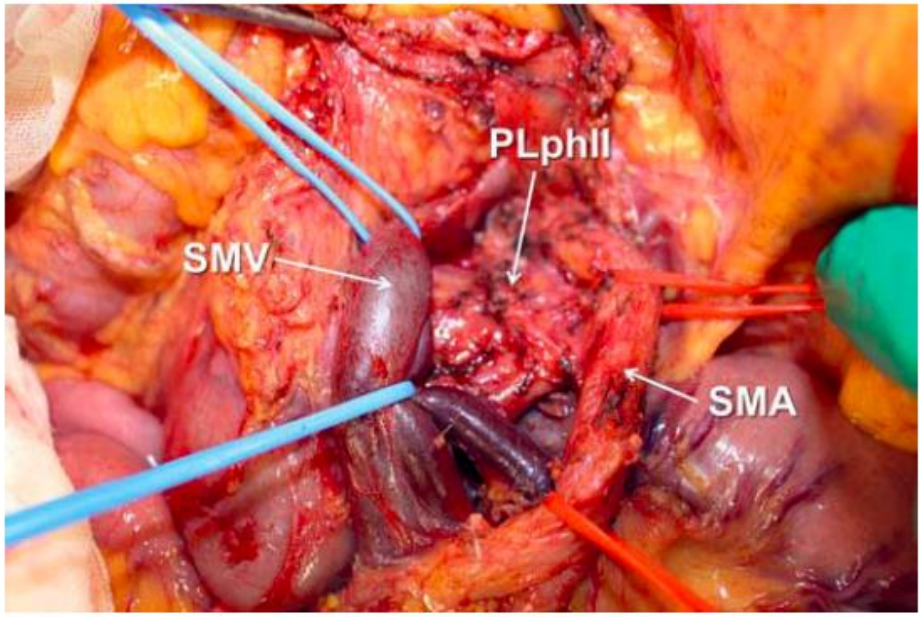
Digestive Surgery

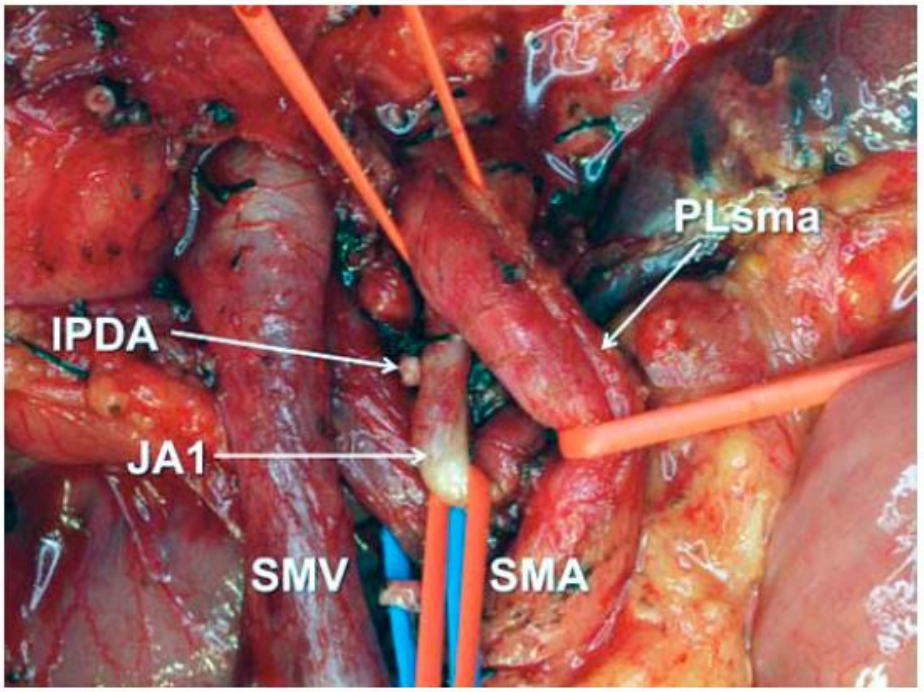
Dig Surg 2016;33:308–313
DOI: 10.1159/000445014

Published online: May 25, 2016

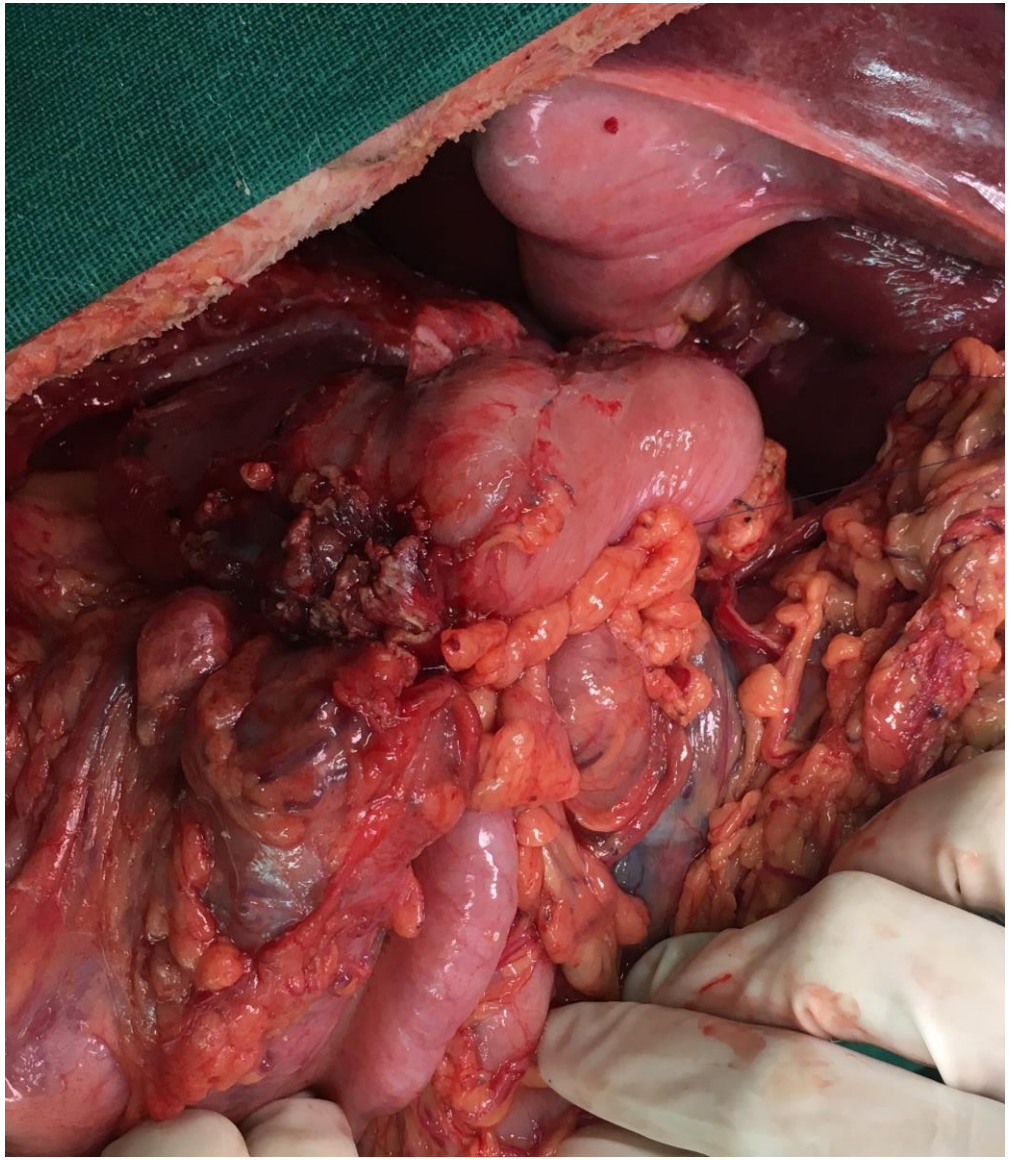
The Mesenteric Approach in Pancreatoduodenectomy

