

Comment faire une pancréatectomie atypique ?

L. Schwarz



➤ **16h42** : Comment faire une pancréatectomie atypique ?
Lilien SCHWARZ, Rouen, France

MERCREDI 17 SEPTEMBRE

AUBÉPINE 5

Pancréas



ACHBT
ASSOCIATION DE CHIRURGE
HÉPATO-BILIO-PANCRÉATIQUE
ET TRANSPLANTATION

De quoi parle-t-on ?

ATYPIQUE ...

Définition

- Pancréatectomie = resection pancréatique
- Atypique = ?
 - Qui ne répond pas au type habituel. *Maladie atypique.*
 - Que l'on peut difficilement classer. *Une artiste atypique*
 - Qui diffère du type normal.

<https://dictionnaire.lerobert.com/>

Med Biol T1, 1970

Définition

Optimizing terminology for pancreatectomy: Introducing a new notation system

2. Type of pancreatectomy

3. The information of resected pancreas area
head, h; body, b; tail, t

OPD(hb')-SMV

1. The approach

4. Sites of combined resection

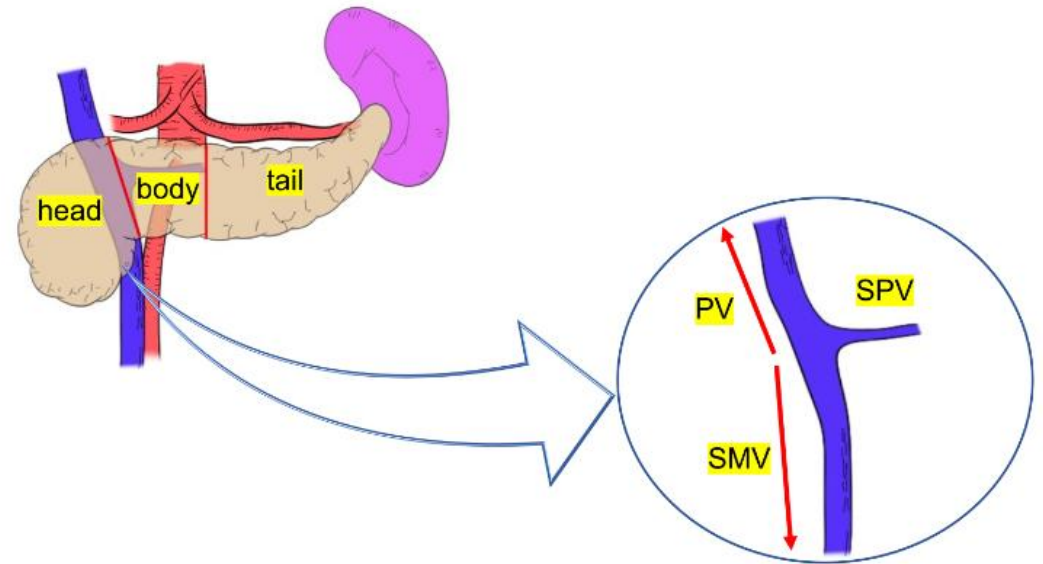


TABLE 3 Examples of the new notations for pancreatectomy.

Surgical procedures	Pancreas transection line (resected pancreas area)	New notation
Open PD	SMV (head)	OPD(h)
Open PD with SMV, PV, and SPV resection	SMA (head, part of body)	OPD(hb')-SMV-PV-SPV
Open PD with SPA resection (i.e., PD-SAR)	Left side of aorta (head, body, part of tail)	OPD(hbt')-SPA[PD-SAR]
Laparoscopic PD	SMA (head, part of body)	LPD(hb')
Laparoscopic PD converted to open procedure	SMA (head, part of body)	L → OPD(hb')
Robotic PD	SMV (head)	RPD(h)
Open duodenum-preserving total pancreatic head resection (i.e., DPPHR) with bile duct resection	SMV (head)	OPP(h)-B
Open DP with splenectomy and left adrenalectomy	SMV (body, tail)	ODP(bt)-S-AG-G
Open DP with CA resection (i.e., DP-CAR) and cholecystectomy	Under GDA (part of head, body, tail)	ODP(h'bt)-S-G-CA/GB[DP-CAR]
Open DP with splenectomy and SMV resection and partial hepatectomy (S2)	SMV (body, tail)	ODP(bt)-S-G-SMV/H2'
Laparoscopic spleen-preserving DP (Kimura procedure)	Left side of aorta (tail)	LDP(t) [Kimura]
Laparoscopic spleen-preserving DP (Warshaw procedure)	SMA (part of body, tail)	LDP(b't)-SPA-SPV [Warshaw]
Robotic DP with splenectomy	SMA (part of body, tail)	RDP(b't)-S
Laparoscopic DP with splenectomy and enucleation of pancreas head tumor	SMV (body, tail), in pancreas head	LDP(bt)-S/LEN(h)
Open TP with splenectomy	Absent (head, body, tail)	OTP(hbt)-S
Open CP	SMV, left edge of aorta (body)	OCP(b)
Laparoscopic enucleation	in pancreas head (part of head)	LEN(h')

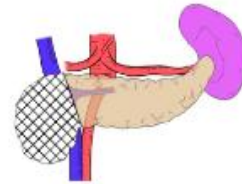
Opti
new

ng a

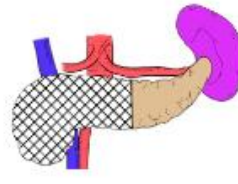
Définition

(a) Pancreatoduodenectomy

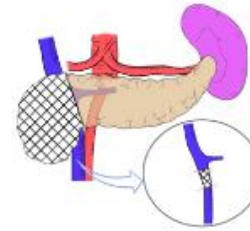
 Resected area



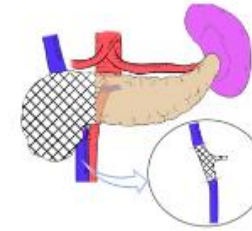
OPD(h)



OPD(hbt')

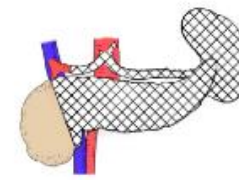
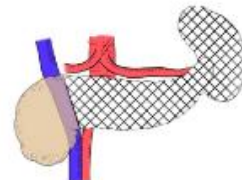


OPD(h)-SMV



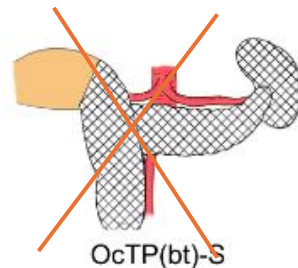
OPD(hb')-SMV-PV-SPV

(b) Distal Pancreatectomy

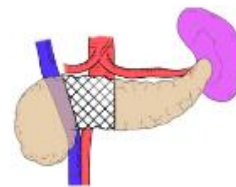


Chirurgie d'épargne pancréatique

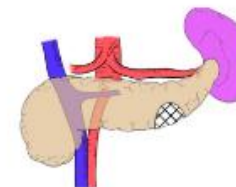
(c) Other types of Pancreatectomy



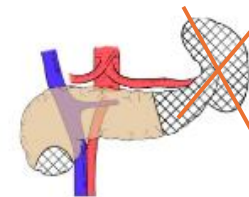
OcTP(bt)-S



OCP(b)



LEN(t')



