How And When To Intervene on WOPN

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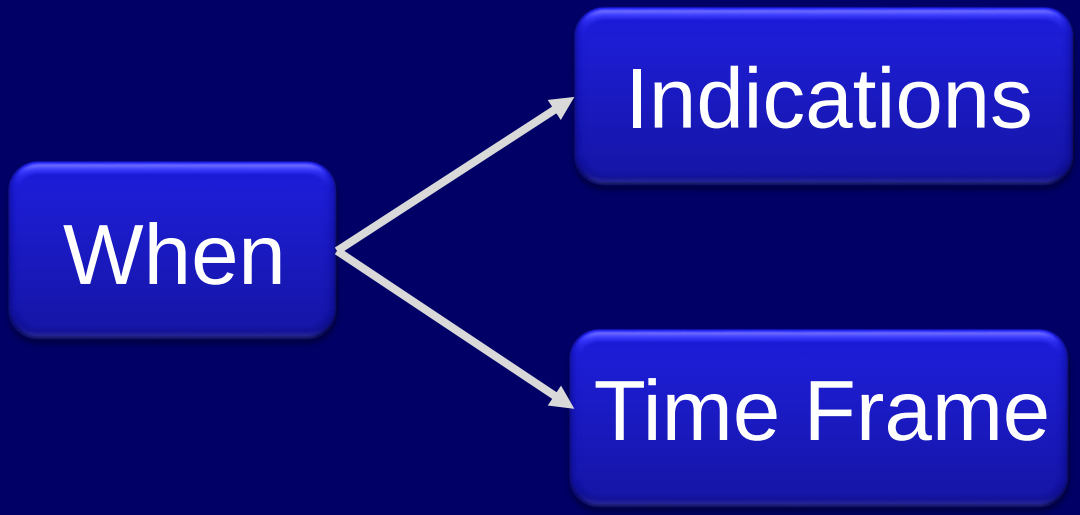
Disclosure

No financial relationships related to this talk

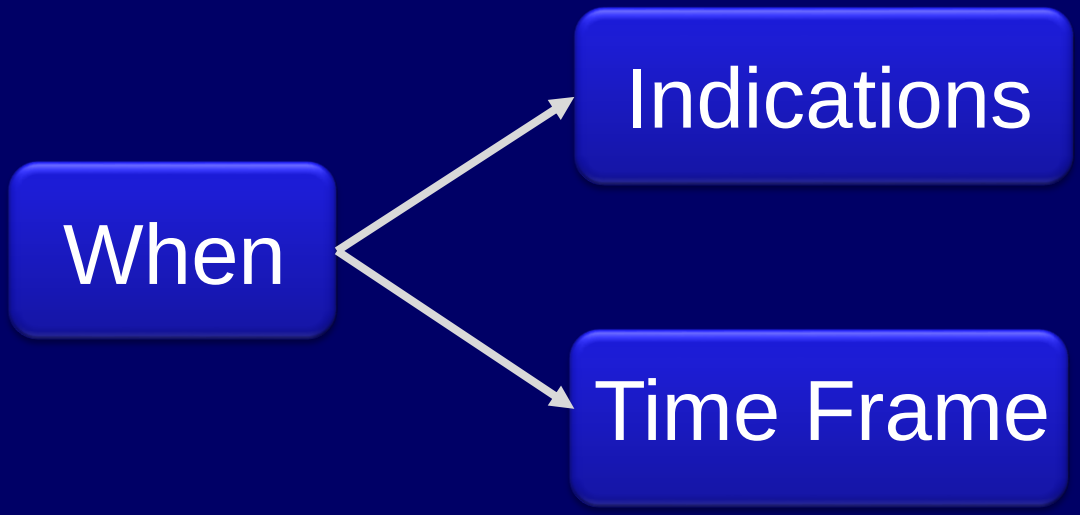
When And How To Intervene on WOPN



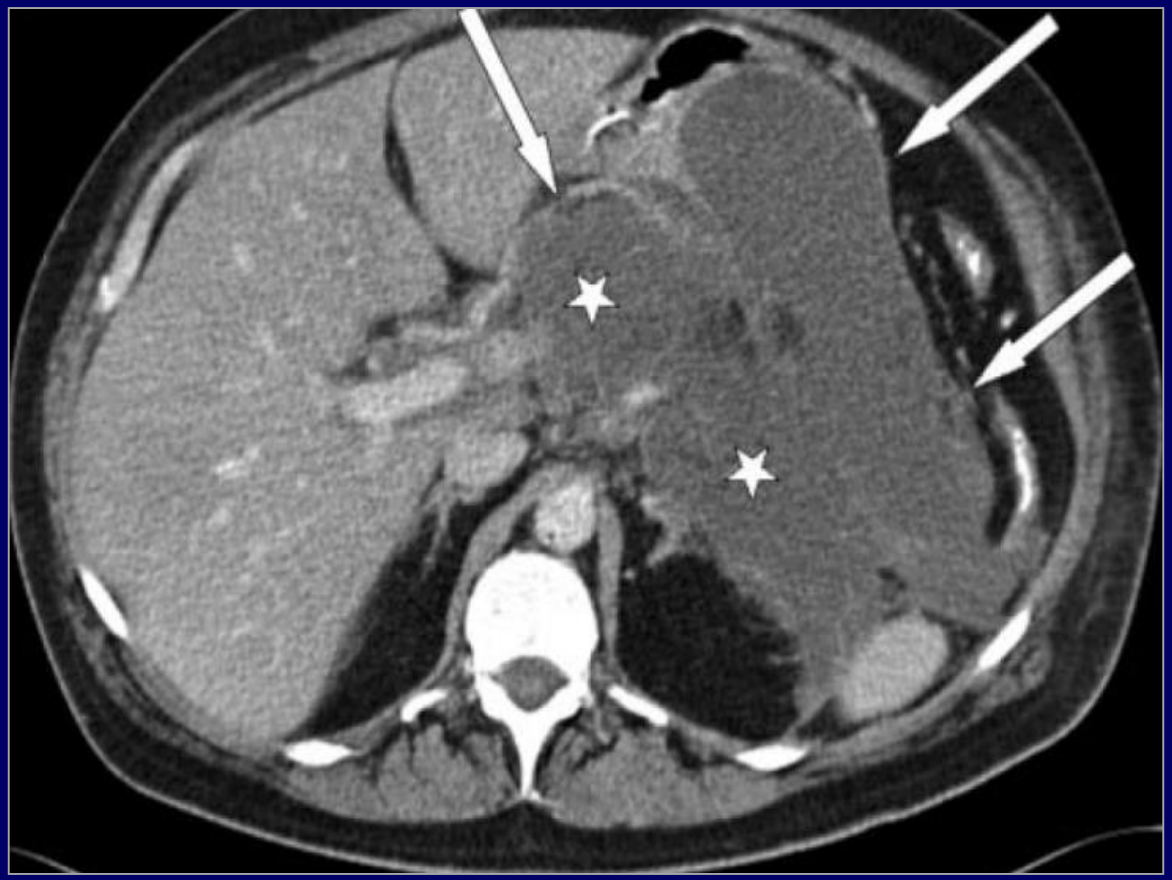
WOPN Indications for Intervention

- Infection
- Organ failure
- Intractable pain
- Gastric outlet obstruction
- Disconnected duct

When And How To Intervene on WOPN

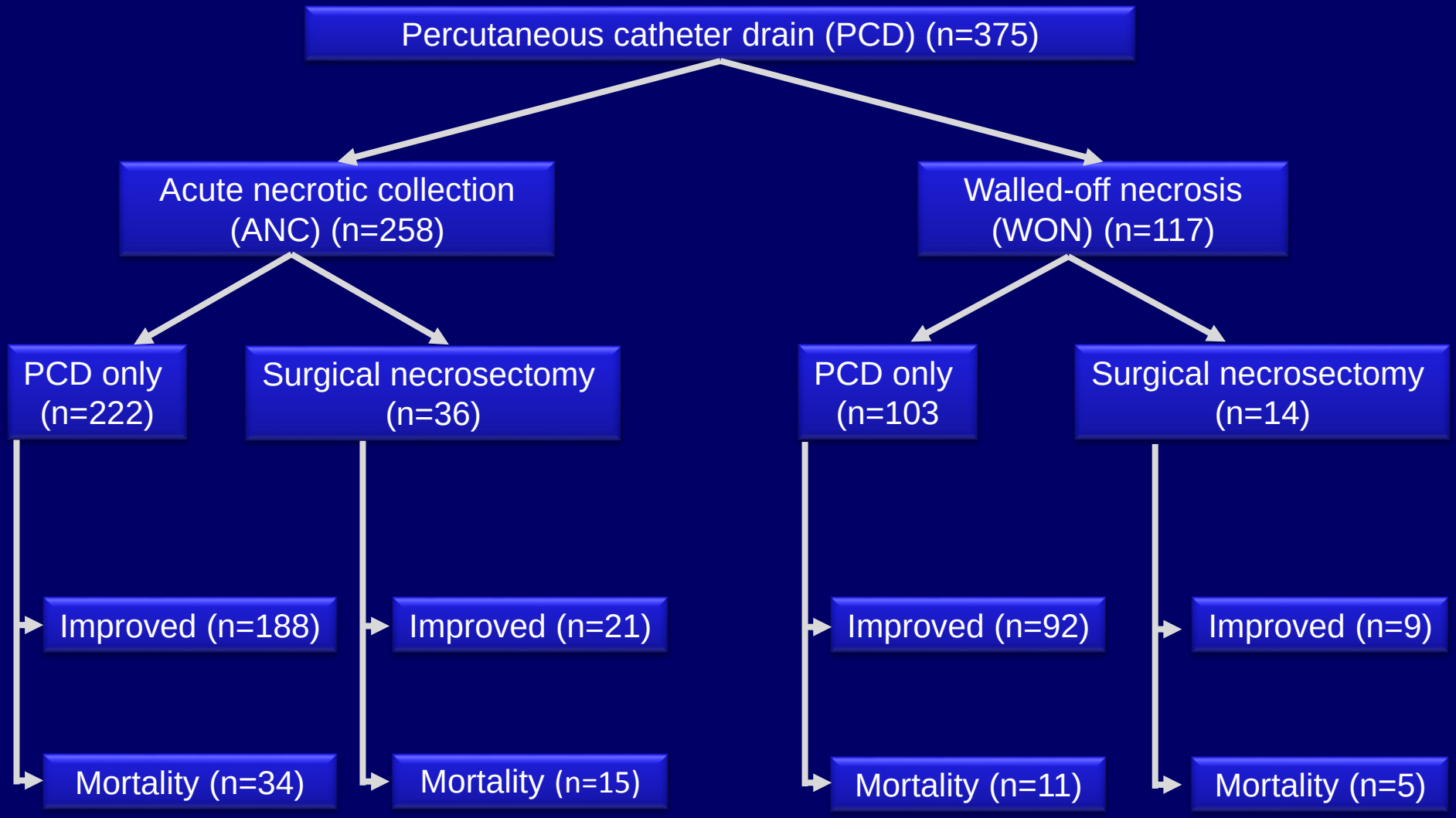


2 to 4 weeks



Acute necrotic collection

Outcome of PCD for ANC and WOPN



Mallick B et al Pancreatology 2018

Complications and outcome of percutaneous catheter drainage

Characters		Total	Acute necrotic collection (ANC)	Walled-off necrosis (WON)	Significance (p)
Complication	EPF	103 (27.5%)	63 (24.4%)	40 (34.2%)	0.034
	Bleed	14 (3.7%)	8 (3.1%)	6 (5.1%)	0.247
	Blockade	46 (12.3%)	29 (11.2%)	17 (14.5%)	0.231
	Slippage	41 (10.9%)	18 (10.9%)	13 (11.1%)	0.534
PD stenting for EPF		75 (72.8%)	43 (68.3%)	32 (80.0%)	0.013
Surgery		50 (13.3%)	36 (14.0%)	14 (12.0%)	0.364
Mortality		65 (17.3%)	49 (19.0%)	16 (13.7%)	0.132