Akimasa Nakao



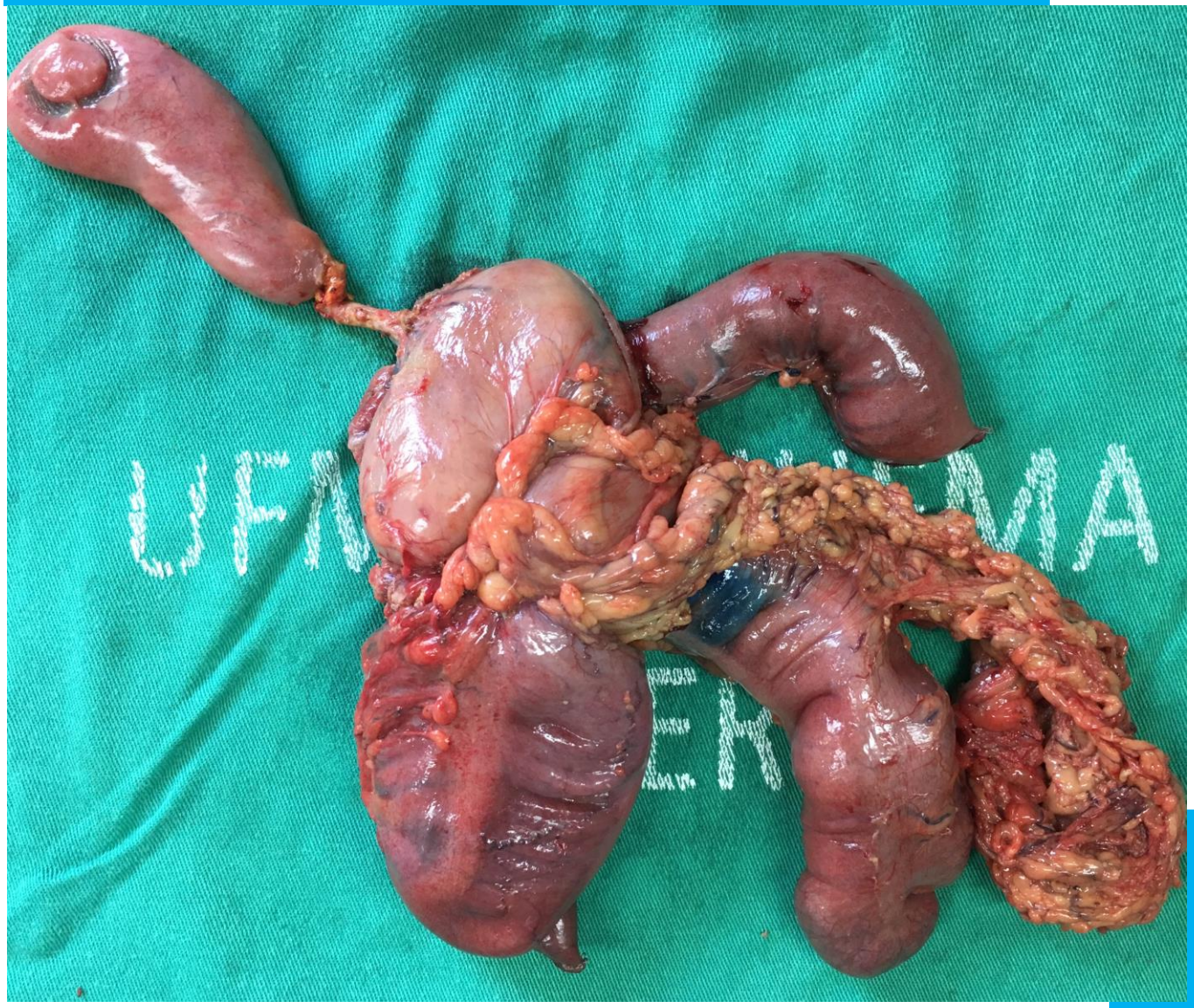


RESSECÇÃO MULTIVISCERAL



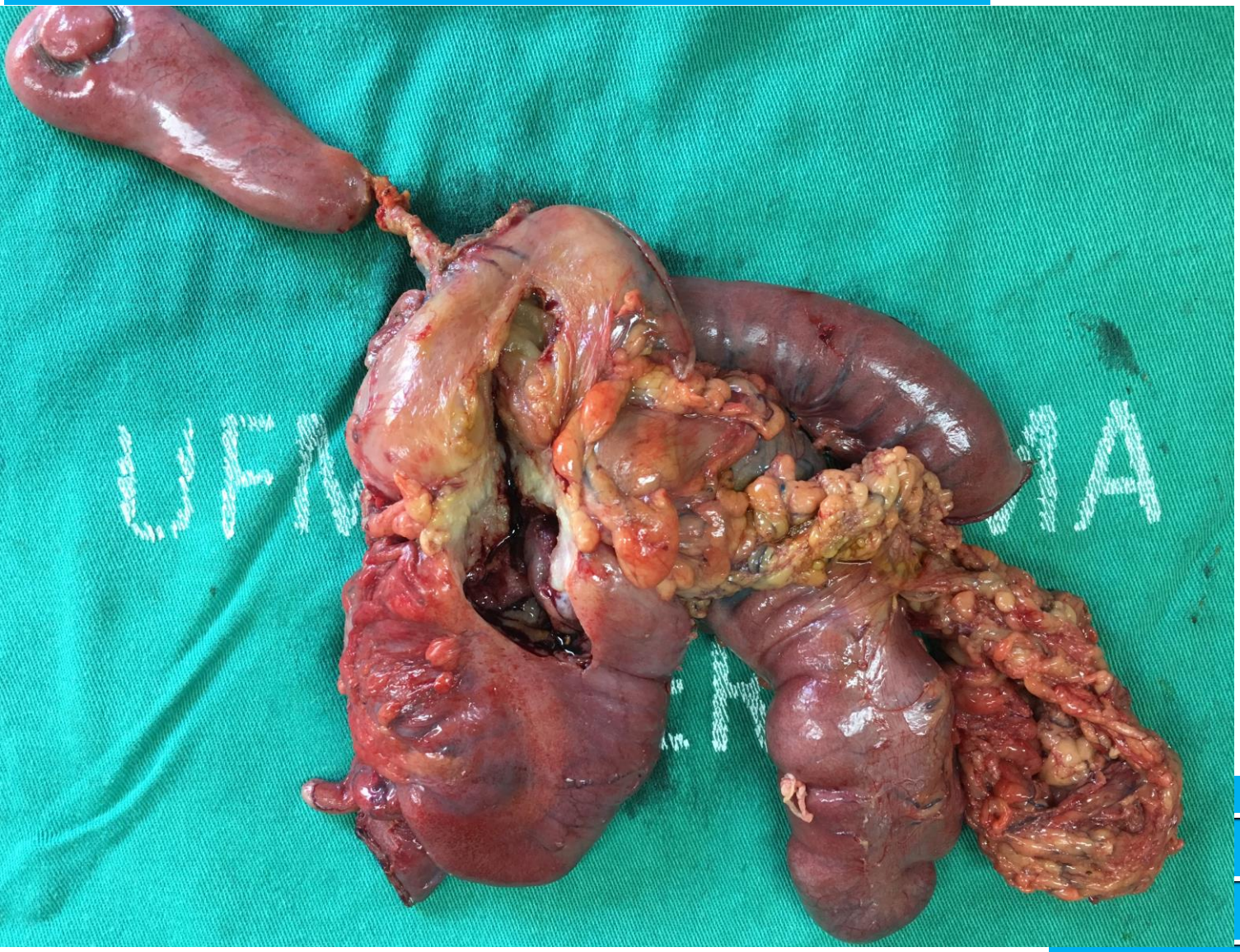
- Pâncreas
- Cólon
- Fígado

RESSECÇÃO MULTIVISCERAL



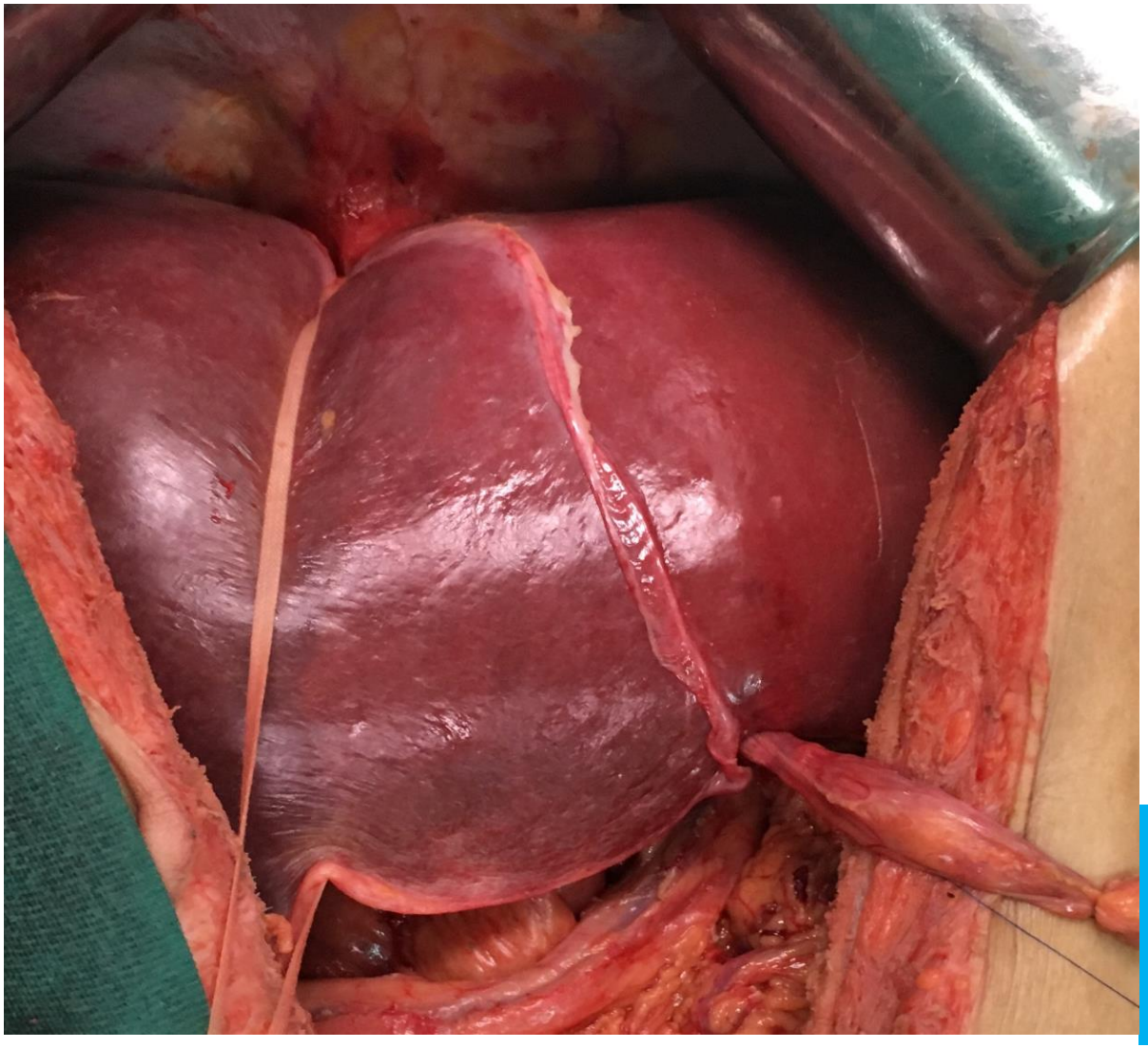
- Pâncreas
- Cólon
- Fígado

RESSECÇÃO MULTIVISCERAL



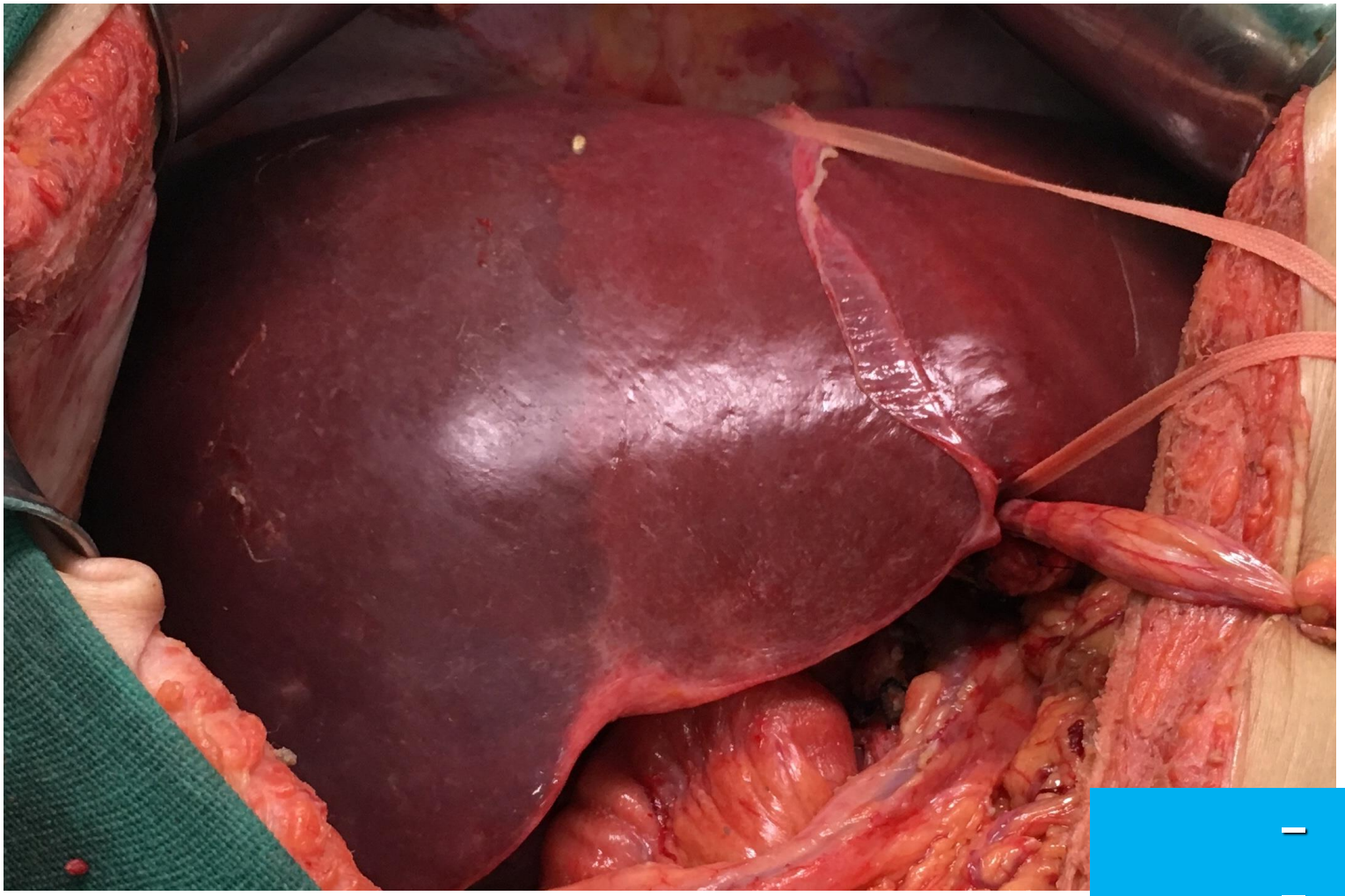
- Pâncreas
- Cólon
- Fígado

RESSECÇÃO MULTIVISCERAL



- Pâncreas
- Cólon
- Fígado

RESSECÇÃO MULTIVISCERAL



- Pâncreas
- Cólon
- Fígado

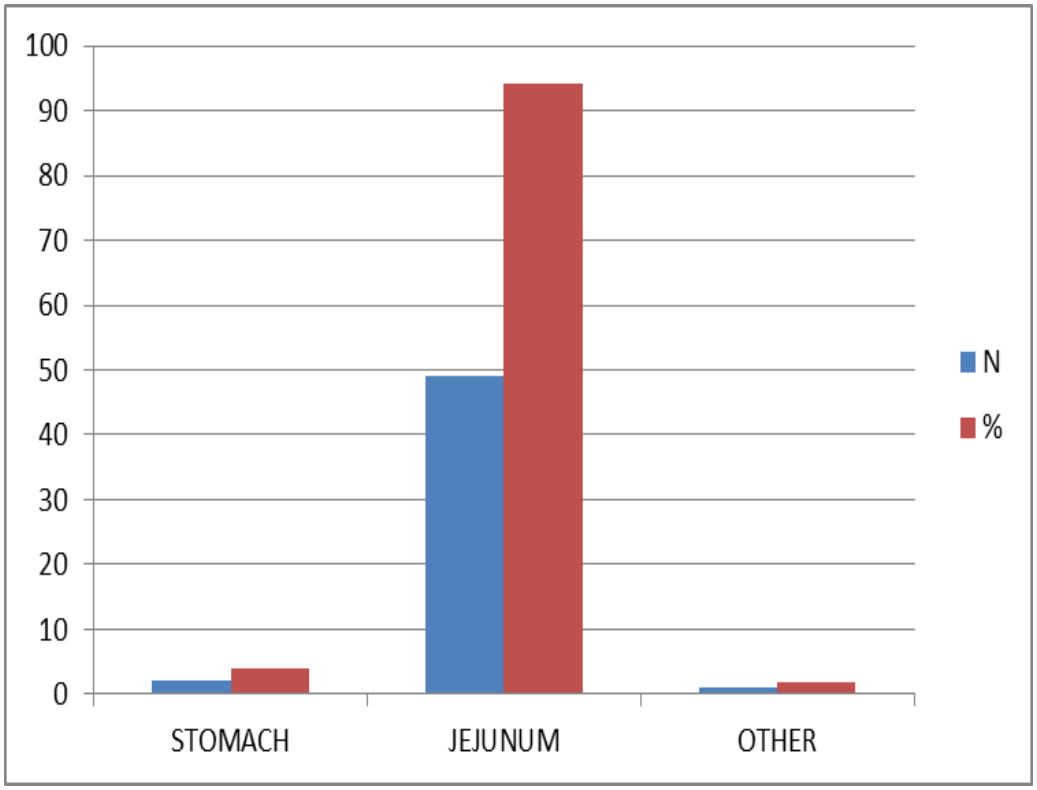
RESSECÇÃO MULTIVISCERAL

- Pâncreas
- Cólon
- Fígado

RESSECÇÃO MULTIVISCERAL

- Pâncreas
- Cólon
- Fígado

ANASTOMOSE PANCREÁTICA



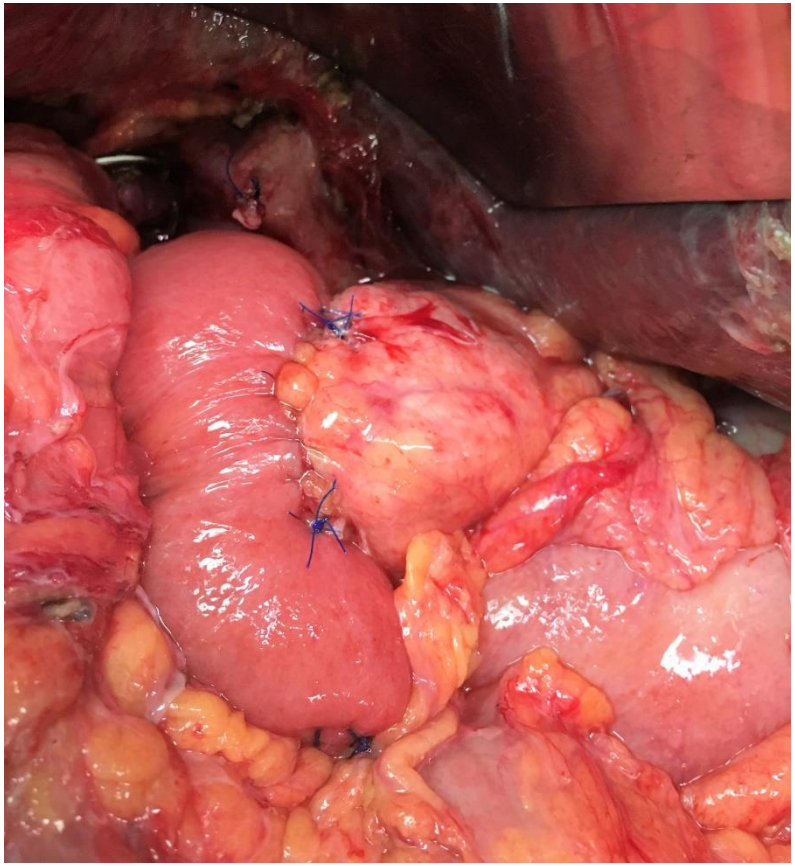
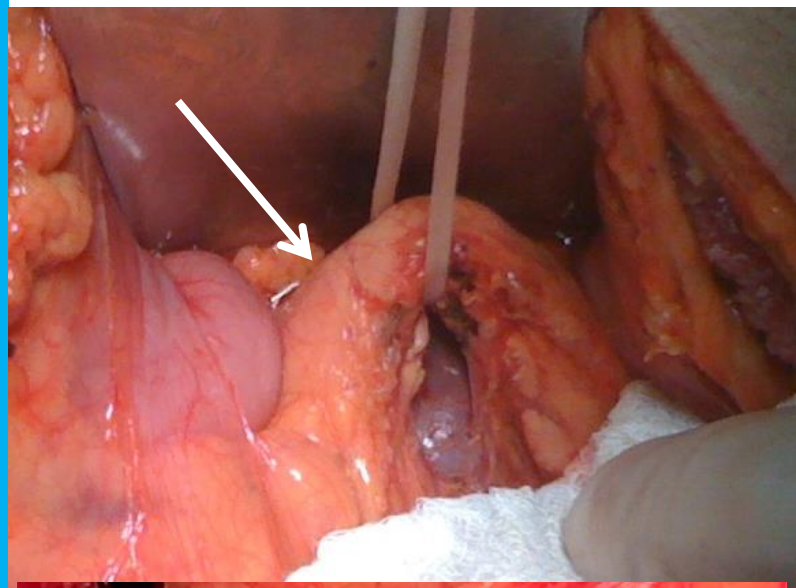


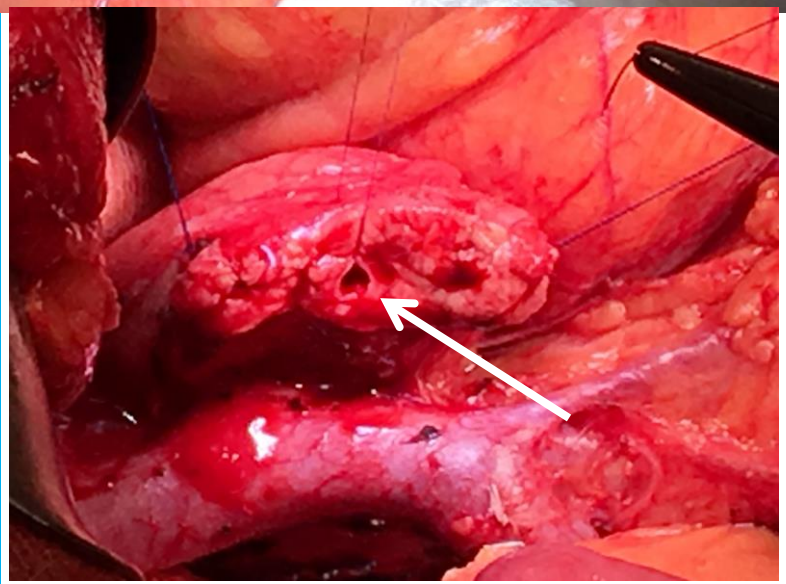
FIGURE 4 – Type of reconstruction (stomach or jejunum) (%)

Torres et al. Arq Bras Cir Dig 2017;30(3).

FATORES DE RISCO

- Pâncreas
  - Textura
  - Diâmetro do ducto
  - Suprimento sanguíneo do coto
  - Débito do suco pancreático
  - Características da doença
- Paciente
  - Idade, Sexo
  - Icterícia (nível)
  - Comorbidades
- Operação
  - Tempo operatório
  - Perda sanguínea
  - Tipo de anastomose
- Outros
  - IMC
  - Hidratação excessiva
  - Desnutrição





Lai ECH, et al. Arch Surg 2009;144:1074-80

7 PONTOS

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.

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

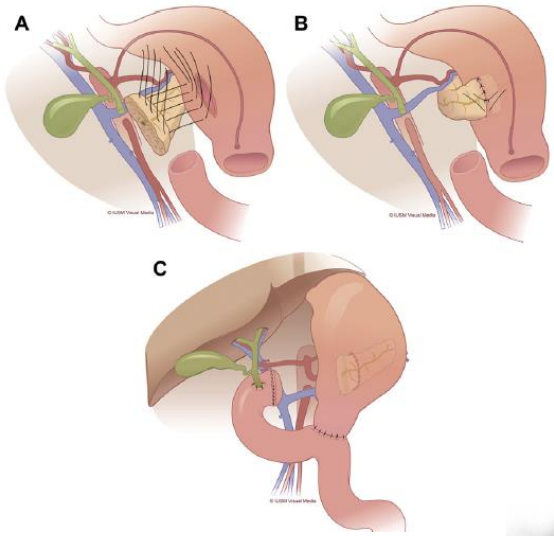
Anastomose

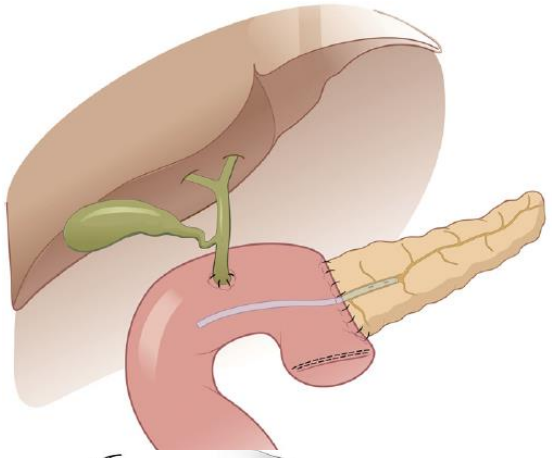
Callery MP, et al. J Am Coll Surg 2013;2016-1-14

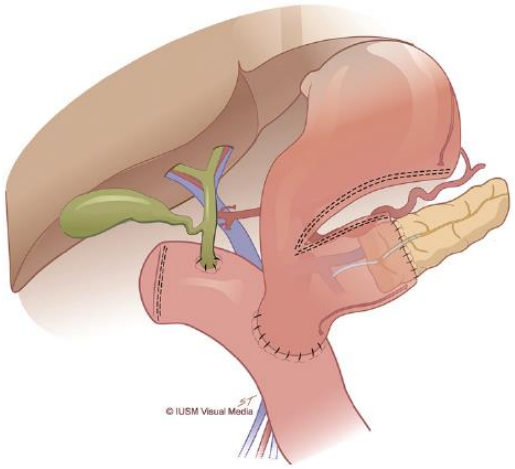
ANASTOMOSE PANCREÁTICA IDEAL

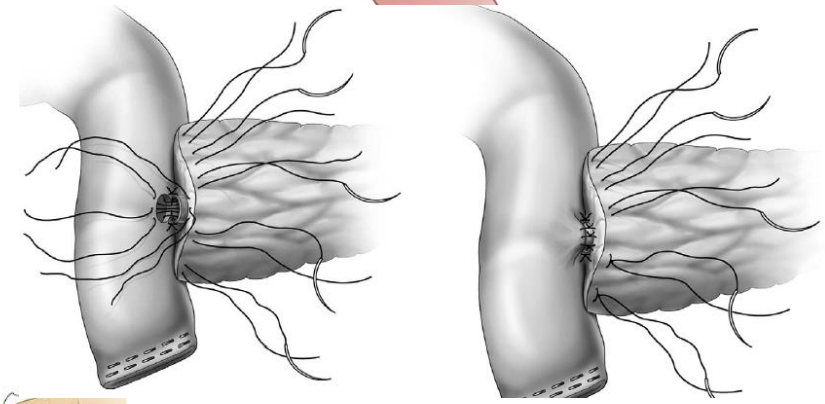
- Bom suprimento sanguíneo (coto pancreático)
- Bom fluxo de suco pancreático:
  - Para a luz intestinal
  - Para a luz gástrica
- Adequada para toda textura de pâncreas
- Adequada para todos os tipos de ductos
- Fácil de realizar
- Fácil de aprender