LDP(t')-S/LEN(h')

Chirurgie d'épargne pancréatique

Enucléations

Pancréatectomies médianes/centrales

Résections de l'uncus

Indications, Rationnel, Résultats

Procedure	Indication	Contraindication	Preoperative workup	Tips and Pitfalls	Results
Enucleation	pNETs BD-IPMNs ++ MCNs	Invasive tumor Size > 2cm Distance with MPD < 3mm	MRI Endoscopic Ultrasound	Intraoperative ultrasonography Preoperative MPD stenting	POPF : 43-45% Toward zero mortality
Uncus resection	pNETs BD-IPMNs +++	Invasive tumor Size > 2cm Distance with MPD < 3mm	Wirsungo-MRI with 3D reconstruction Endoscopic Ultrasound	Intraoperative ultrasonography Preoperative MPD stenting Intraoperative cholangiography Consider left sided approach	Severe morbidity : 9% Toward zero Mortality
Central pancreatectomy	pNETs +++ MCNs SPPT IPMNs	High risk of POPF > 70 years old Residual pancreas < 5cm Preoperative diabetes mellitus	CT scan with vascular reconstruction MRI Endoscopic Ultrasound	Gastroduodenal artery clearance mandatory Left Drainage backward left colic flexure	Morbidity: 58- 72% 50% decrease of exocrine and endocrine insufficiency

Bon résultats fonctionnels

Qualité de vie comparable à long terme à
celle de la population générale

Mortalité faible < 1% mais... morbidité +++
> 30% POPF

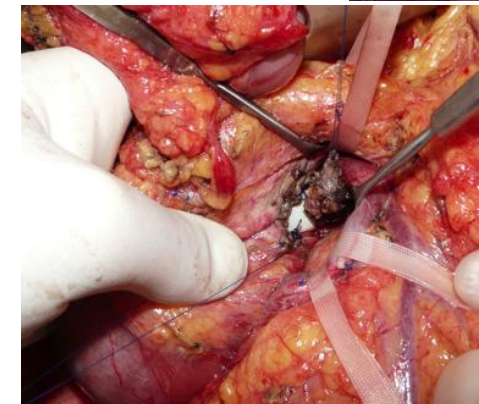
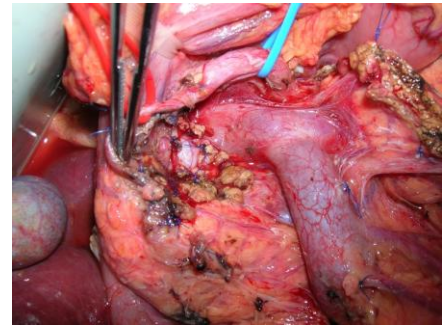
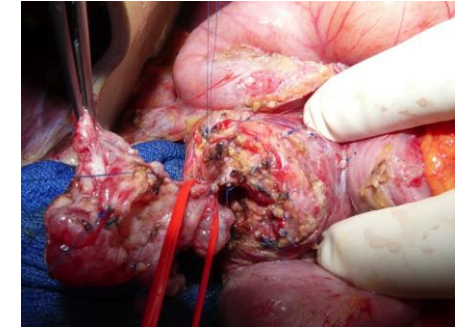
Un mot d'histoire

Première énucléation pancréatique (EN) rapportée —septembre 1889, par Giuseppe Ruggi (Bologne)

Pancréatectomie centrale (central/middle pancreatectomy), PC

- **Concept avec double anastomose** (section accidentelle isthme : **Guillemin & Bessot, 1957** (pancréatite chronique) avec anse jéjunale en oméga aux deux moignons.
- **Première PC « planifiée » pour tumeur : Dagradi & Serio, 1982** (insulinome isthmique), **publication 1984** ; technique ensuite popularisée par **lacono**

Résection isolée de l'uncus (uncinate process resection / ventral pancreatectomy) — première description comme technique dédiée : Takada, 1993 (lésion kystique chez pancreas divisum).



Enucléation pancréatique

Points particuliers

Enucléations pancréatiques

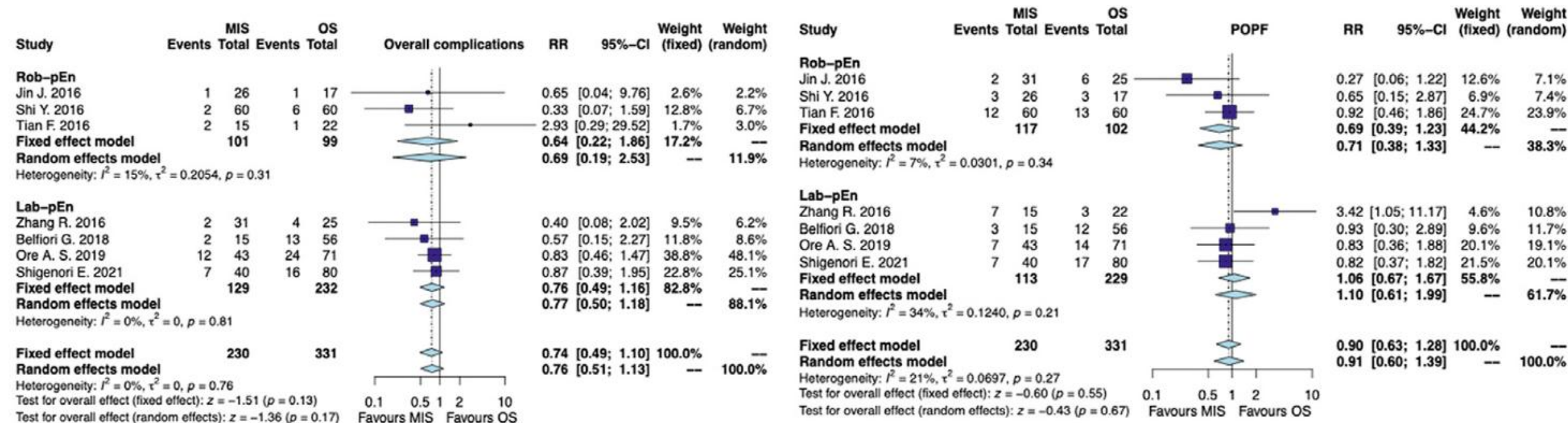
Points clés et questions ?

HPB

Approche mini-invasive ? OUI / NON

REVIEW ARTICLE

Minimally-invasive versus open pancreatic enucleation: systematic review and metanalysis of short-term outcomes



Enucléations pancréatiques

Points clés et questions ?

Surgical Endoscopy (2023) 37:544–555
<https://doi.org/10.1007/s00464-022-09527-w>

ORIGINAL ARTICLE



Distance tumeur/CPP ?

Laparoscopic pancreatic enucleation: cystic lesions and proximity to the Wirsung duct increase postoperative pancreatic fistula

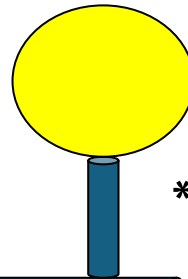
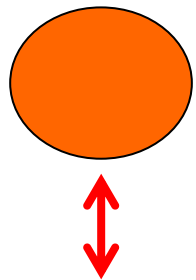
One rule to limit the risk of **POPF**:

Distance* from the MAIN DUCT ≥ 3 mm ?

