3rd International & SRS LATAM Robotic Surgery Congress
2nd COLCIR Congress

PANCREATODUODENECTOMY

Artery first approach: when and how to do it



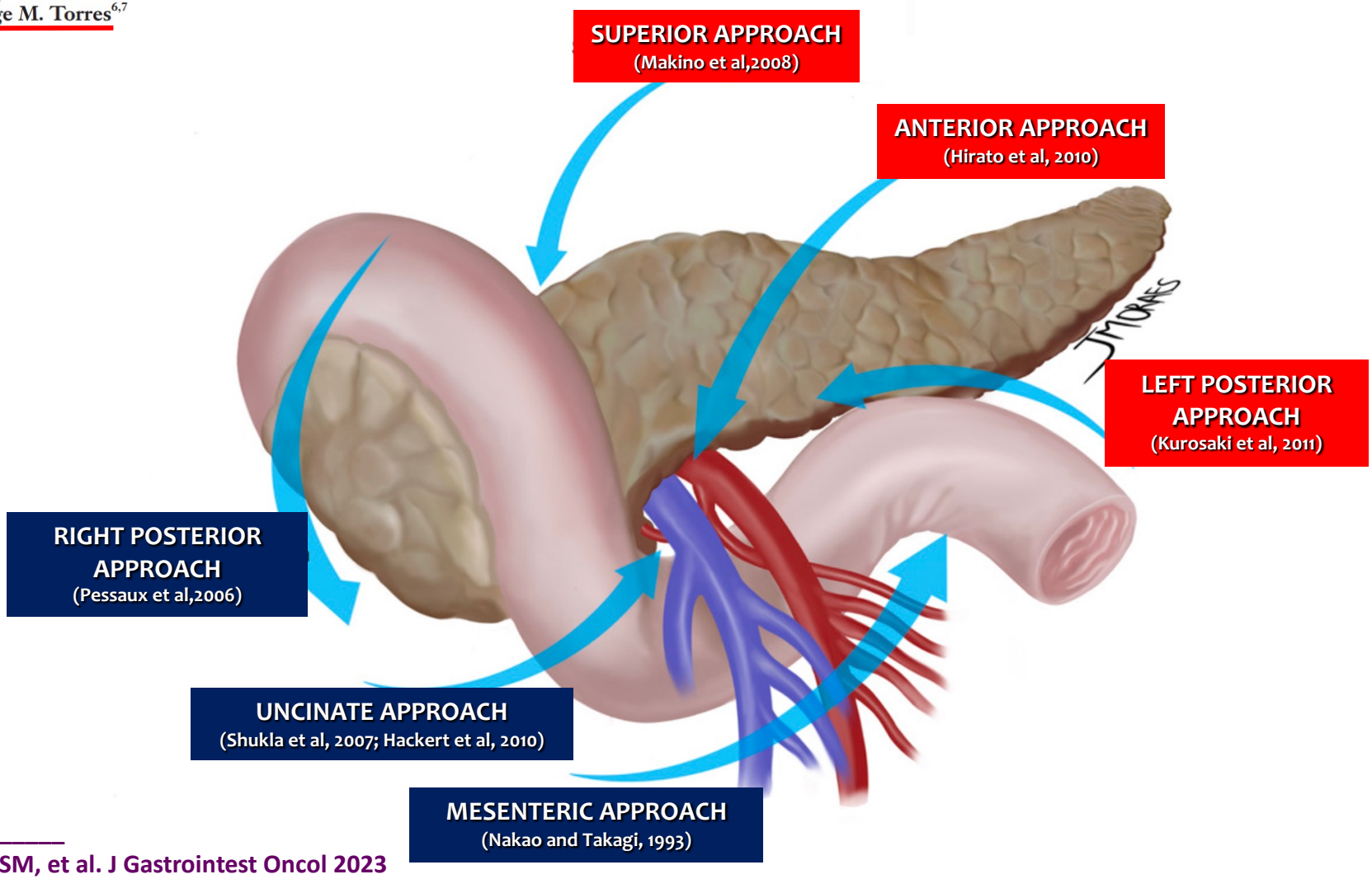
Orlando Jorge M. Torres
Full |Professor and Chairman
Department of Gastrointestinal Surgery
Hepatopancreatobiliary Unit
Federal University of Maranhão - Brazil

Review Article

A more radical perspective on surgical approach and outcomes in pancreatic cancer—a narrative review

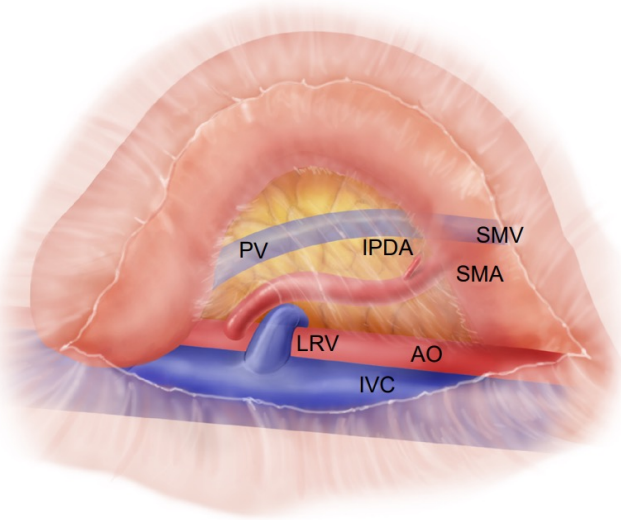
Eduardo de Souza M. Fernandes[1,2,3], Felipe Pedreira T. de Mello[1,2], Eduardo Pinho Braga[1], Gabrielle Oliveira de Souza[1], Ronaldo Andrade[1,2], Leandro Savattone Pimentel[1,2], Camila Liberato Girão[1,2], Munique Siqueira[1,2], José Maria A. Moraes-Junior[6,7], Romulo Varella de Oliveira[4], Nicolas Goldaracena[5], Orlando Jorge M. Torres[6,7]