Buchler MW, et al. Br J Surg 2000; 87: 883-889

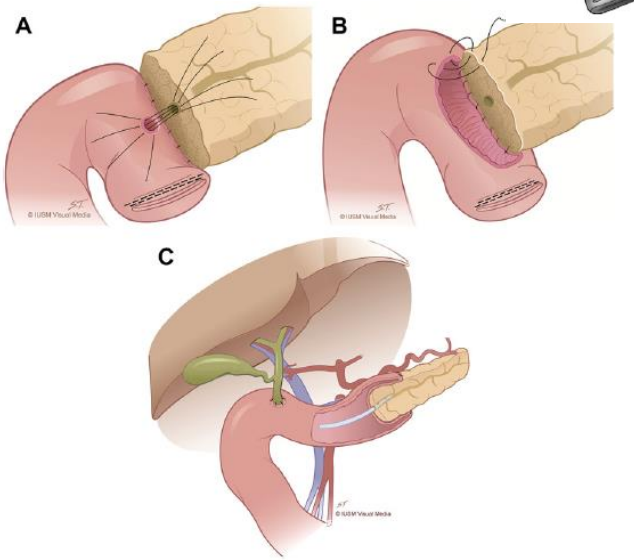


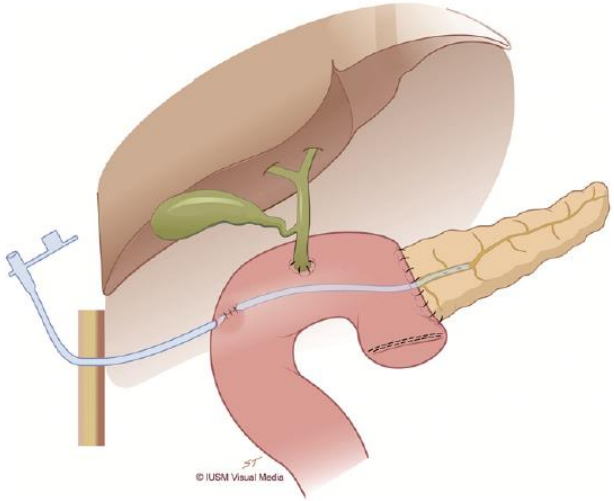


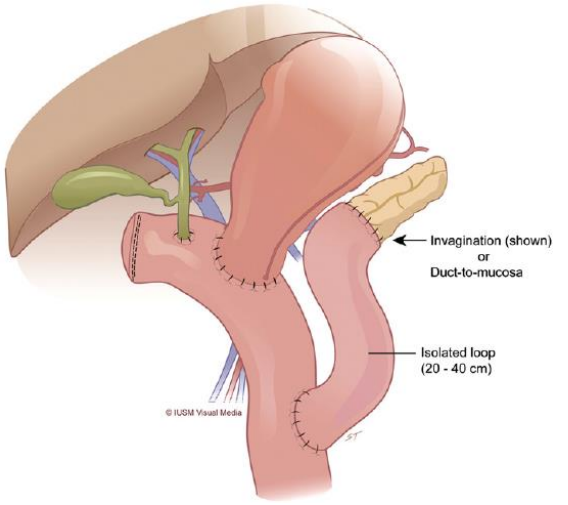




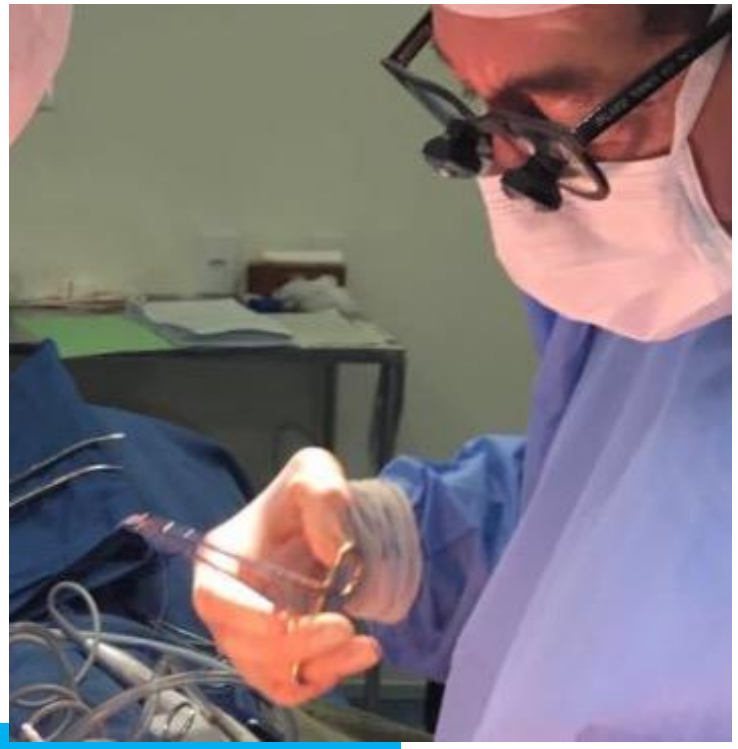
ANASTOMOSE IDEAL?





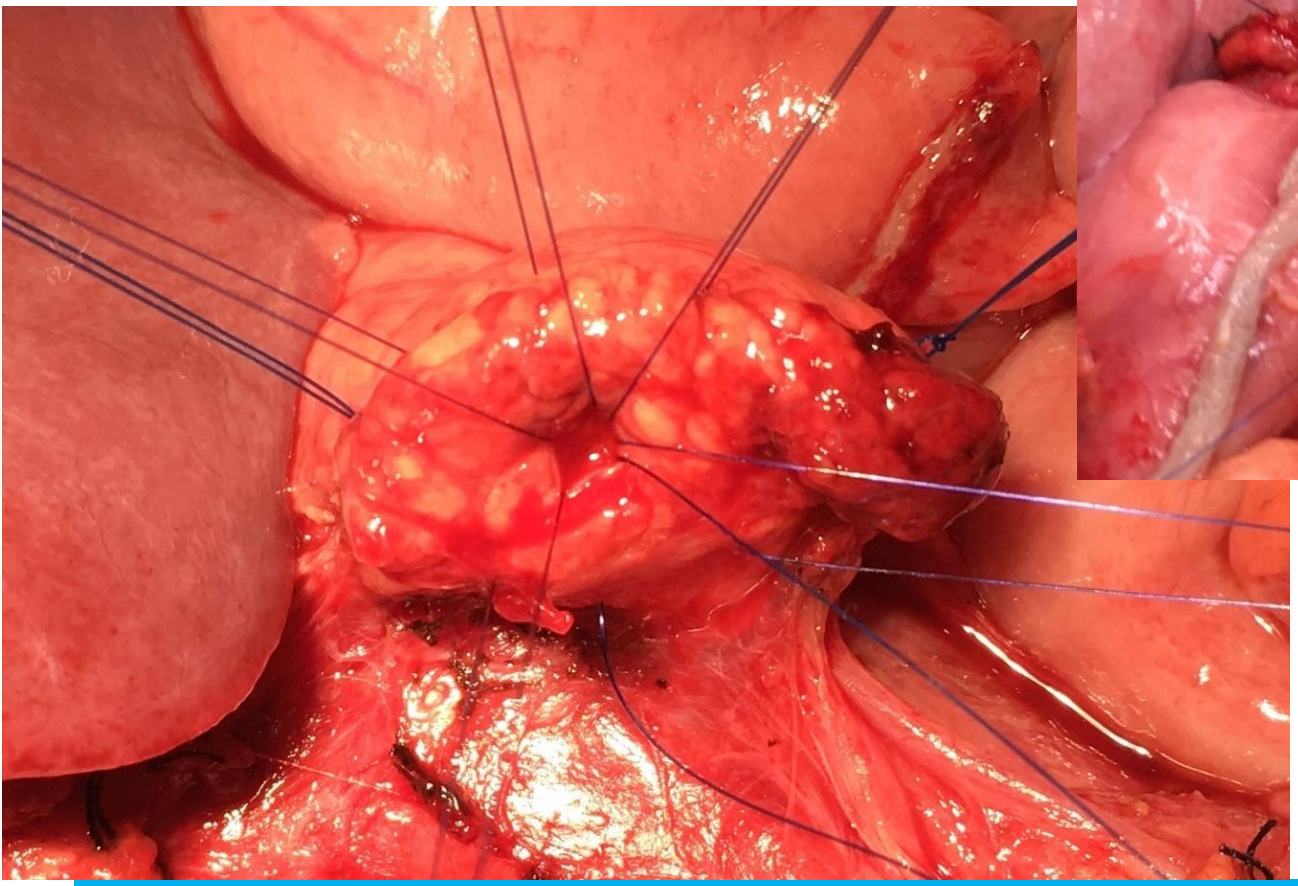


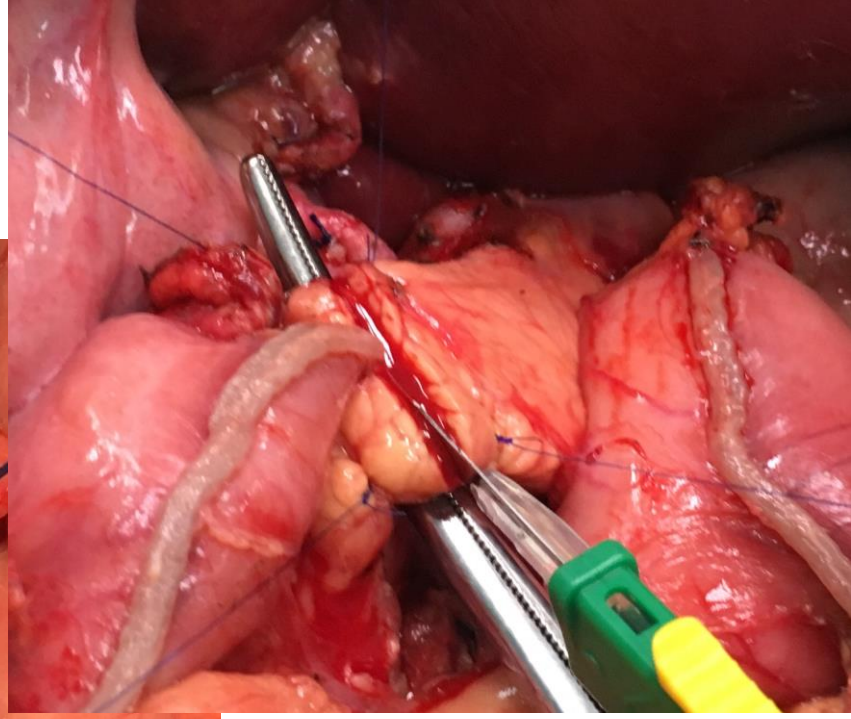
MAGNIFICAÇÃO



- Melhor identificação do ducto
- Adequado posicionamento das suturas
- Melhora a precisão da anastomose
- Decisivo em ductos ≤ 3mm
- Erros:
  - Sutura cruzada
  - Incluir as duas margens
  - Pegar menor quantidade de ducto
  - Posicionamento incorreto dos nós

SUPRIMENTO SANGUÍNEO



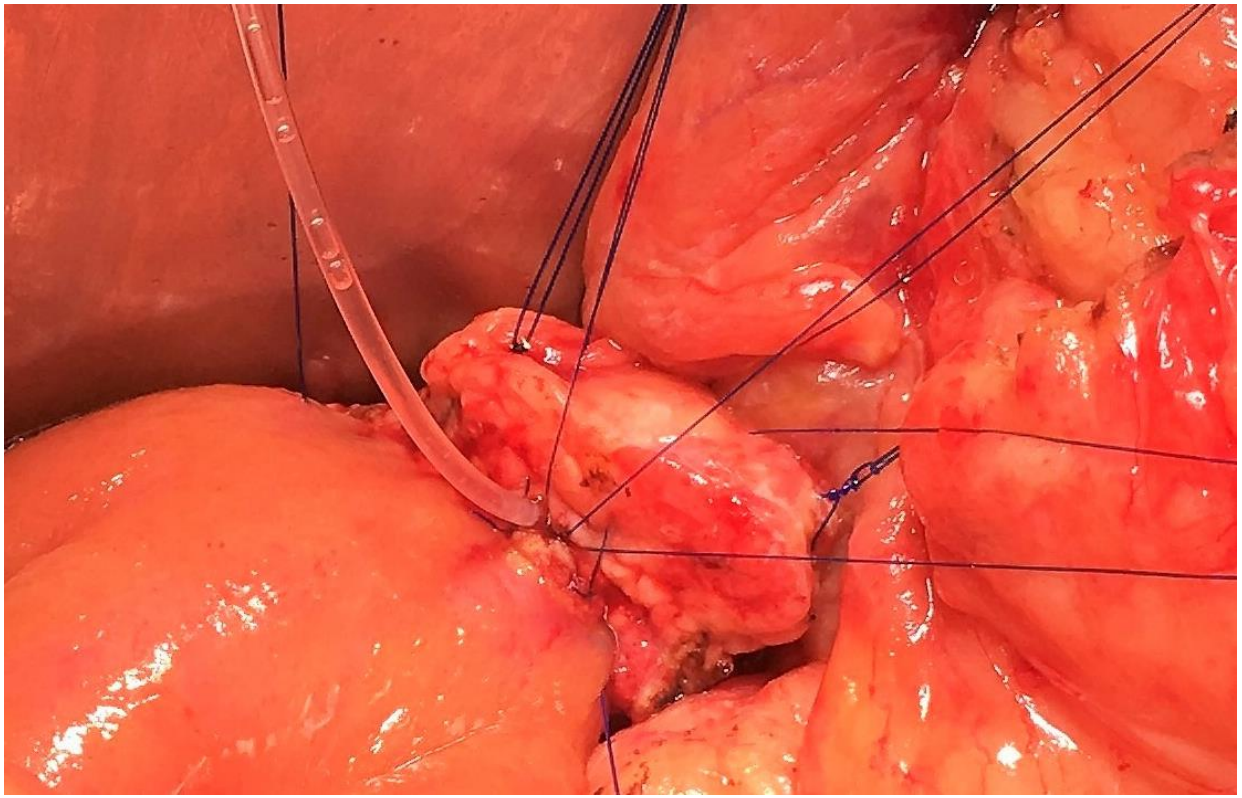


- Incisão do pâncreas com lâmina fria
- Promover bom suprimento sanguíneo do pâncreas e intestino

INTESTINO SECCIONADO

- Desorganização da transmissão nervosa
- Secção e manipulação excessiva
- Maior paresia nas primeiras horas
- Estase subsequente

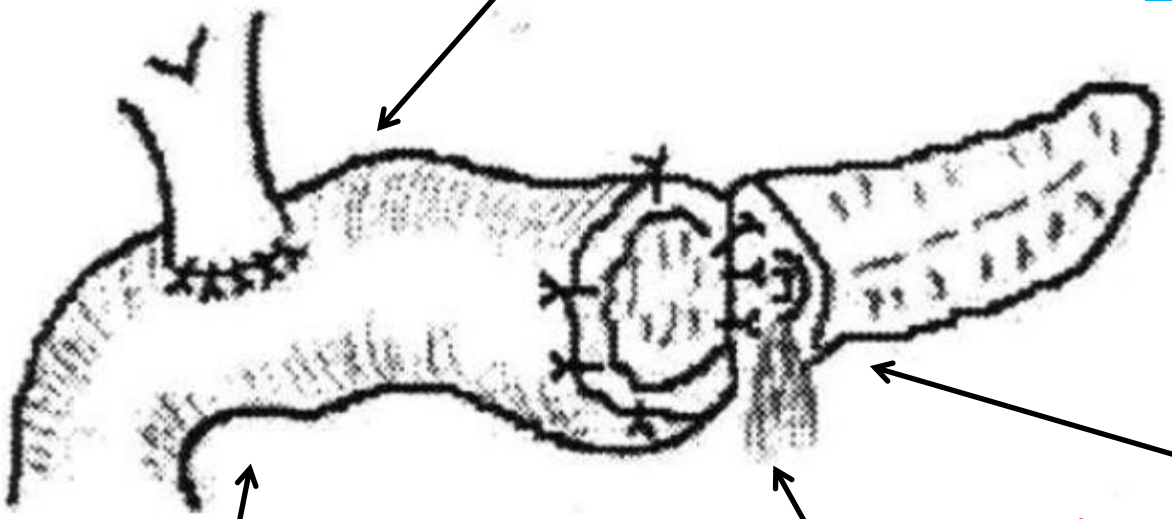
Shrikhande SV, et al. Indian J Surg 2007;69:224-9



STENT

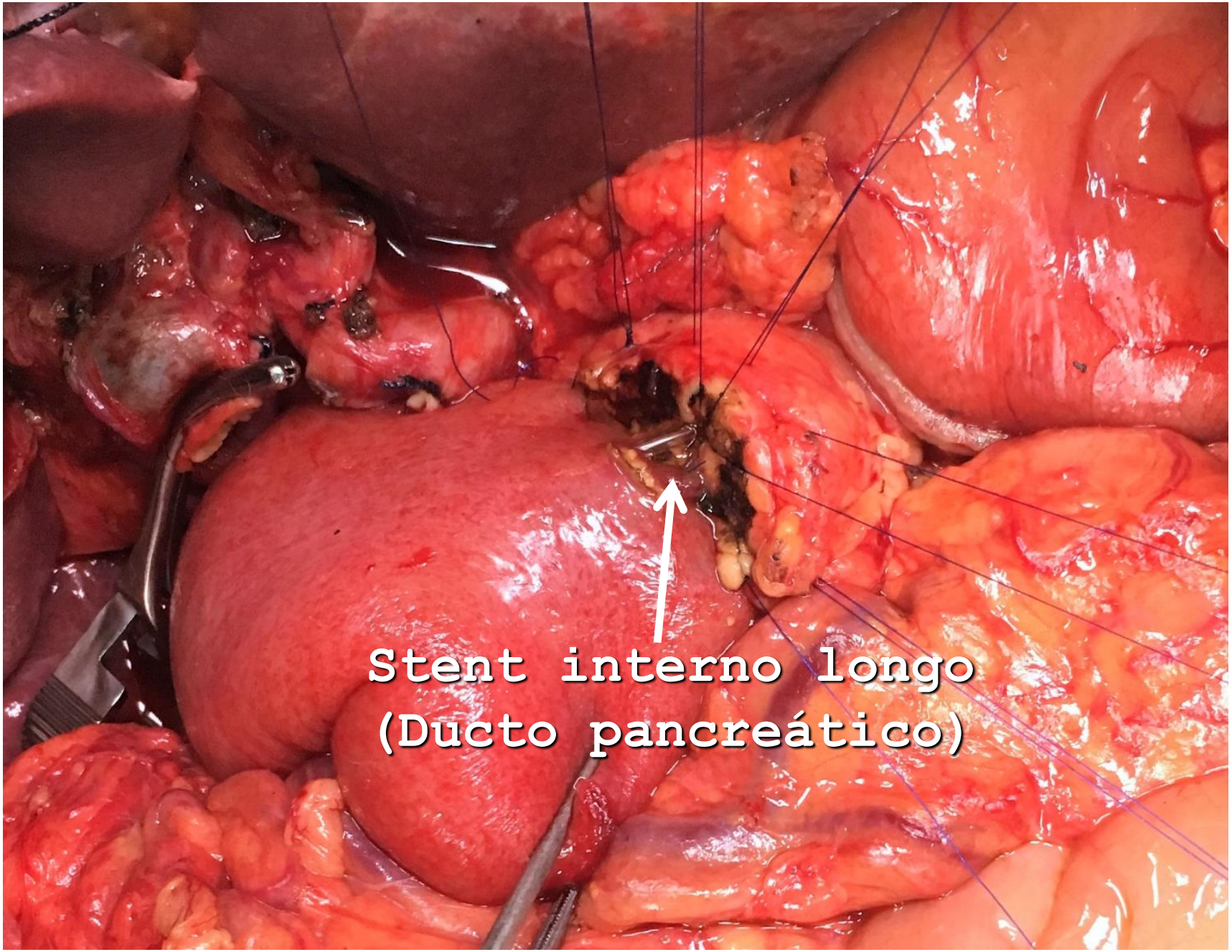
- Facilita a colocação precisa da sutura
- Deriva o suco pancreático longe do local da anastomose.
- Evita ou reduz a retenção de secreção pancreática no segmento inicial do jejuno enquanto a peristalse não está restaurada.
- Diminui o risco de oclusão inadvertida do ducto pancreático.
- Melhora a integridade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