Variables	No POPF N=54	POPF (grades B/C) N=10	Univariate Analysis	Multivariate Analysis
Wirsung < 3 mm	13 (25)	6 (60)	0.030	
Wirsung ≥ 3 mm	41 (75)	4 (40)		

MRI : predictive value

Peroperative
ultrasonography



*Or COM

Enucléations pancréatiques

Points clés et questions ?

ORIGINAL ARTICLE – PANCREATIC TUMORS

Distance tumeur/CPP ?

Mitigating Postoperative Fistula Risks in Laparoscopic Pancreatic Enucleation: A Retrospective Study

One rule to limit the risk of **POPF**:

Distance* from the MAIN DUCT ≥ 2 mm ?

Variable	Univariate analysis			Multivariate analysis		
	OR	95% CI	p- Value	OR	95% CI	p Value
Distance to MPD						
>2 vs. ≤ 2 mm	0.19	0.05–0.74	0.016	0.18	0.04–0.76	0.020
Preoperation stent						
Yes vs. no	0.24	0.07–0.76	0.014	0.23	0.07–0.79	0.021
Surgery duration						
>2.33 vs. ≤ 2.33 h	2.41	1.09–5.32	0.029	1.70	0.50–5.79	0.39

Enucléations pancréatiques

Points clés et questions ?

Stenting canal pancréatique ? OUI / NON

Plutôt non.... (A Sauvanet)

ORIGINAL ARTICLE – PANCREATIC TUMORS

Mitigating Postoperative Fistula Risks in Laparoscopic Pancreatic Enucleation: A Retrospective Study

The short-term outcomes of laparoscopic enucleation of pancreatic tumors with exposing the Wirsung duct

Optimizing pancreatic enucleation for benign tumors: the role of pre-placed pancreatic duct stents—a retrospective cohort study



Li, Ann Surg Oncol 2025
Xu, Surg Endosc 2025
Hu, Surg Endosc 2025

Enucléations pancréatiques

Points clés et questions ?

Identification/repérage tumoral ?
ICG?



Un outil supplémentaire !

RETROSPECTIVE study (Shirata et al.) 	• Sample: 23 patients with solid or cystic pancreatic tumors	
	ICG Detection Rate	
	PanNETs	100 %
	Cystic tumors	90.9 %
COLPAN trial (Paiella et al.) 	PDAC	57 %
	• Sample: 10 patients with PanNETs	
	• Fluorescence-guided laparoscopic surgery	
	Effective detection of all lesions	
	Fluorescence peak signal used to confirm negative surgical margins	

Meta-analysis (Rompianesi et al.): 6 studies, 64 cases

ICG could be a valuable tool for intraoperative visualization of pancreatic tumors

Detection rate	Accuracy	Specificity	Positive predictive value
75%	81.3%	78.8%	98.2%

Pancréatectomie centrale

Points particuliers

Pancréatectomie centrale/médiane

Points clés et questions ?

Approche mini-invasive ? OUI / NON

Minimally invasive versus open central pancreatectomy: Systematic review and meta-analysis

Sara Sentí Farrarons, MD^a, Eduard A. van Bodegraven, MD^{b,c}, Alain Sauvanet, MD^a, Mohammed Abu Hilal, MD, PhD^d, Marc G. Besselink, MD, PhD^{b,c}, Safi Dokmak, MD, PhD^{a,*}



Meta-regression MICP versus OCP

Outcome	MICP n (%)	Mi rem	OCP n (%)	Open REM	Total n (%)	Total REM	P value
POPF B/C	40 (17.5%)	0.17 [0.10; 0.27]	96 (21.9%)	0.15 [0.07; 0.29]	136 (20.4%)	0.16 [0.10; 0.24]	.789
Overall morbidity	101 (43.4%)	0.42 [0.30; 0.56]	382 (52.2%)	0.50 [0.42; 0.57]	488 (50.2%)	0.47 [0.41; 0.54]	.349
Major morbidity*	46 (20.9%)	0.15 [0.07; 0.31]	121 (20.7%)	0.21 [0.16; 0.27]	167 (20.7%)	0.20 [0.15; 0.25]	.410
NODM	8 (5.3%)	0.03 [0.01; 0.14]	39 (5.5%)	0.04 [0.03; 0.08]	47 (5.5%)	0.04 [0.02; 0.07]	.651

MI, minimally invasive approach, REM: random-effects model; OCP, open central pancreatectomy; POPF, postoperative pancreatic fistula; NODM, new-onset diabetes mellitus; MICP, minimally invasive central pancreatectomy.

* Clavien-Dindo ≥ 3 morbidity.

Pancréatectomie centrale/médiane

Points clés et questions ?

Variantes techniques et classification

A classification of laparoscopic central pancreatectomy determined on the basis of anatomical landmarks in 109 patients

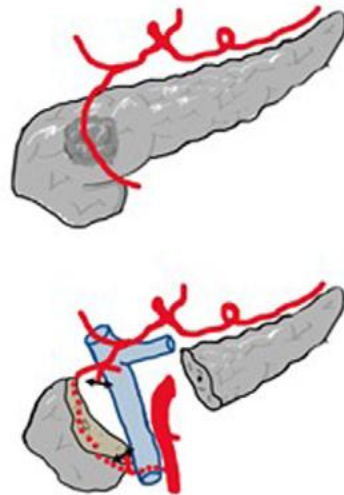


Clément Pastier, MD^a, Jules Gregory, MD, PhD^{b,c}, Marc-Anthony Chouillard, MD^a, Béatrice Aussilhou, MD^a, Vinciane Rebours, MD, PhD^{c,d}, Mickael Lesurtel, MD, PhD^{a,c}, Alain Sauvanet, MD, PhD^{a,c}, Safi Dokmak, MD, PhD^{a,c,e,*}

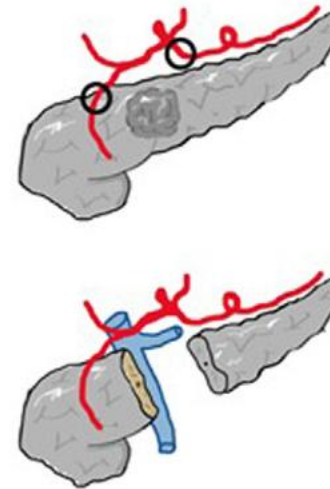
Check list imagerie

- distance lésion / GDA,
- distance lésion / origine SA
- distance lésion / canal cholédoque
- distance lésion / pédicule gastrique gauche
- taille de la lésion
- variations anatomiques (sténose TC, pancréas divisum)