ARTERY FIRST

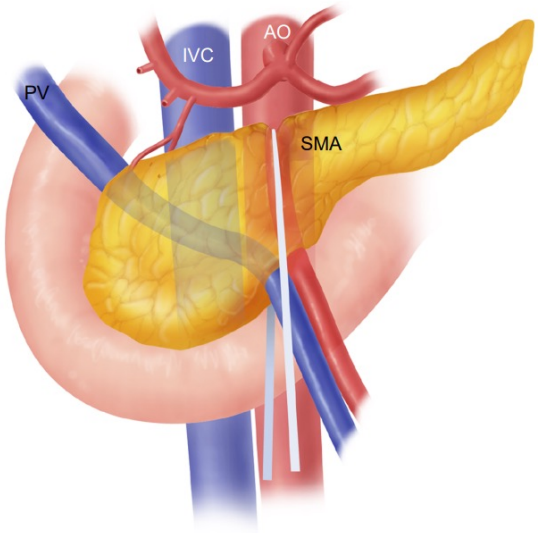


Fernandes ESM, et al. J Gastrointest Oncol 2023

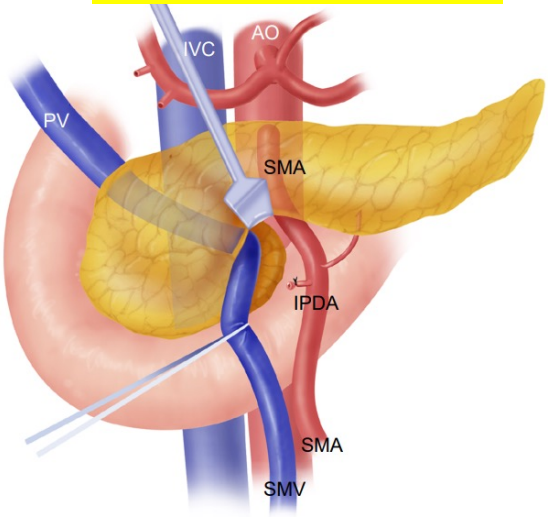
RIGHT POSTERIOR APPROACH



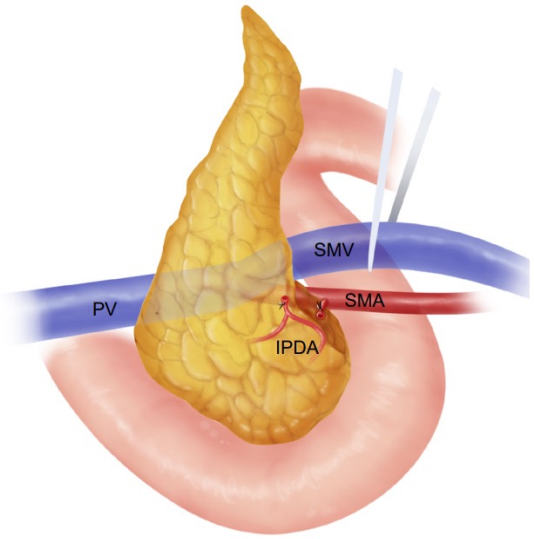
SUPERIOR APPROACH



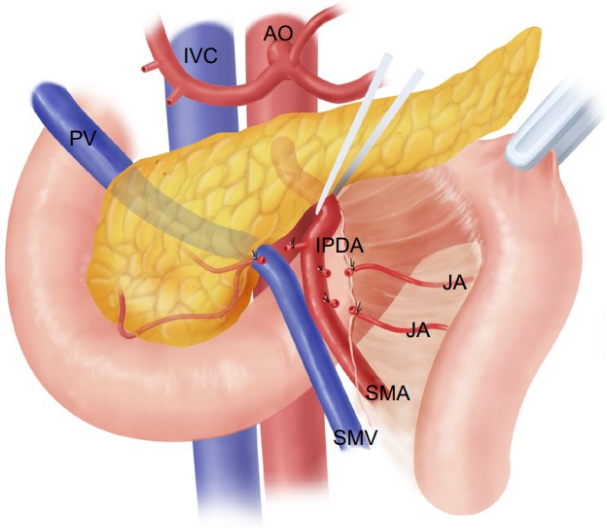
ANTERIOR APPROACH



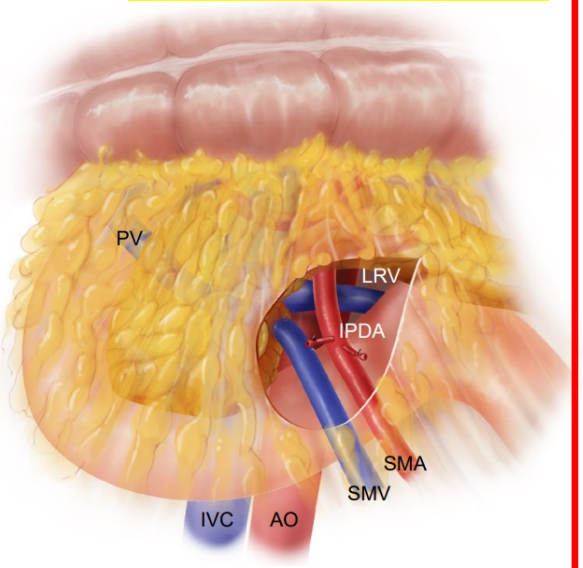
UNCINATE APPROACH



LEFT POSTERIOR APPROACH

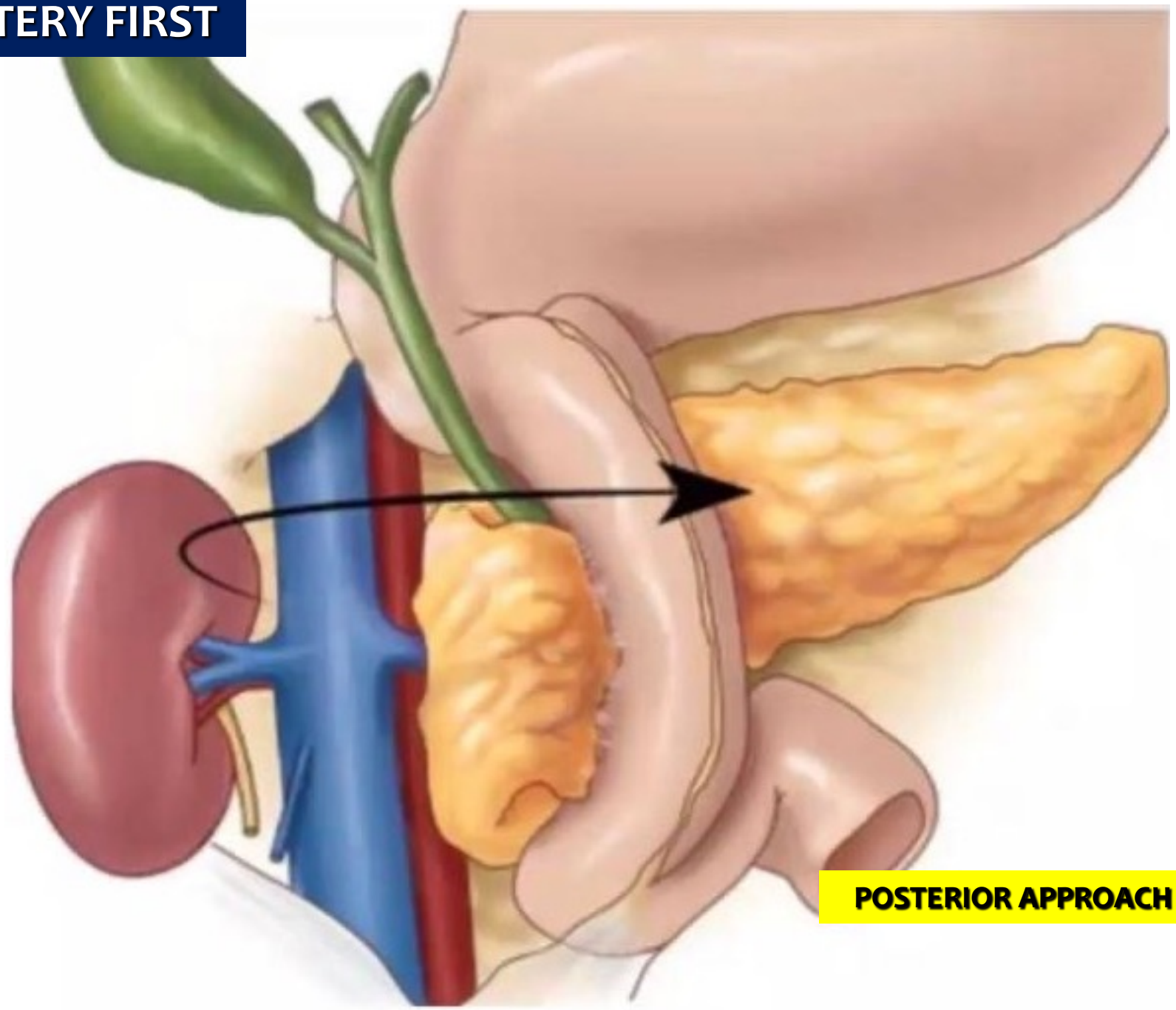


MESENTERIC APPROACH

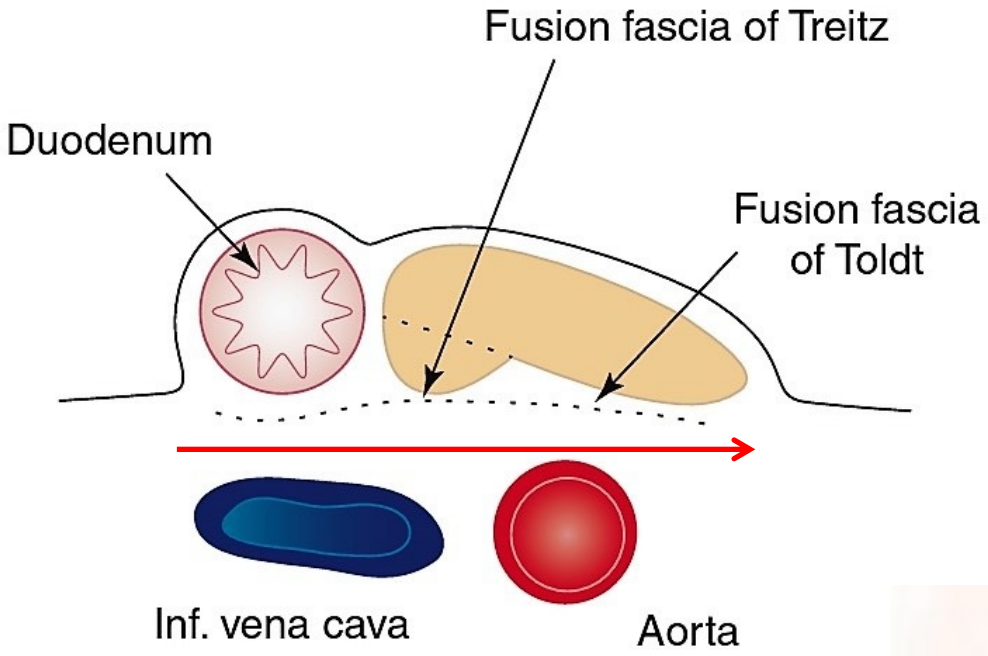


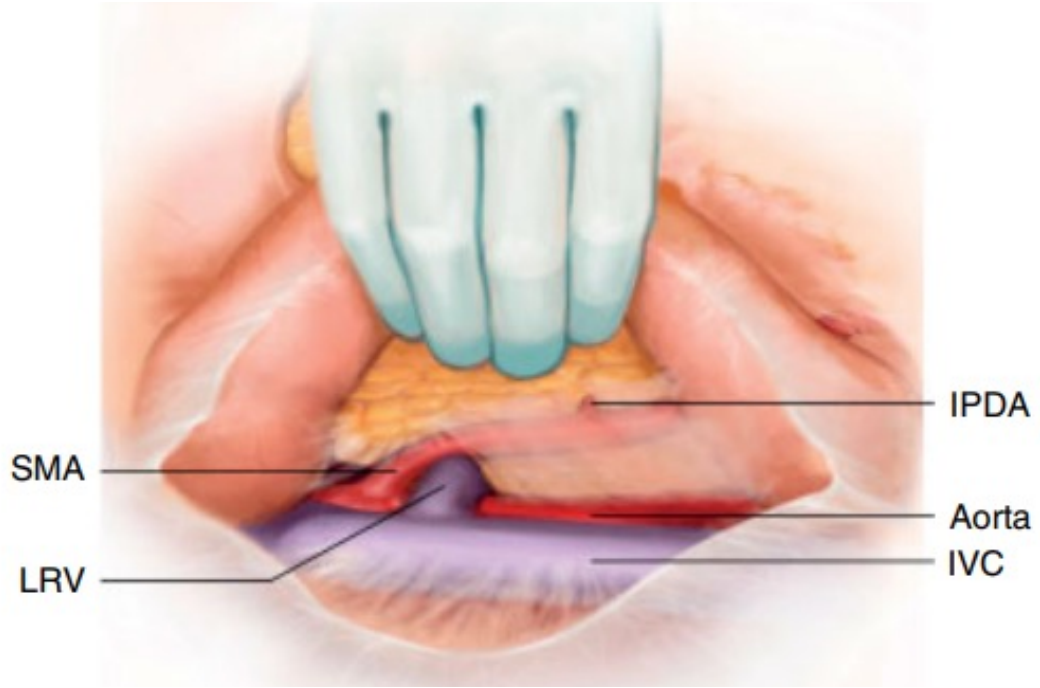
Muller PC, et al. Br J Surg 2023

ARTERY FIRST



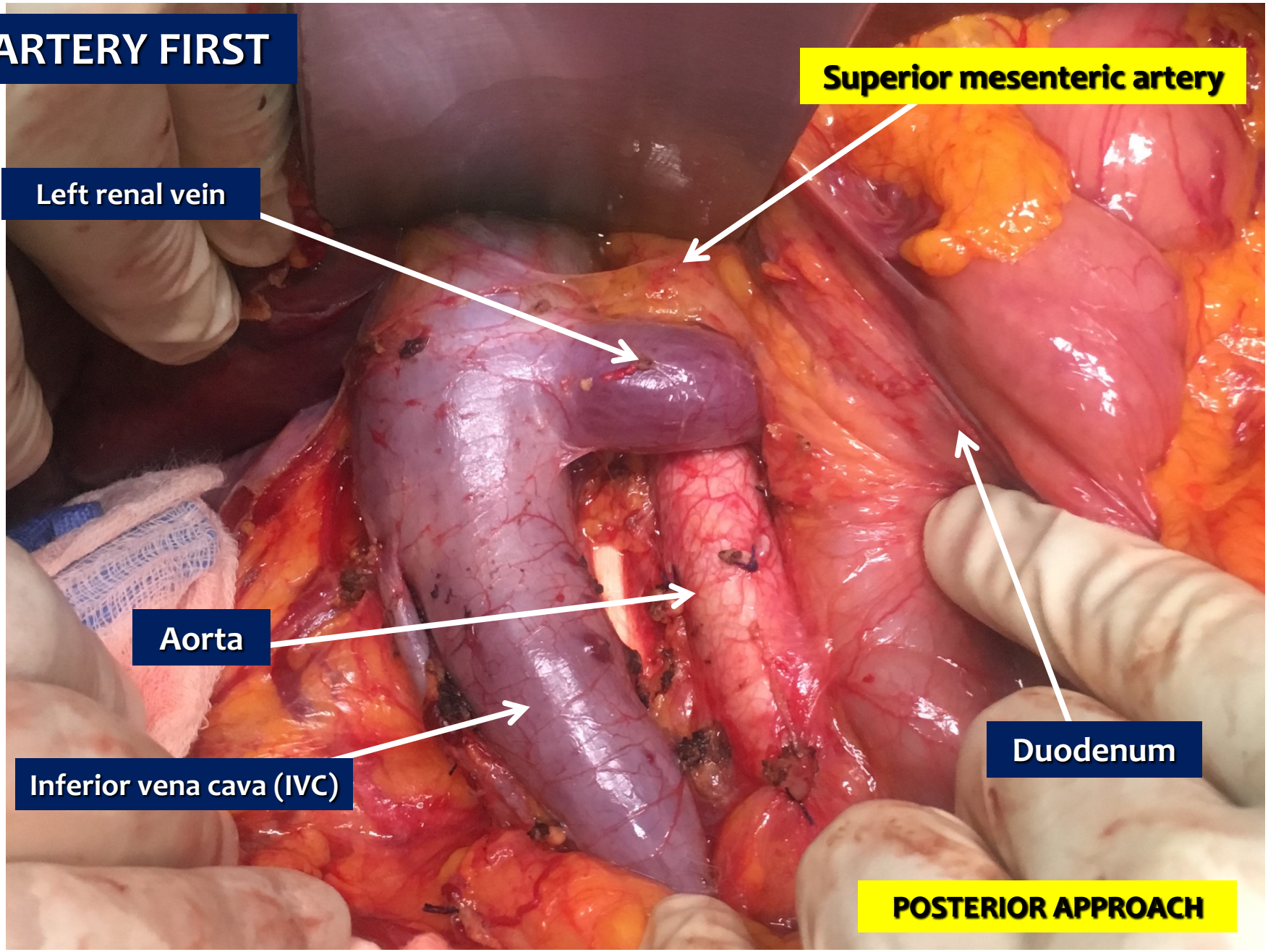
POSTERIOR APPROACH



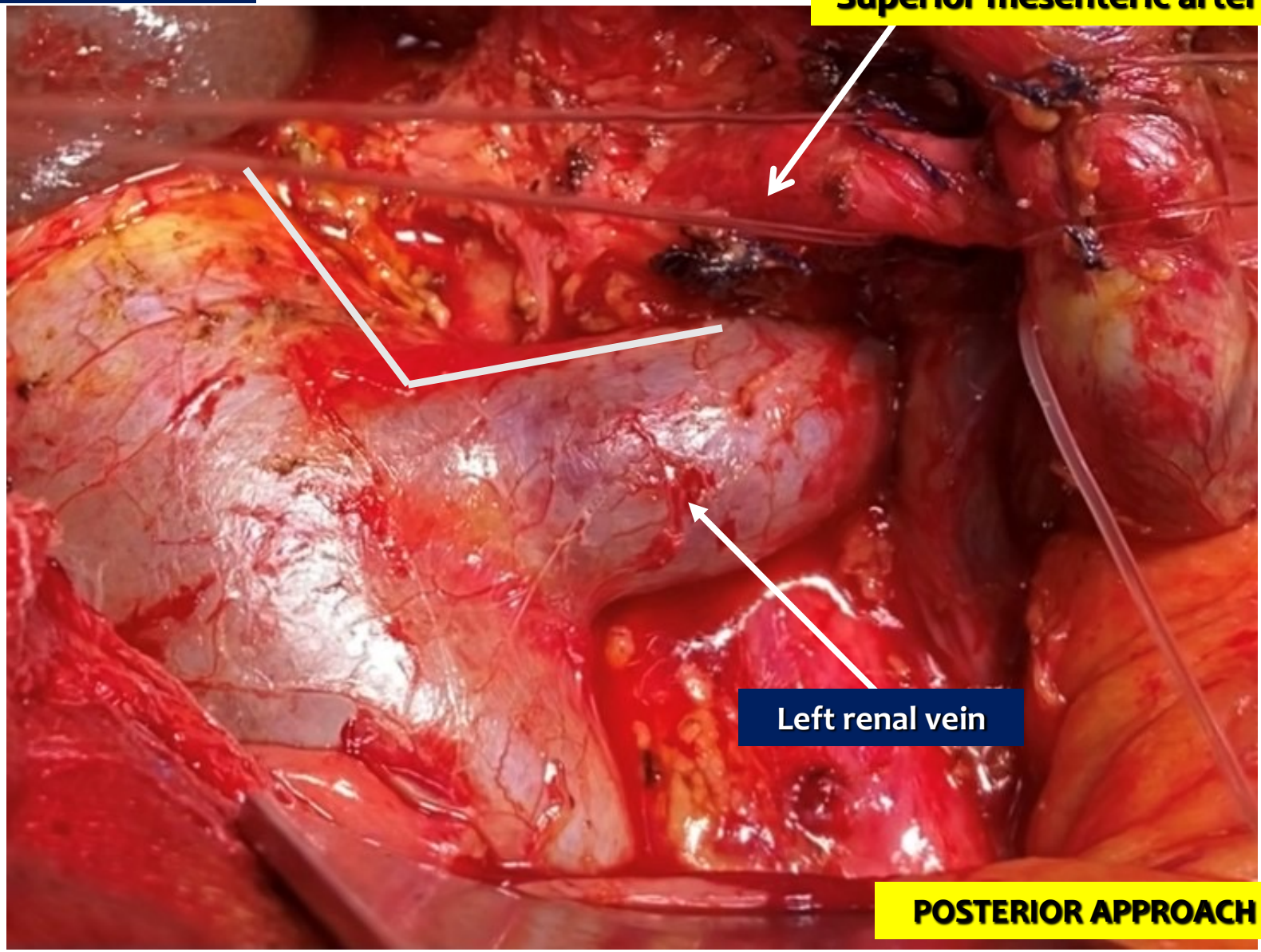


POSTERIOR APPROACH

ARTERY FIRST



ARTERY FIRST

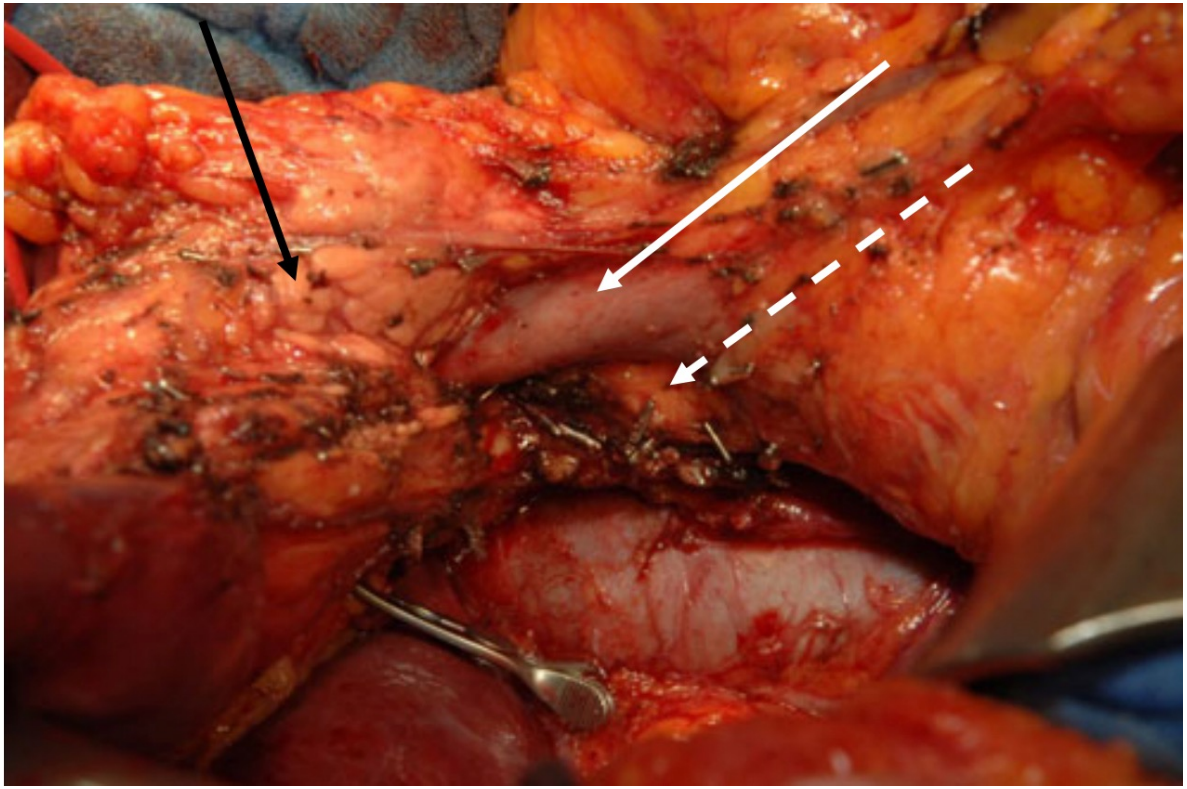


Langenbecks Arch Surg (2010) 395:1161–1164
DOI 10.1007/s00423-010-0663-9

ARTERY FIRST

HOW TO DO IT

Uncinate process first—a novel approach for pancreatic head resection



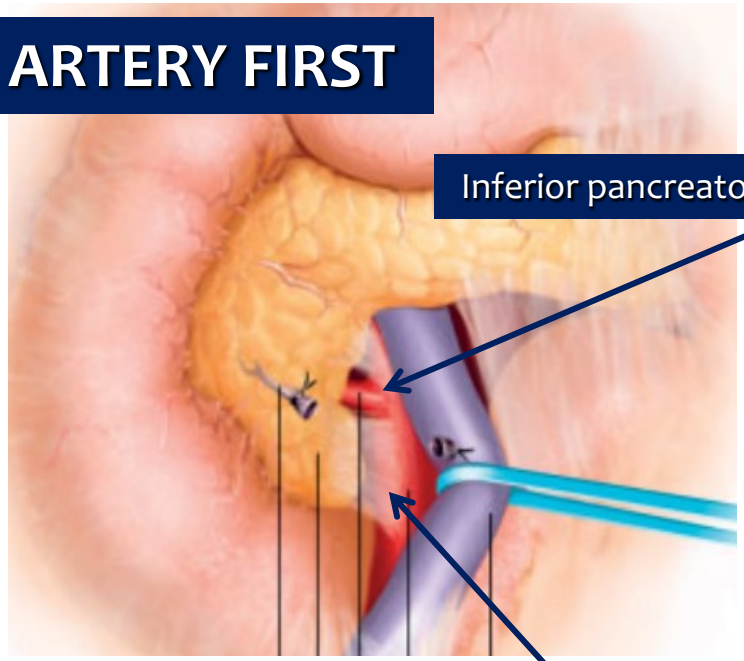


Shailesh Shrikhande (India)
Thilo Hackert (Germany)

UNCINATE FIRST

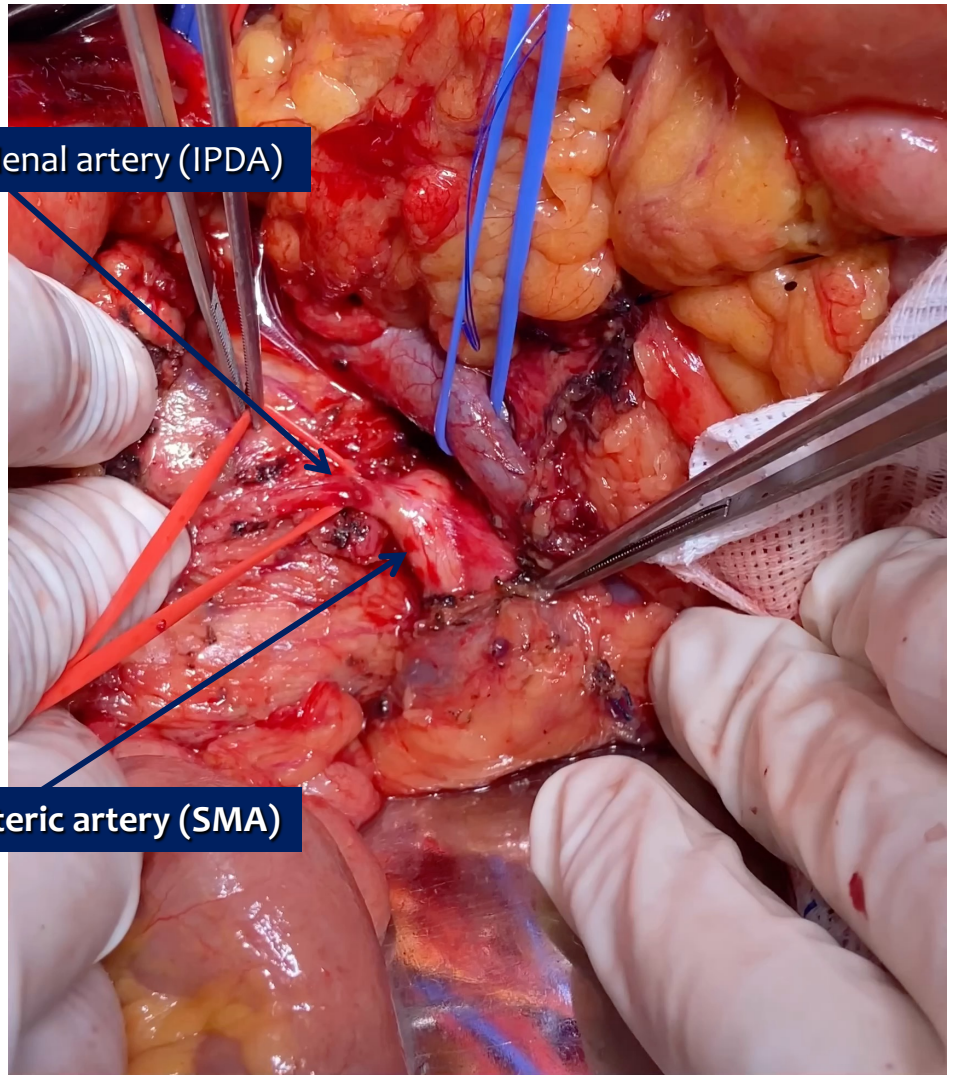
Hackert T, et al. Langenbecks Arch Surg 2010; 395:1161–4