SEM STENT

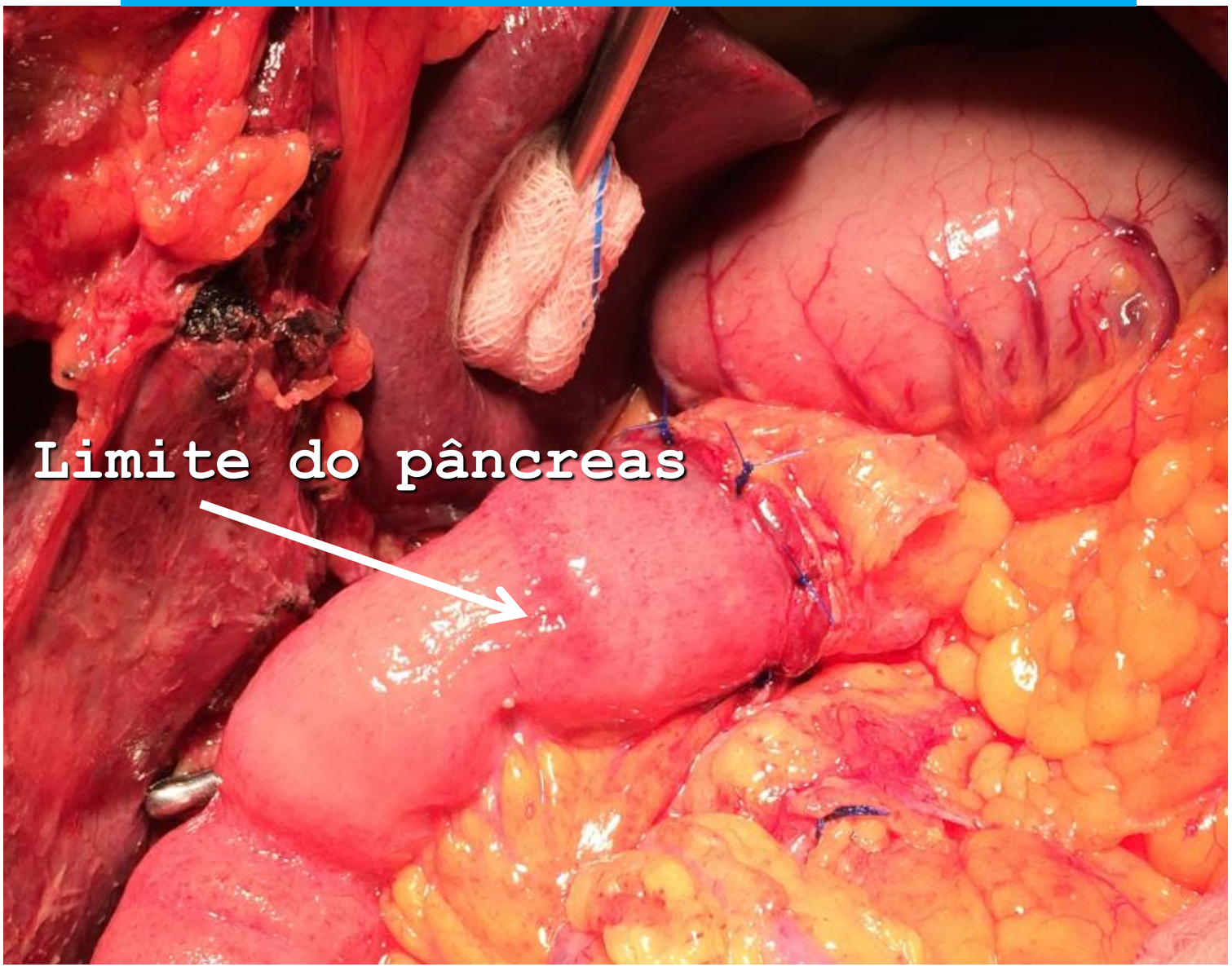


Outros:
Hiperhidratação
Opióides
Piloro
Retrocólica

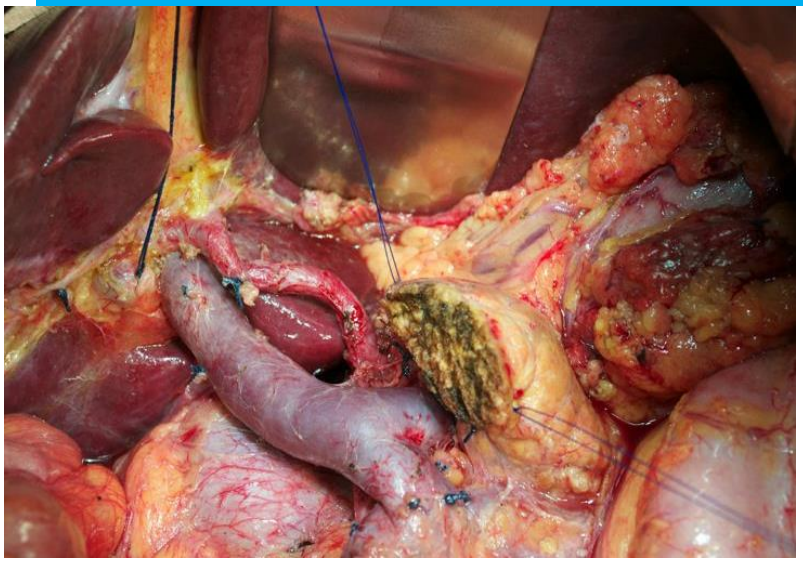
Torres OJM, et al. Arq Bras Cir Dig 2010

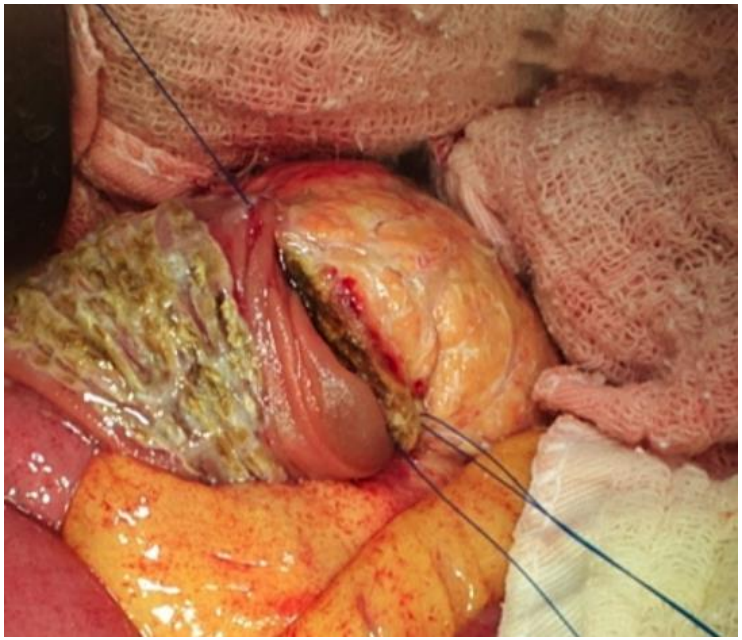

Stent interno longo
(Ducto pancreático)

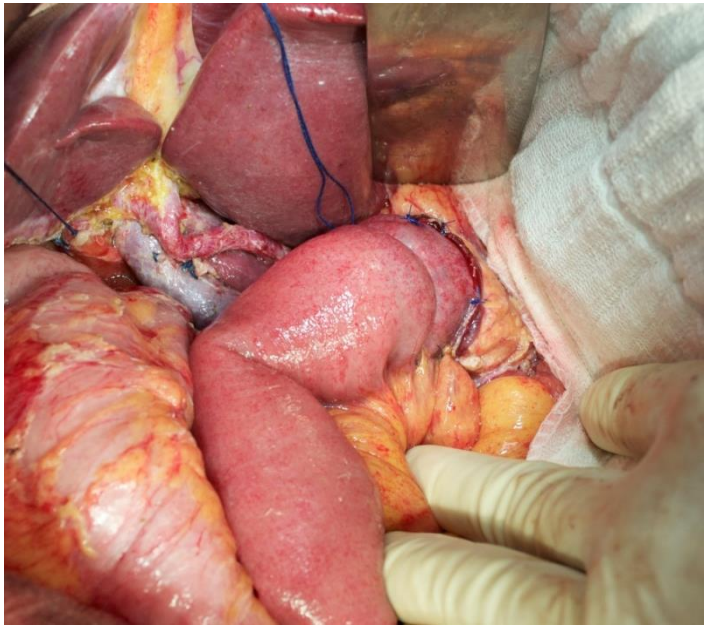
Invaginação (telescopagem)



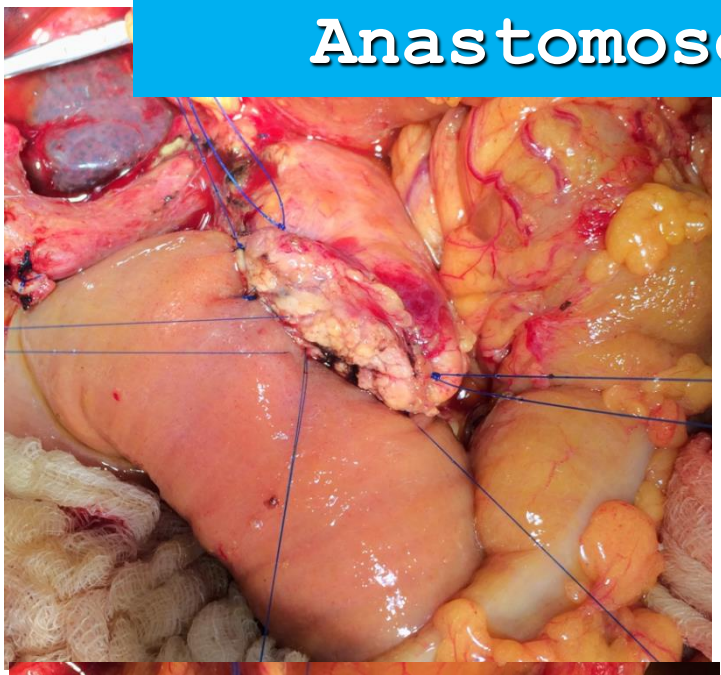
Anastomose tipo PENG

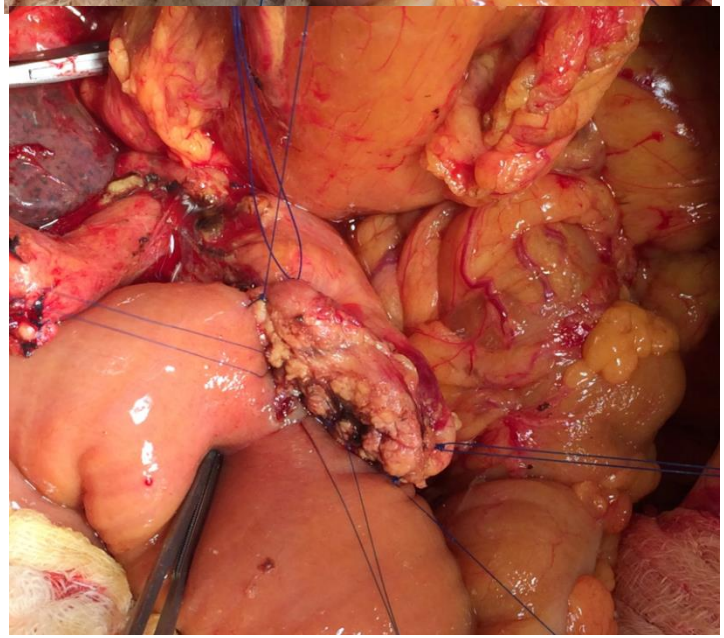


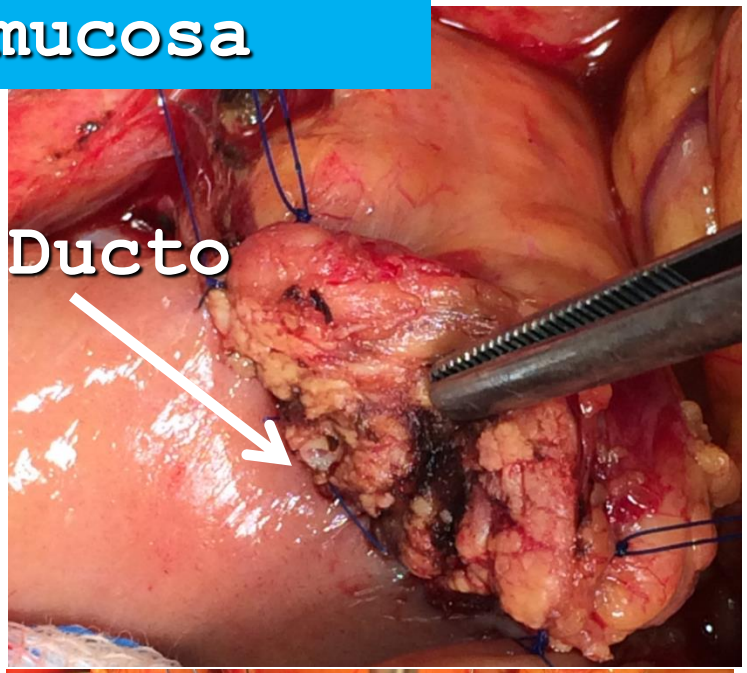


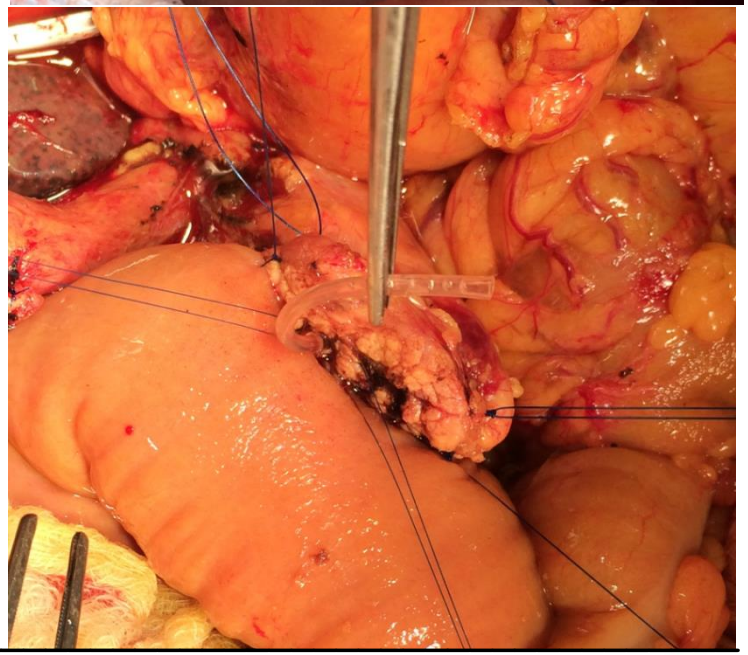


Anastomose Ducto-mucosa

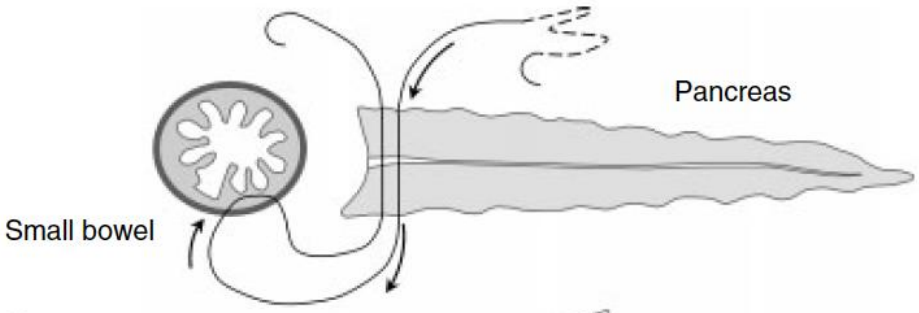




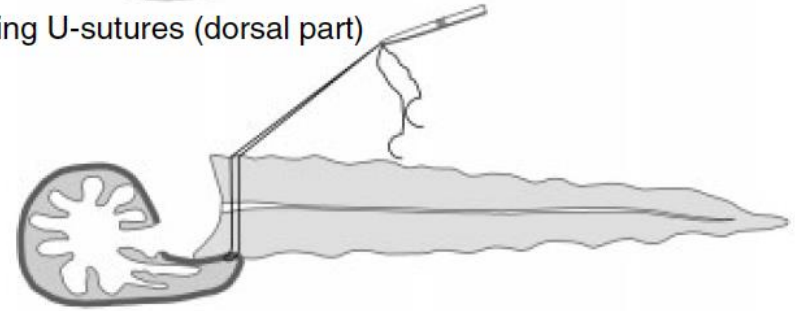




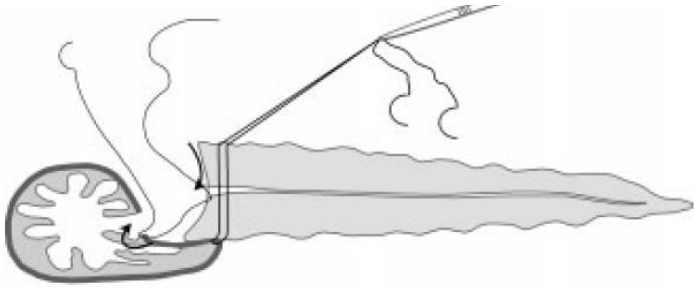
Técnica de Blumgart



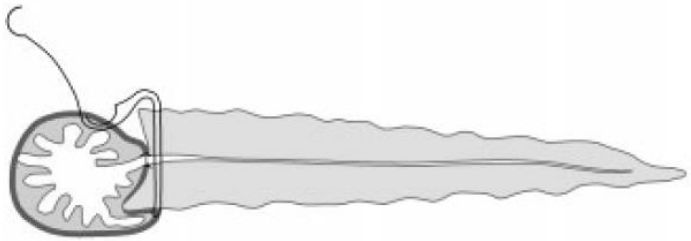
a Placing U-sutures (dorsal part)