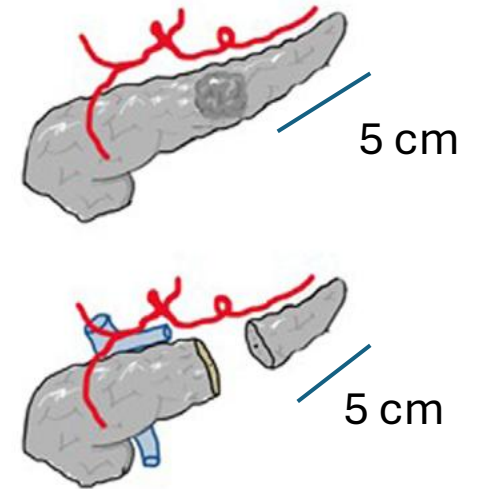
Head-LCP



Neck-LCP



Body-LCP

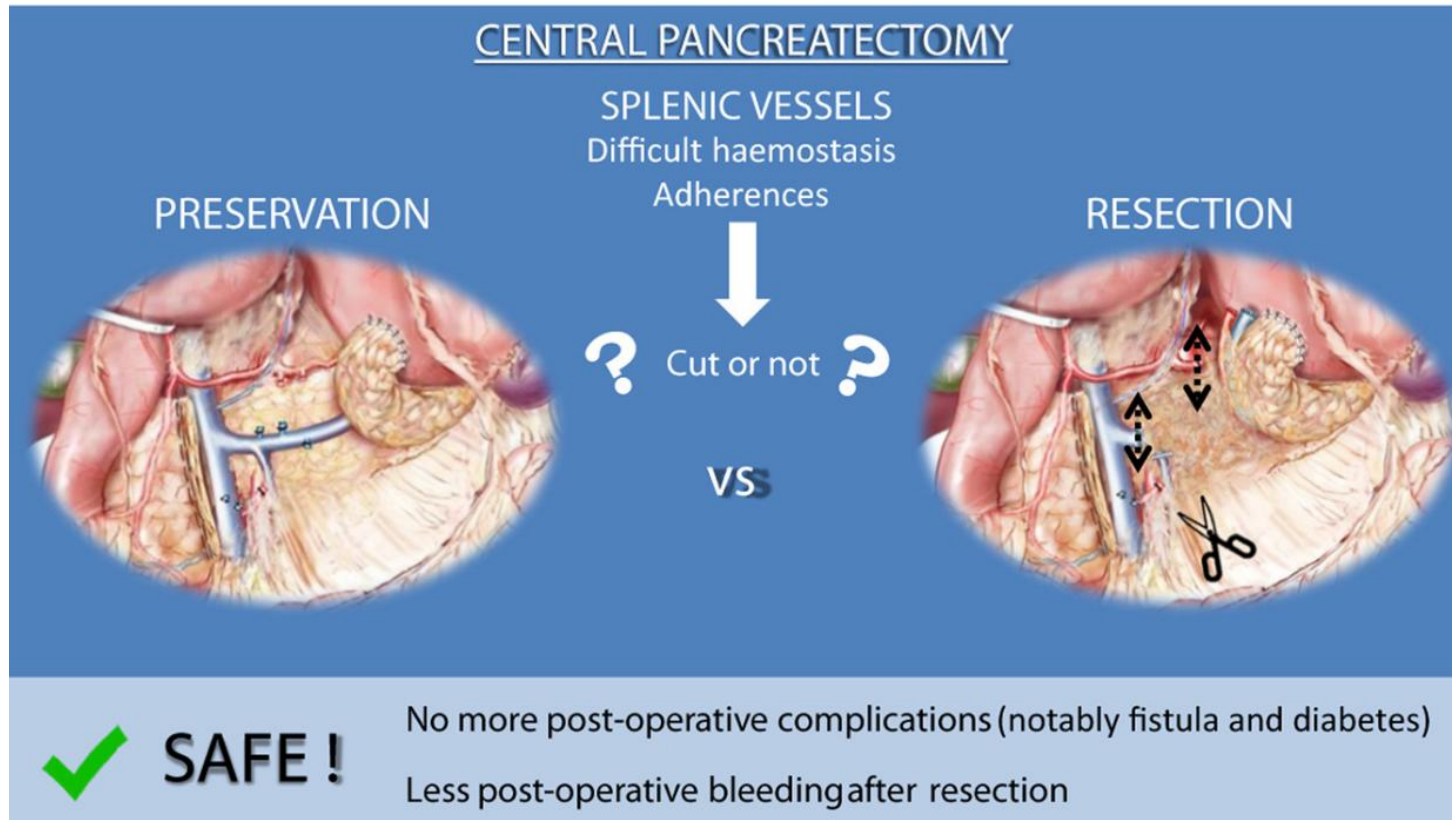


Pancréatectomie centrale/médiane

Points clés et questions ?

Conservation des vaisseaux spléniques ?

Resection of splenic vessels during laparoscopic central pancreatectomy is safe and does not compromise preservation of the distal pancreas

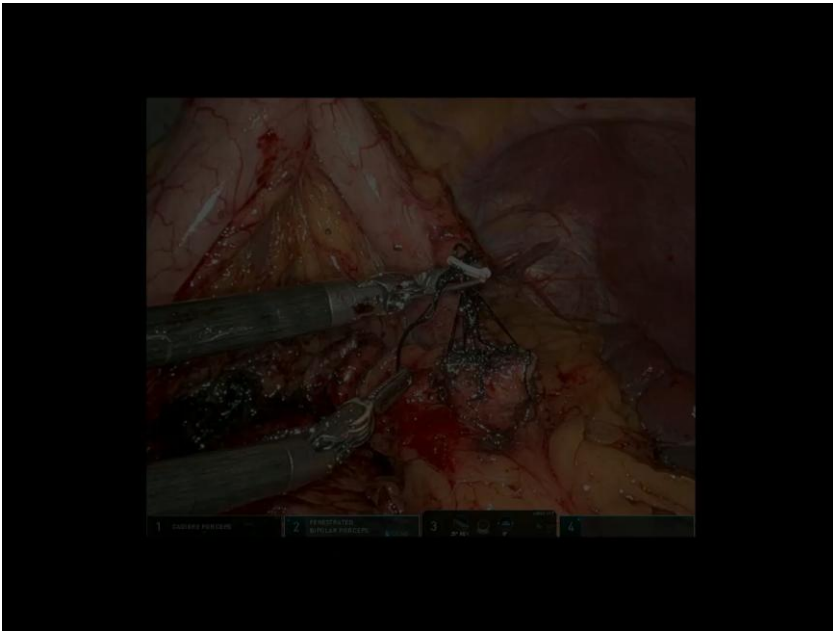


Pancréatectomie centrale/médiane

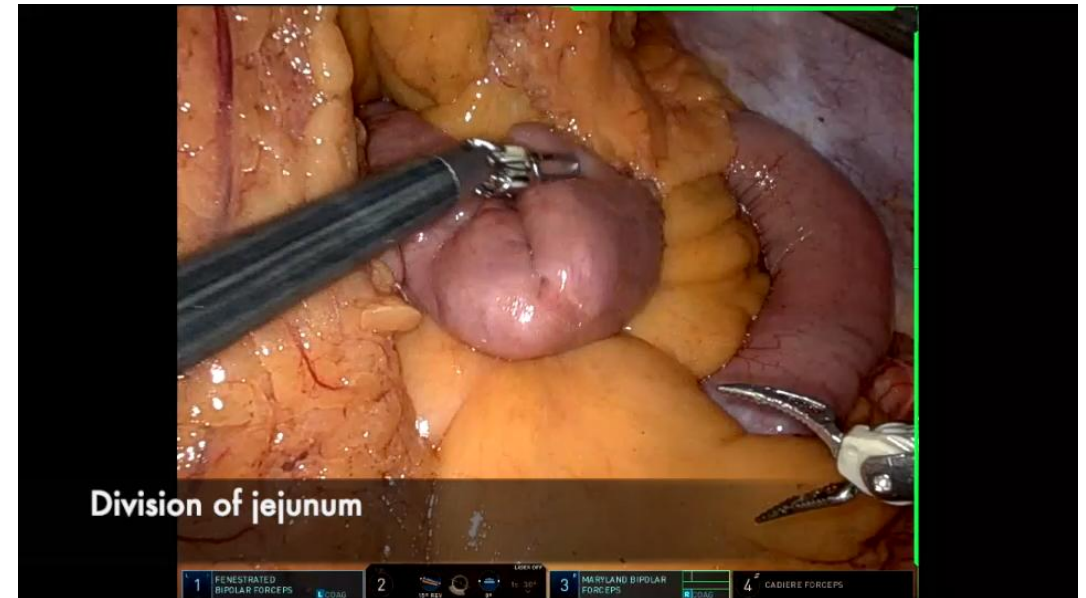
Points clés et questions ?