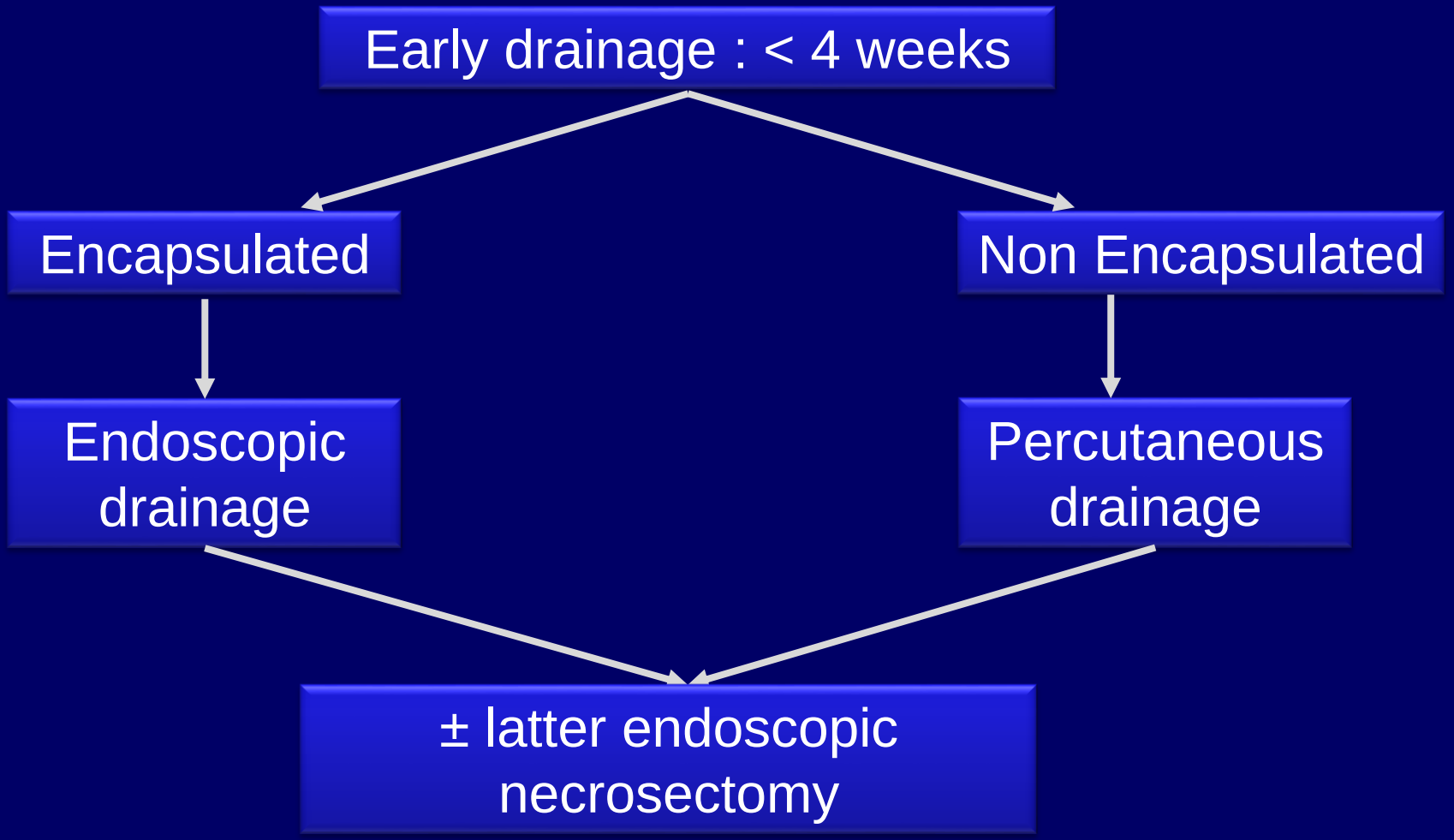
Mallick B et al Pancreatology 2018

Early (<4 Weeks) Versus Standard (≥ 4 Weeks) Endoscopically Centered Step-Up Interventions for Necrotizing Pancreatitis

Outcomes	NP patients with nterventions < 4 weeks (usually ANC collections) (*n* = 76)	NP patients with interventions ≥ 4 weeks (usually WON collections) (*n* = 117)	*p* value
Mortality (%)	10 (13.2%)	5 (4.3%)	0.024
Morbidity (%)			
[a]Median length of stay in days (IQR)	37 (27–61)	26 (0–207)	**<0.001**
[b]Median length of ICU stay in days (IQR)	2.5 (0–22)	0 (0–3)	**<0.001**
Complications (procedure and disease related)			
Stent occlusion and Infection	30(40%)	39(33%)	0.36
Bleeding	8 (10.5%)	12 (10.3%)	0.95
Perforation	0	7 (6.0%)	0.044
Fistulae	25 (32.9%)	24 (20.5%)	0.054
New-onset diabetes	15 (19.7%)	25 (21.4%)	0.785

Trikudanathan et al American Journal of Gastroenterology 2018

Acute Necrotic Collection



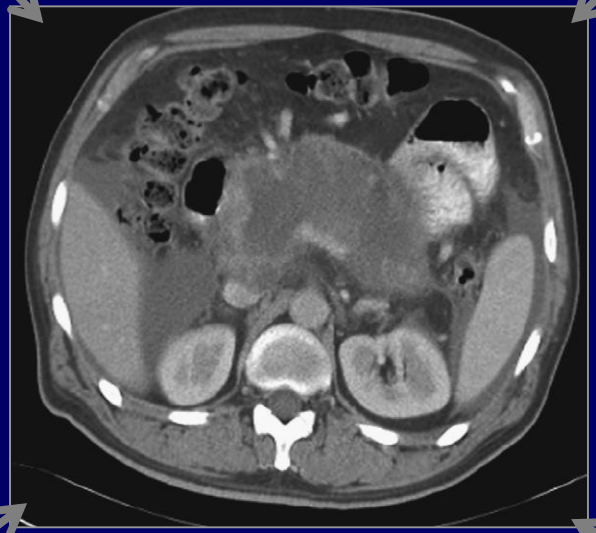
When And How To Intervene on WOPN > 4 wks

How

Pancreatic Necrosis

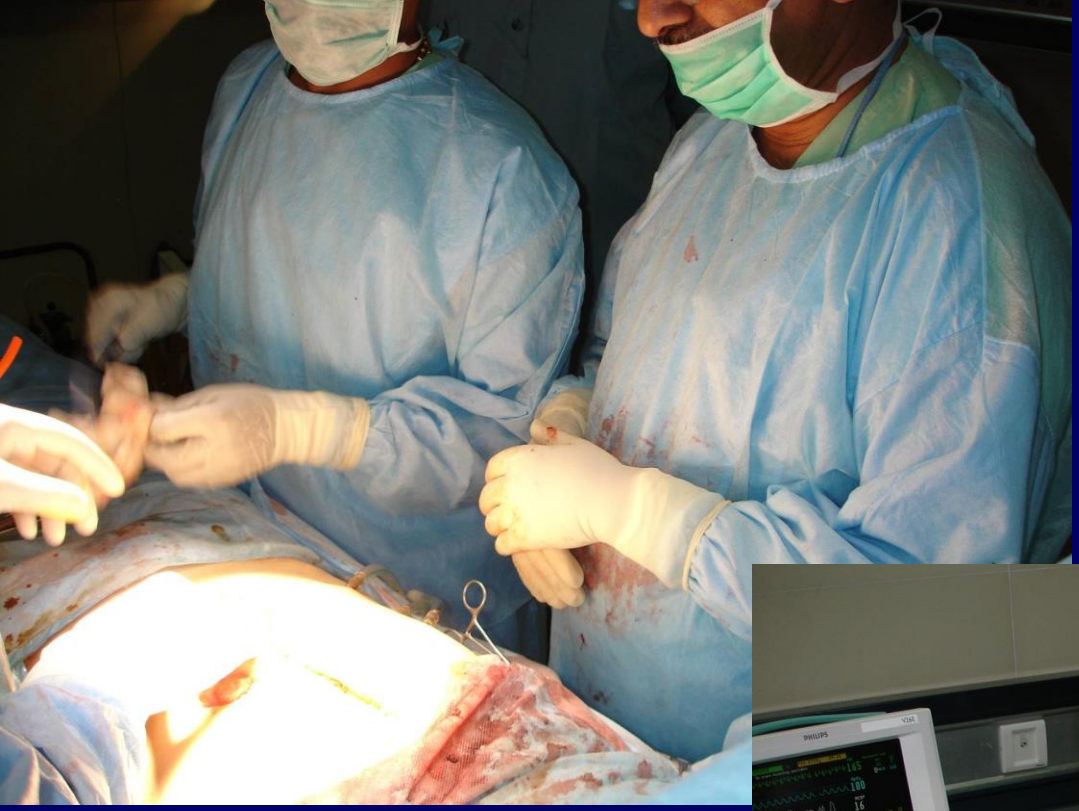
Open Surgery

Minimally invasive Surgery



Endoscopic

Percutaneous



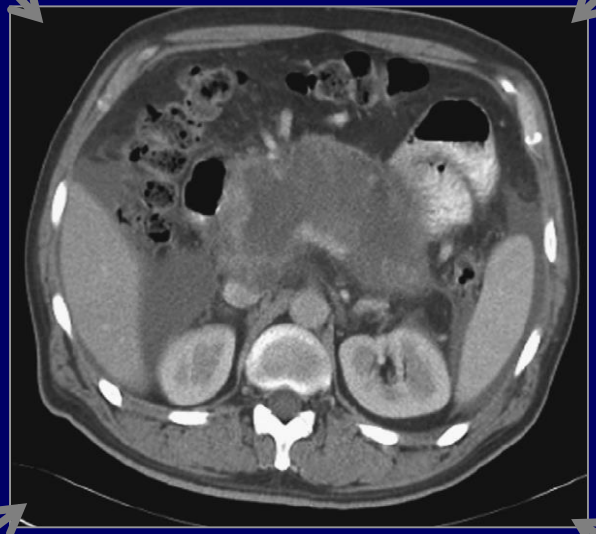
WOPN Surgical Indications

- > 75% necrosis
- Marked extention into paracolic space
- Not accessible to endoscopy / percutaneous
- Associated pathology
- Diffuse or multifocal collections
- Failed interventions