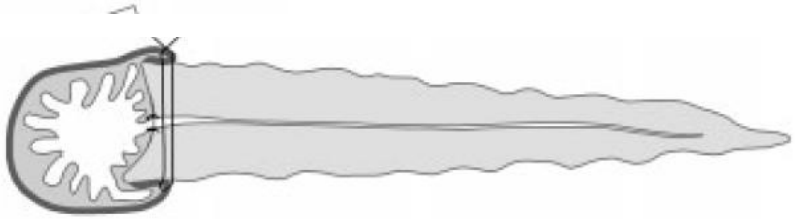
b Approximation of the jejunum



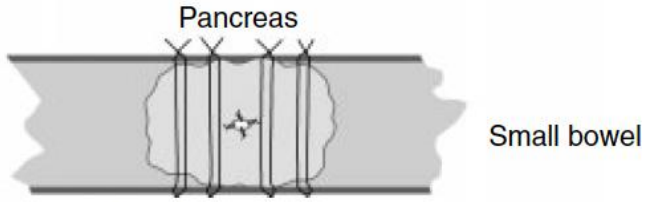
c Duct-to-mucosa anastomosis



d Completion of U-sutures (ventral part)



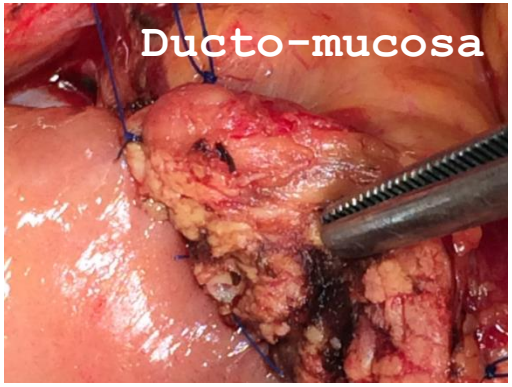
e Longitudinal view of completed anastomosis

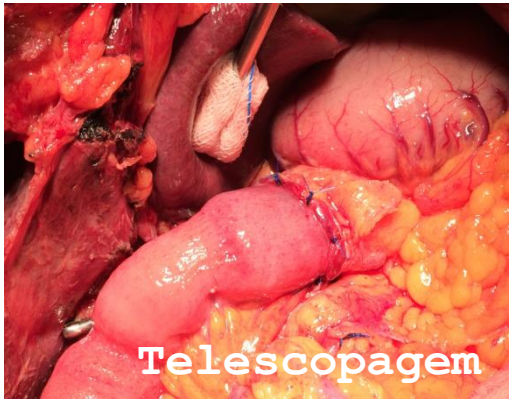


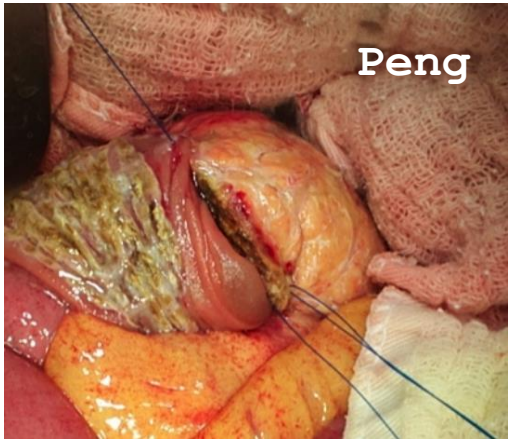
f Transverse view of completed anastomosis

Kleespies A, et al. Br J Surg 2009;96:741-50

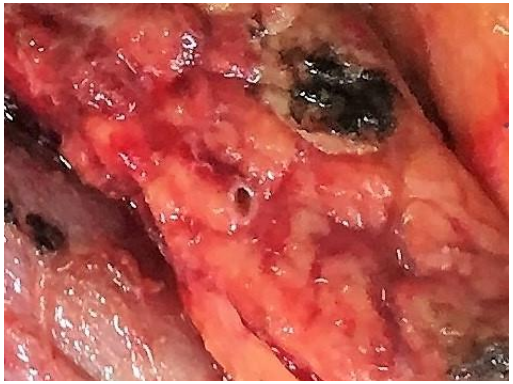
Anastomose







- ❑ Envolve o ducto
- ❑ Espessura total
- ❑ Stent
- ❑ Número de camadas
- ❑ Acomoda o intestino
- ❑ Todos os pâncreas



Sugestão

Mumbai (India)
Janeiro 2016

ABCDDV/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

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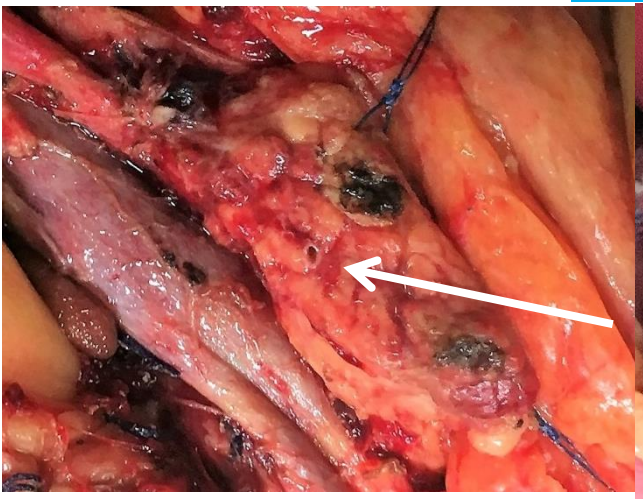
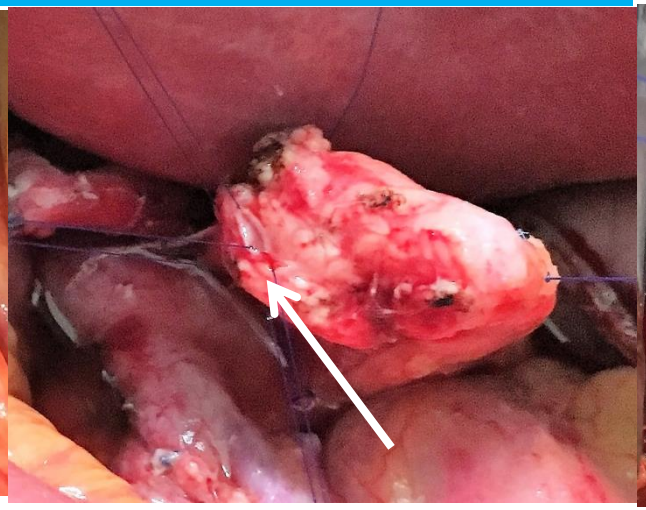
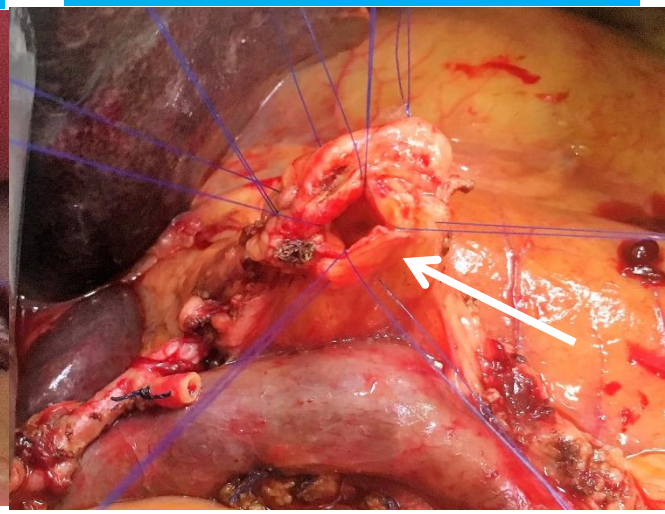
DUCTO FINO



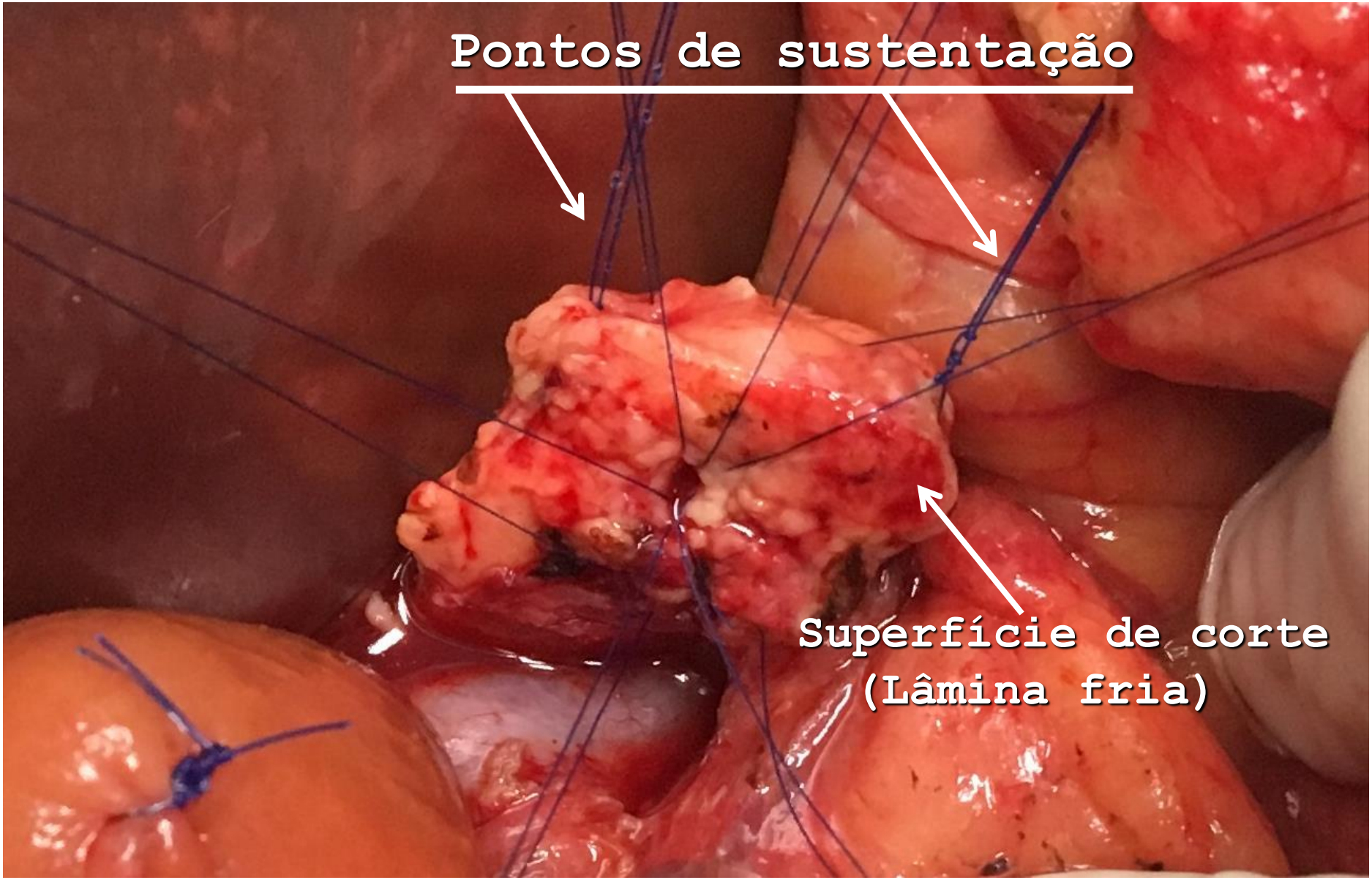
DUCTO INTERMEDIÁRIO

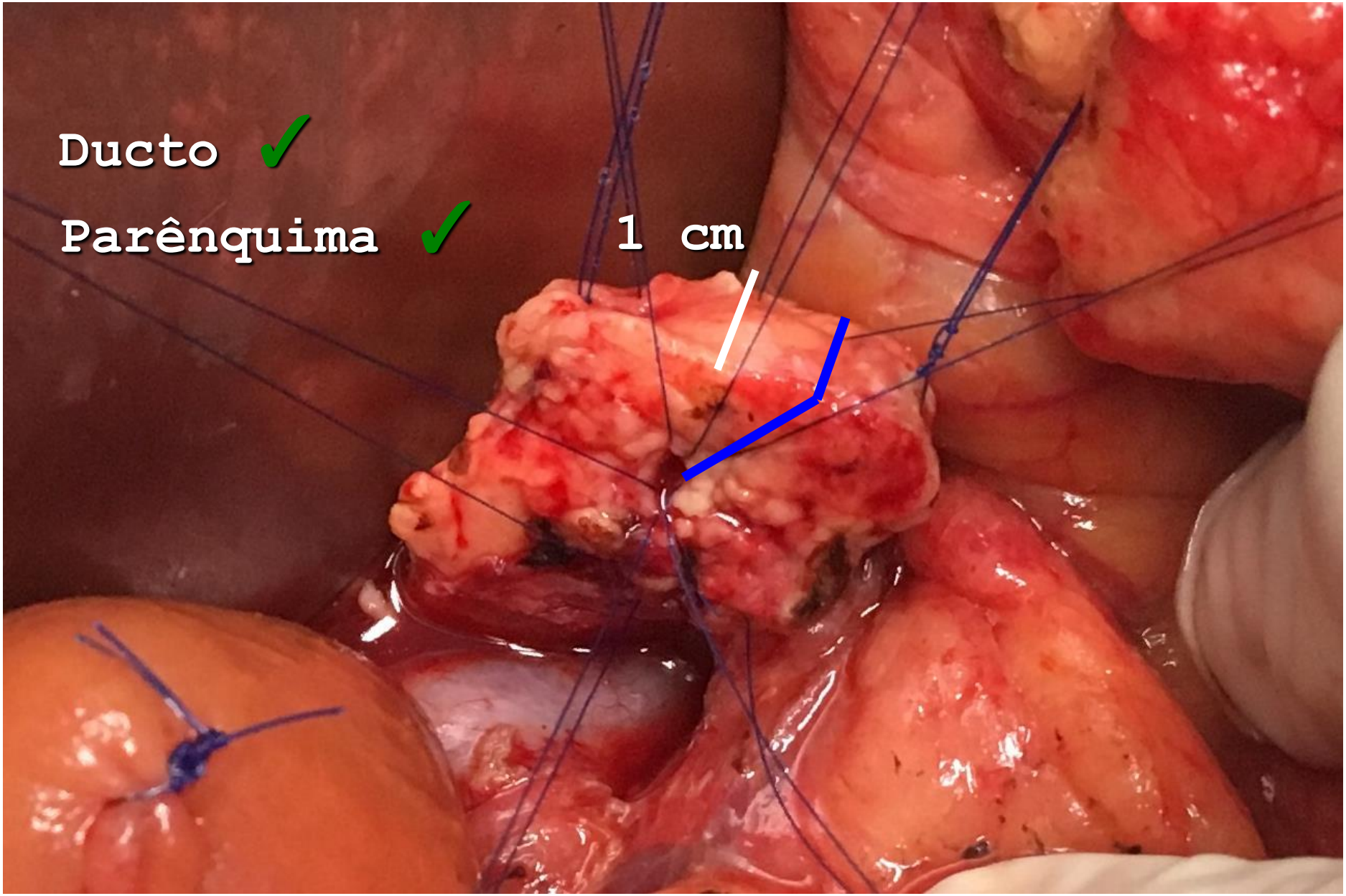


DUCTO CALIBROSO

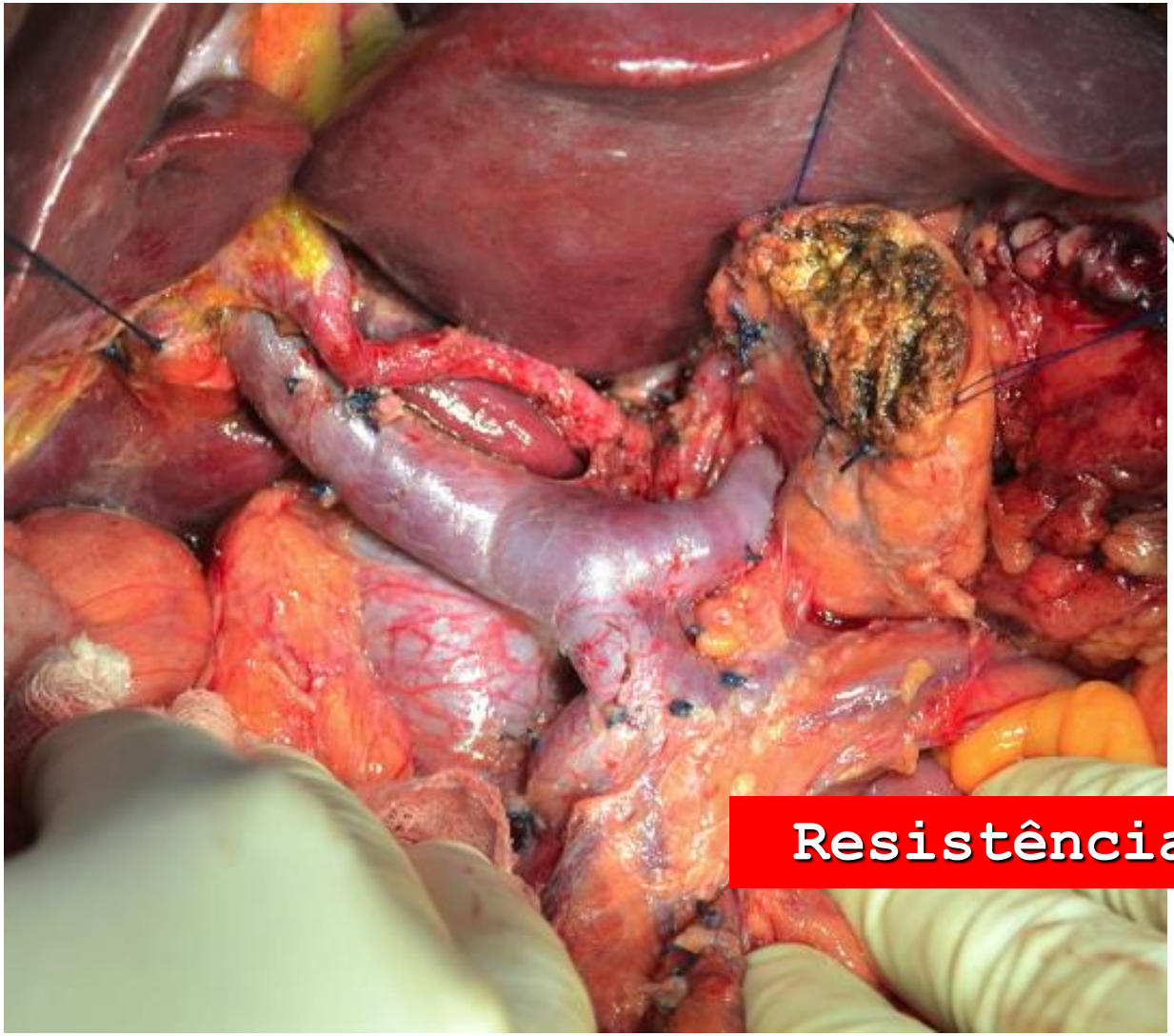


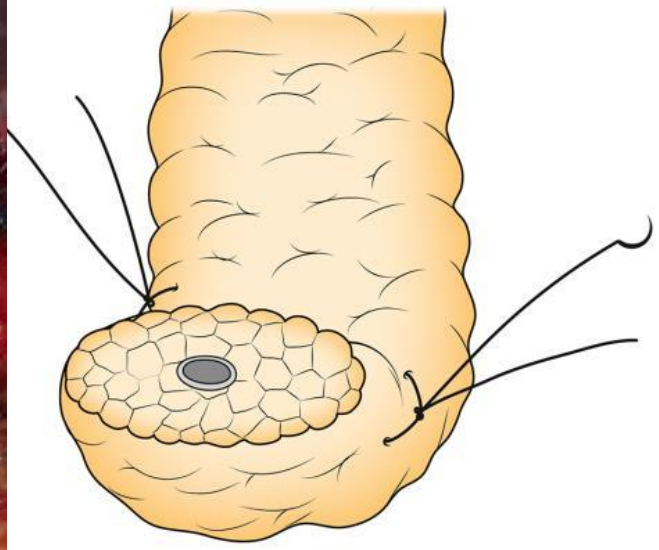
Torres OJM, et al. Arq Bras Cir Dig 2017;30:260-3