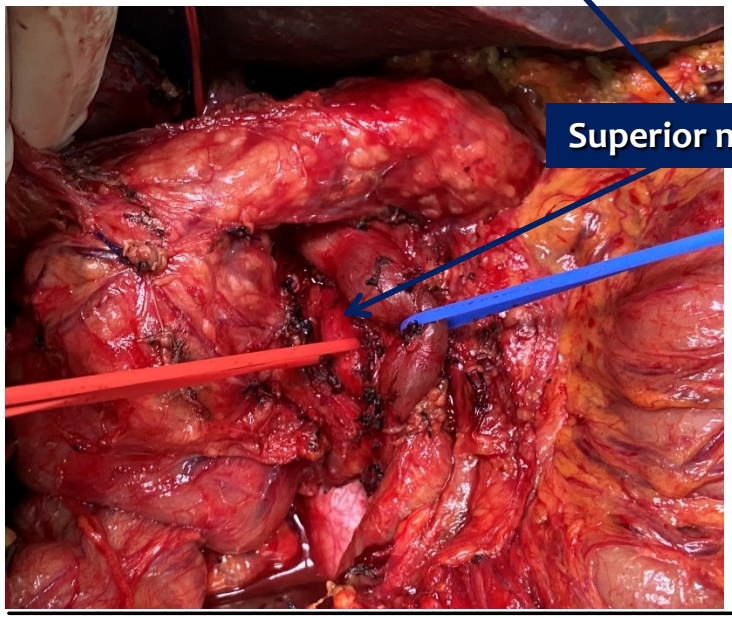
ARTERY FIRST



Pandanaboyana S, et al. Br J Surg 2012;99:1027–35

Inferior pancreatoduodenal artery (IPDA)

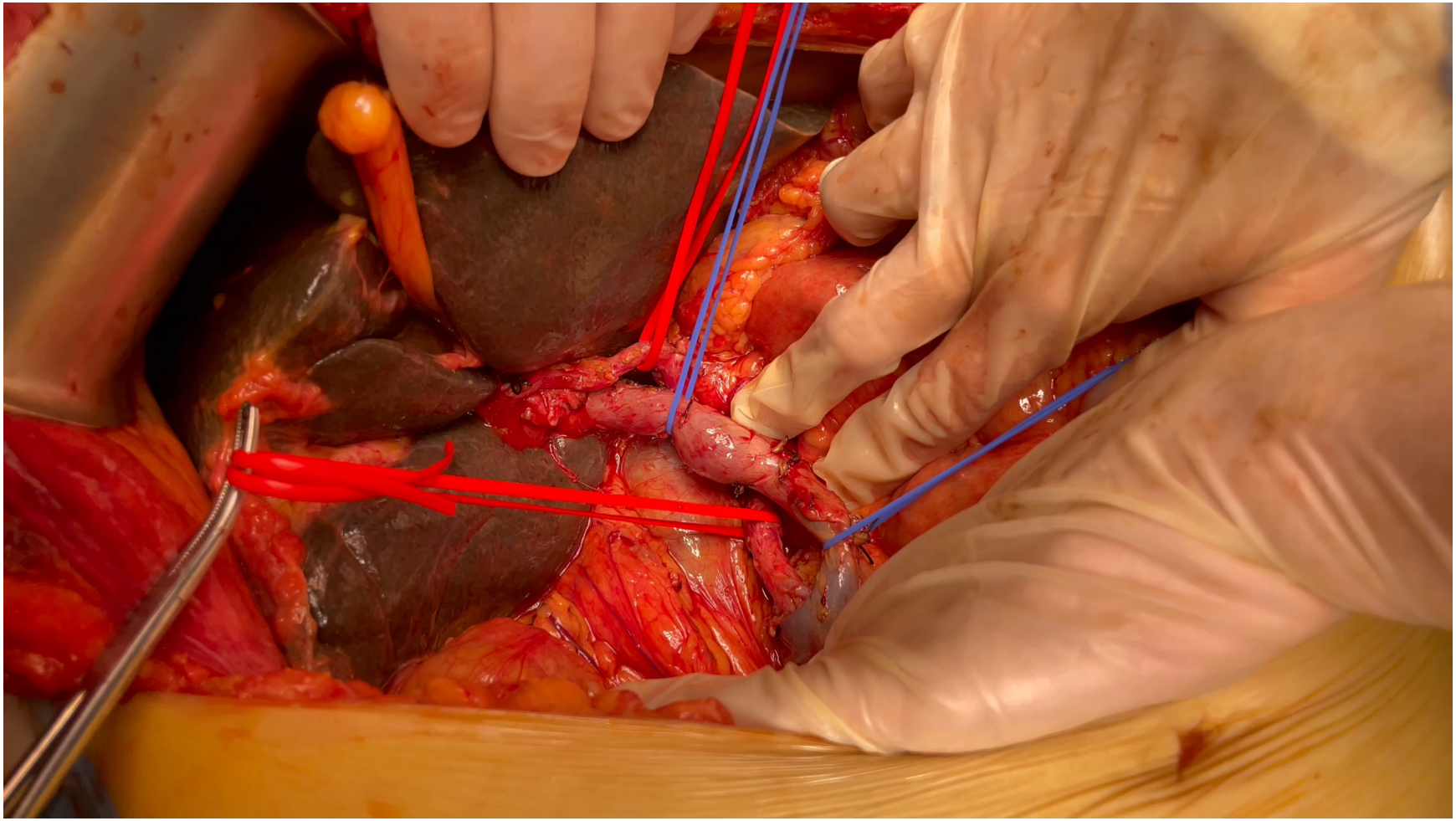




Superior mesenteric artery (SMA)

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ARTERY FIRST

Digestive Surgery

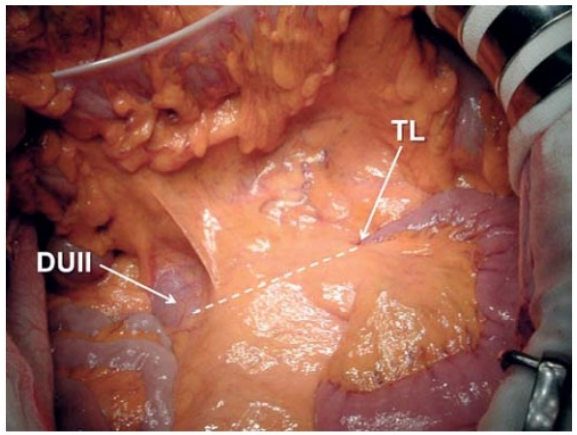
How I Do It

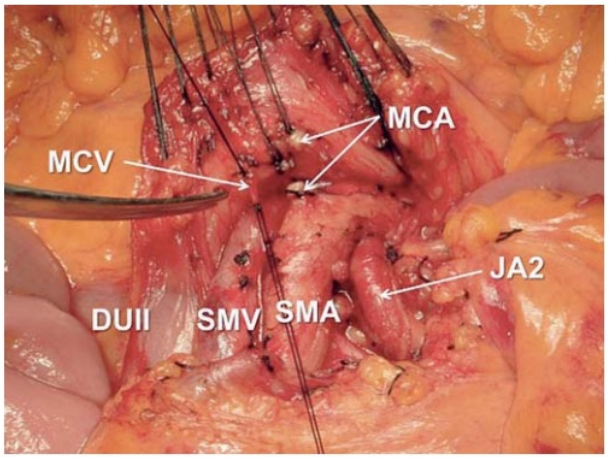
Dig Surg 2016;33:308–313
DOI: 10.1159/000445014

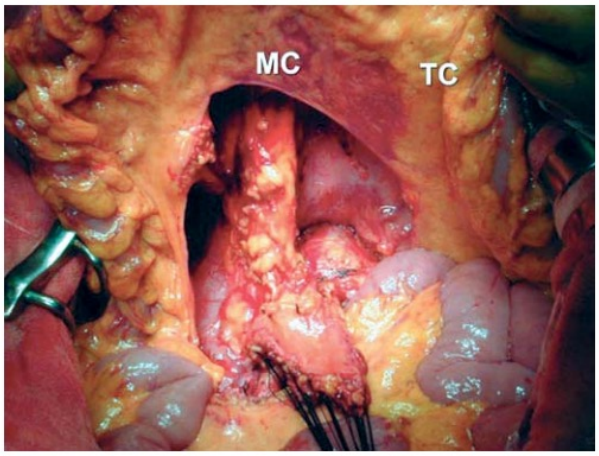
Published online: May 25, 2016

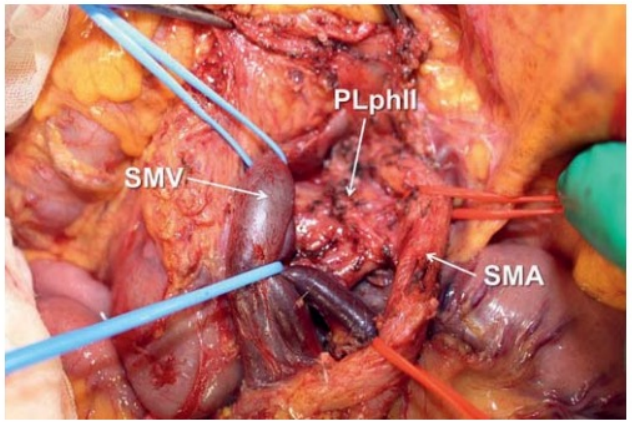
The Mesenteric Approach in Pancreatoduodenectomy

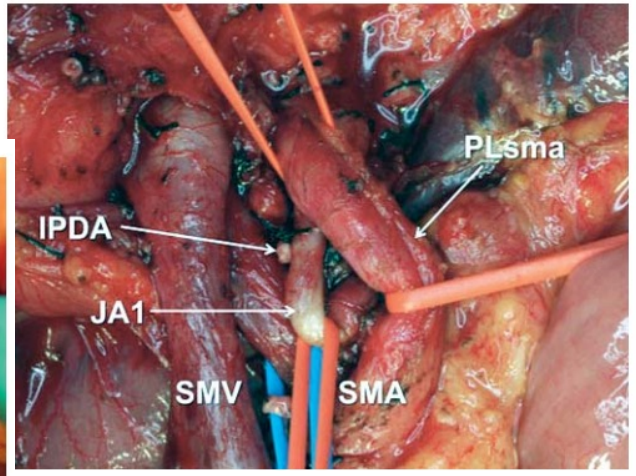












MESENTERIC APPROACH

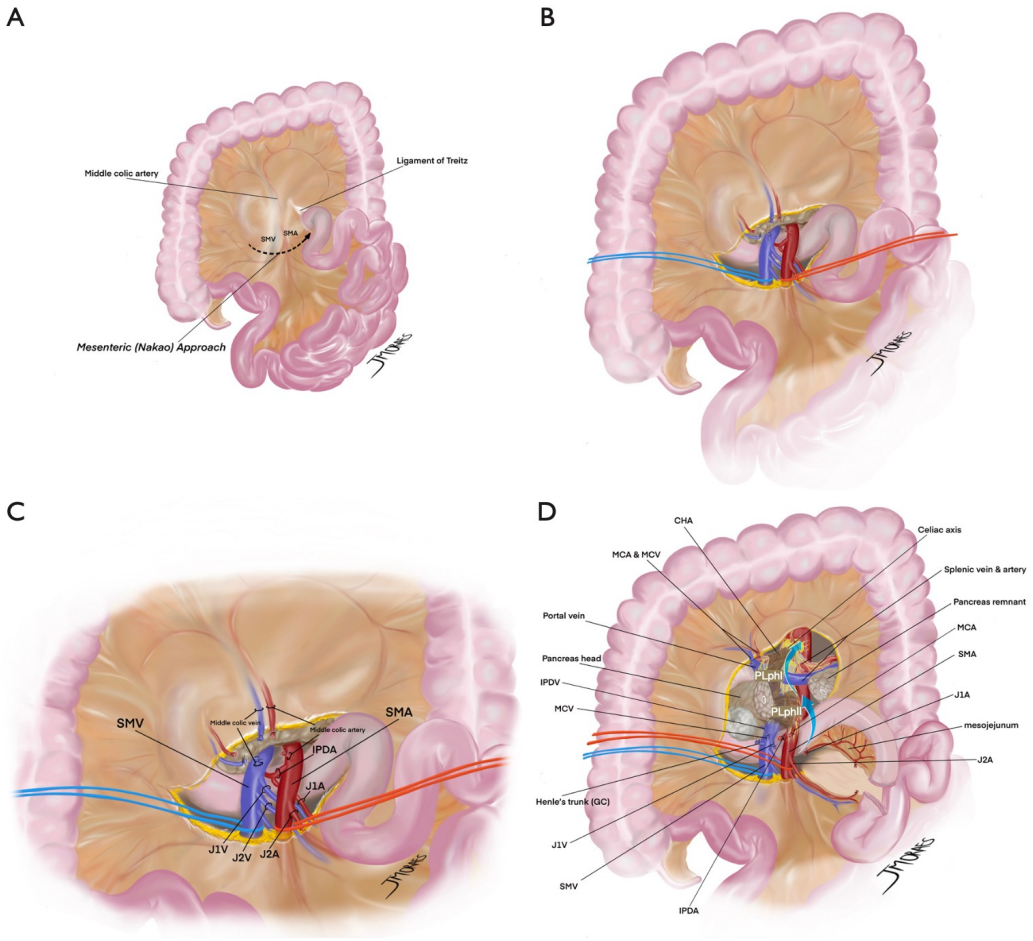
Nakao A, et al. Dig Surg 2016;33:308-13

Review Article

A more radical perspective on surgical approach and outcomes in pancreatic cancer—a narrative review

Eduardo de Souza M. Fernandes[1,2,3], Felipe Pedreira T. de Mello[1,2], Eduardo Pinho Braga[1], Gabrielle Oliveira de Souza[1], Ronaldo Andrade[1,2], Leandro Savattone Pimentel[1,2], Camila Liberato Girão[1,2], Munique Siqueira[1,2], José Maria A. Moraes-Junior[6,7], Romulo Varella de Oliveira[4], Nicolas Goldaracena[5], Orlando Jorge M. Torres[6,7]