Stepup vs Direct vs Drainage

Open Surgery

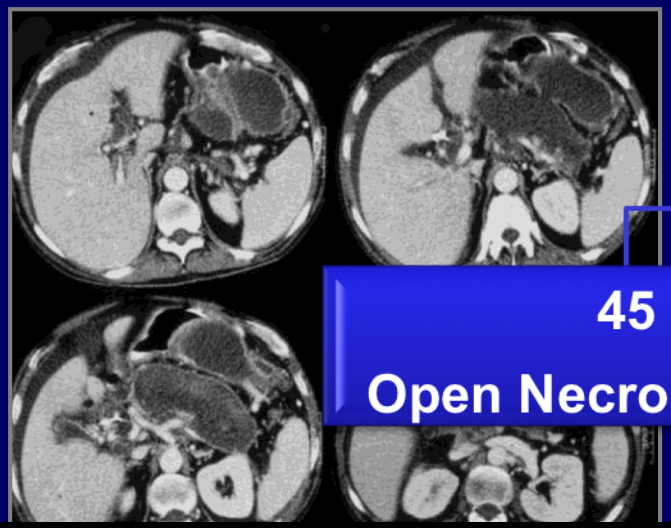
Minimally invasive Surgery



Endoscopic

Percutaneous

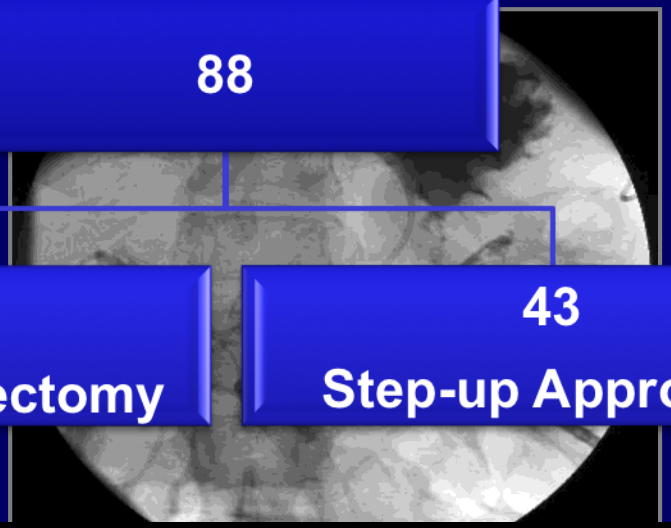
A Step-up Approach or Open Necrosectomy for Necrotizing Pancreatitis



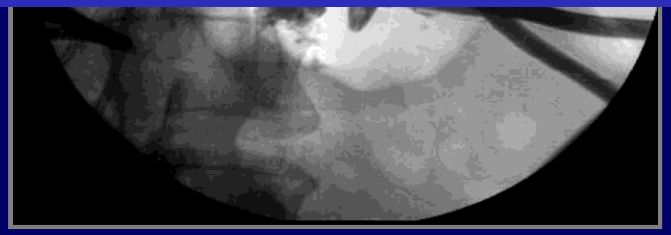
88

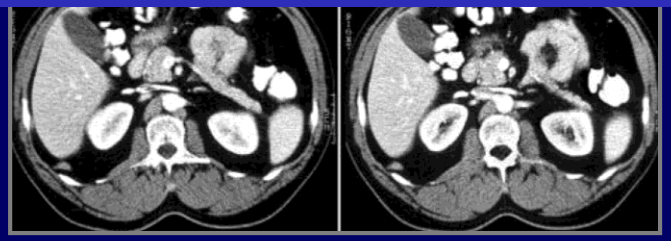
45
Open Necrosectomy

43
Step-up Approach



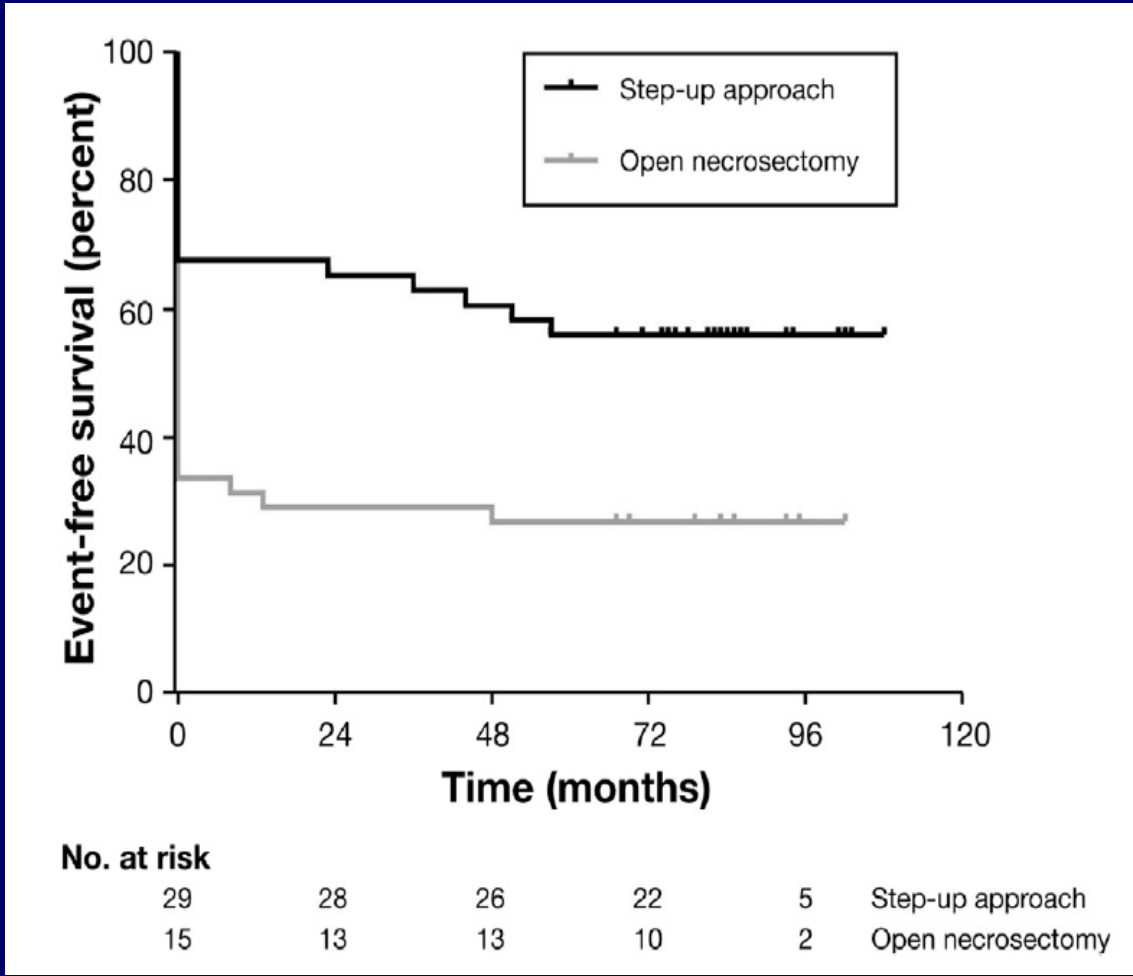
Complications	31/45 (69%)	17/43 (40%)
NMOF	40%	12%
NDM	38%	16%





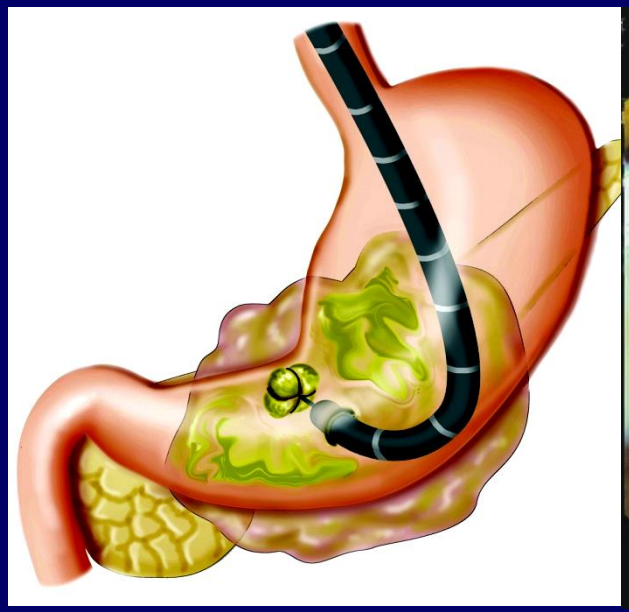
Hjalmar C. van Santvoort et al NEJM April 2010

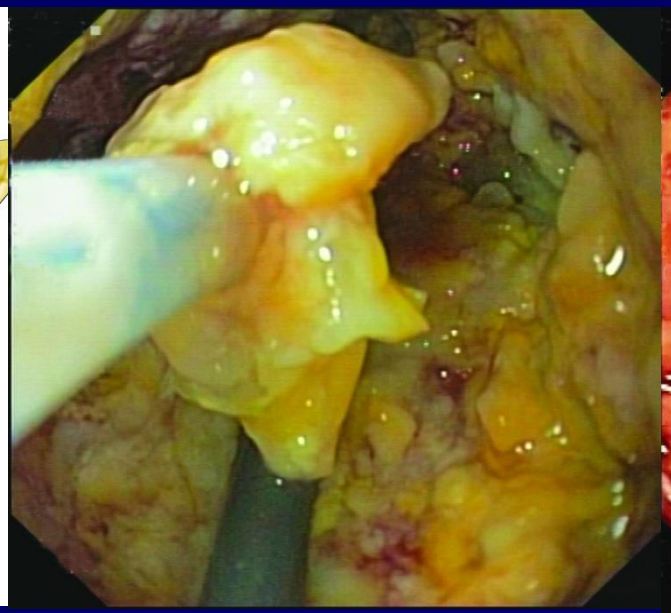
Superiority of Step-up Approach vs Open Necrosectomy in Long-term Follow-up of Patients With Necrotizing Pancreatitis