Pontos de sustentação
Superfície de corte
(Lâmina fria)


Ducto ✓
Parênquima ✓
1 cm

Sutura de sustentação

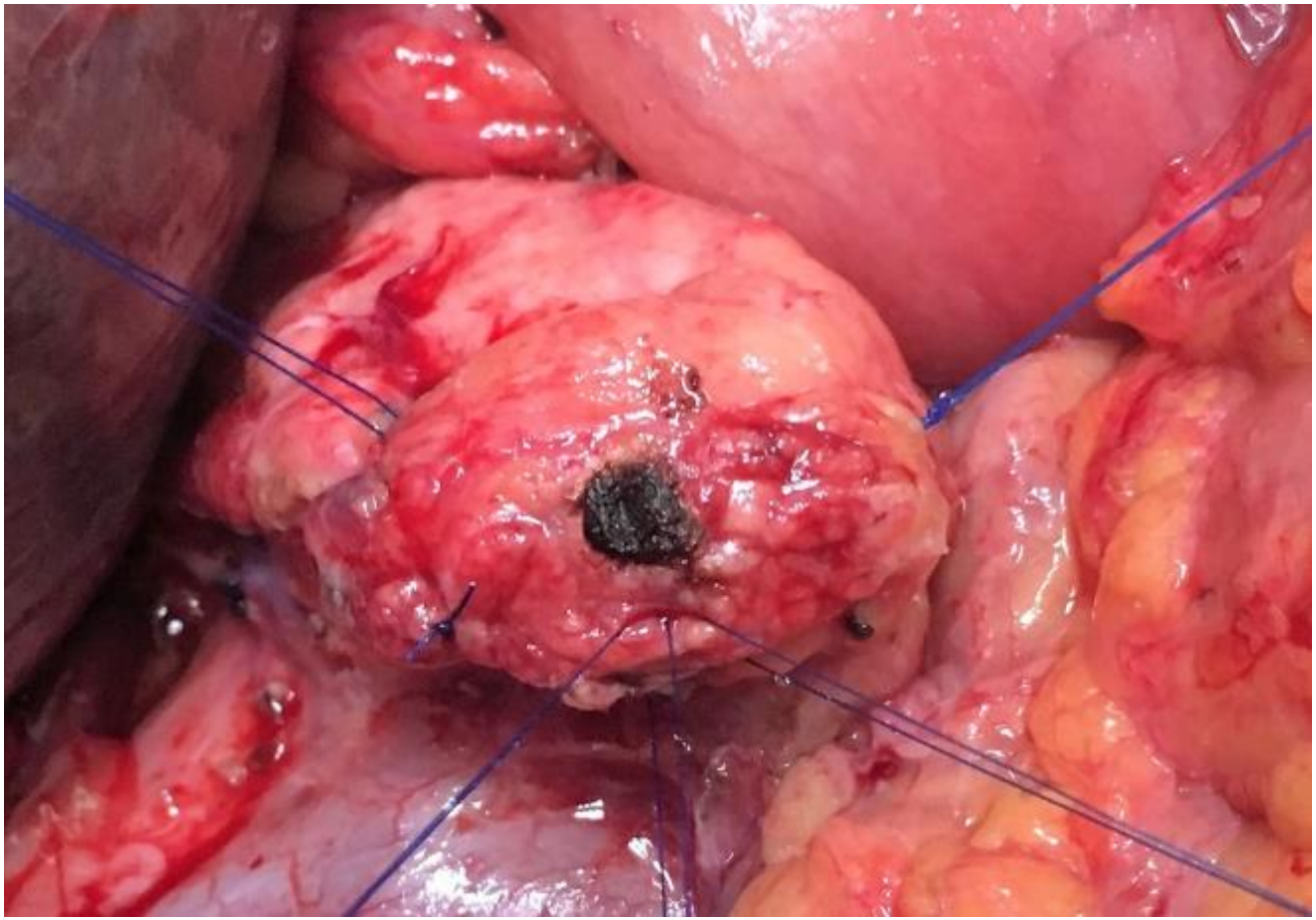


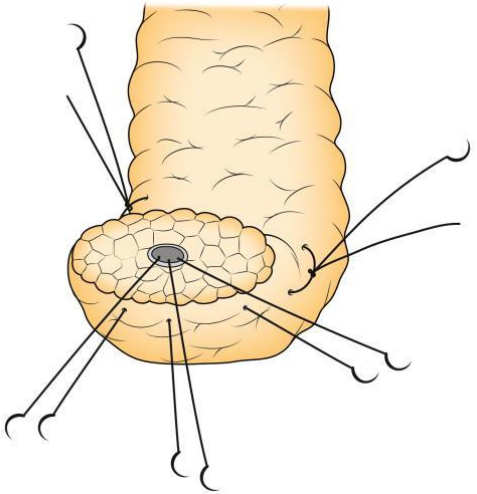


Resistência na anastomose

Posterior duct-pancreatic suture

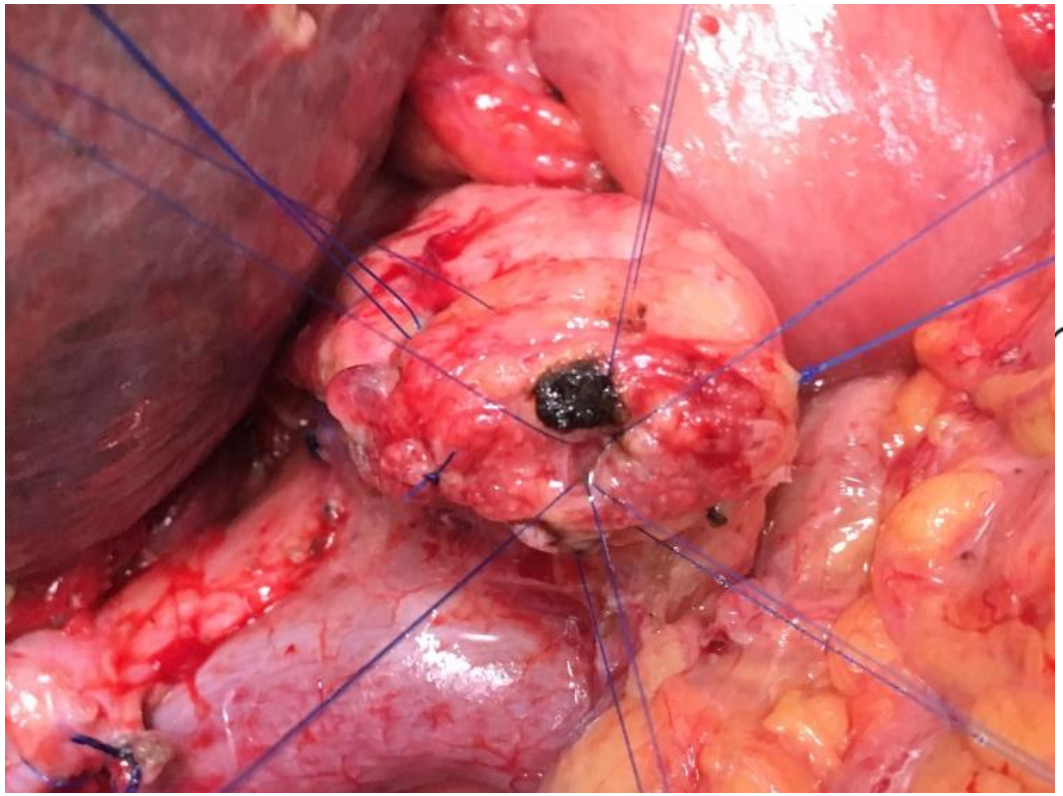
Three sutures are placed on the posterior wall of the pancreatic duct to the posterior pancreatic parenchyma. The stitches are performed with 5-0 double needle prolene at the 4 o'clock, 6 o'clock, and 8 o'clock positions.

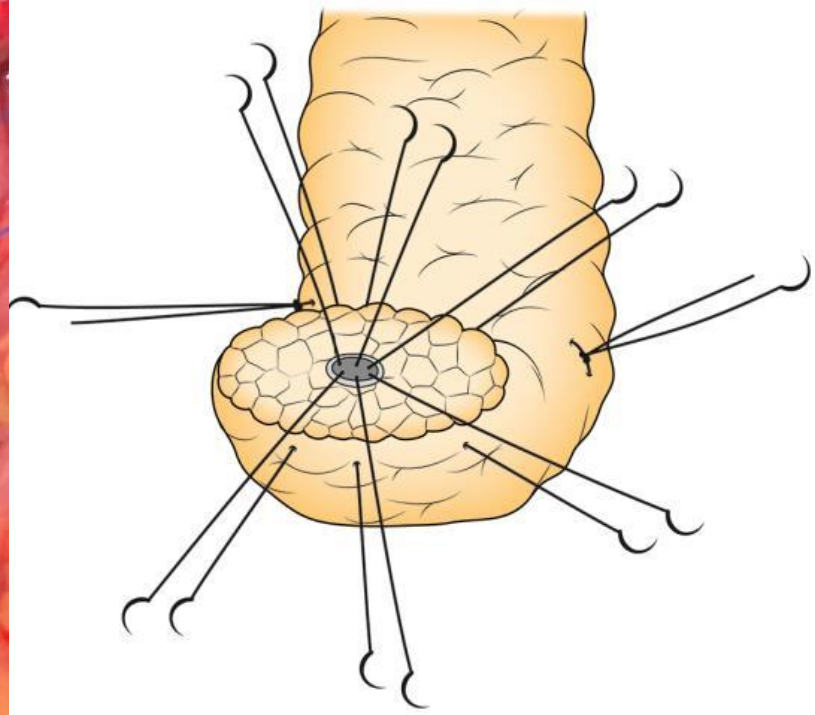




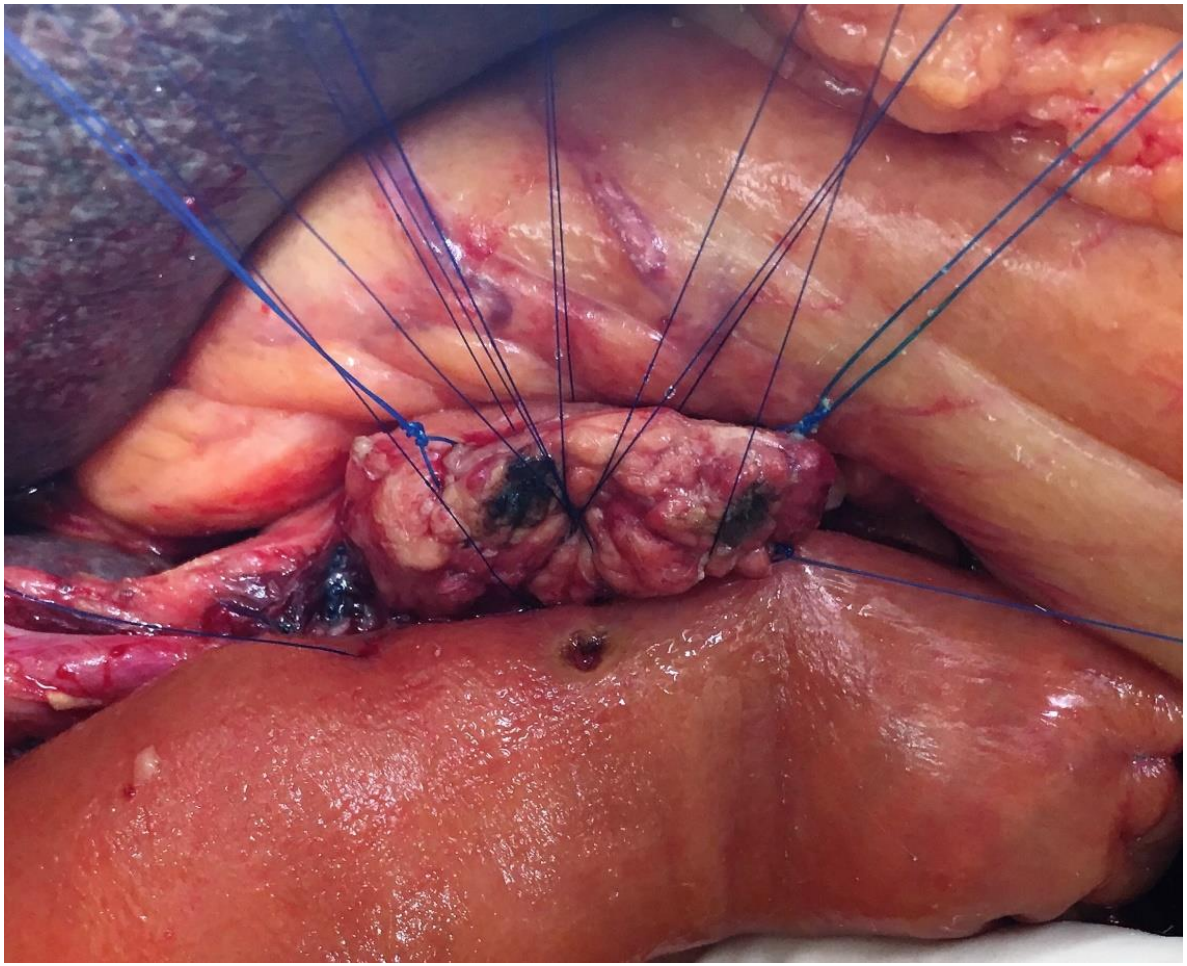
Anterior duct-pancreatic suture

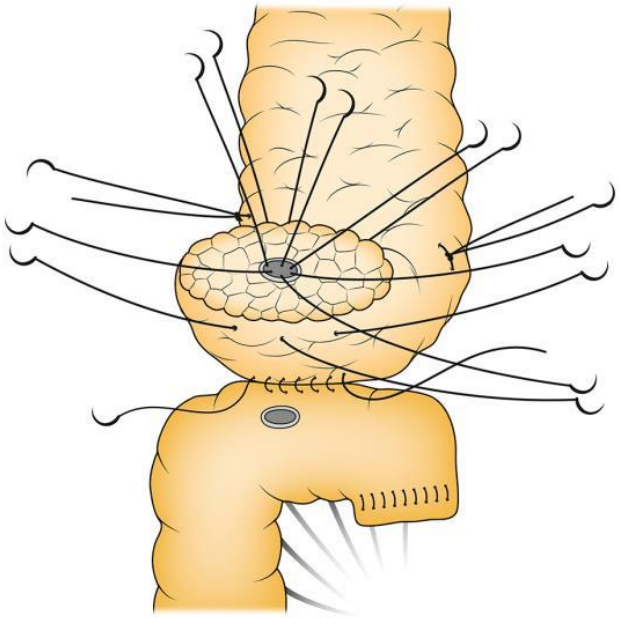
Three sutures are placed on the anterior wall of the pancreatic duct to the anterior pancreatic parenchyma. The stitches are performed with 5-0 double needle prolene at the 10 o'clock, 12 o'clock, and 2 o'clock positions.