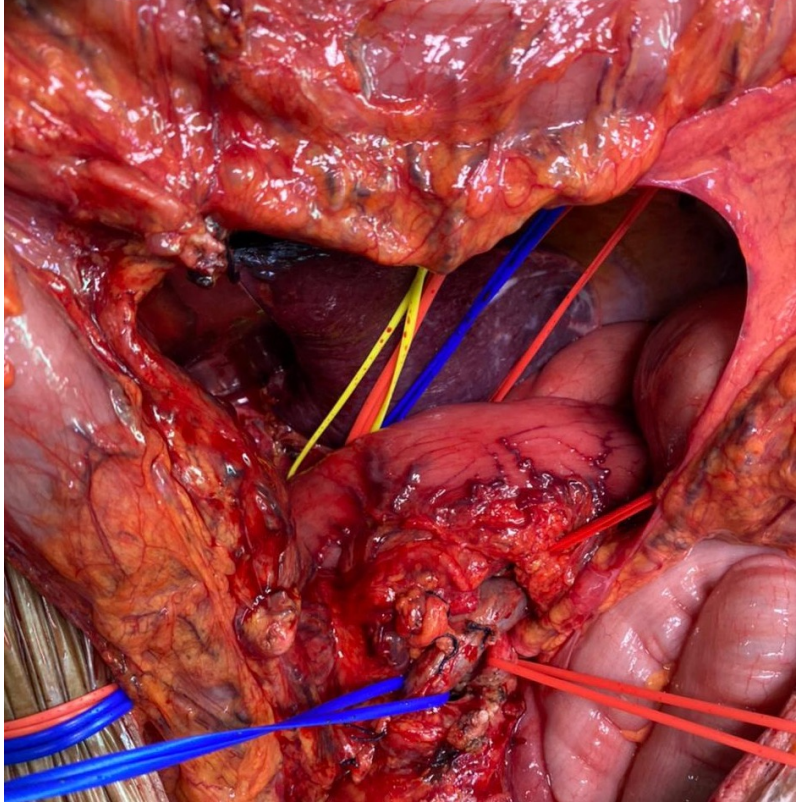
MESENTERIC APPROACH



Fernandes ESM, et al. J Gastrointest Oncol 2023



Infracolic approach



MESENTERIC APPROACH

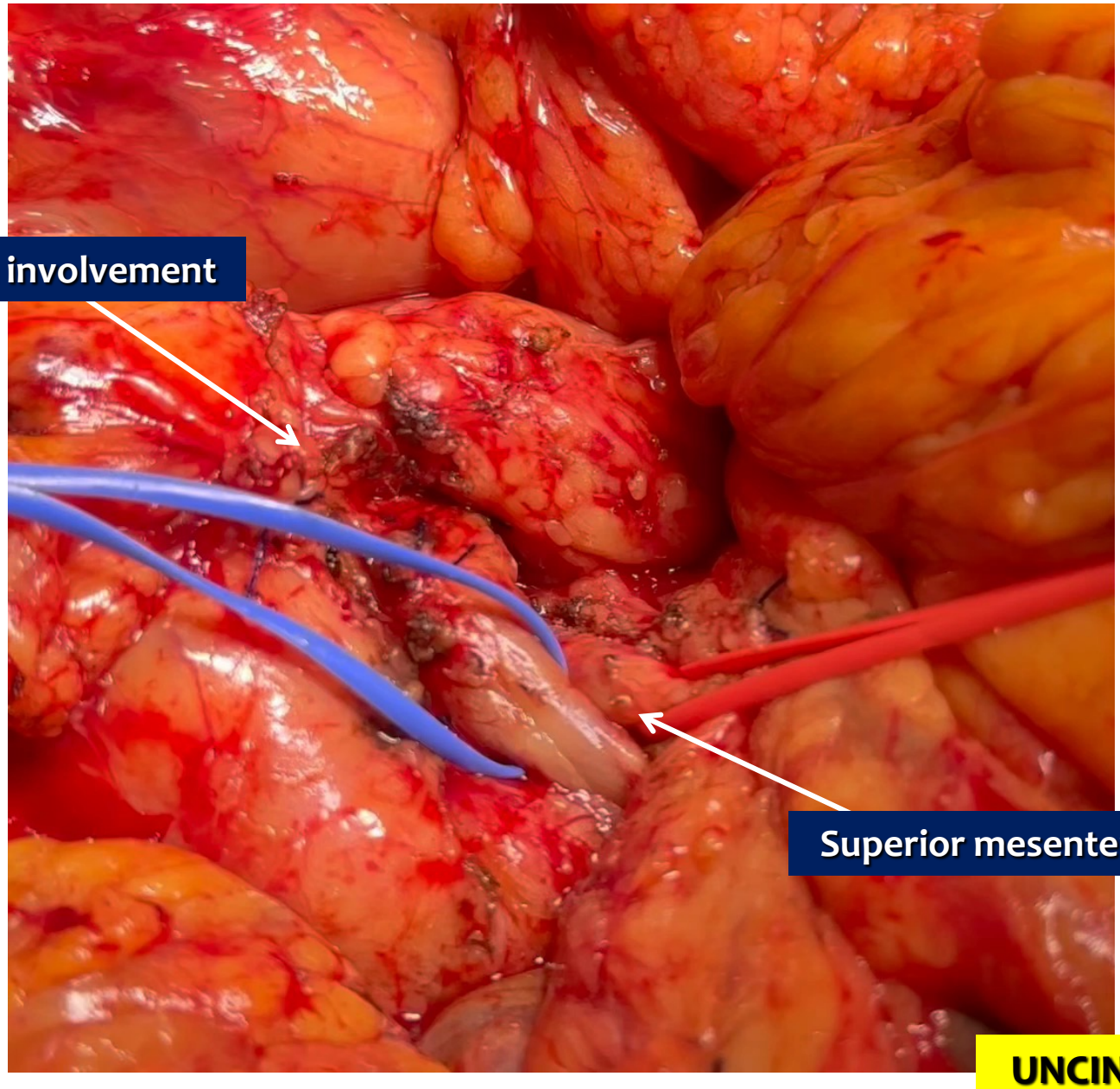
ADVANTAGES OF ARTERY FIRST APPROACH

Table 3 Advantages of the artery-first approach (SHARMA) [35]

1. Resection without breaching the tumor extension plane, thereby minimizing cell spillage
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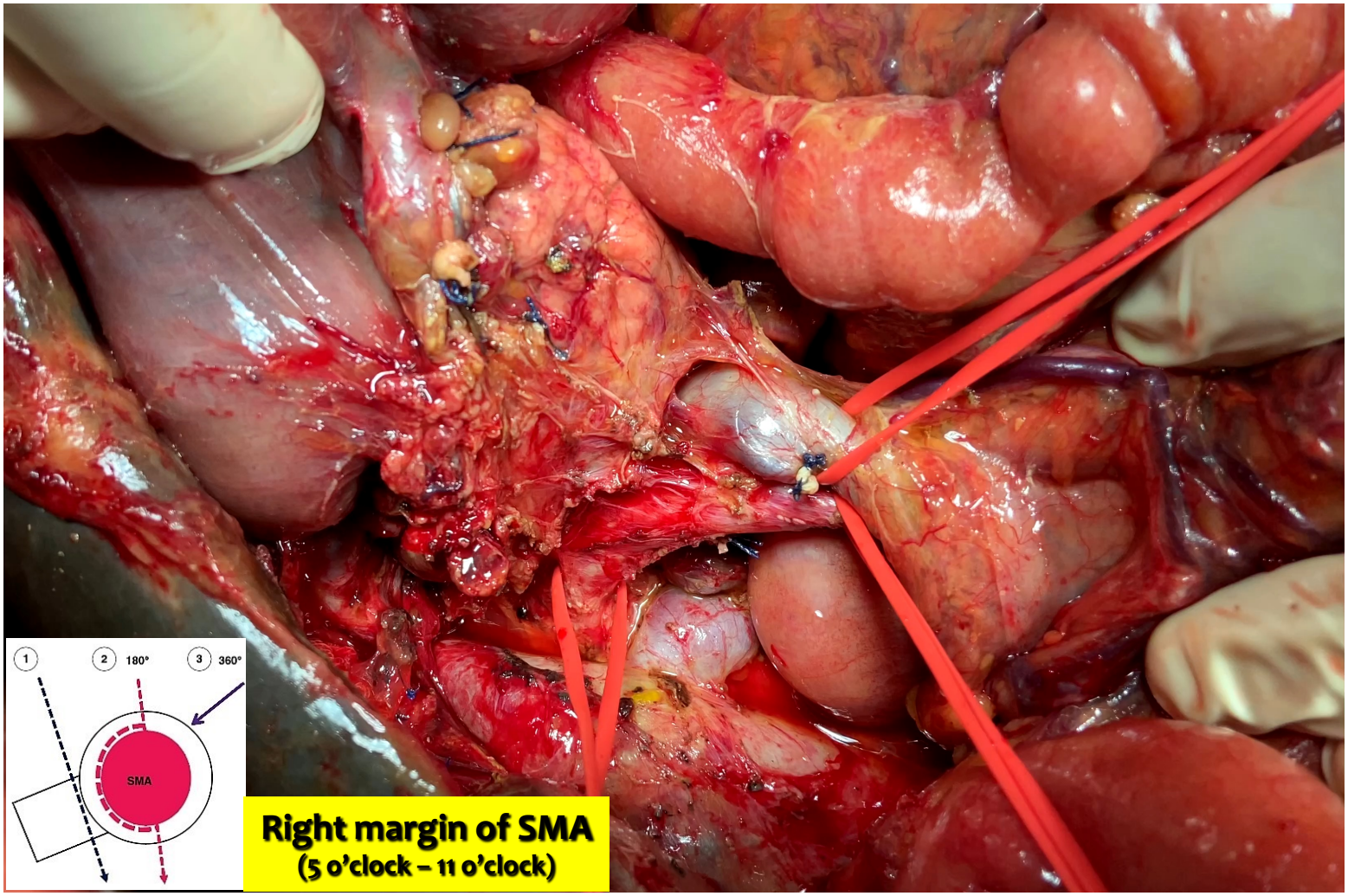
ARTERY FIRST

Fernandes ESM, et al. Langenbeck's Arch Surg 2021



UNCINATE FIRST

ARTERY FIRST



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International Journal of Surgery 73 (2020) 14–24

Contents lists available at ScienceDirect

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



Review

Superior mesenteric artery first approach can improve the clinical outcomes of pancreaticoduodenectomy: A meta-analysis

- Higher R0 resection rate (p< 0.001)
- Lower local recurrence rate (p< 0.0001)
- Higher overall survival:
  - 1-year p=0.015
  - 2-year p=0.005
  - 3-year p=0.001

Meta-analysis - 18 studies

Jiang X, et al. Int J Surg 2020;73:14-24

ARTERY FIRST

.1007/s00268-020-05856-w

World Journal of Surgery

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ORIGINAL SCIENTIFIC REPORT

Complete Lymphadenectomy Around the Entire Superior Mesenteric Artery Improves Survival in Artery-First Approach Pancreatoduodenectomy for T3 Pancreatic Ductal Adenocarcinoma

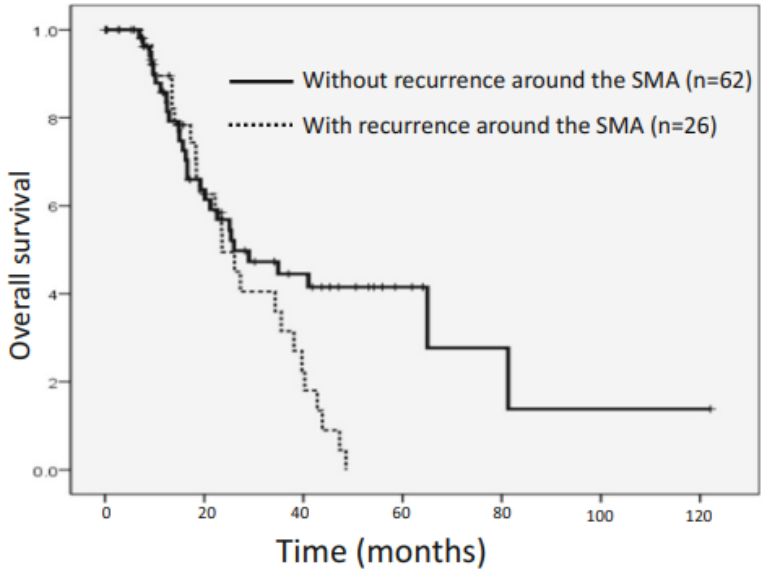


Fig. 1 Overall survival according to recurrence around the SMA. The median survival was 23.6 months in patients with recurrence around the SMA and 26 months in patients without recurrence around the SMA ($p = 0.0367$) SMA: superior mesenteric artery

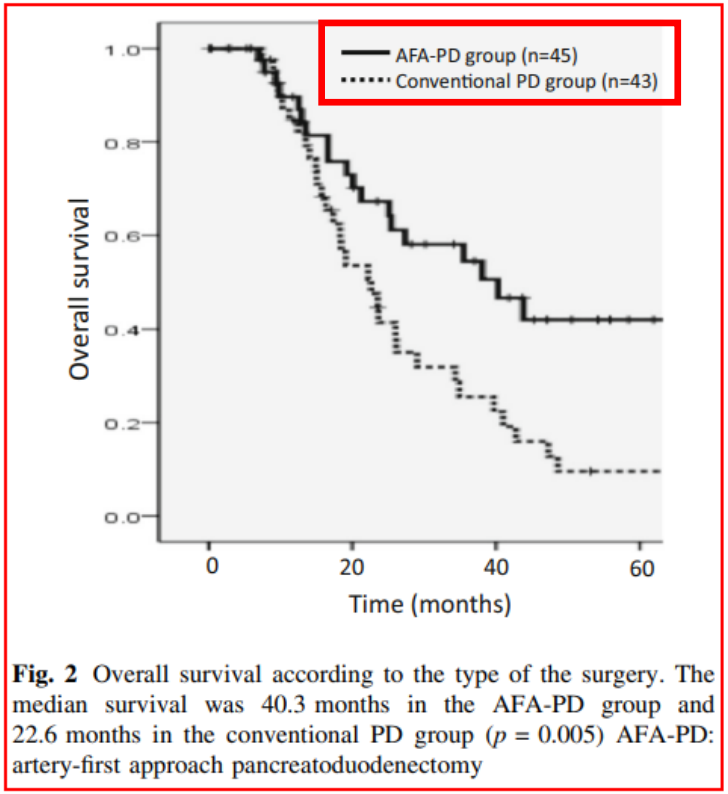


Fig. 2 Overall survival according to the type of the surgery. The median survival was 40.3 months in the AFA-PD group and 22.6 months in the conventional PD group ($p = 0.005$) AFA-PD: artery-first approach pancreatoduodenectomy

40.3 months vs 22.6 months (p= 0.005)

OVERALL SURVIVAL

Kobayashi S, et al. World J Surg 2020

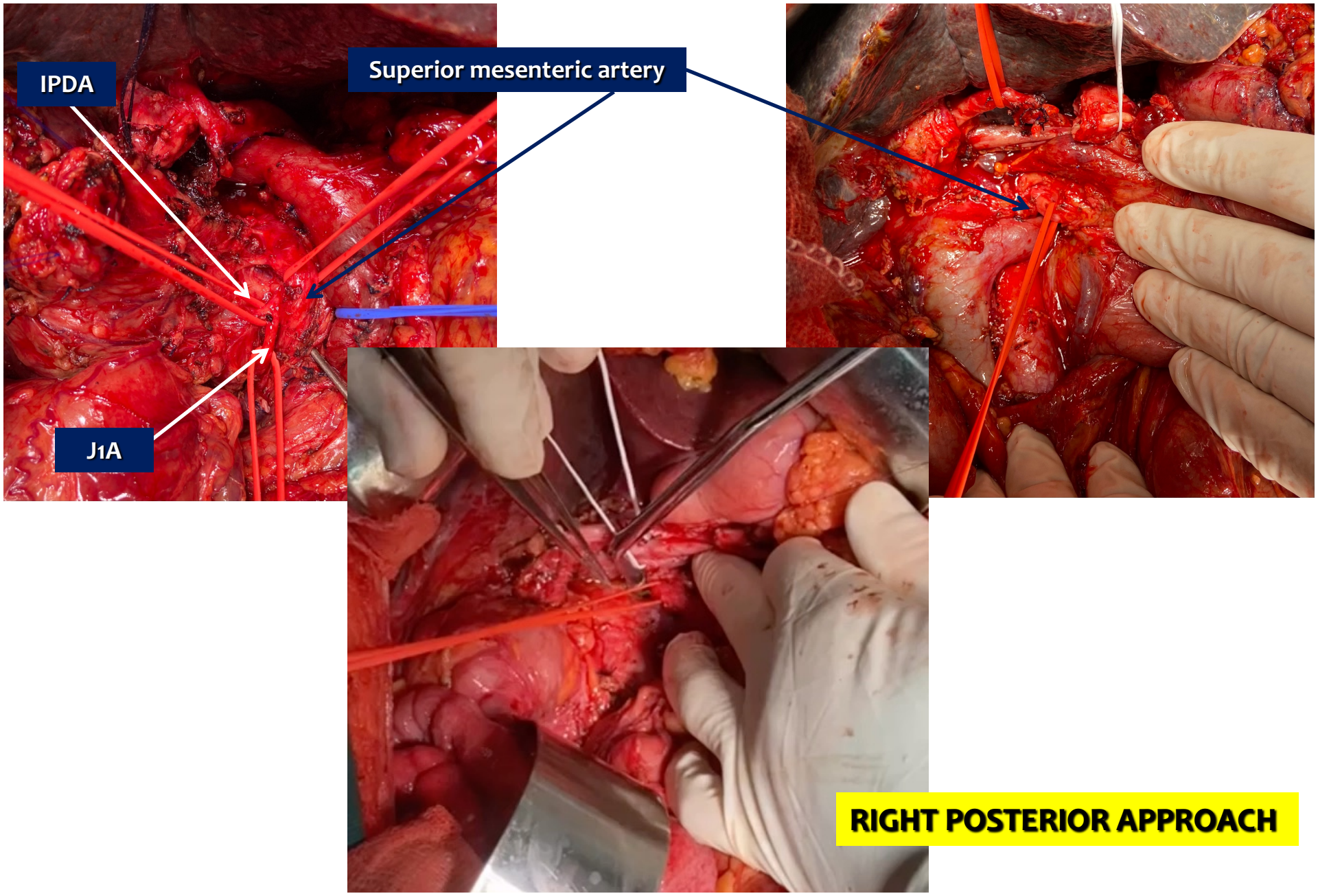
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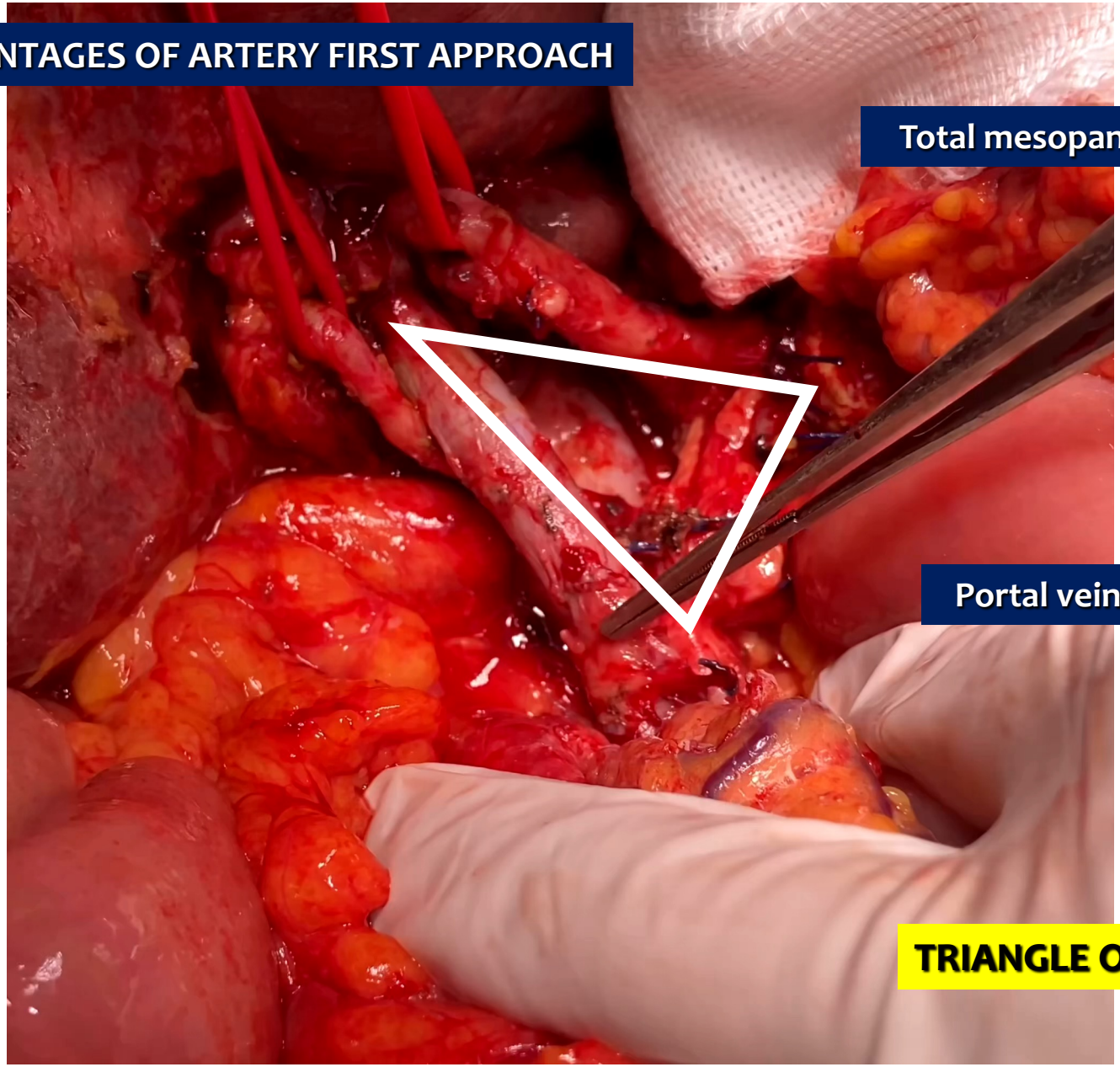
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Fernandes ESM, et al. Langenbeck's Arch Surg 2021