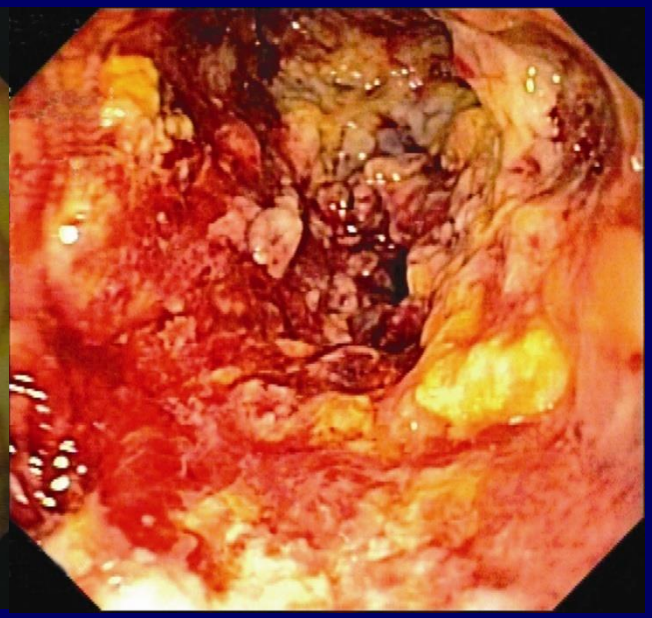


Hollemans et al Gastroenterology 2019

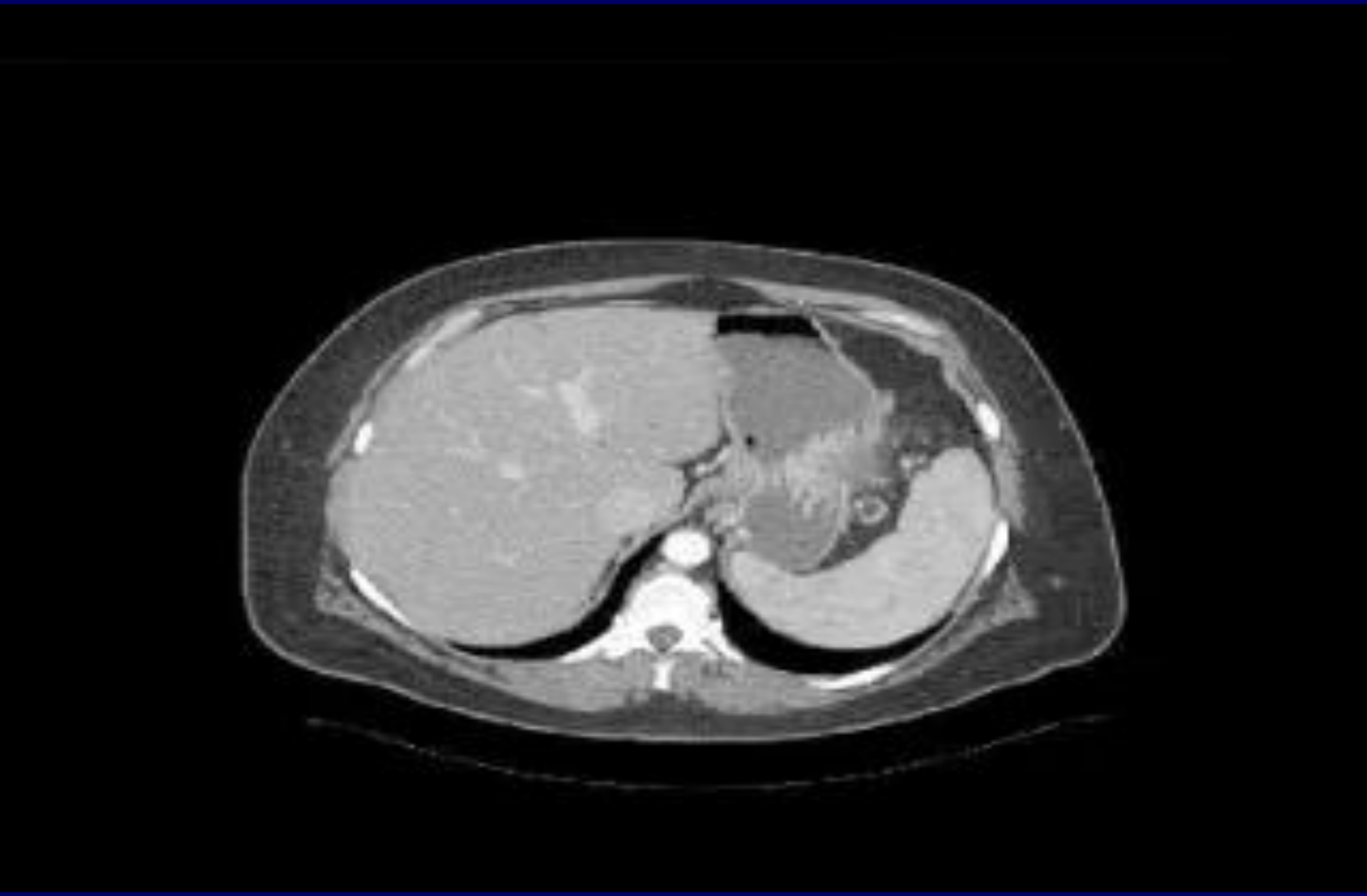
Endoscopic Necrosectomy







Seifert H et al. Lancet 2000
Seewald S et al Gastrointest Endosc 2005



Courtesy by Todd Baron

Endoscopic transluminal necrosectomy in necrotising pancreatitis: a systematic review

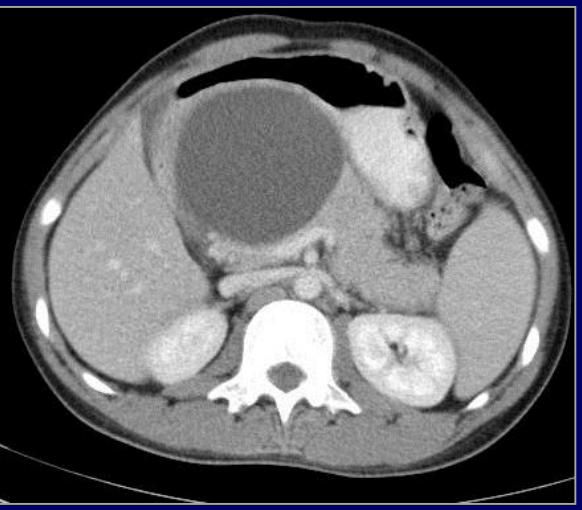
Sandra van Brunschot · Paul Fockens · Olaf J. Bakker · Marc G. Besselink ·

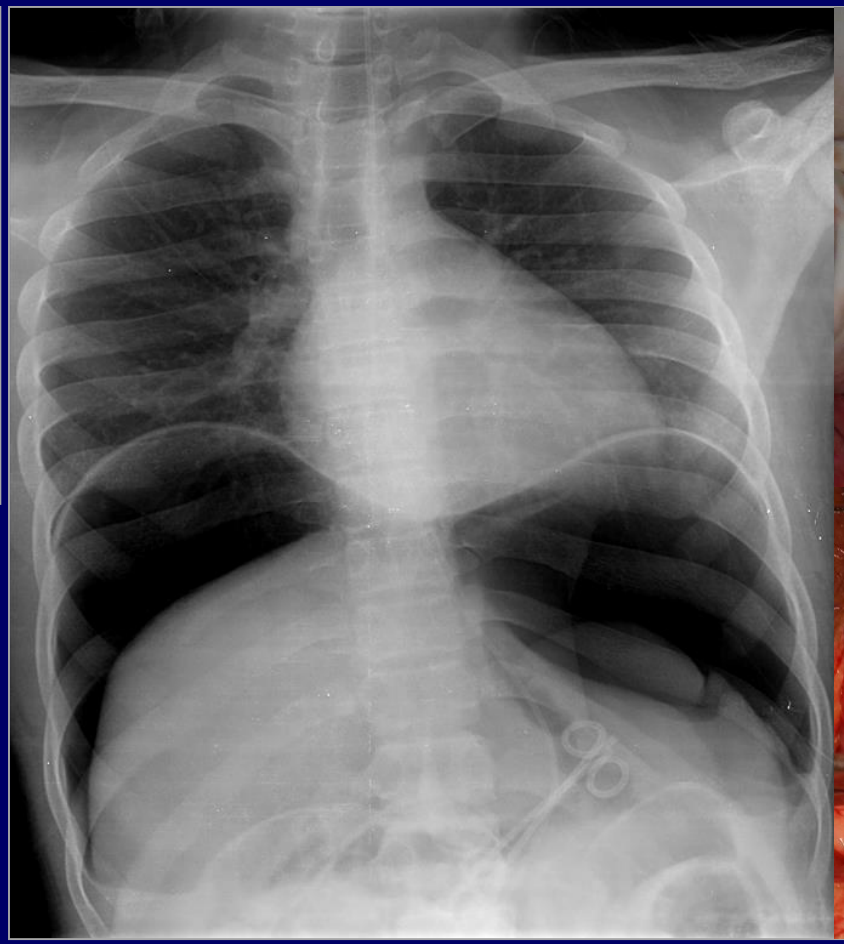
14 studies 455 patients

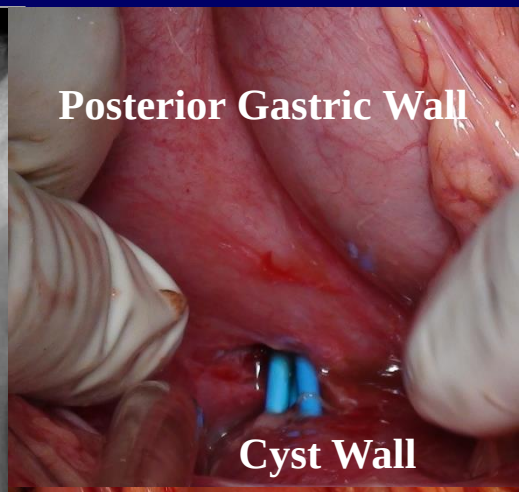
- Endoscopic interventions 4n.o
- Successful treatment 81%
- Mortality 6%
- Complications 36%

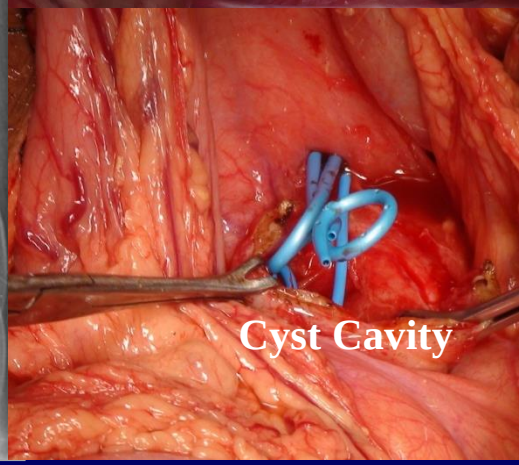
Surg Endosc 2013

Necrosectomy-Perforation

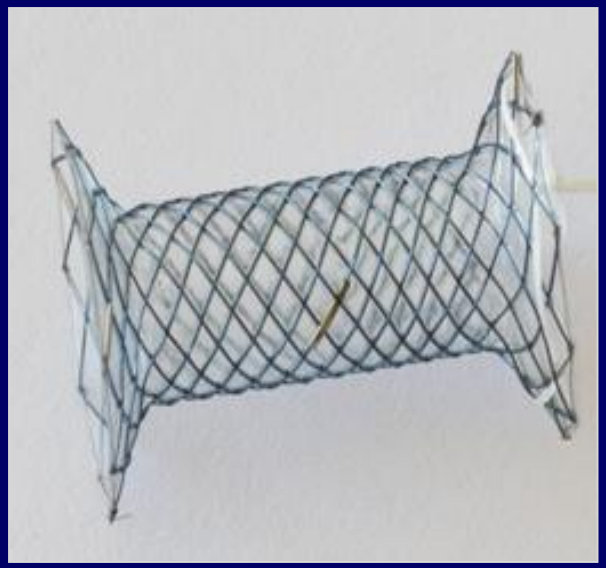




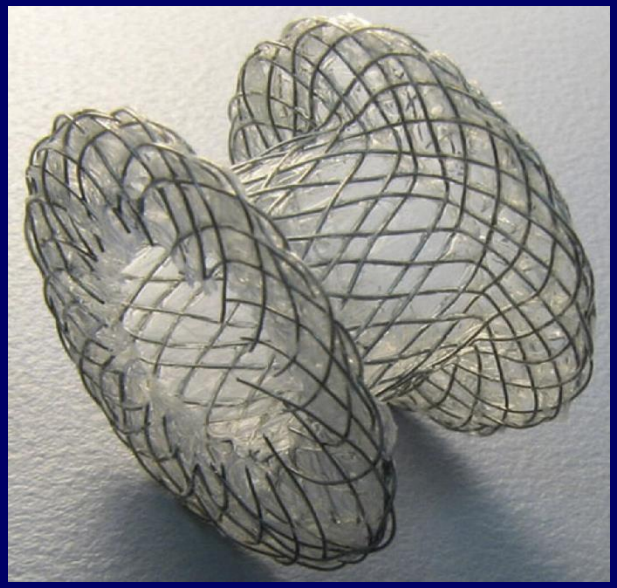




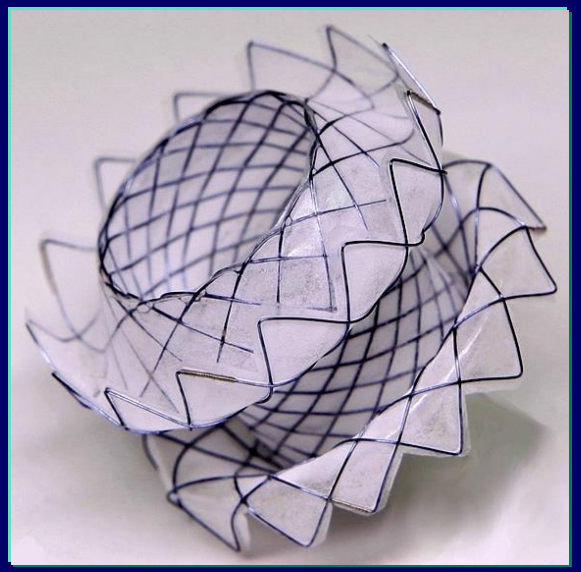
Short bi-flanged SEMS (LAMS)