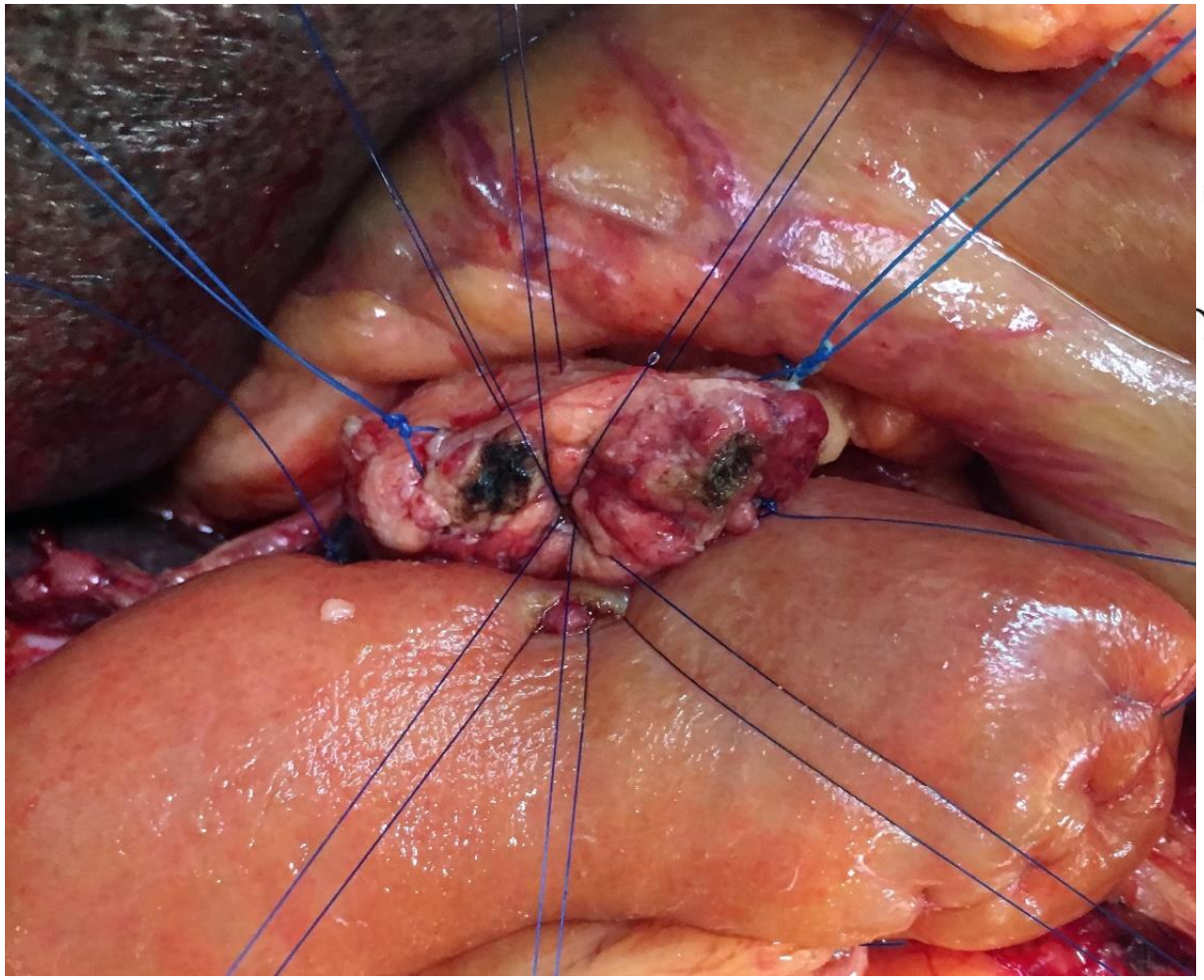
Posterior outer layer

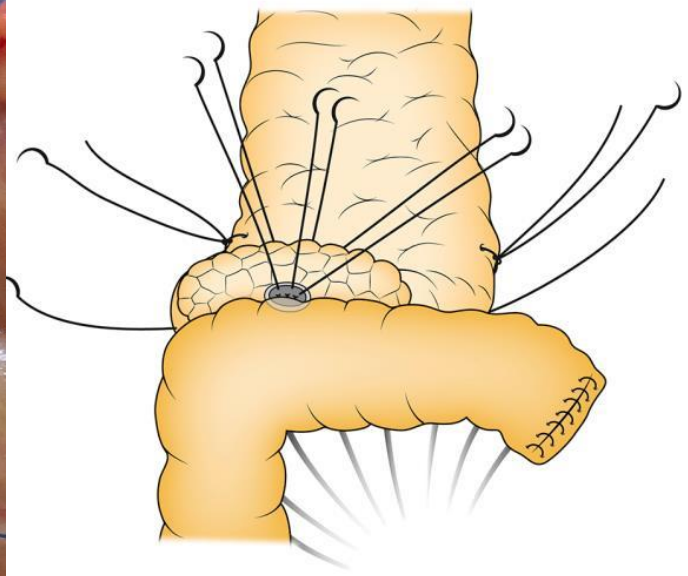




Running suture with 4-0 single needle prolene on the posterior aspect the pancreatic parenchyma with the jejunal seromuscular layer.

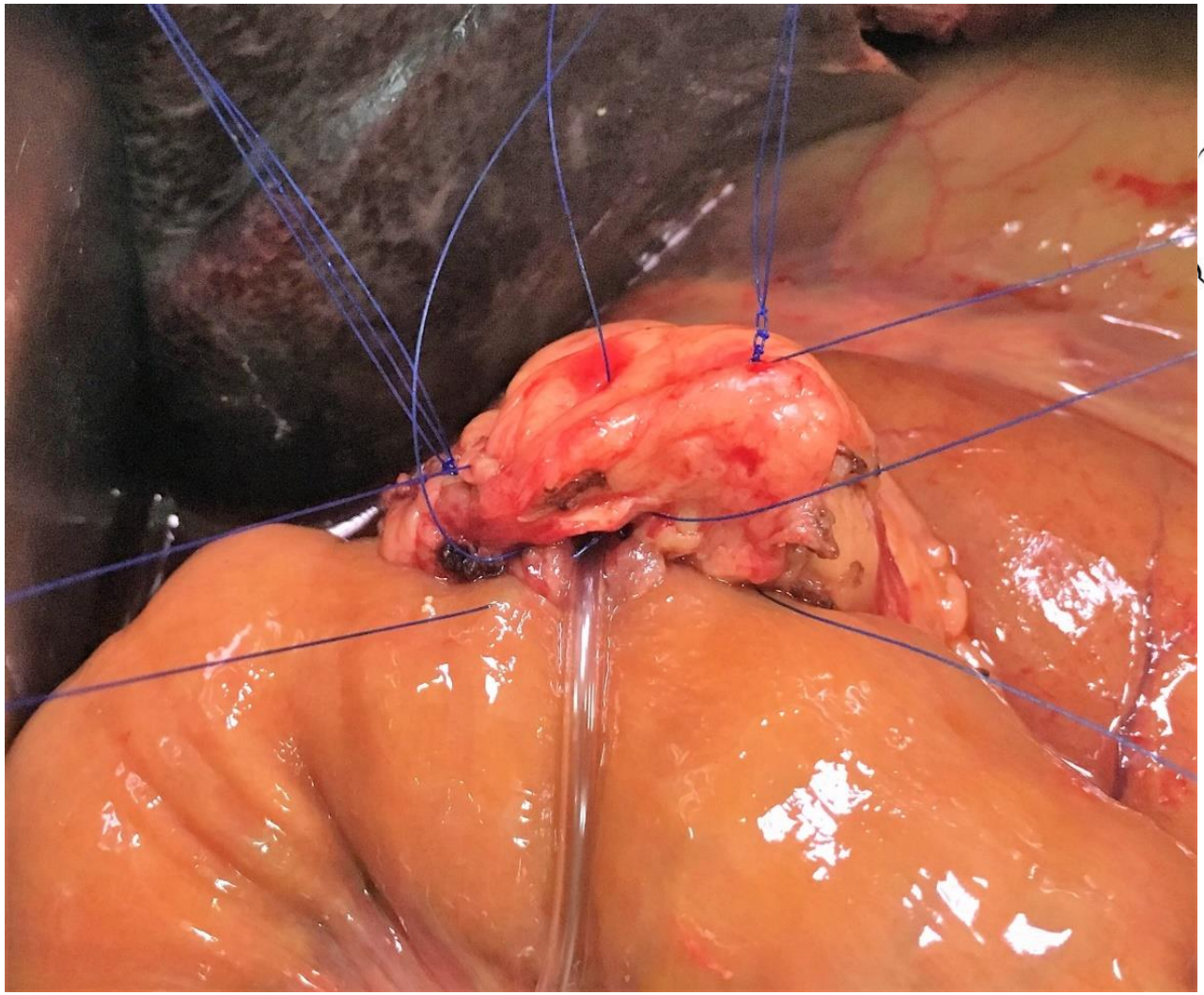
Posterior inner layer

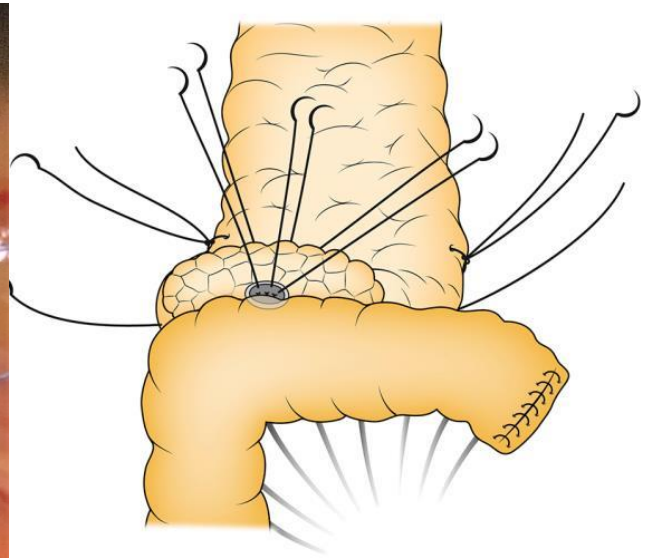




The sutures in the 4 o'clock, 6 o'clock, and 8 o'clock positions are passed from outside to inside in the inferior edge of the jejunum at the same positions.

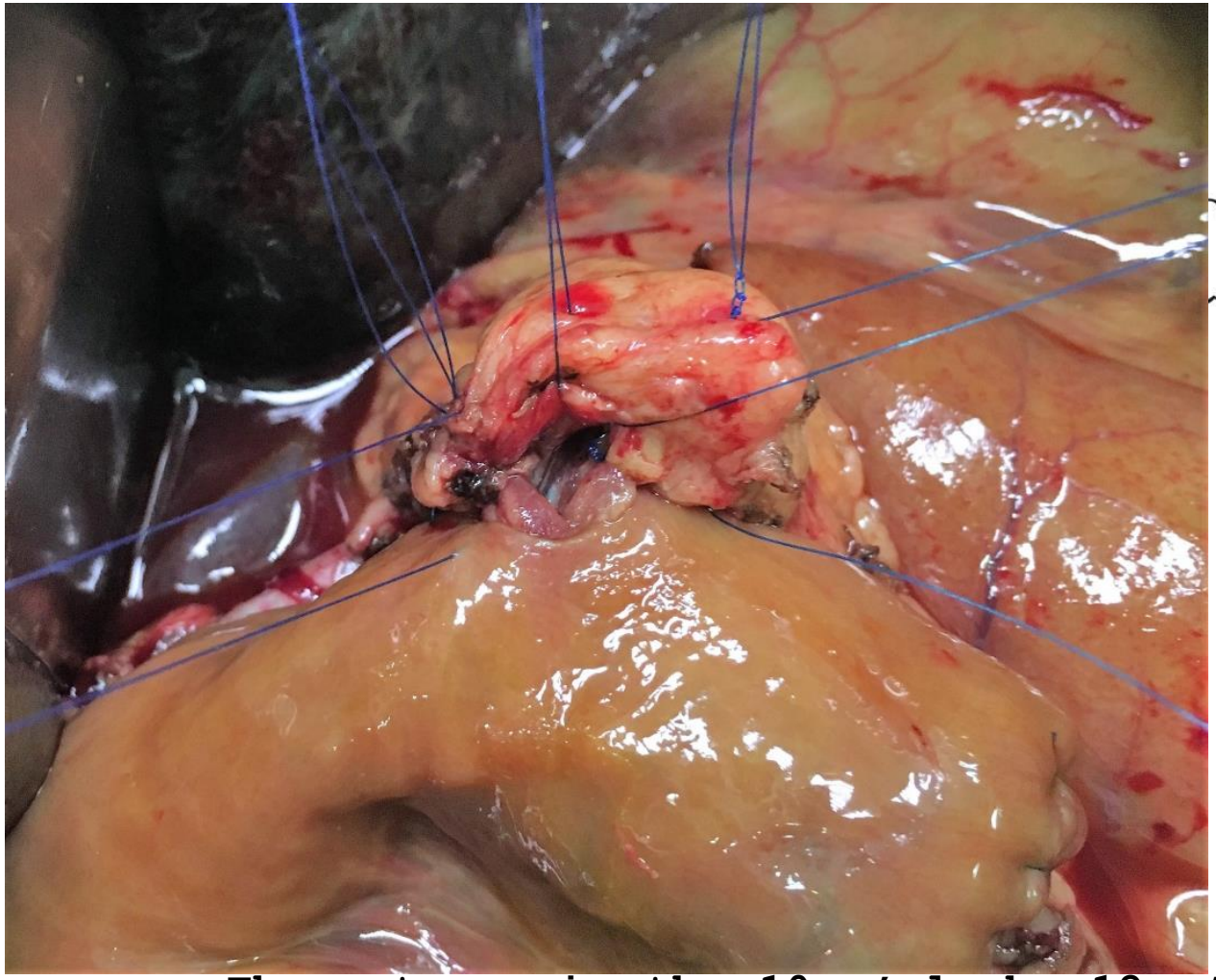
Posterior inner layer

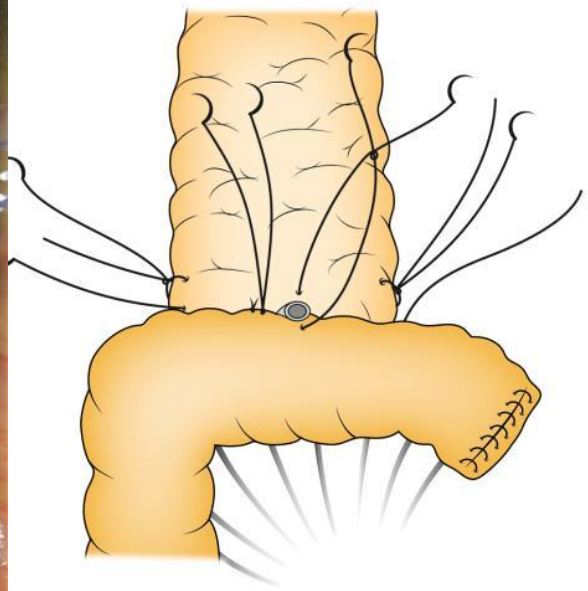




The sutures in the 4 o'clock, 6 o'clock, and 8 o'clock positions are passed from outside to inside in the inferior edge of the jejunum at the same positions.

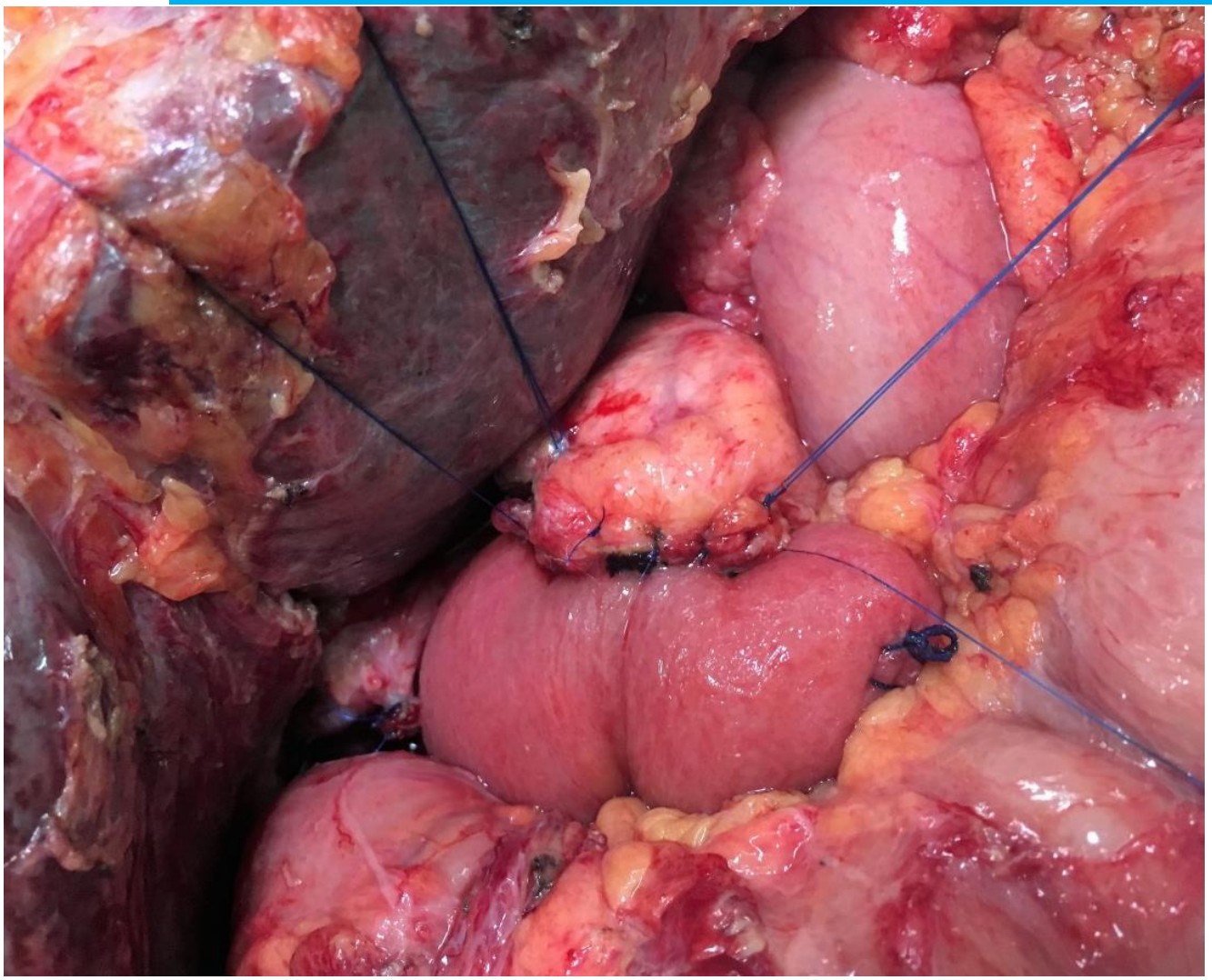
Anterior inner layer

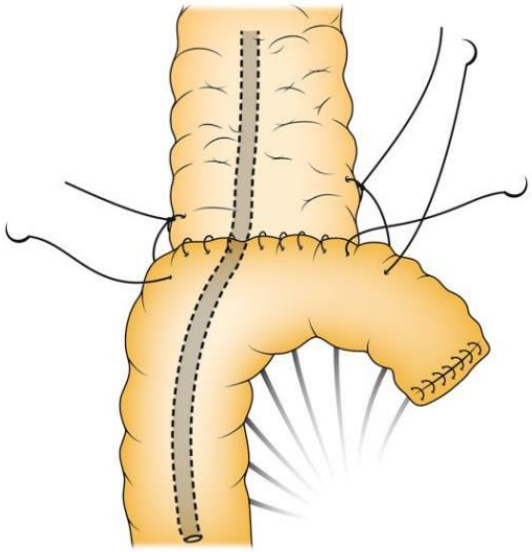




The sutures in the 10 o'clock, 12 o'clock, and 2 o'clock positions are passed from inside to outside in the superior edge of the jejunum and are knotted with the plastic stent into the jejunal lumen.