IPDA
Superior mesenteric artery
J1A
RIGHT POSTERIOR APPROACH

ADVANTAGES OF ARTERY FIRST APPROACH



Total mesopancreas excision

Portal vein resection

TRIANGLE OPERATION

ADVANTAGES OF ARTERY FIRST APPROACH

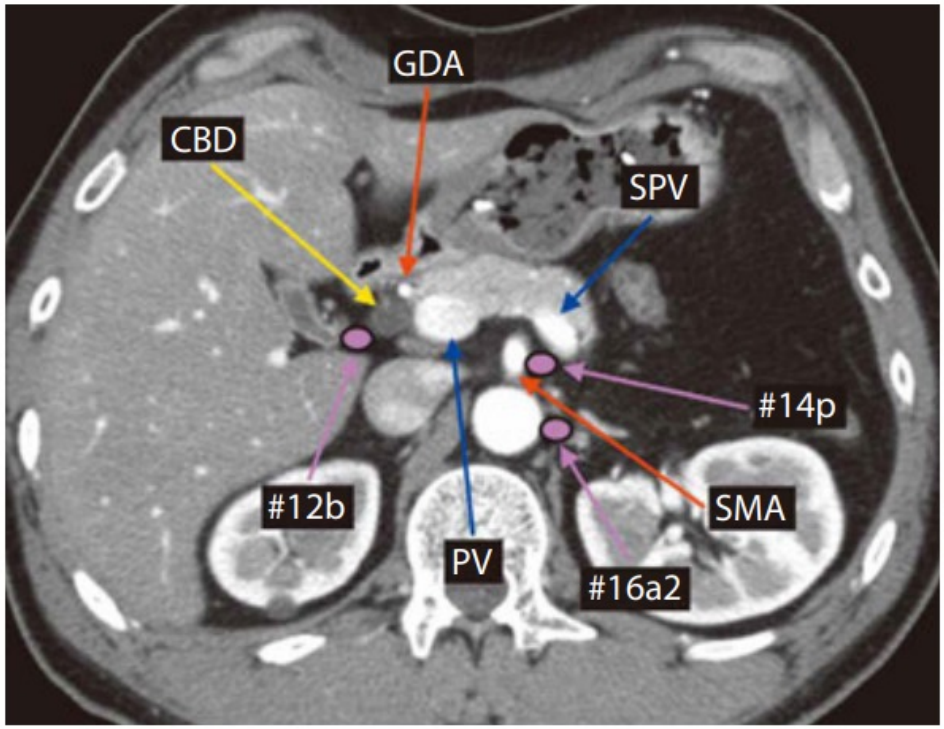
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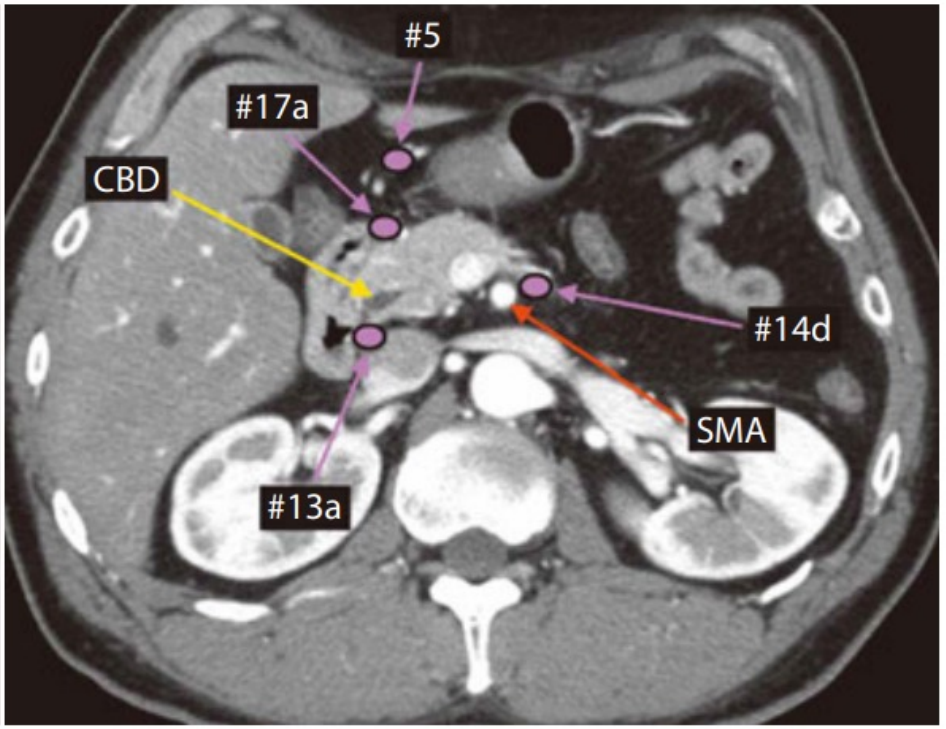
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Fernandes ESM, et al. Langenbeck's Arch Surg 2021

LYMPHADENECTOMY





14p, 14d

ARTERY FIRST

.1007/s00268-020-05856-w

World Journal of Surgery

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ORIGINAL SCIENTIFIC REPORT

Complete Lymphadenectomy Around the Entire Superior Mesenteric Artery Improves Survival in Artery-First Approach Pancreatoduodenectomy for T3 Pancreatic Ductal Adenocarcinoma

ARTERY FIRST

Table 2 Comparison of perioperative and oncological outcomes between the AFA-PD group and the conventional PD group

	AFA-PD group	Conventional PD group	*P*
	n = 45	*n* = 43	
Operative time, median (range), min	443 (390–497)	467 (414–530)	0.1312
Intraoperative blood loss, median (range), mL	811 (520–1150)	899 (720–1443)	**0.0210**
Transfusion, n (%)	19 (42.2)	22 (51.2)	0.5178
Portal vein resection, n (%)	12 (26.7)	13 (30.2)	0.8147
Postoperative complications, ≥ grade IIIa, n (%)	3 (6.7)	5 (11.6)	0.4794
Curative resection R0, n (%)	35 (77.8)	28 (65.1)	0.3423
No. harvested lymph nodes, median (range)	23 (14–37)	19 (12–22)	**0.0165**
No. harvested lymph nodes of #14p, median (range)	4 (2–5)	1 (0–3)	**< 0.001**
No. harvested lymph nodes of #14d, median (range)	4 (2–5)	2 (0–3)	**0.0146**
Lymph node metastasis, n (%)	27 (60)	30 (69.8)	0.3376

Bold values are statistically significant ($p < 0.05$)

AFA-PD - Artery first approach pancreatoduodenectomy

Kobayashi S, et al. World J Surg 2020

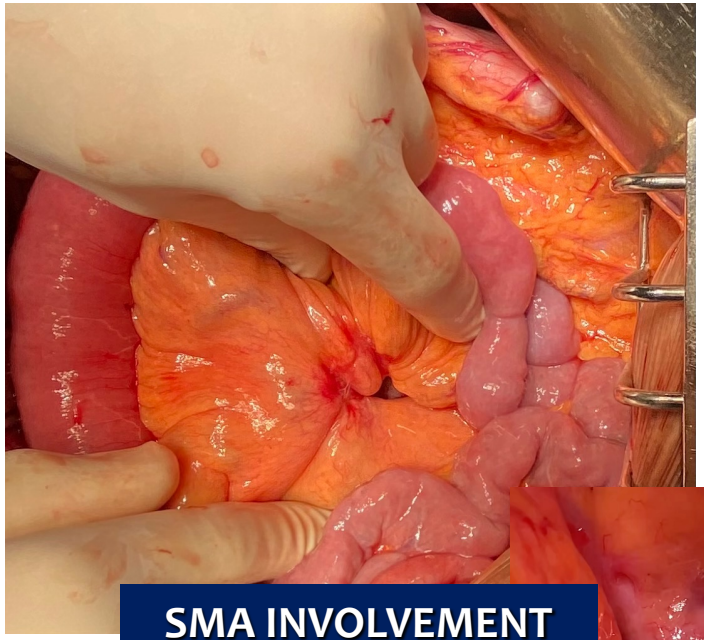
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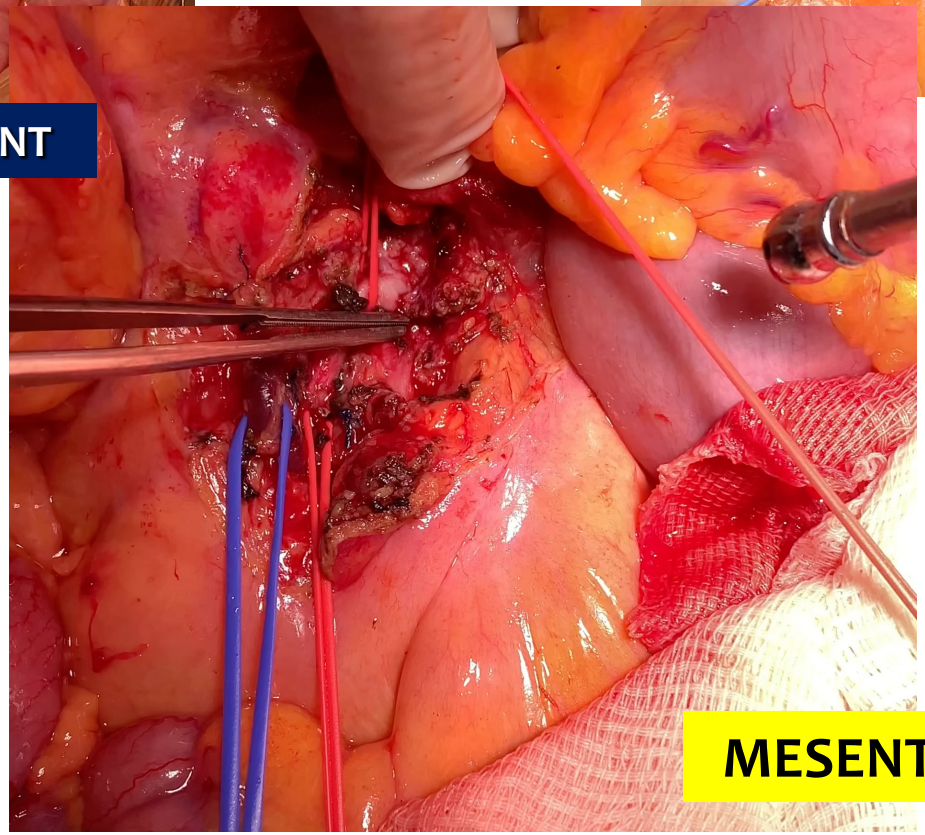
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Fernandes ESM, et al. Langenbeck's Arch Surg 2021







SMA INVOLVEMENT

MESENTERIC APPROACH

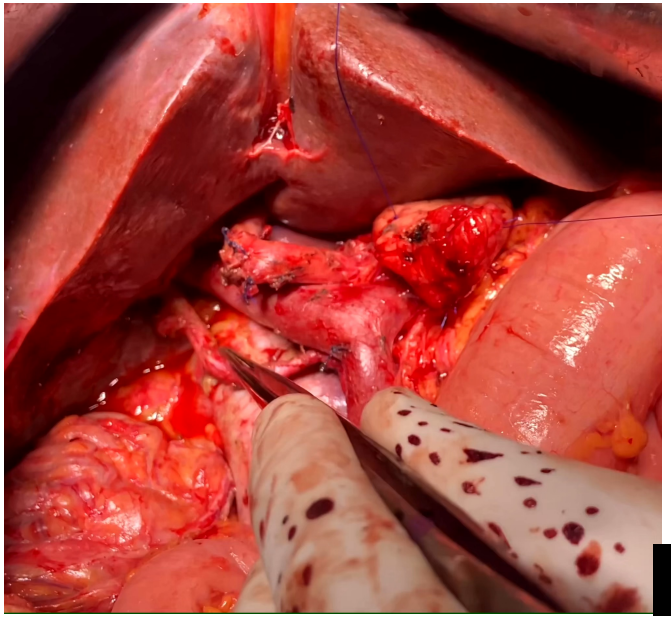
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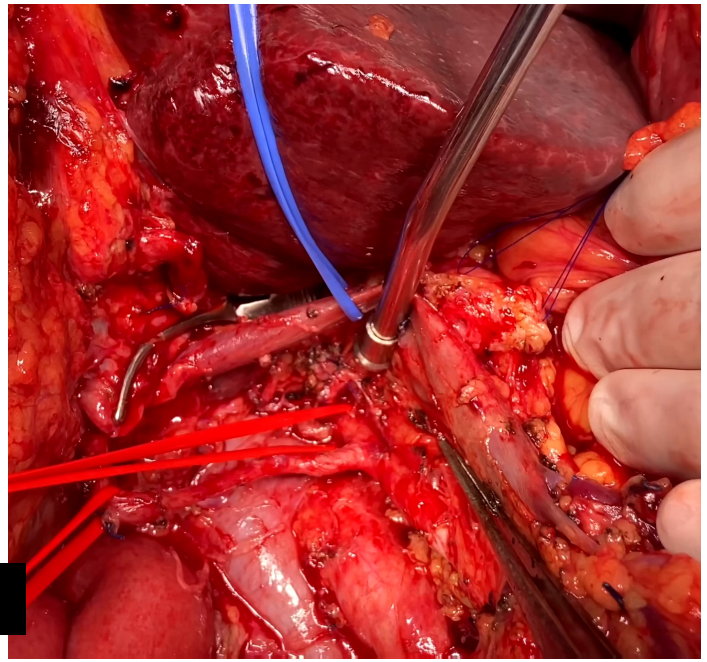
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ARTERY FIRST