Nagi stent

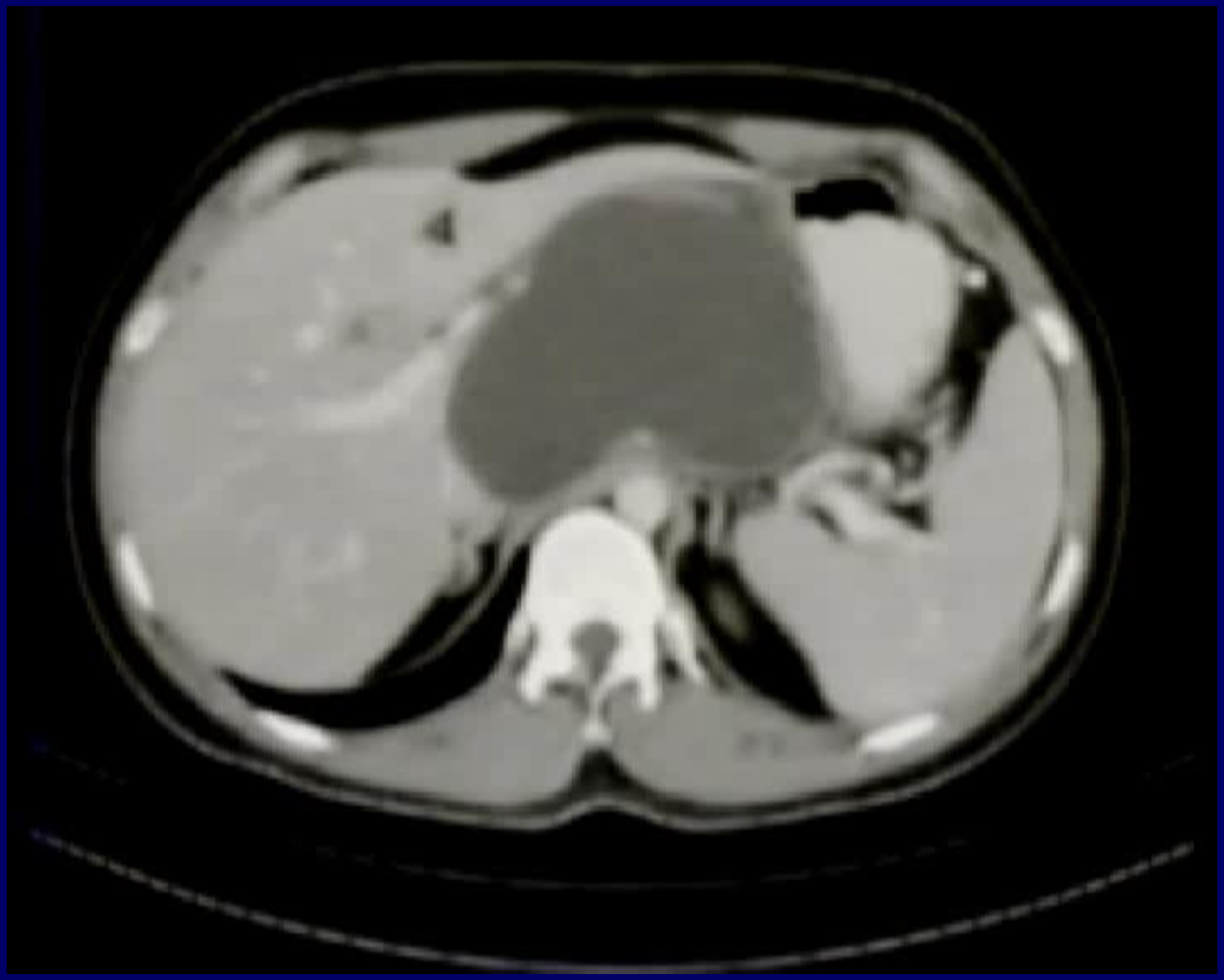


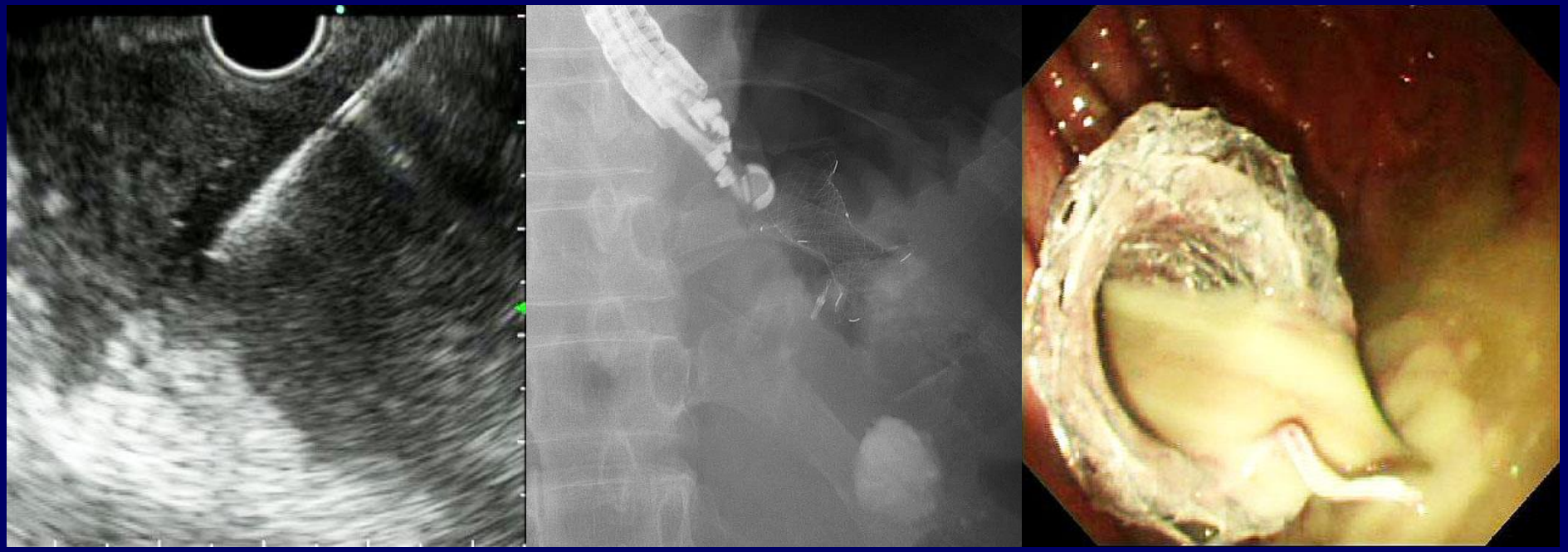
Axious stent



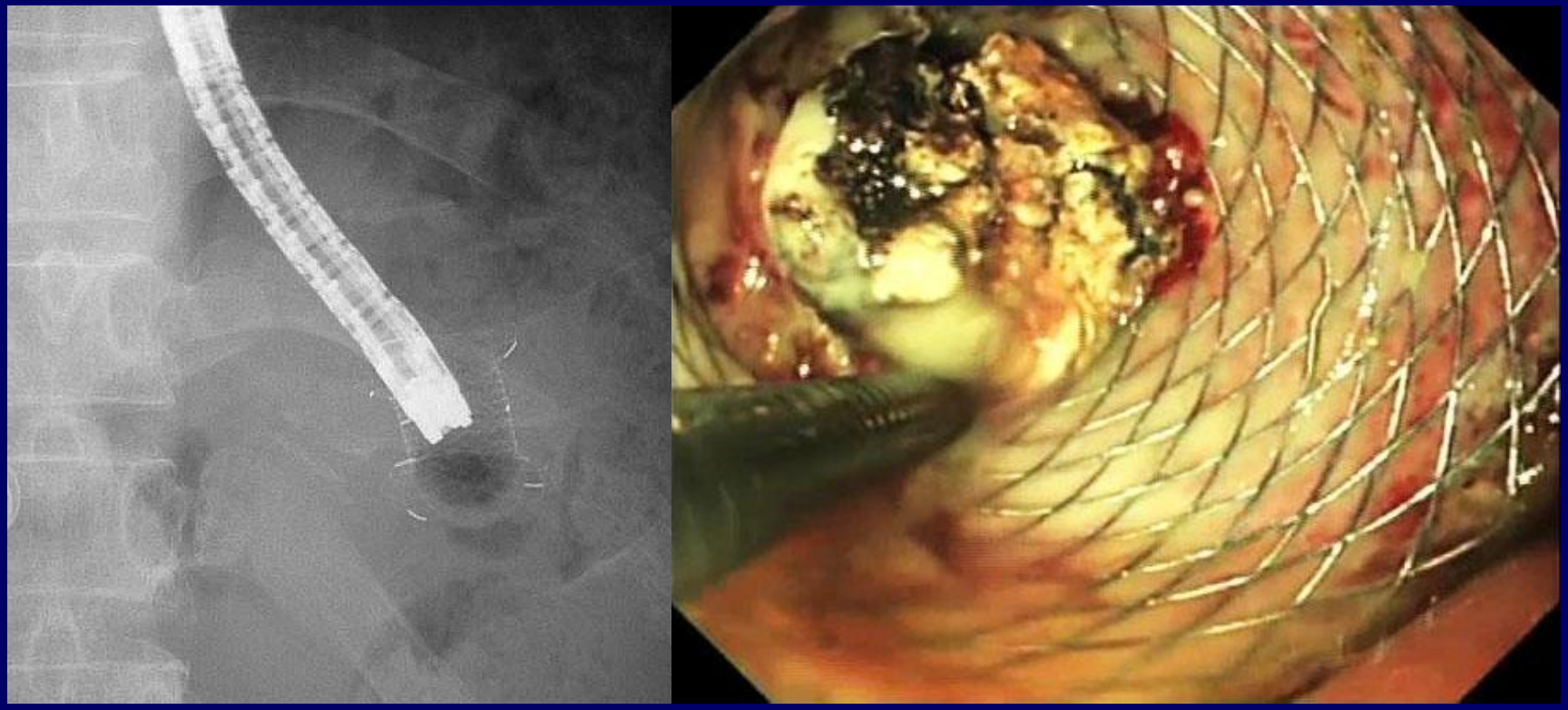
Spaxus stent

Short biflanged SEMS EUS guided

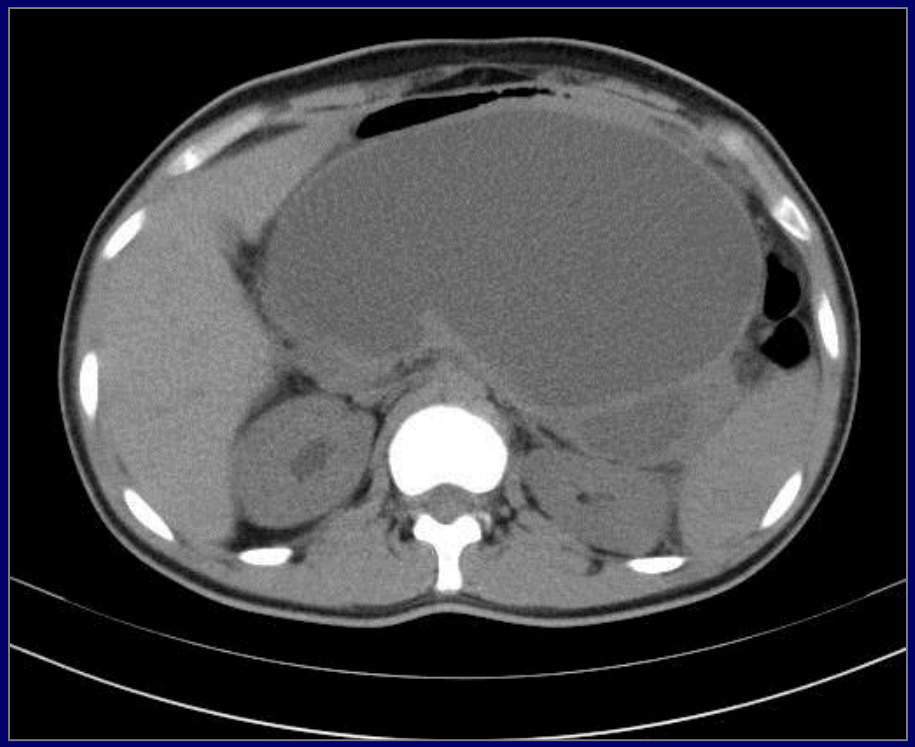




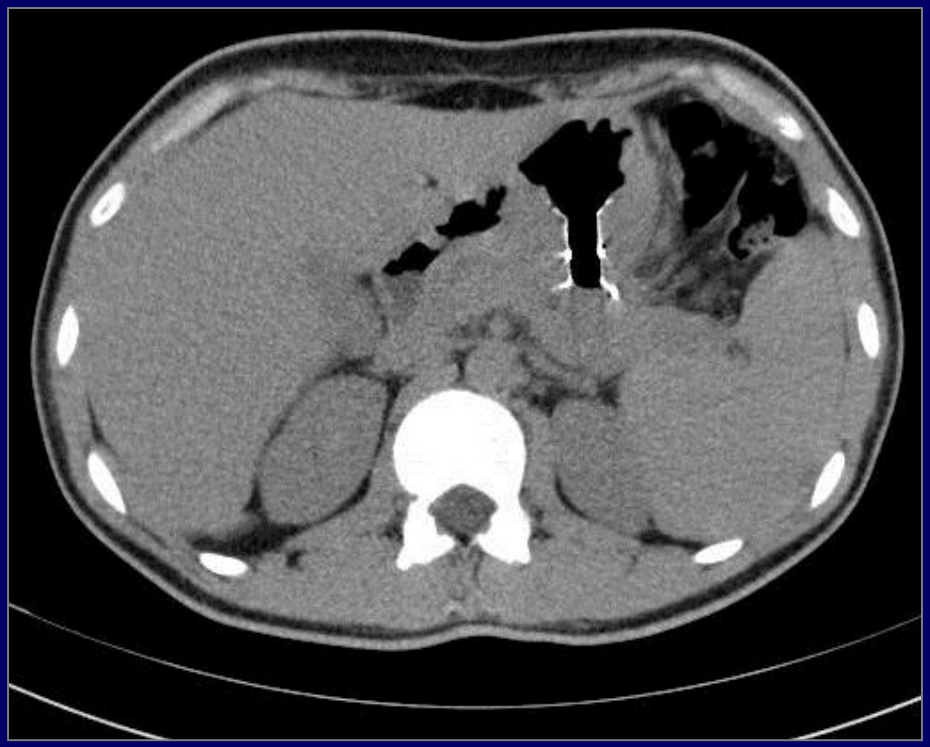
Itoi T, Reddy DN et al J Hepatobiliary Pancreat Sci 2012