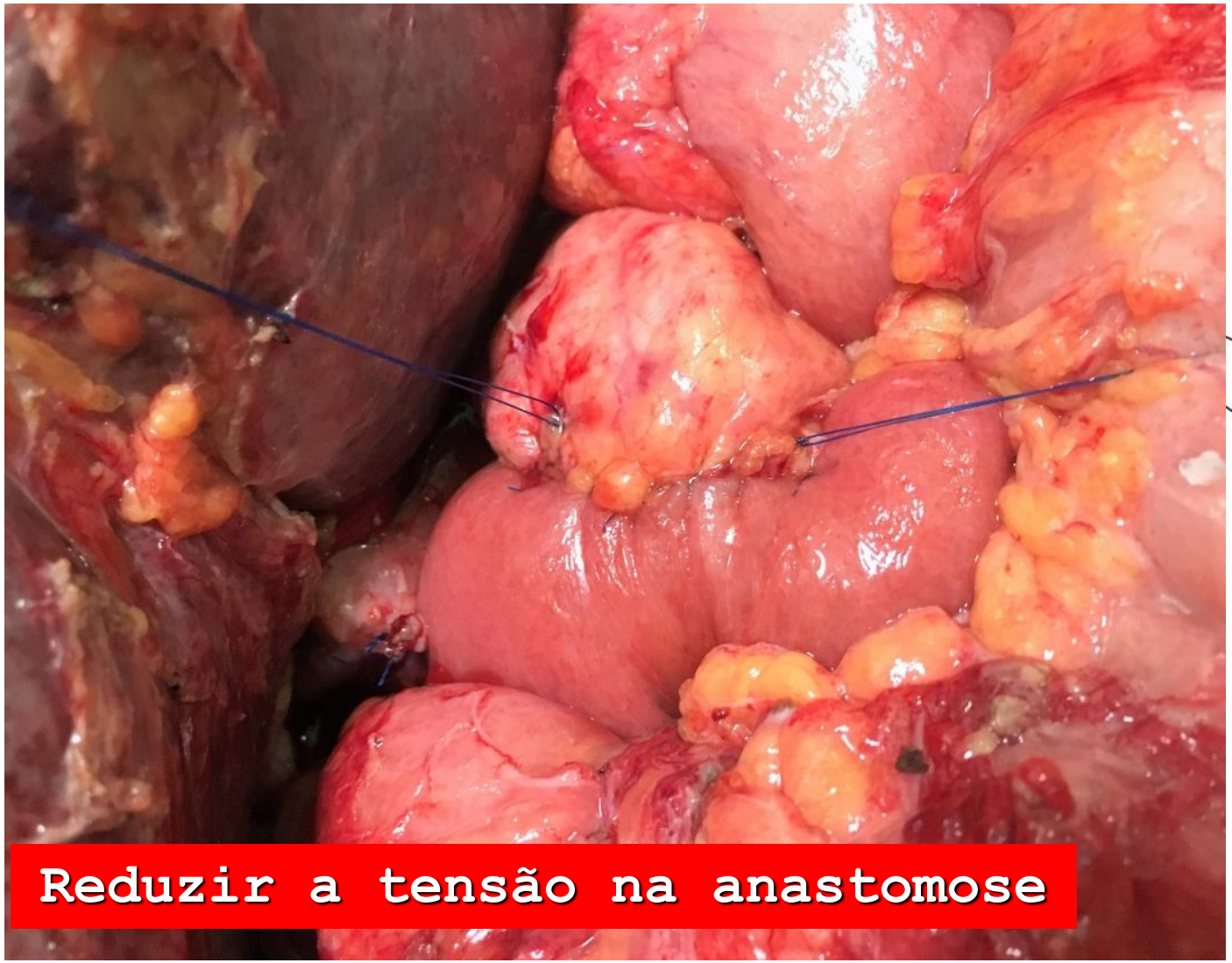
Anterior outer layer



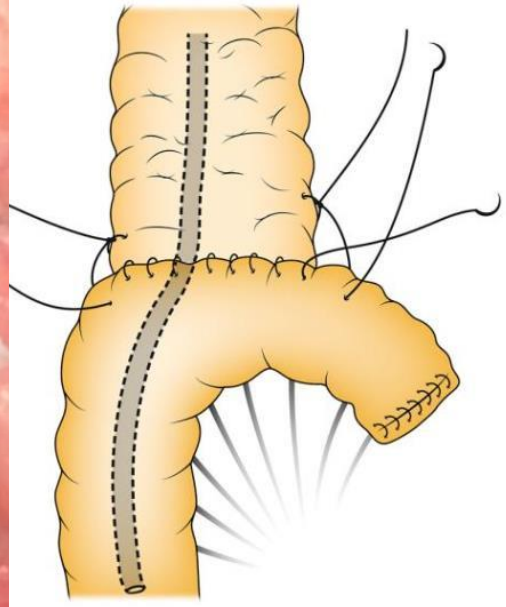


A running suture is performed with 4-0 single needle prolene, on the anterior aspect of the pancreatic parenchyma with jejunal seromuscular layer.

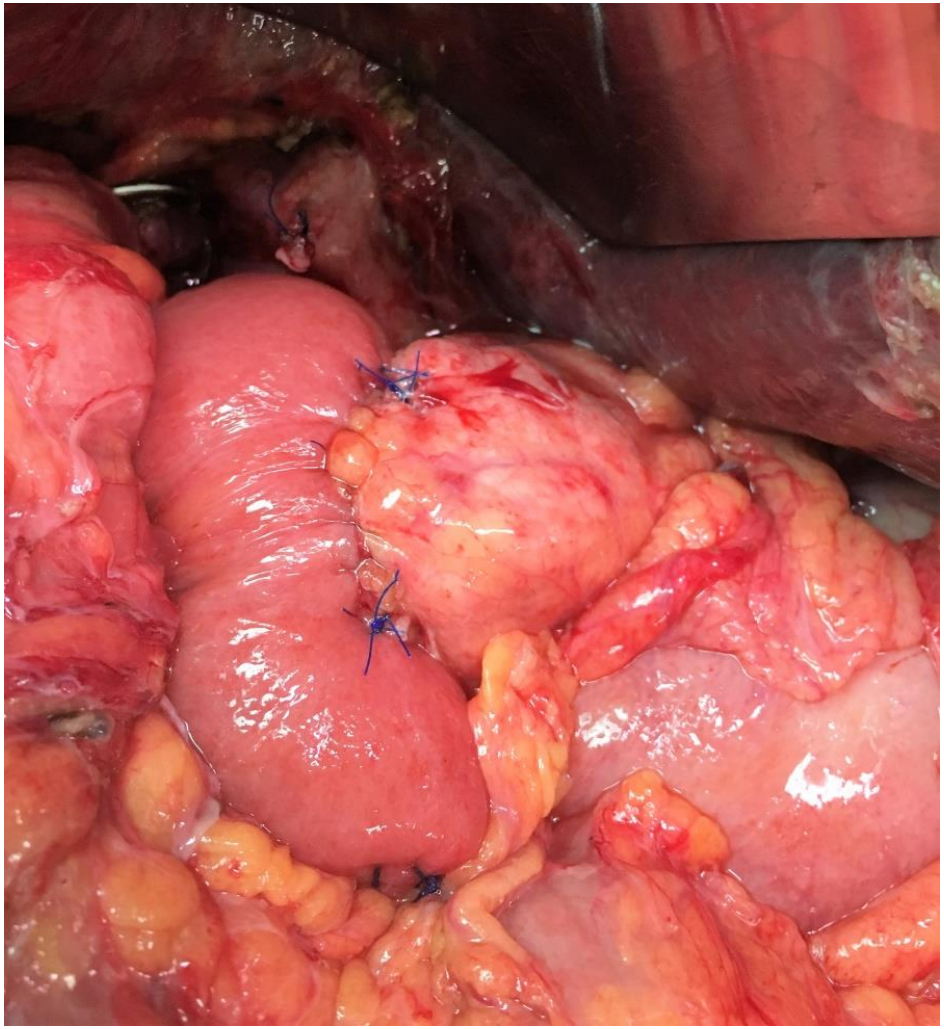
Sutura de sustentação

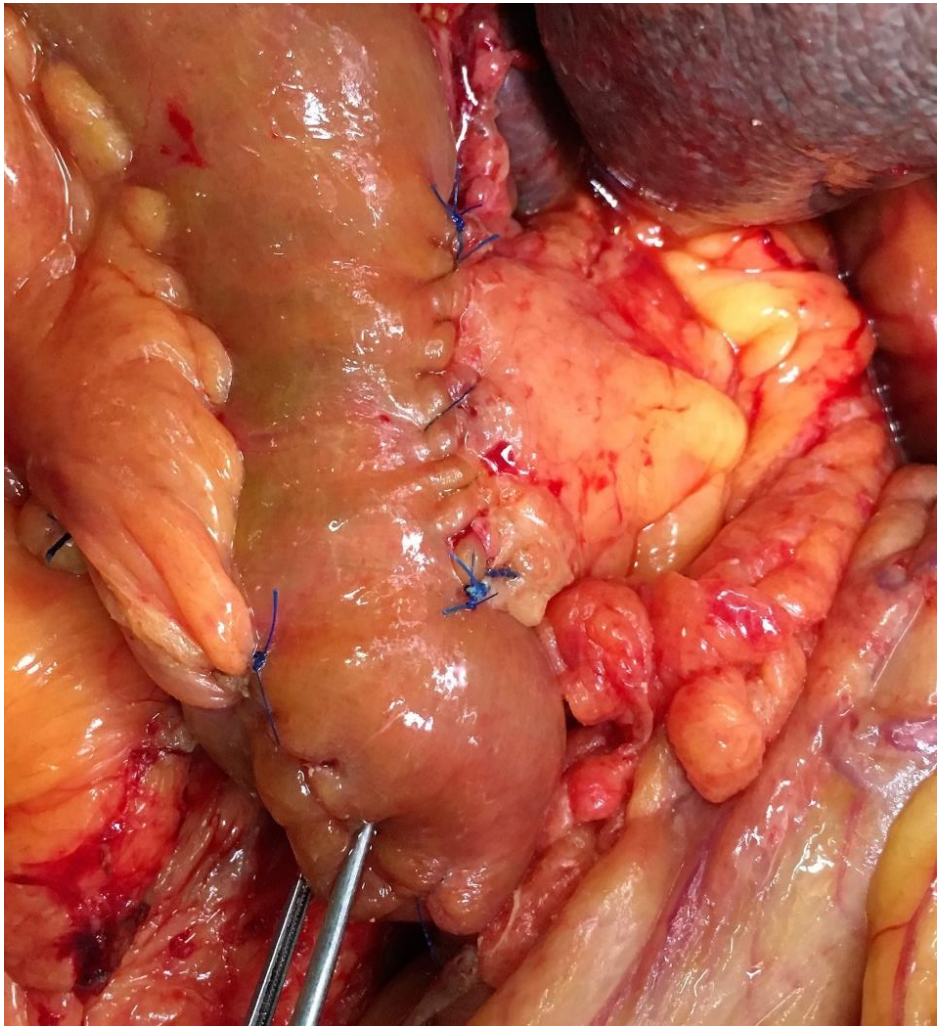


Reduzir a tensão na anastomose

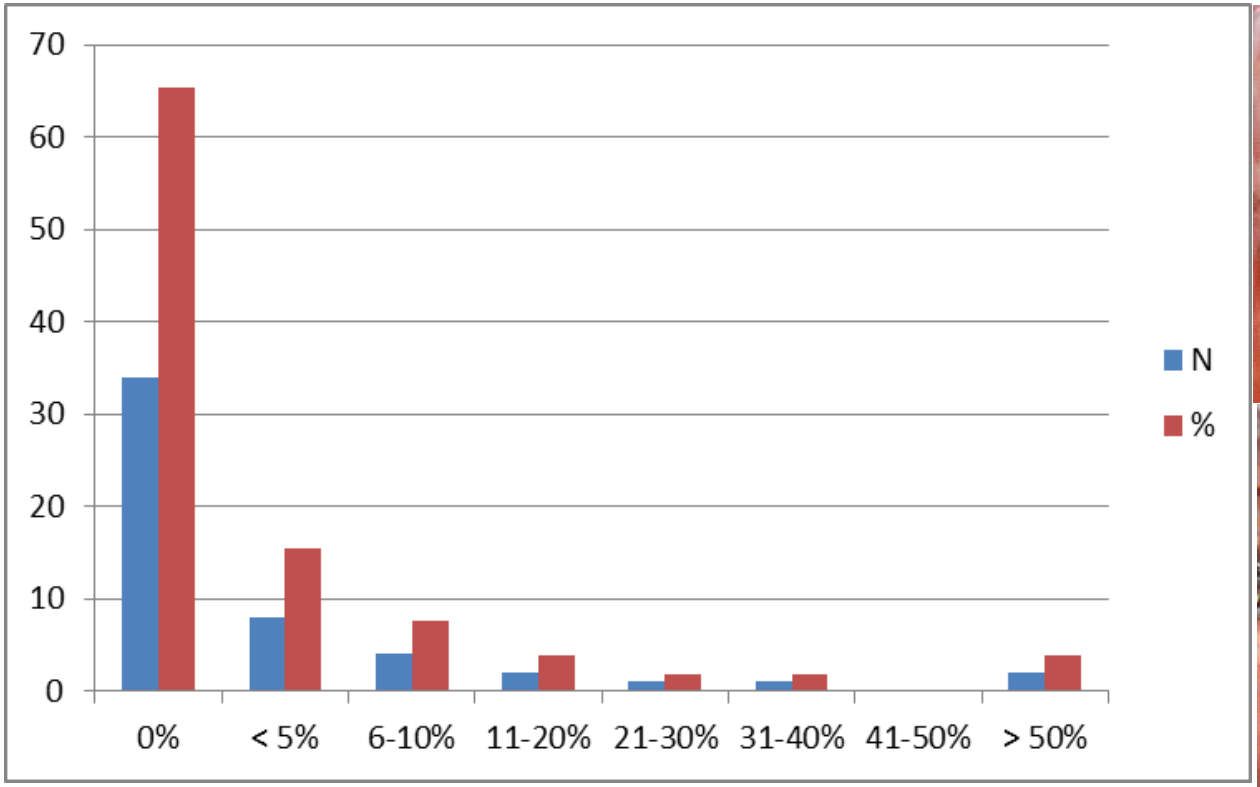


Aspecto final





LAPAROSCOPIC PANCREATODUODENECTOMY



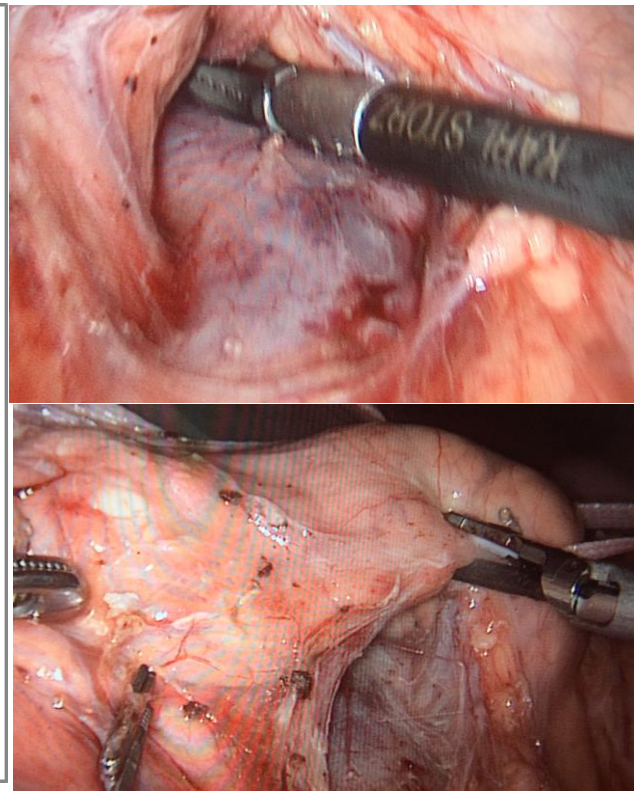


FIGURE 1 – Laparoscopic pancreatoduodenectomy (%) of their cases

Torres et al. Arq Bras Cir Dig 2017;30(3).

ACKNOWLEDGEMENTS

Adriano Sampaio (SP), Agnaldo Soares Lima (MG), Alessandro Osvaldt (RS), Alexandre Menezes de Brito (GO), Alexandre Prado de Resende (MG), Antonio Moris Cury Filho (SP), Antonio Nocchi Kalil (RS), Antonio Roberto Teixeira (SP), Antonio Talvane Torres Oliveira (RJ), Augusto Tinoco (RJ), Carlos Renato Sales Bezerra (PI), Cassio Virgílio Cavalcante Oliveira (PB), Claudemiro Quireze Junior (GO), Eduardo Garcia Pacheco (SP), Eduardo Ramos (PR), Eduardo Viana (RJ), Ênio Campos Amico (RN), Eric Ettinger Junior (BA), Everton Faria (RS), Felipe José Fernandez Coimbra (SP), Francisco Callejas Neto (SP), Gustavo Peixoto Miguel (ES), João Eduardo Nicoluzzi (PR), Jorge Sores Lyra (MA), José Huygens Parente Garcia (CE), Juan Carlos Llanos (SP), Júlio Cezar Uili Coelho (PR), Leonardo Canedo (BA), Luís Cesar Bredt (PR), Marcelo Dias Sanches (MG), Marcelo Enne (RJ), Marcelo Gonçalves (PB), Marcelo Moura Linhares (SP), Marcio Fernando Boff (RS), Nilton Ghiotti Siqueira (AC), Paulo Herman (SP), Paulo Reichert (RS), Rafael Albagli (RJ), Raphael Araújo (SP), Ricardo Jureidini (SP), Rinaldo Danesi Pinto (SC), Rodrigo Altenfelder Silva (SP), Sidney Chalub (AM), Tercio de Campos (SP), Tercio Genzini (SP), Walter de Biase Silva Neto (GO).

Obrigado!