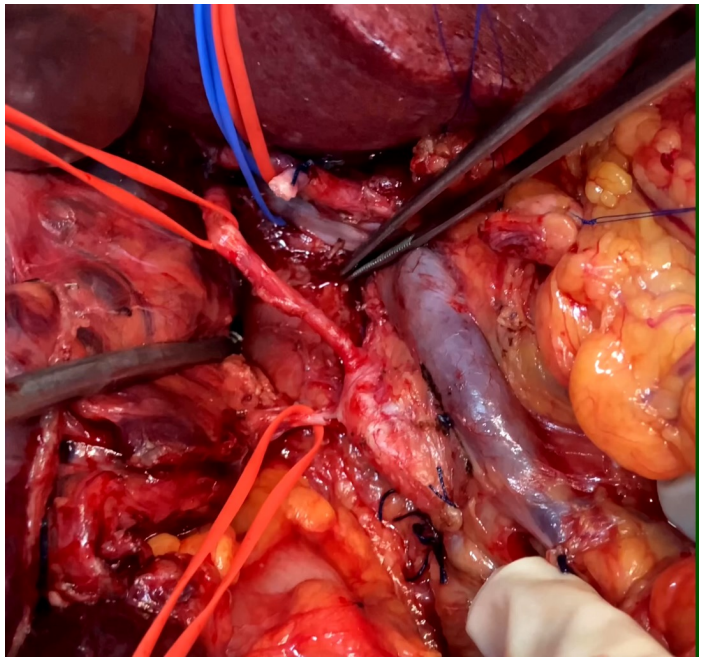
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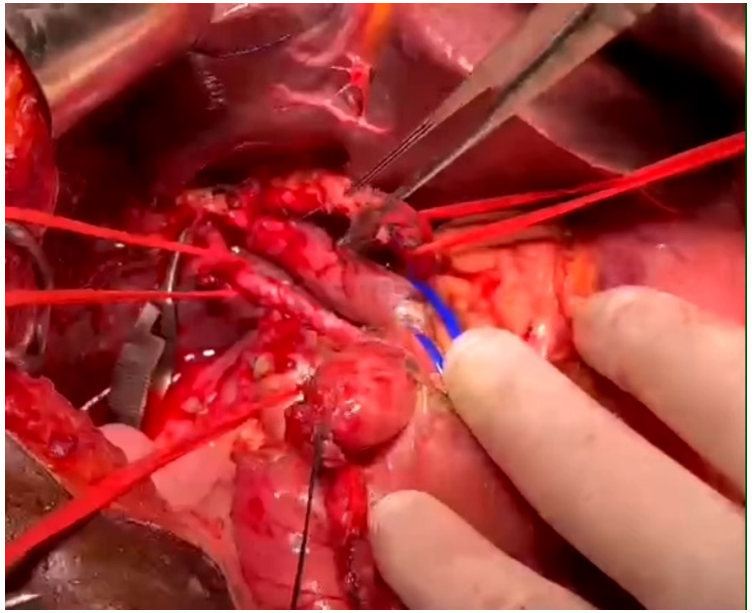
Right hepatic artery

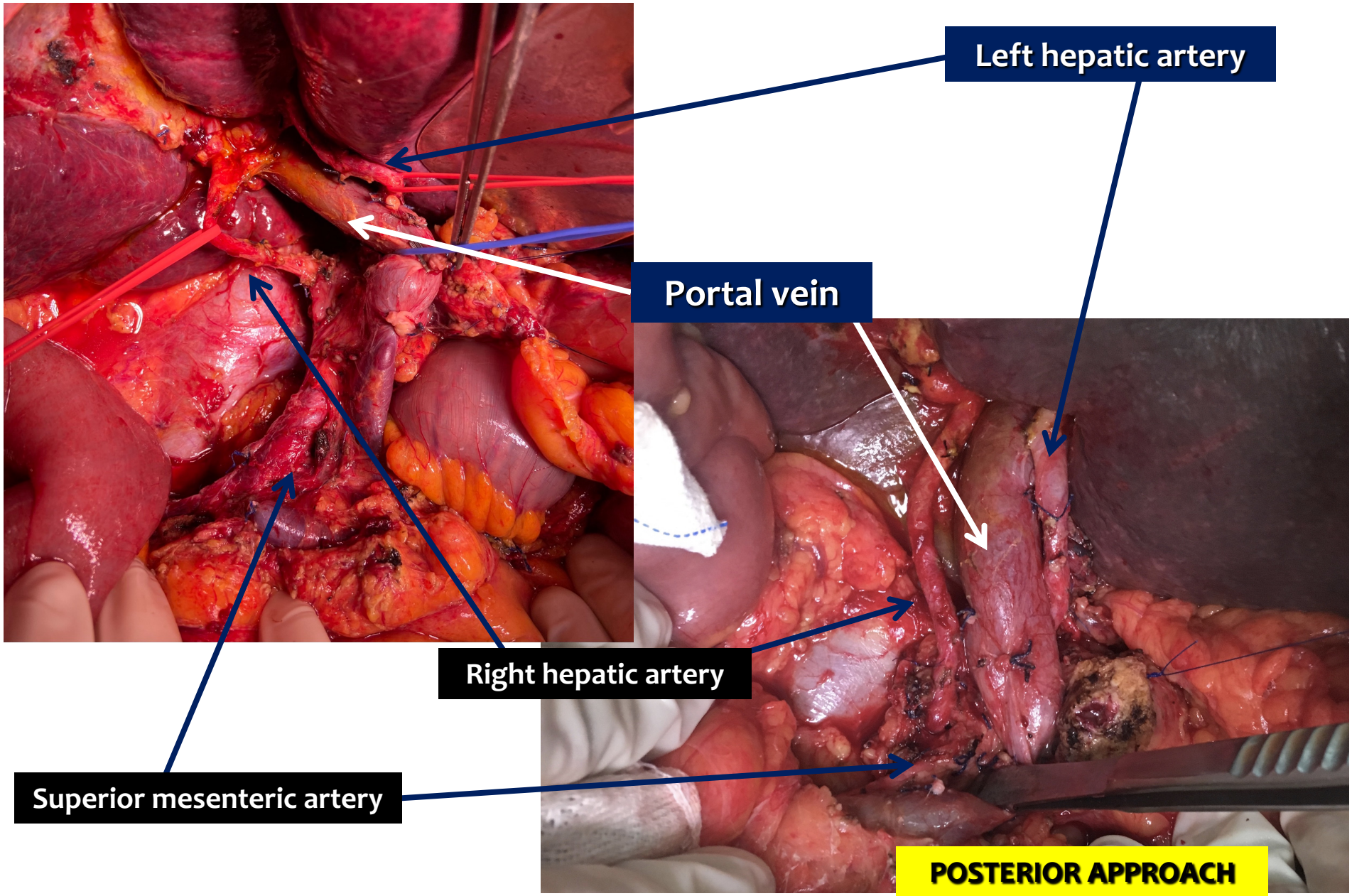


Superior mesenteric artery



ARTERY FIRST




Left hepatic artery
Portal vein
Right hepatic artery
Superior mesenteric artery
POSTERIOR APPROACH

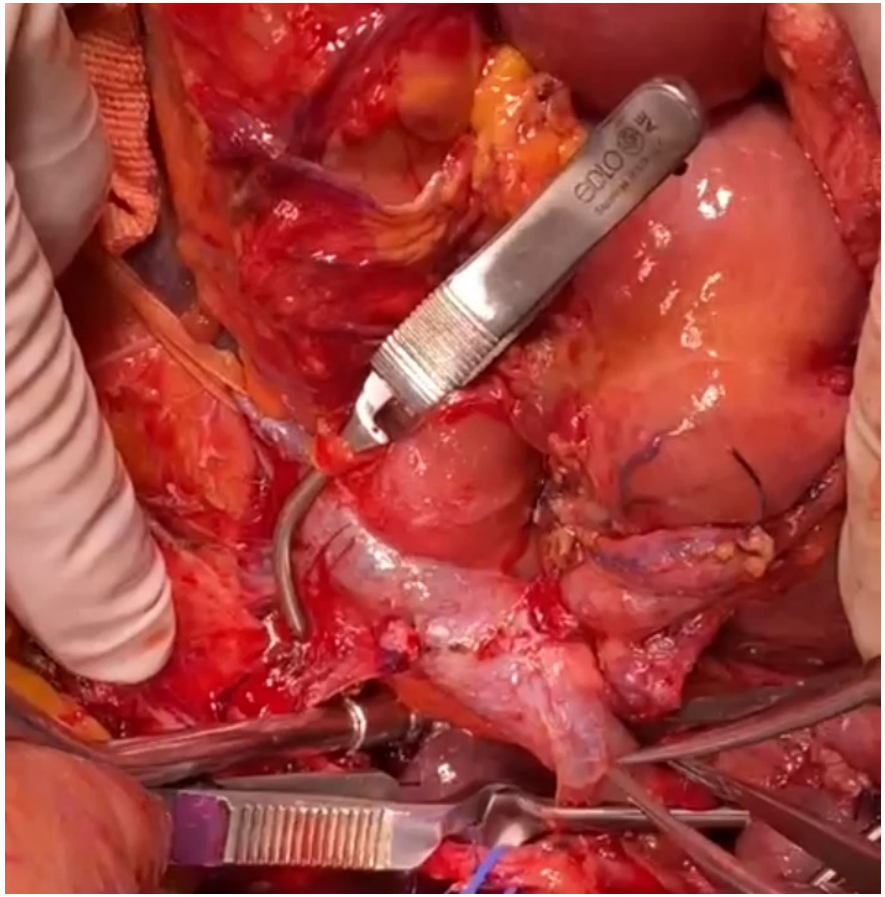
ADVANTAGES OF ARTERY FIRST APPROACH

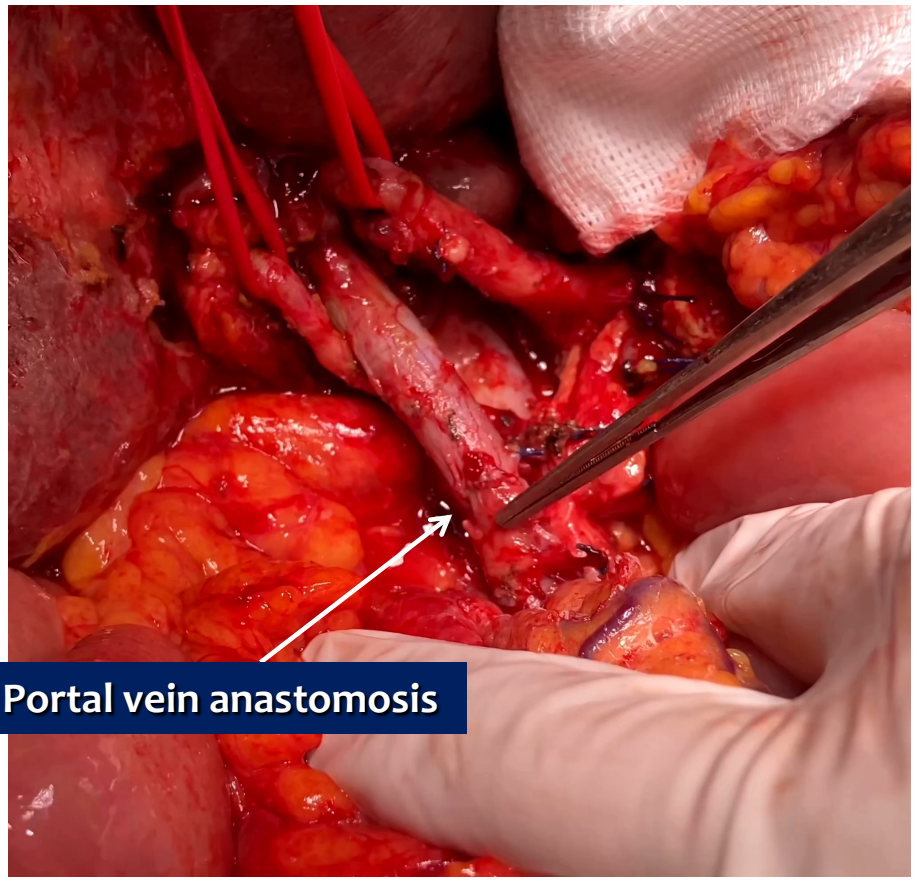
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1. Resection without breaching the tumor extension plane, thereby minimizing cell spillage
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ARTERY FIRST

Fernandes ESM, et al. Langenbeck's Arch Surg 2021



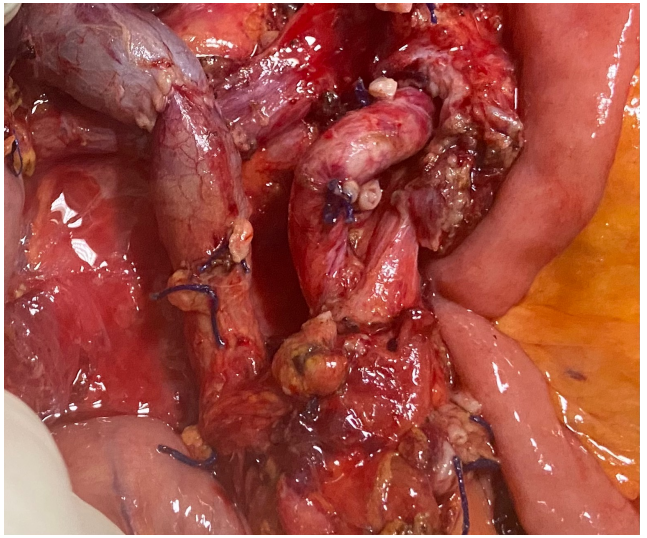


Portal vein/superior mesenteric vein resection/reconstruction

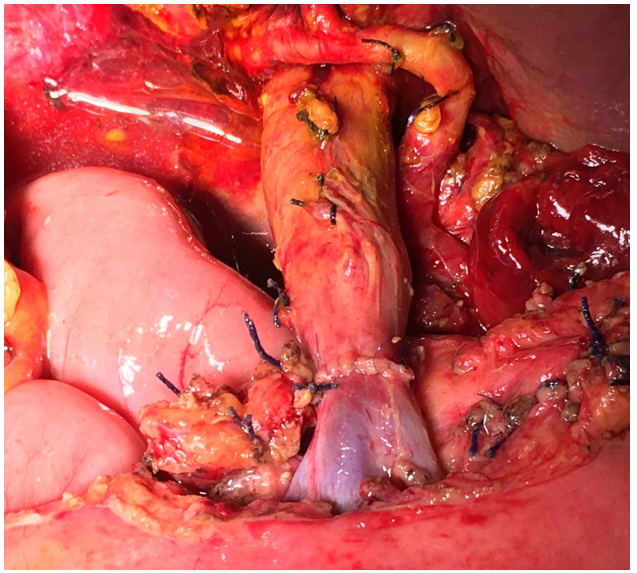
ADVANTAGES OF ARTERY FIRST APPROACH

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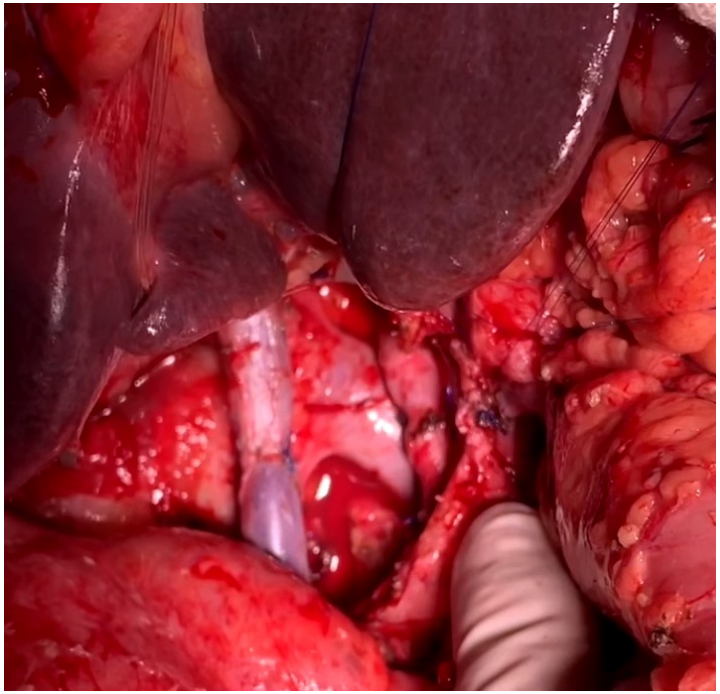