Itoi T, Reddy DN et al J Hepatobiliary Pancreat Sci 2012

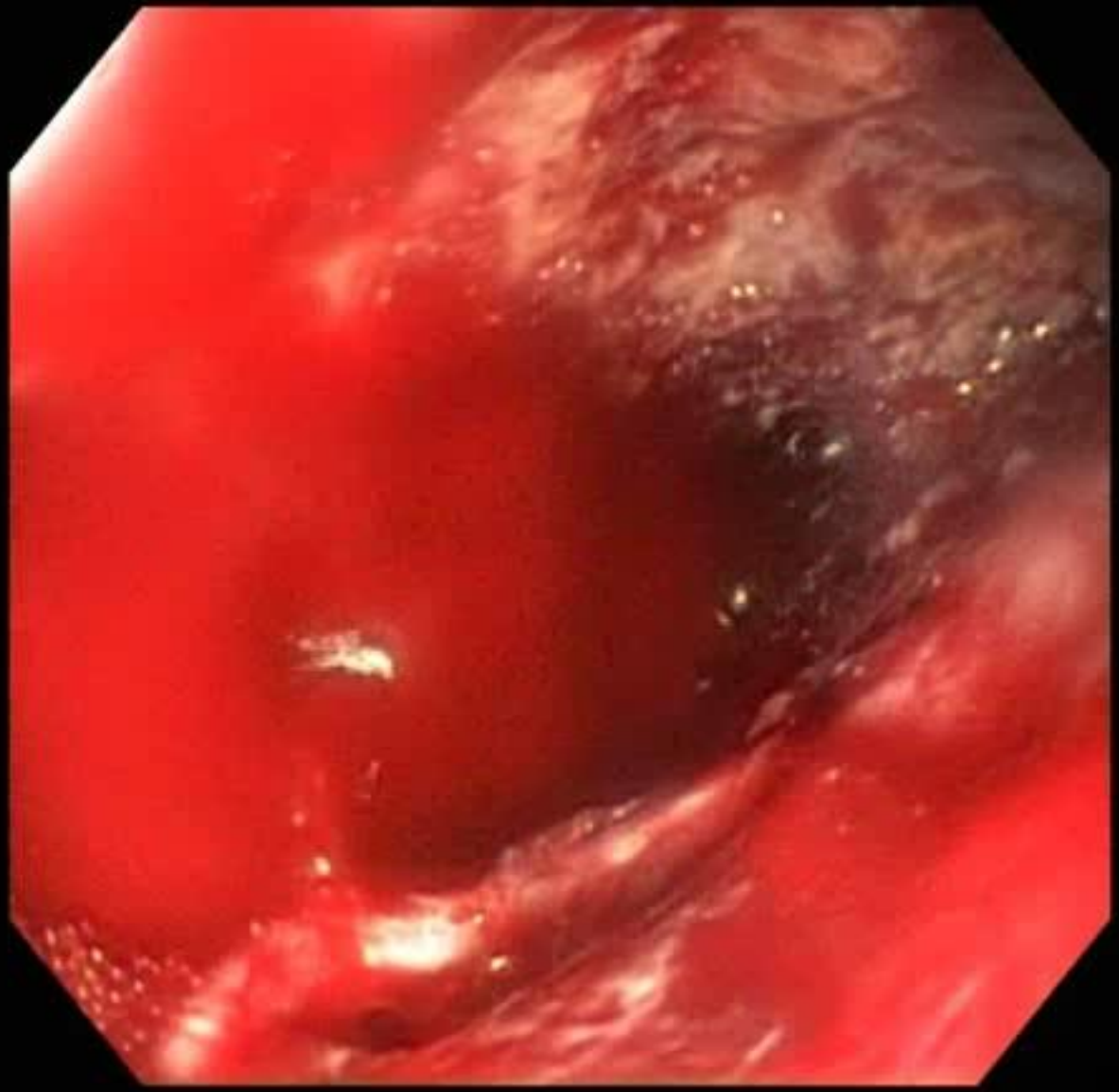


WOPN



4 Weeks after stent

Necrosectomy-bleeding



Endotherapy - WOPN

Complications

- Bleeding
- Perforation
- Infection
- Air embolism

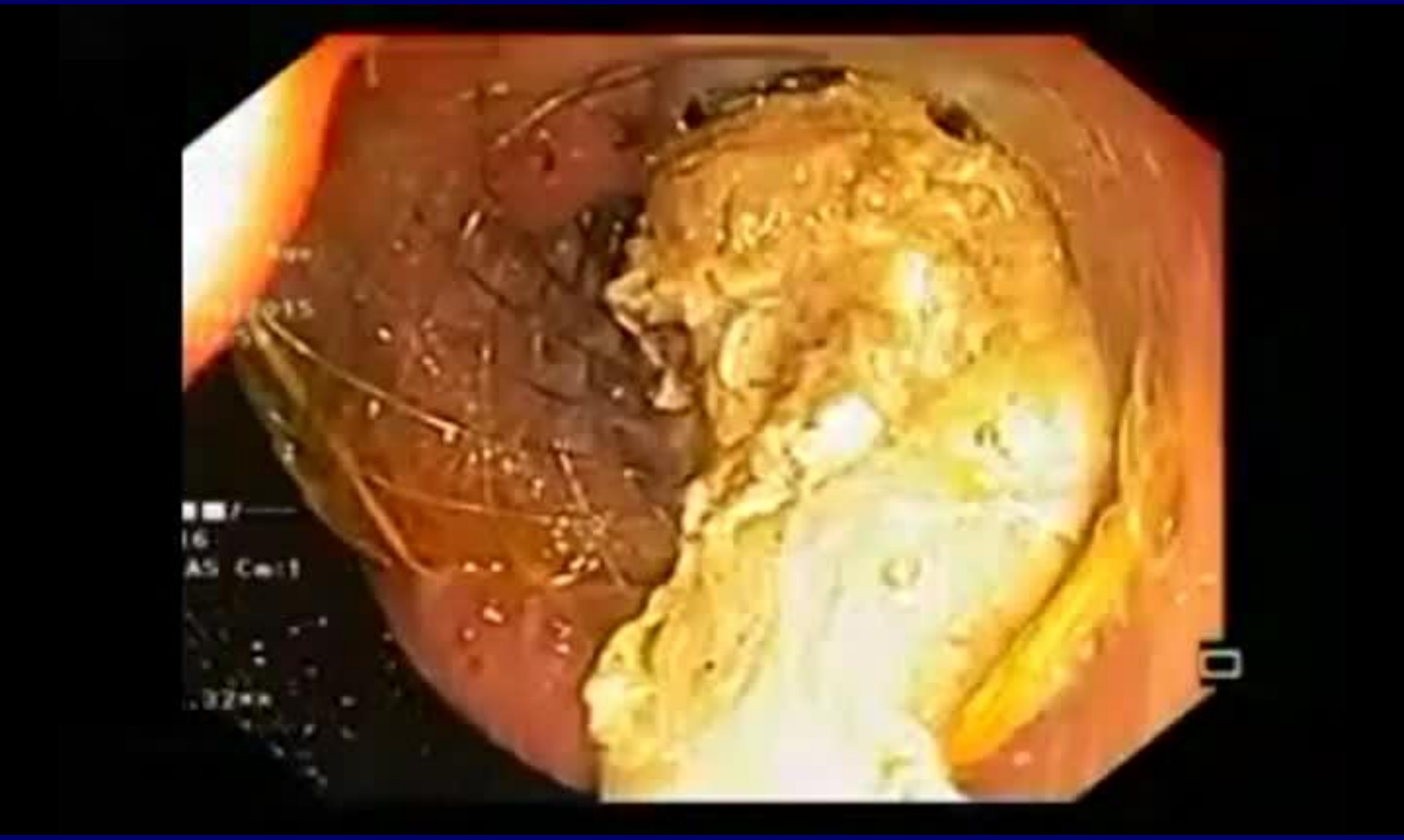
Can we avoid this complicated necrosectomy ?