PG vs PJ, quelle anastomose?

PG (pancréatico-gastrostomie) :



PJ (pancréatico-jejunostomie) :



Meta-regression PJ versus PG

Outcome	PJ n (%)	PJ REM	PG n (%)	PG REM	Total n (%)	Total REM	P value
POPF B/C	30 (31.9%)	0.28 [0.15; 0.46]	67 (33.8%)	0.28 [0.16; 0.45]	94 (32.2%)	0.28 [0.18; 0.40]	.945

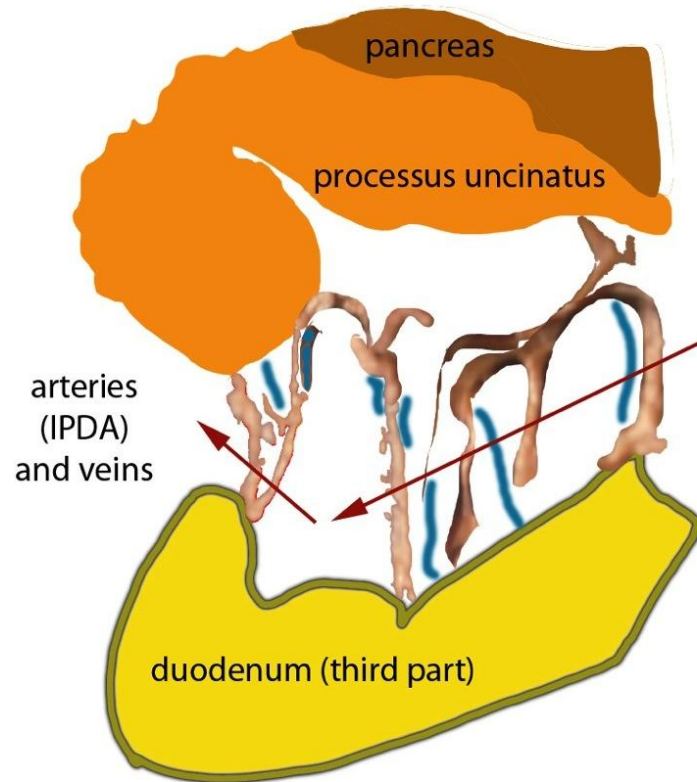
PJ, pancreaticojejunostomy; PG, pancreaticogastrostomy; POPF, postoperative pancreatic fistula; REM, random-effects model.