NO GRAFT

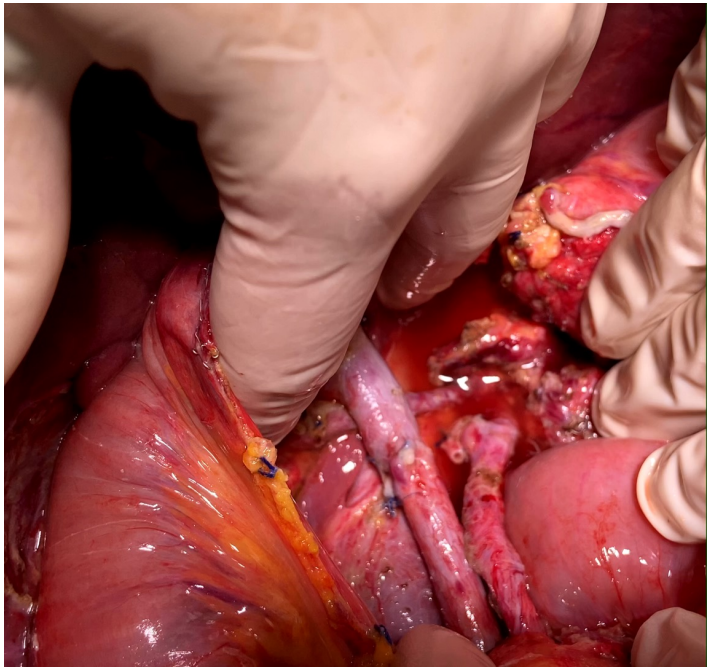


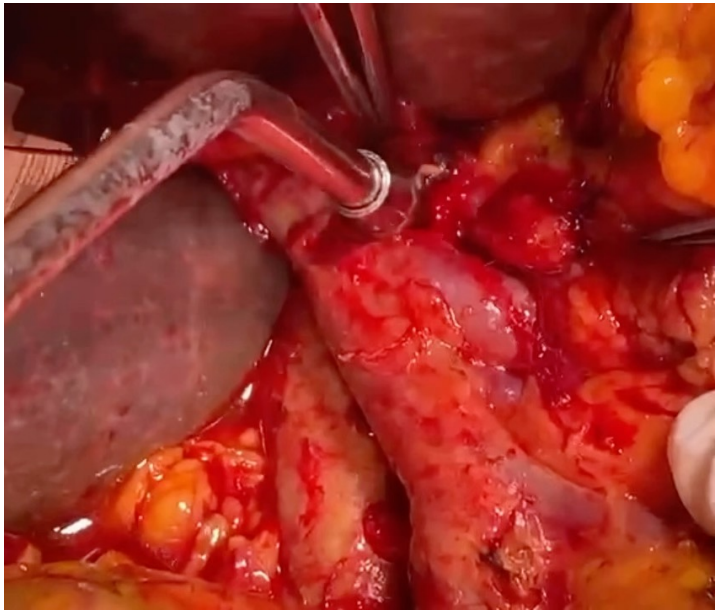
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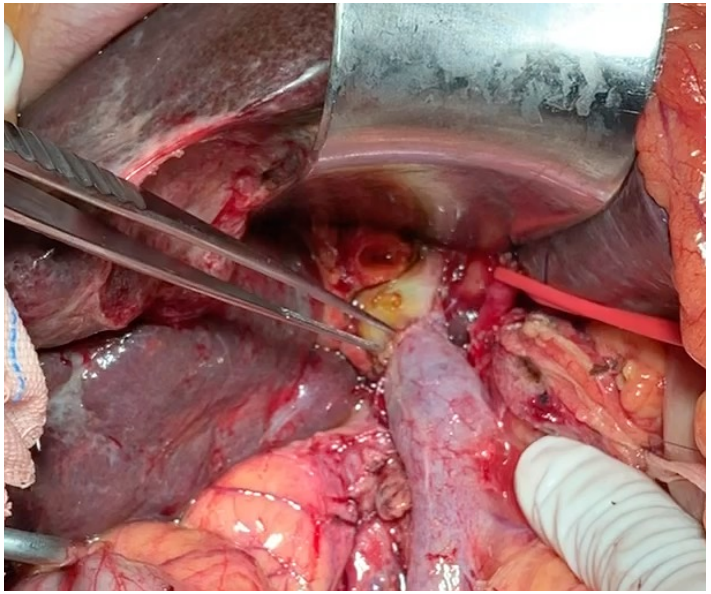
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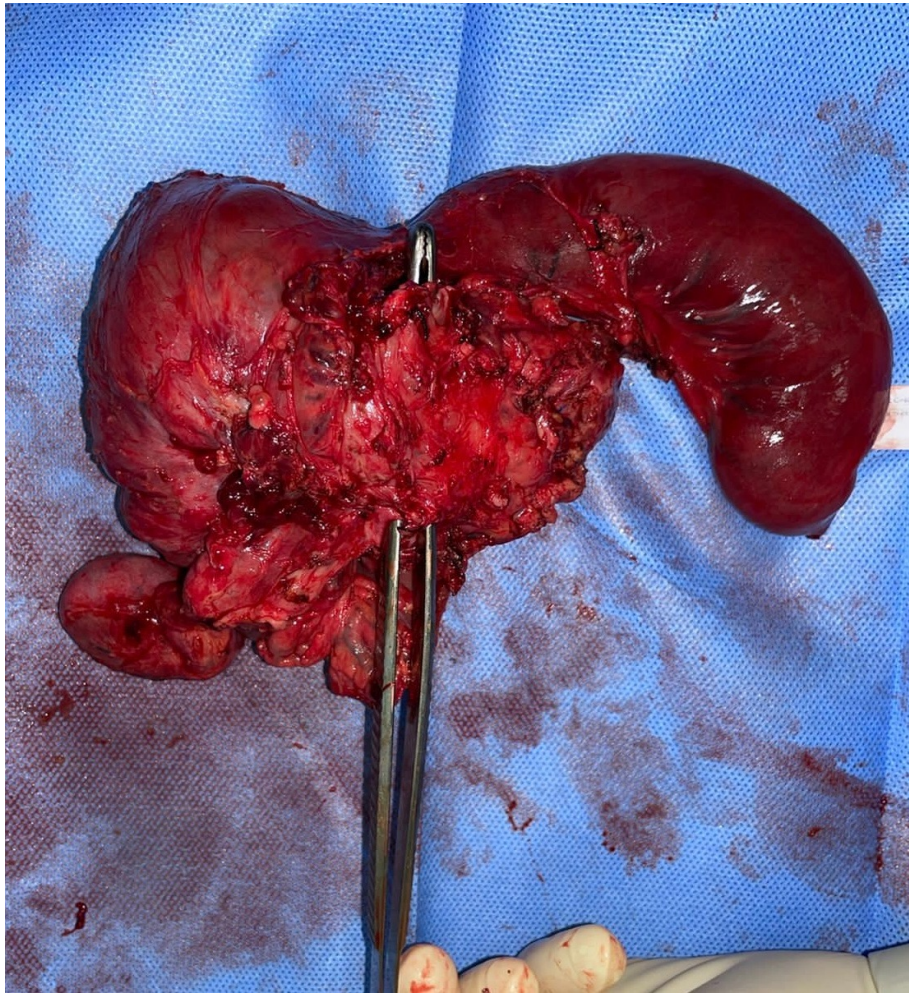


NO GRAFT









Portal vein resection



Jakarta - Indonesia

September 2022

ARTERY FIRST

ADVANTAGES OF ARTERY FIRST APPROACH

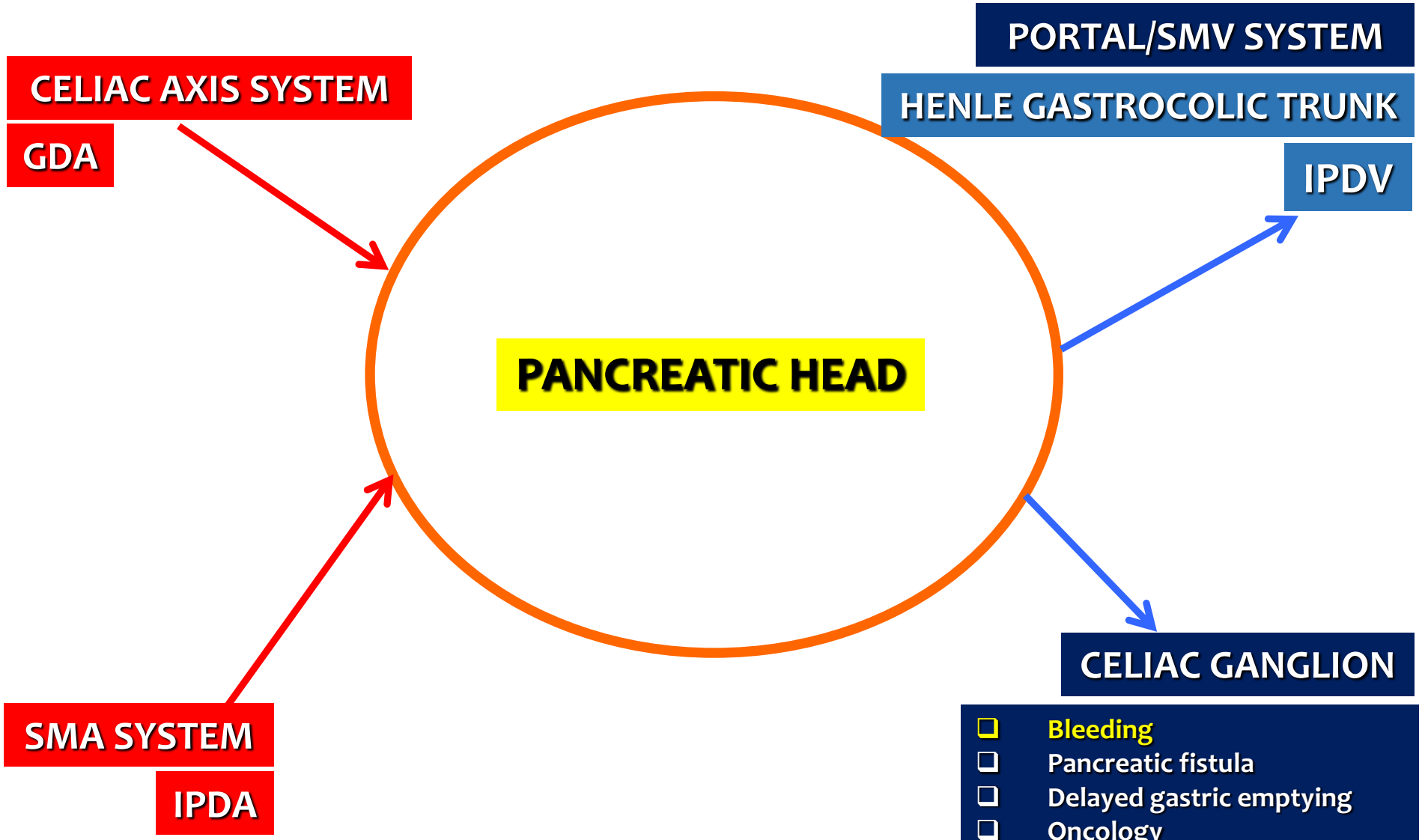
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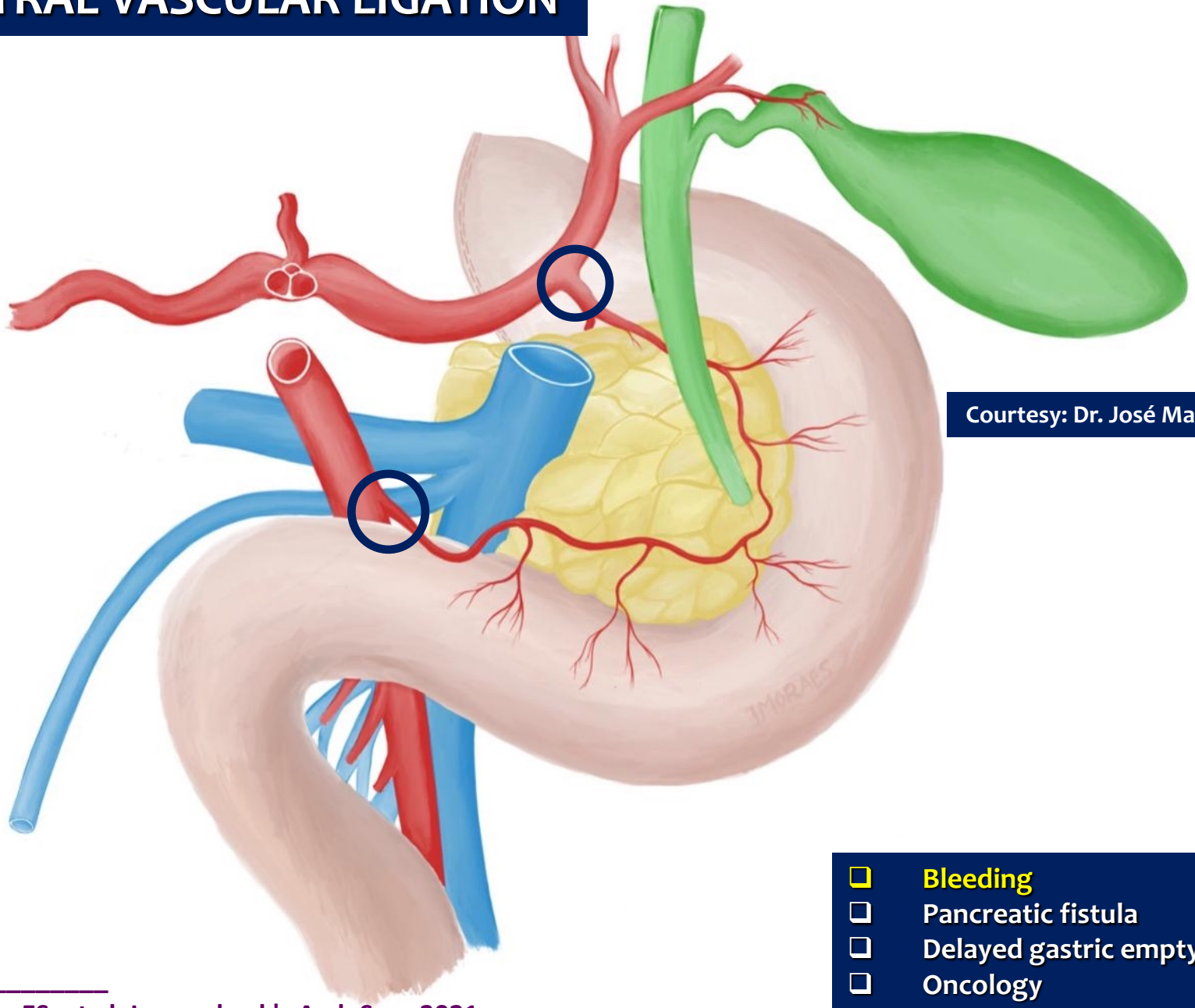
ARTERY FIRST