Endoscopic “step-up approach” using dedicated bi-flanged metal stent reduces the need for direct necrosectomy in WON

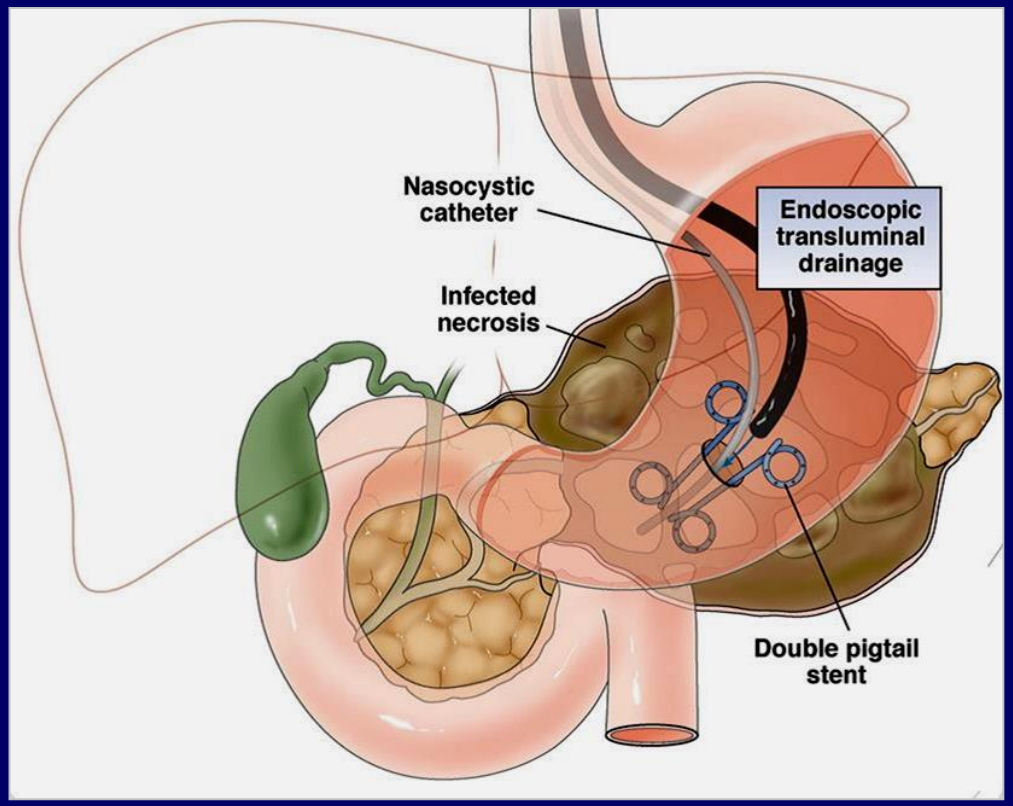
Sundeep Lakhtakia, Jahangeer Basha,Rupjyoti Talukdar, Rajesh Gupta, Zaheer Nabi,Mohan Ramchandani,BVN Kumar, Partha Pal,Rakesh Kalpala,Palle M Reddy,Rebala Pradeep,Jagadeesh Singh,G V Rao,D N Reddy,

Gastrointest Endosc 2016

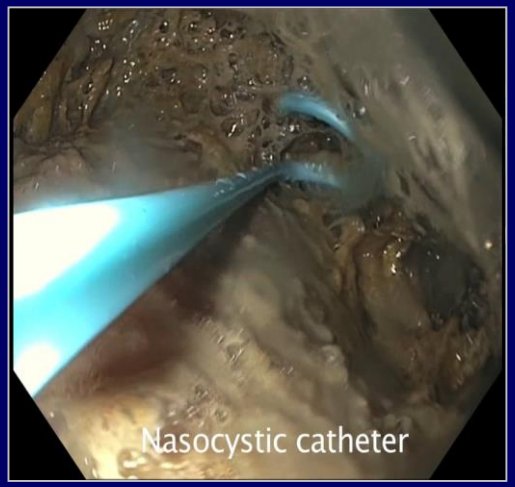
Step 1 : De-clogging

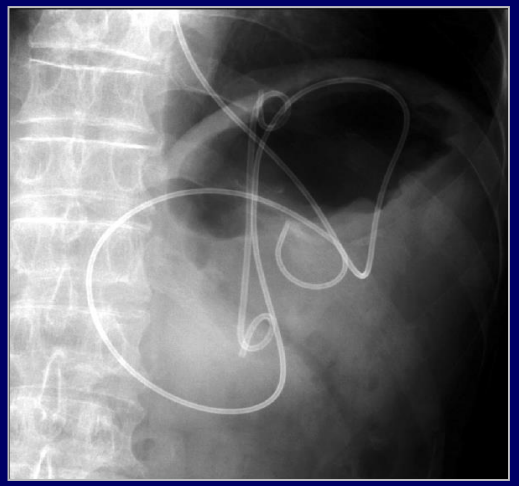


NCT Irrigation



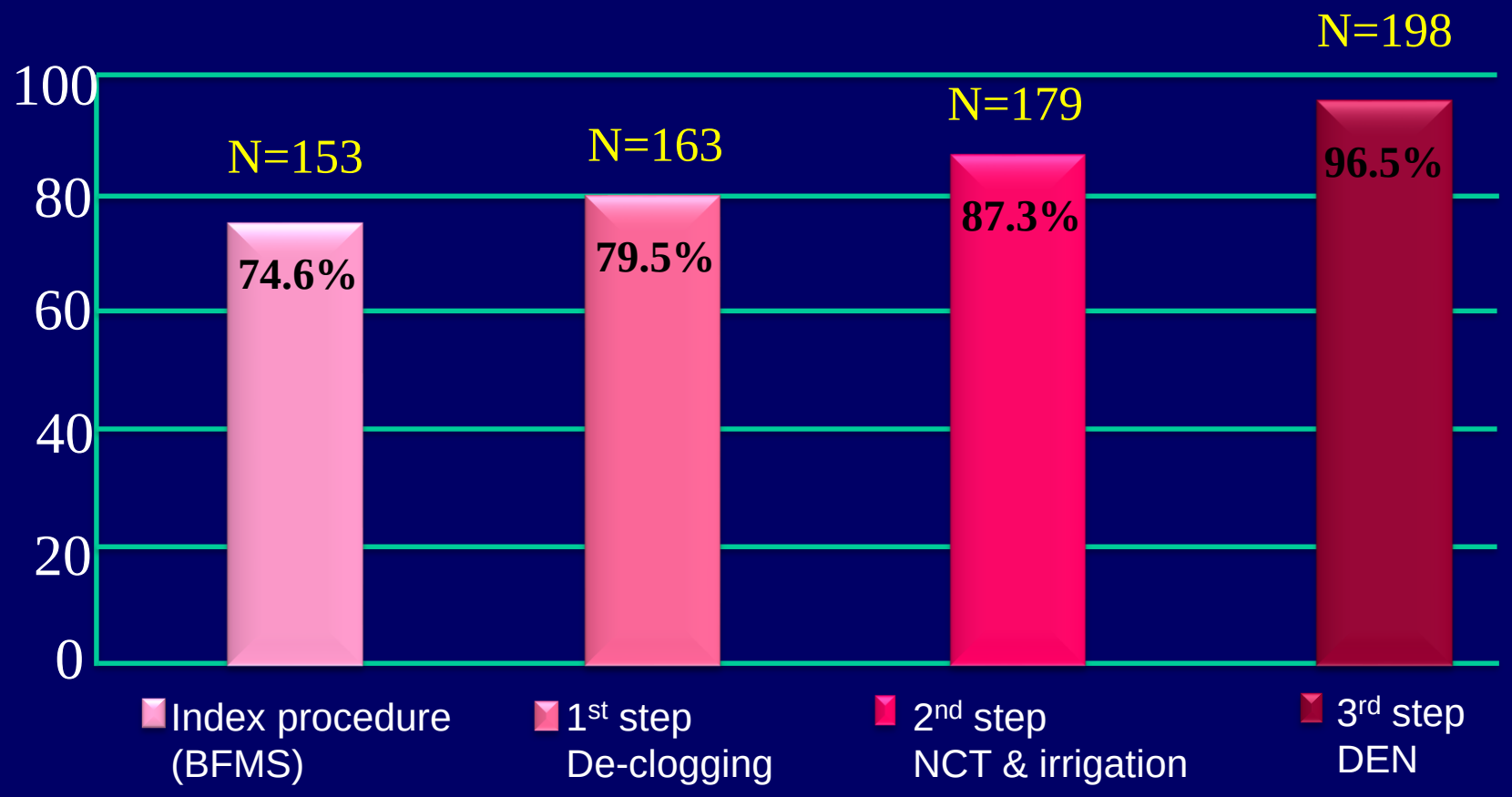
NASO-CYSTIC TUBE (NCT)





Step 3: Direct Necrosectomy

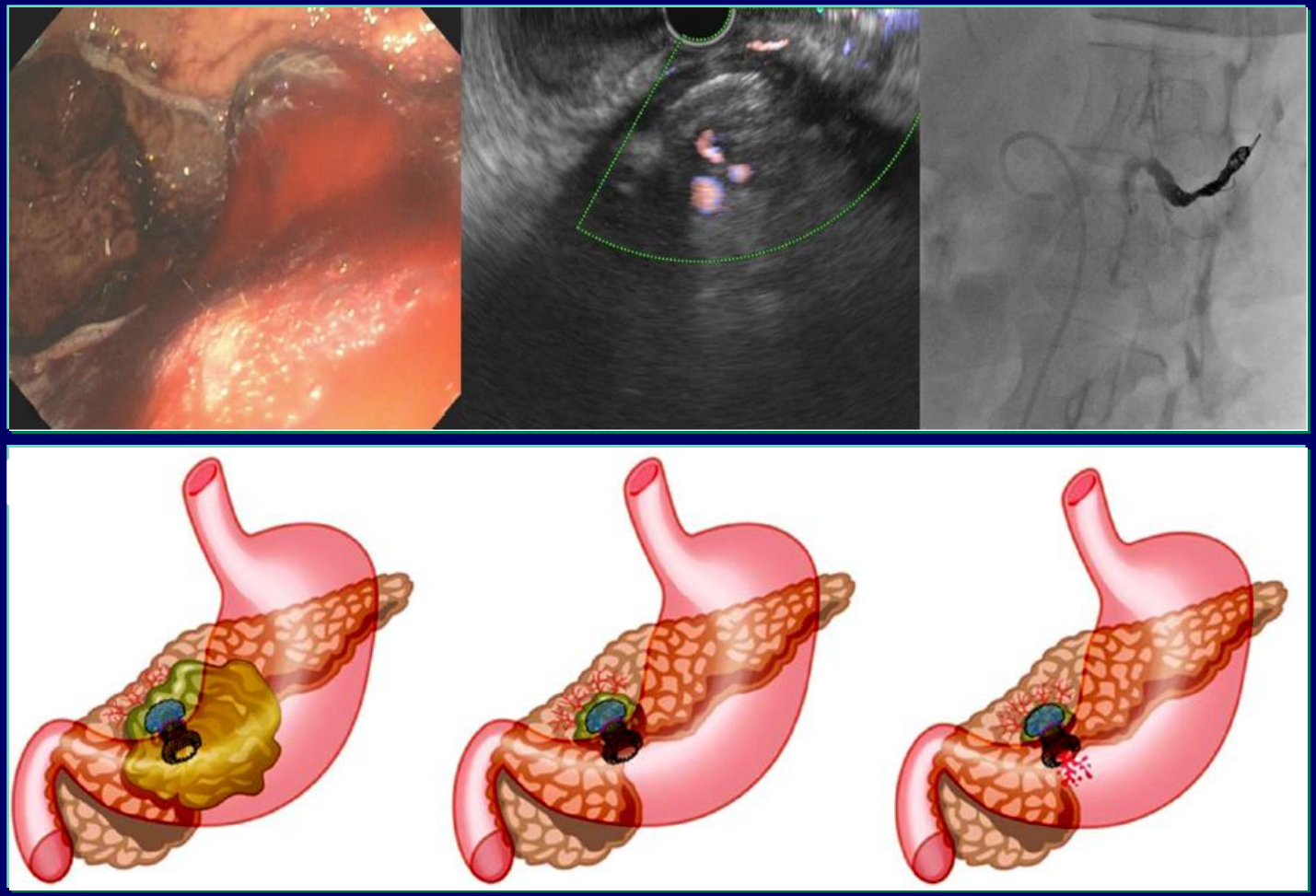
Step-wise incremental success (N=205)



How ?