Farrarons, Surgery 2022; Kawano, Ann Surg Oncol 2025; Pasquier, Surgery 2025

Resection de l'uncus

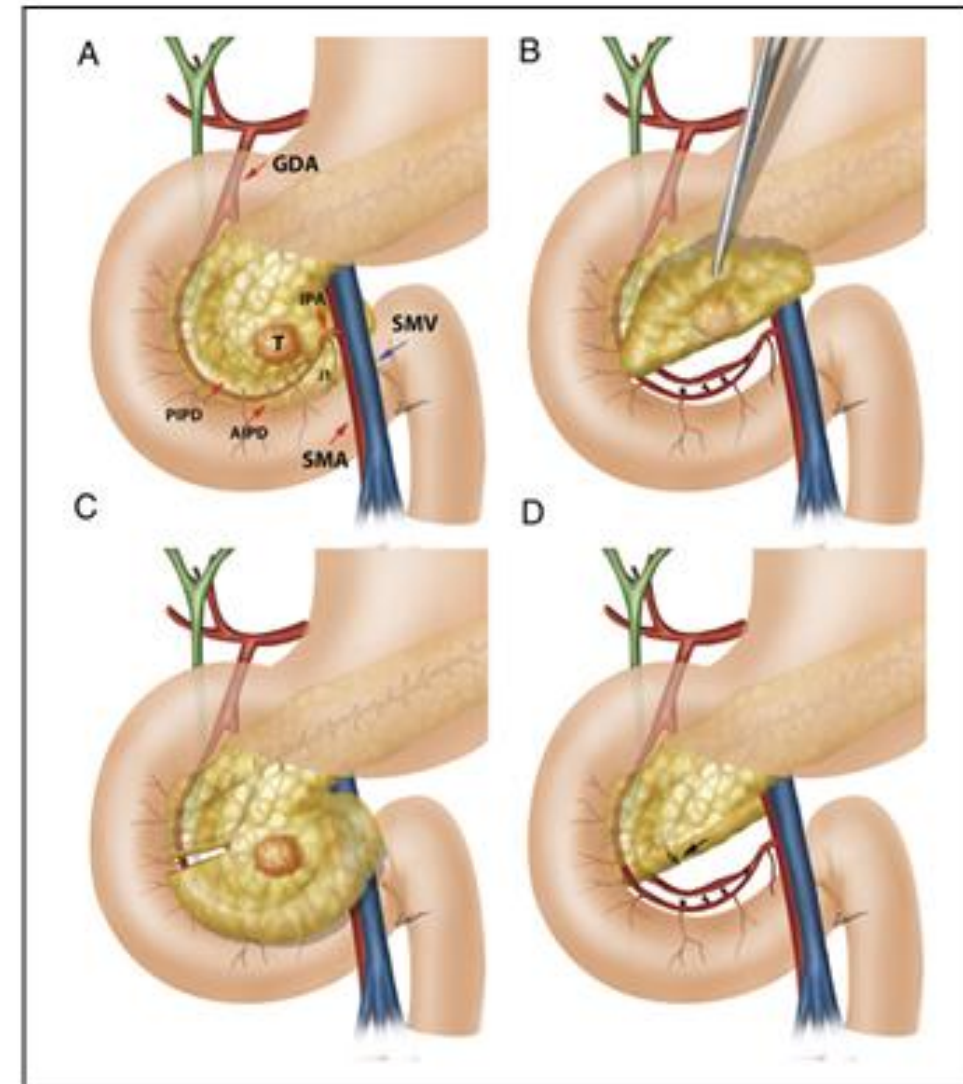
Points techniques

Resection de l'uncus



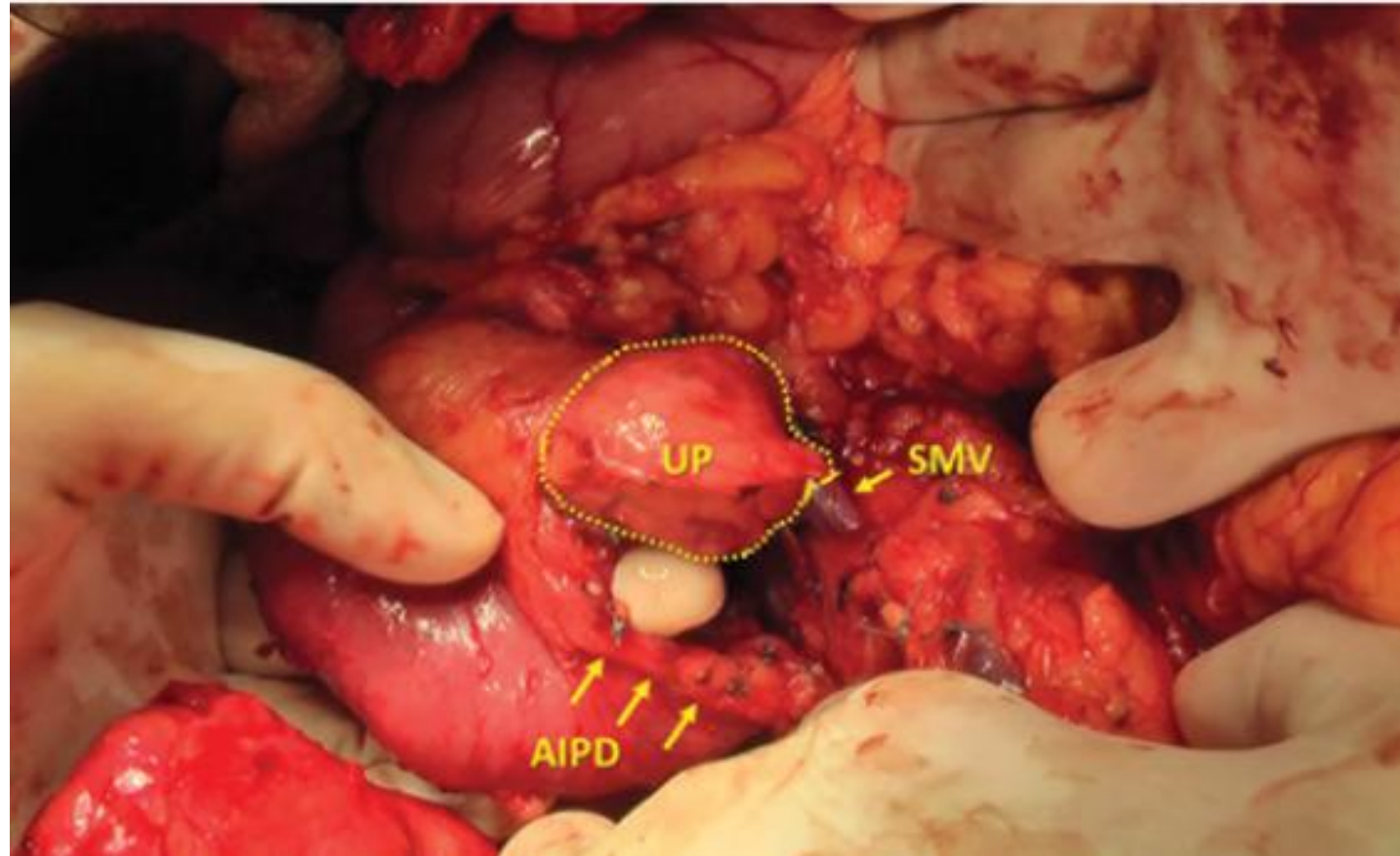
Iconographie Prof JR Delpero

- Limites anatomiques de l'uncus difficiles à définir
- Proximité du canal pancréatique principal et de la VMS
- Préserver les arcades pancréatico-duodénales
- Contrôler la lame retroporte
- Pancreas Divisum – facilite la procedure



Machado, Surg Innov 2022

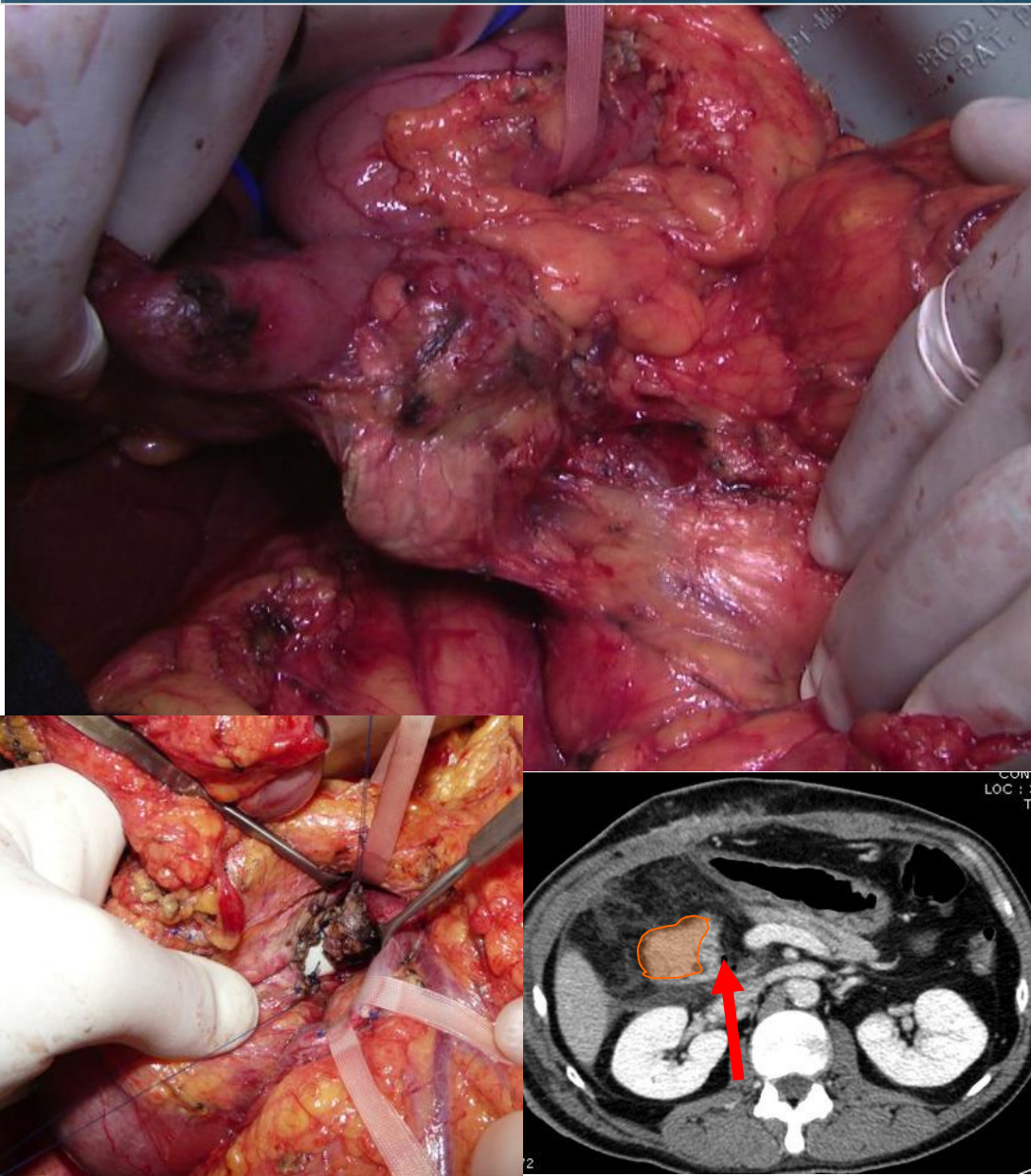
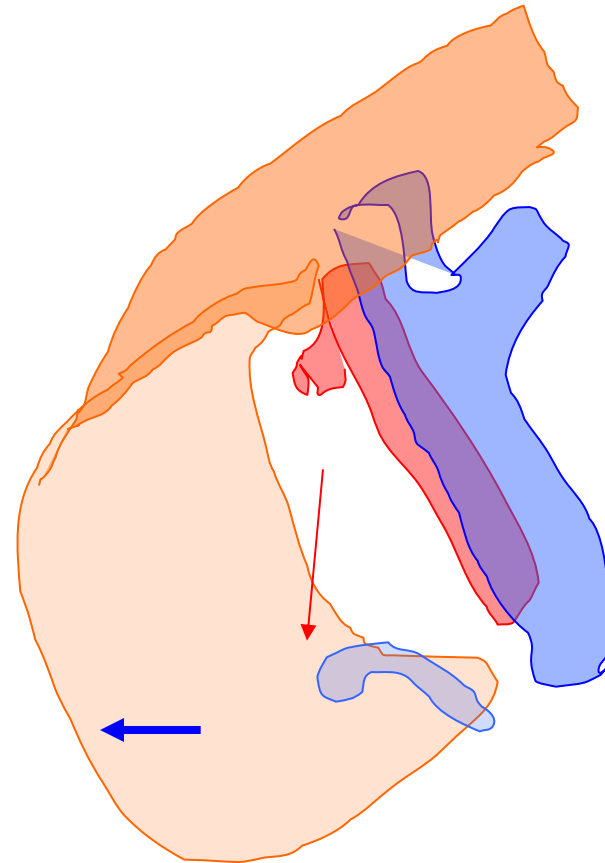
Resection de l'uncus