Fernandes ESM, et al. Langenbeck's Arch Surg 2021

CENTRAL VASCULAR LIGATION



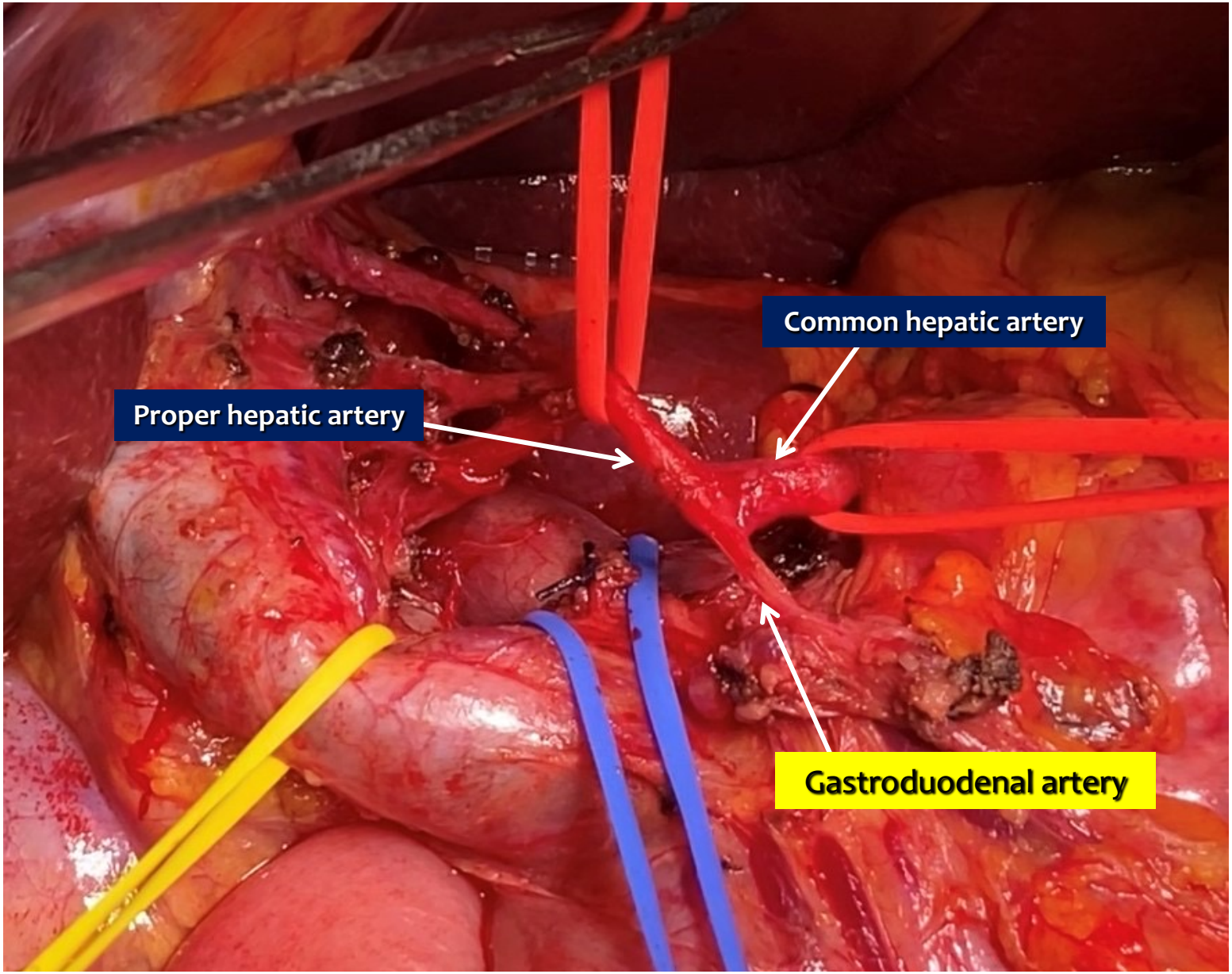
CENTRAL VASCULAR LIGATION

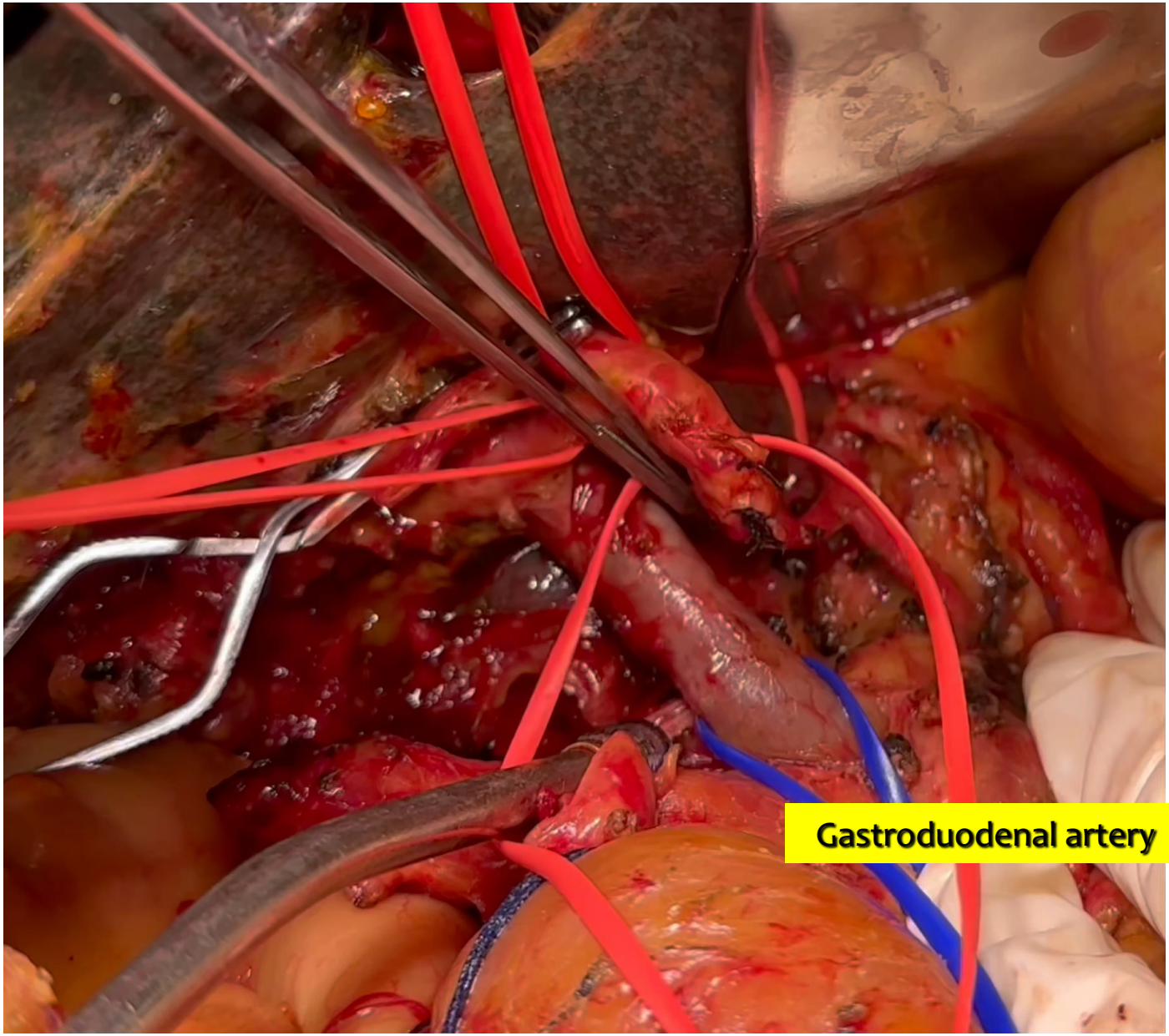


Courtesy: Dr. José Maria

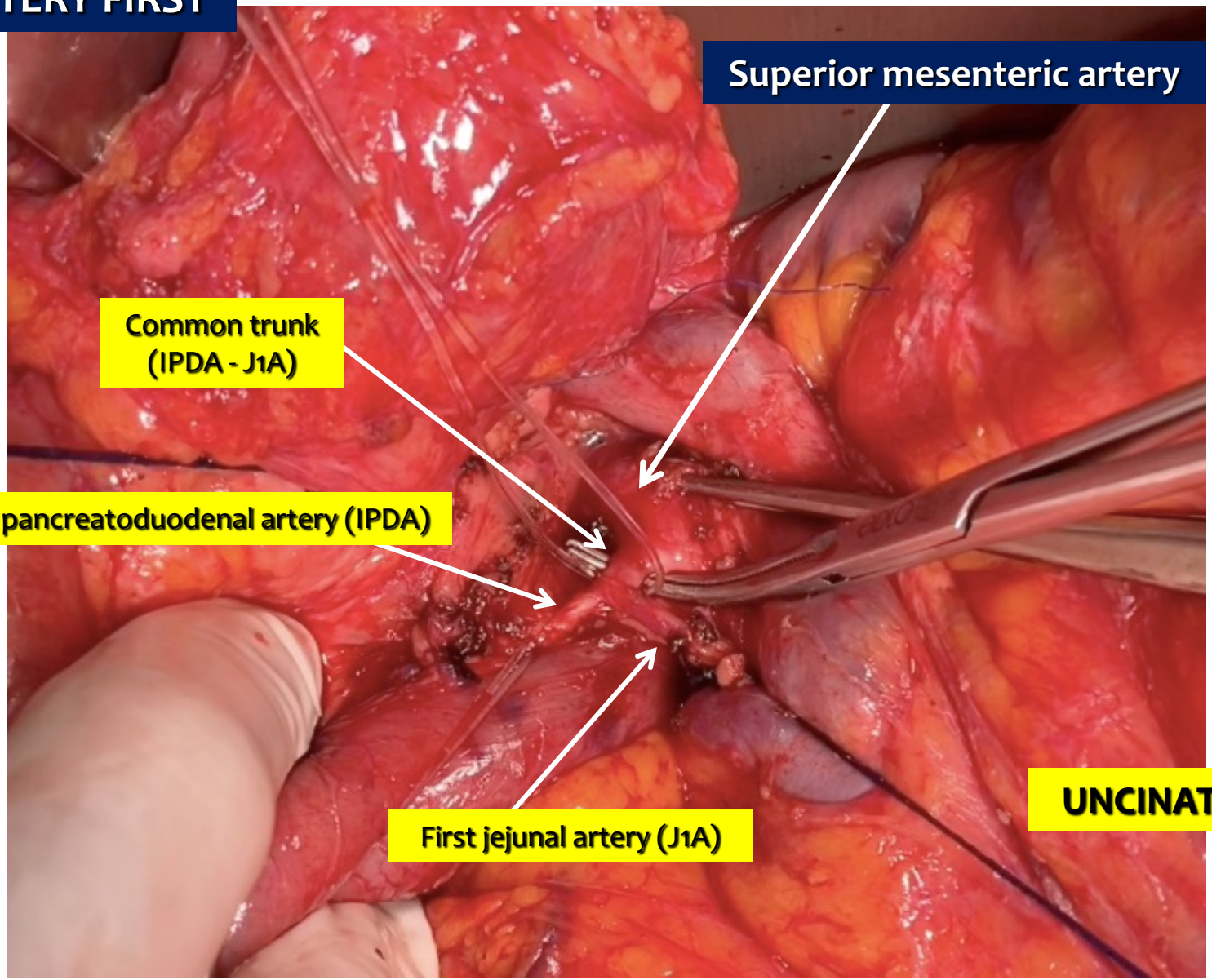
- ❑ Bleeding
- ❑ Pancreatic fistula
- ❑ Delayed gastric emptying
- ❑ Oncology

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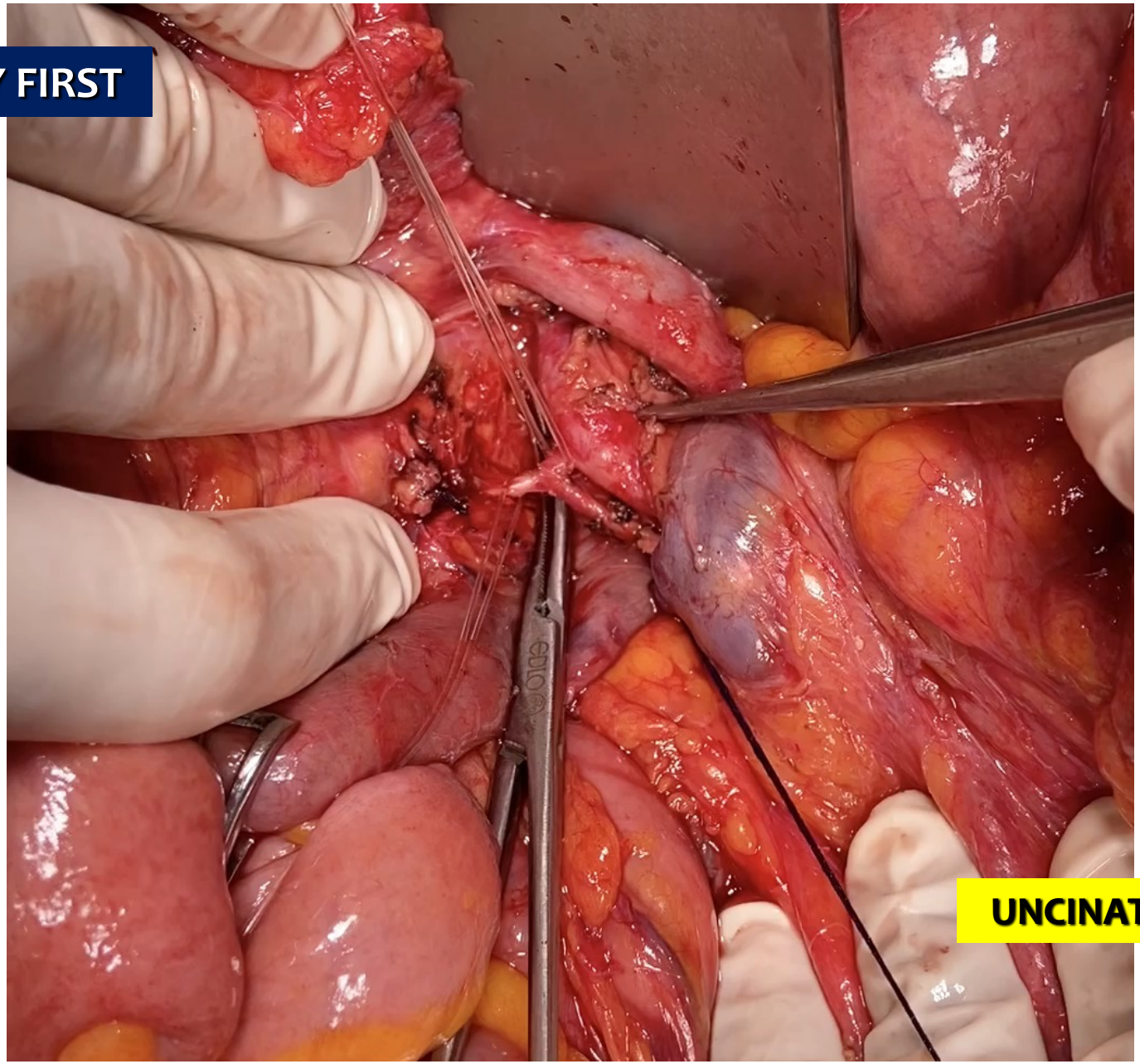

Common hepatic artery
Proper hepatic artery
Gastroduodenal artery


Gastroduodenal artery

ARTERY FIRST

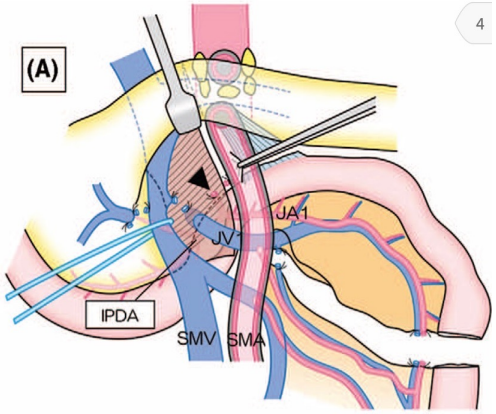


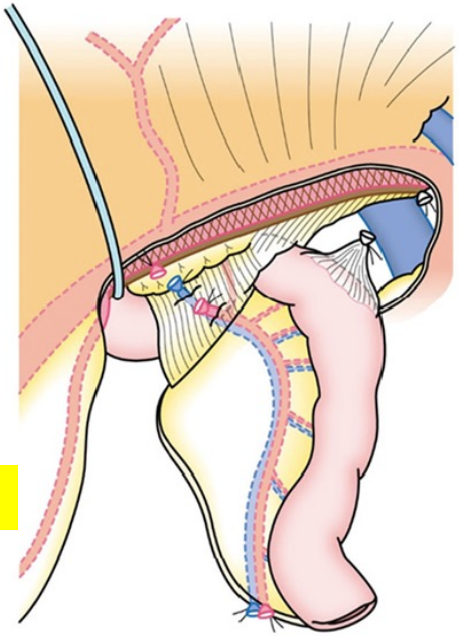
ARTERY FIRST



UNCINATE FIRST

FIRST JEJUNAL ARTERY

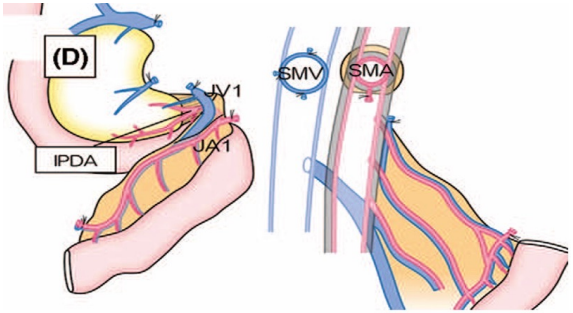


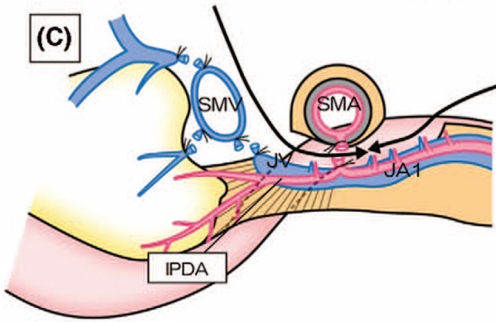


First jejunal artery (J1A)



Mesojejuno





Level 3

Inoue Y, et al. J Gastrintest Surg 2016

International Journal of Surgery 73 (2020) 14–24

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Review

Superior mesenteric artery first approach can improve the clinical outcomes of pancreaticoduodenectomy: A meta-analysis

Conclusion

In conclusion, better clinical outcomes were found in patients treated with SMA-PD. Particularly in pancreatic cancer patients, SMA-PD significantly contributed to long-term survival. Furthermore, different operative efficacy was observed in six SMA approaches, and the posterior approach exerted the optimal effect on clinical outcomes of SMA-PD.

Meta-analysis - 18 studies

Jiang X, et al. Int J Surg 2020;73:14-24

PANCREATODUODENECTOMY

Artery first approach: when and how to do it

- Pancreatic ductal adenocarcinoma (head of the pancreas)
- After neoadjuvant chemotherapy

LEFT POSTERIOR APPROACH
(Kurosaki et al, 2011)

ANTERIOR APPROACH
(Hirato et al, 2010)

SUPERIOR APPROACH
(Makino et al,2008)

RIGHT POSTERIOR APPROACH
(Pessaux et al,2006)

UNCINATE APPROACH
(Shukla et al, 2007; Hackert et al, 2010)

MESENTERIC APPROACH
(Nakao and Takagi, 1993)





Thanks!

Gracias!

Obrigado!

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