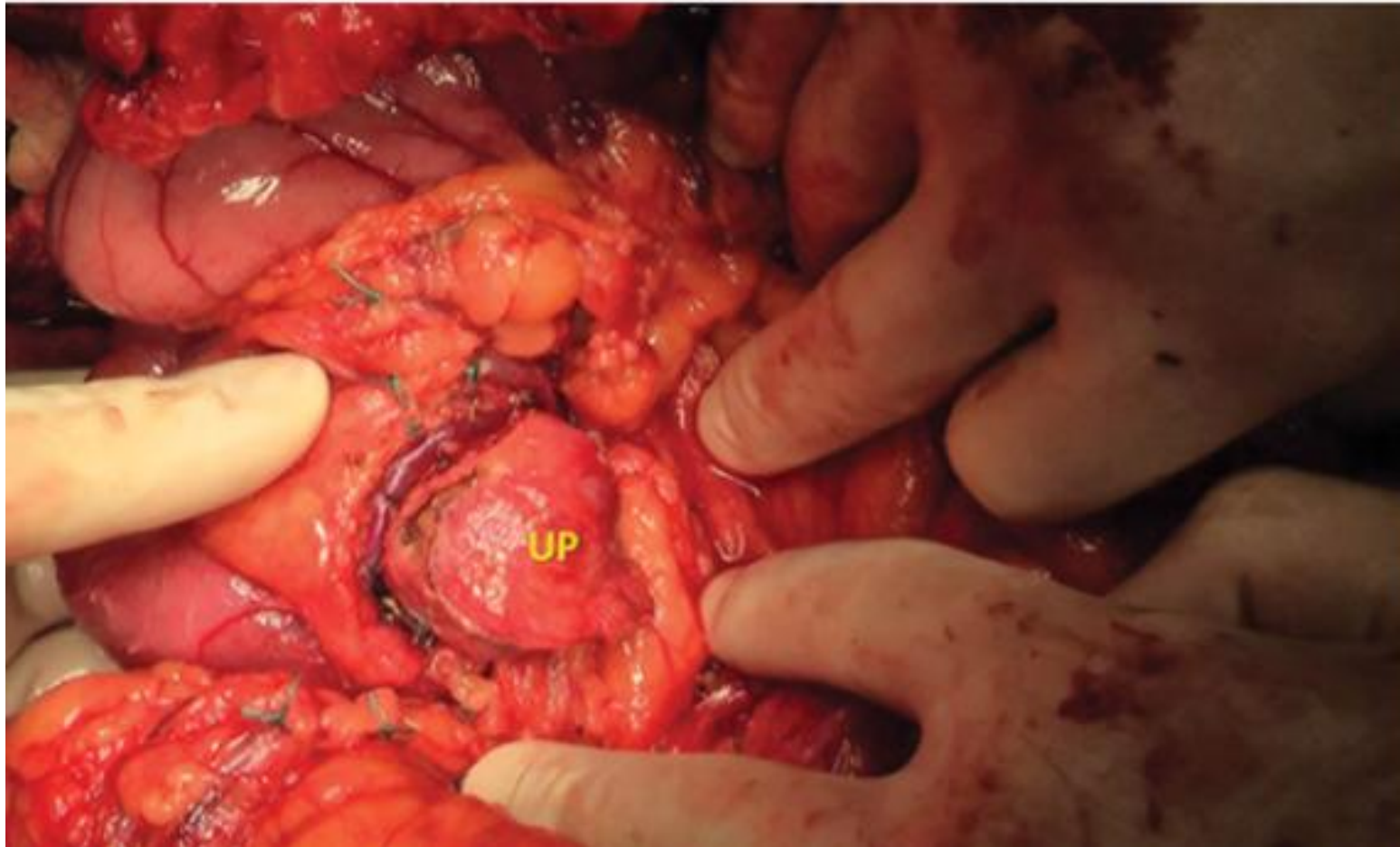
Dissection de la partie inférieure de l'uncus (UP) du duodénum. Préservation de la perfusion du duodénum
SMV, veine mésentérique supérieure ; AIPD, artère pancréatico-duodénale antérieure inférieure.

Resection de l'uncus

Libération bord droit de l'axe vasculaire (VMS/AMS)

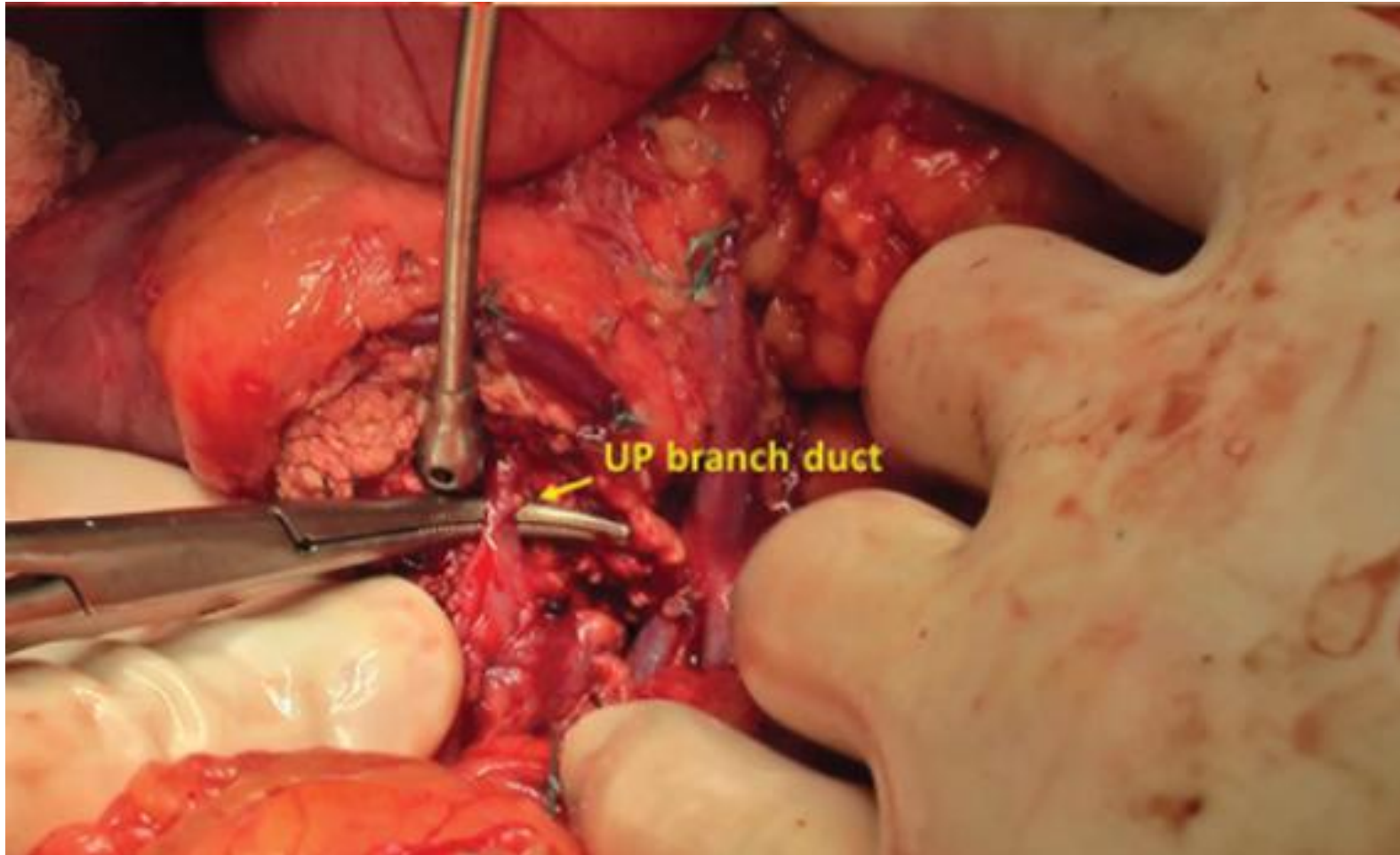


Resection de l'uncus



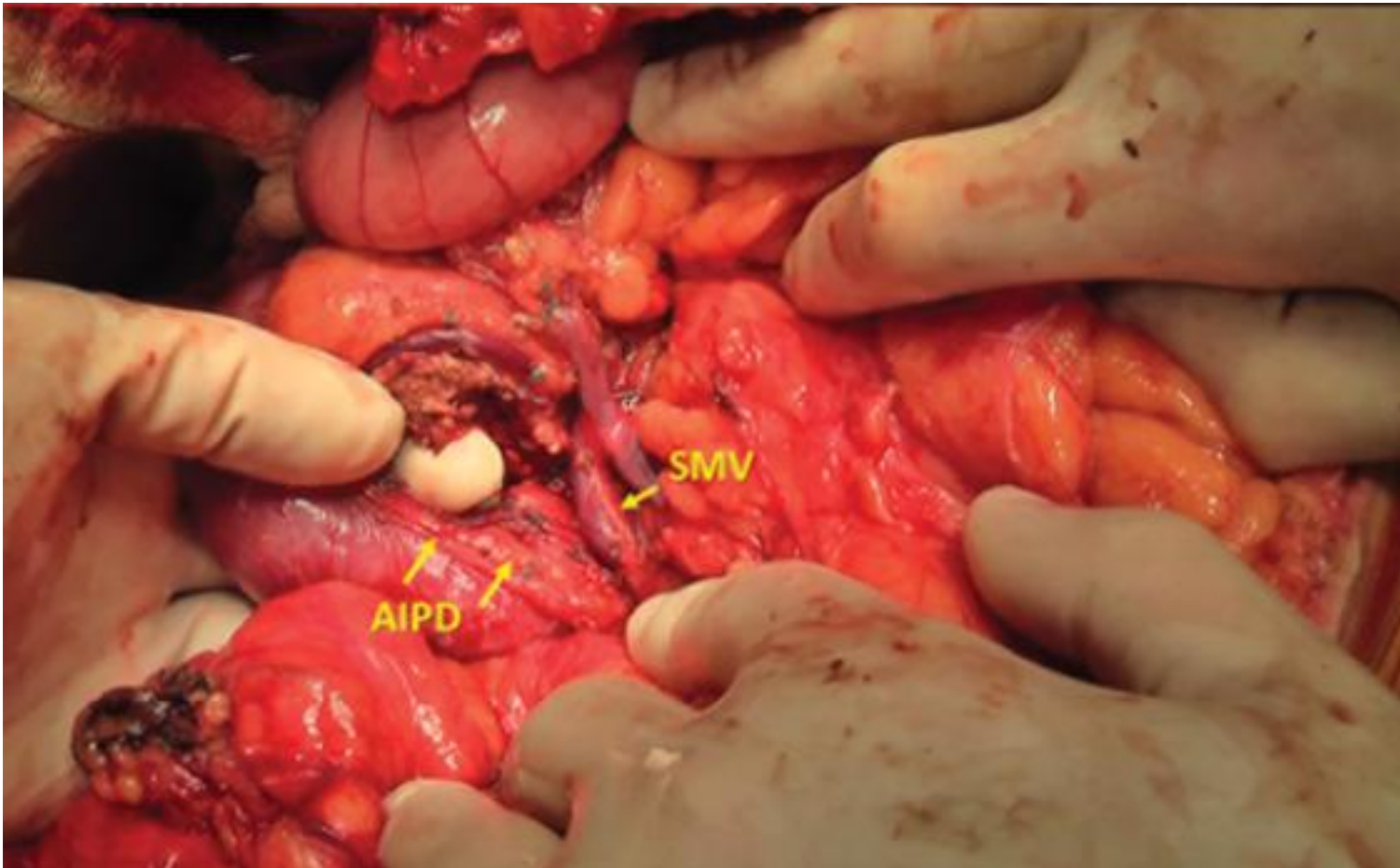
La partie supérieure de l'uncus est soigneusement sectionnée.
Le canal pancréatique principal est respecté.

Resection de l'uncus



L'uncus est sectionné. Le canal pancréatique principal est préservé, et le canal pancréatique de l'uncus est identifié et ligaturé.

Resection de l'uncus



Aspect final après résection isolée de l'uncus.
SMV, veine mésentérique supérieure ; AIPD, artère pancréato-duodénale antérieure inférieure.

Comment faire une pancréatectomie atypique ?

L. Schwarz



➤ **16h42** : Comment faire une pancréatectomie atypique ?
Lilien SCHWARZ, Rouen, France

MERCREDI 17 SEPTEMBRE

AUBÉPINE 5

Pancréas



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HÉPATO-BILIO-PANCRÉATIQUE
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