LAMS vs Plastic Stents

Lumen-apposing metal stents (LAMS) for pancreatic fluid collection (PFC) drainage: may not be business as usual



J Y Bang et al Gut 2016

Non-superiority of lumen-apposing metal stents over plastic stents for drainage of walled-off necrosis in a randomised trial

	LAMS (n=31)	Plastic stents (n=29)	
Procedure duration	15 min	40 min	<0.001
Adverse events (stent related)	32.3%	6.9%	0.014
Treatment success	93.5%	96.6%	0.999

J Y Bang et al Gut 2019

Metal stents versus plastic stents for the management of pancreatic walled-off necrosis: a systematic review and meta-analysis

	Plastic stents	Lumen-apposing metal stents
Overall resolution	80.9%	91.5% (OR, 2.5; 95% CI, 1.4-4.3; $P = .001$)
Rate of resolution with a single procedure	43.4%	52.3% (OR, 1.4; 95% CI, 0.56-3.6; $P = .4$)
Bleeding	7.1%	5% (OR, 0.64; 95% CI, 0.13-3.1; $P = .5$)
Perforation	3%	4% (OR, 1.2; 95% CI, 0.24-6.18; $P = .8$)
Stent migration	5.3%	6.3% (OR, 1.12; 95% CI, 0.51-2.47; $P = .7$)
Stent occlusion	16.9%	3.8%(OR, 0.36; 95% CI, 0.03-4; $P = .4$)
Number of procedures to achieve resolution	Mean difference –.92 (95% CI, –1.283-.561, $p < 0.001$) (favoring metal stents)	

F Bazerbachi et al Gastrointestinal Endoscopy 2018

ORIGINAL ARTICLE: Clinical Endoscopy

EUS-guided pseudocyst drainage: prospective evaluation of early removal of fully covered self-expandable metal stents with pancreatic ductal stenting in selected patients CME

Vinay Dhir, MD,[1] Anthony Yuen Bin Teoh, MS, FRCS,[2] Mukta Bapat, MD,[1] Suryaprakash Bhandari, MD,[1] Nitin Joshi, MD,[1] Amit Maydeo, MD[1]

Mumbai, India; Shatin, Hong Kong

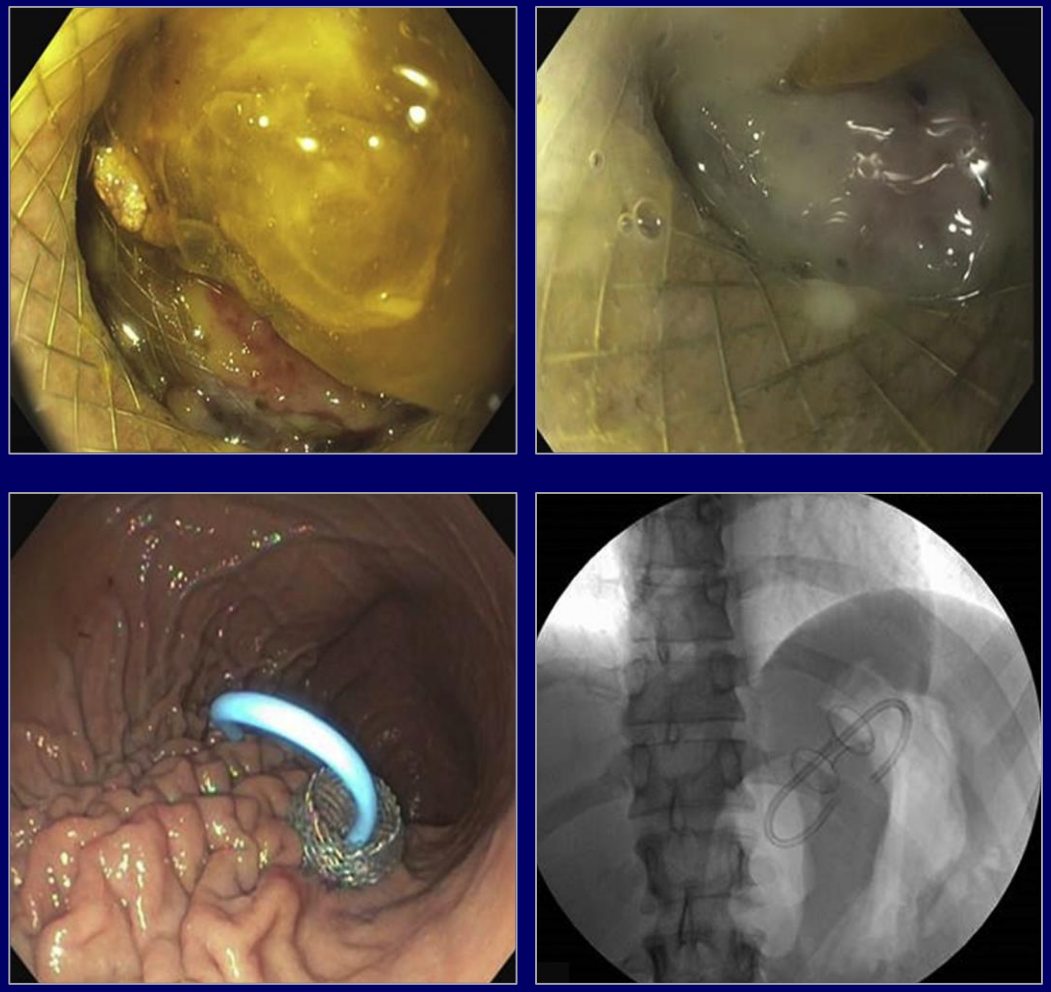
Early removal of biflanged metal stents in the management of pancreatic walled-off necrosis: a prospective study

Authors

Vinay Dhir[1], Douglas G. Adler[2], Ankit Dalal[1], Nitin Aherrao[1], Rahul Shah[1], Amit Maydeo[1]

Endoscopy 2017

Safety and efficacy of lumen-apposing metal stents with and without simultaneous double-pigtail plastic stents for draining pancreatic pseudocyst

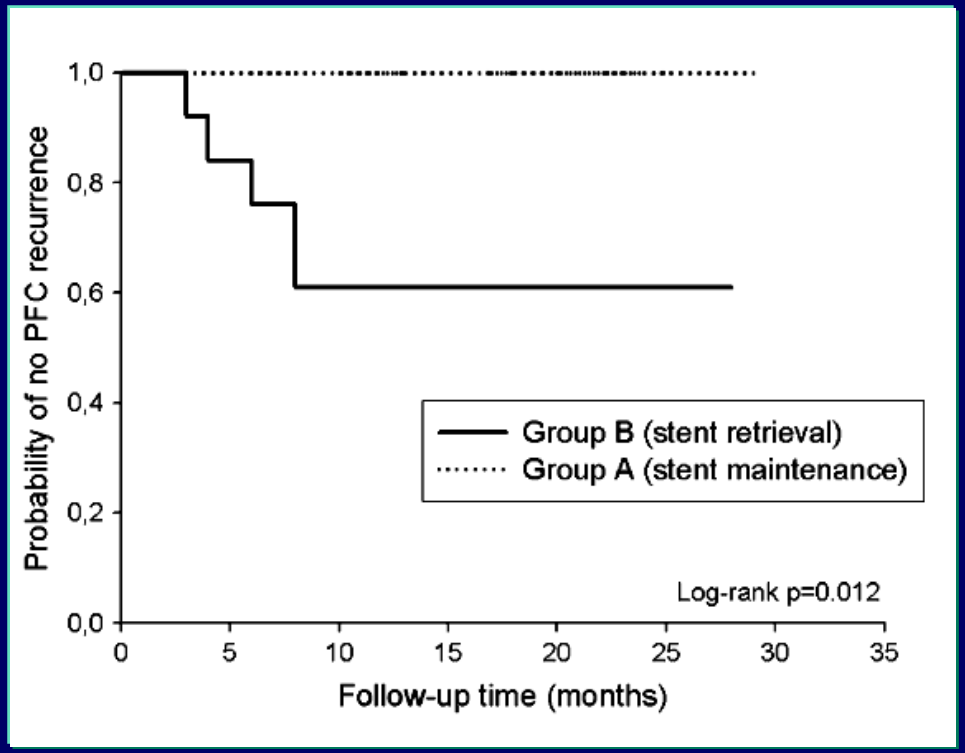


Aburajab et al Gastrointestinal Endoscopy 2018

Plastic Stents: remove or leave in

Pancreatic-fluid collections: a randomized controlled trial regarding stent removal after endoscopic transmural drainage

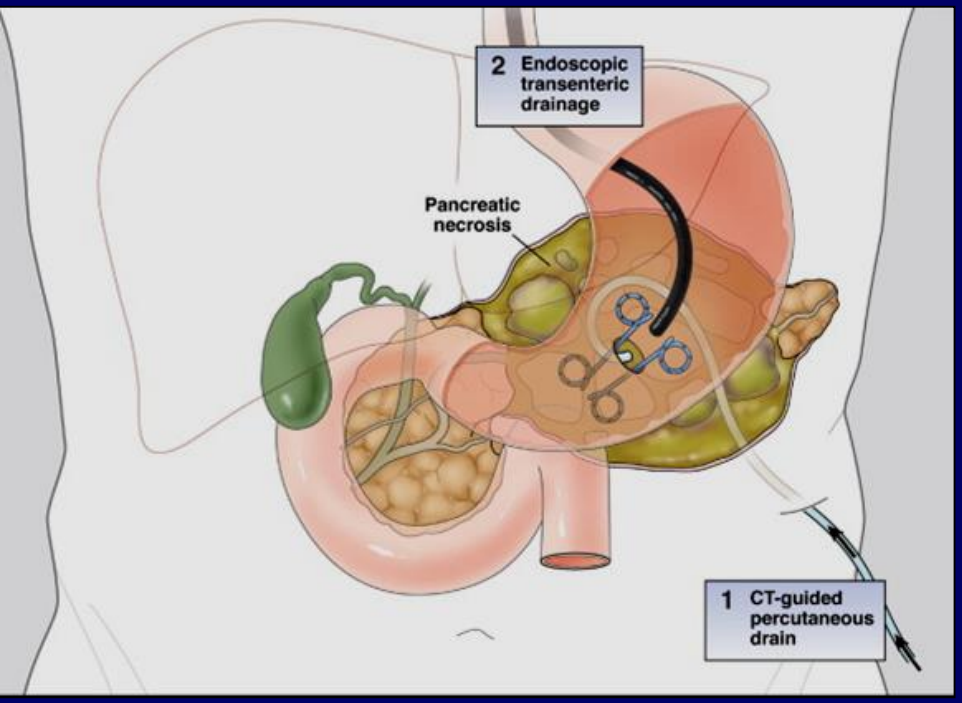
CME

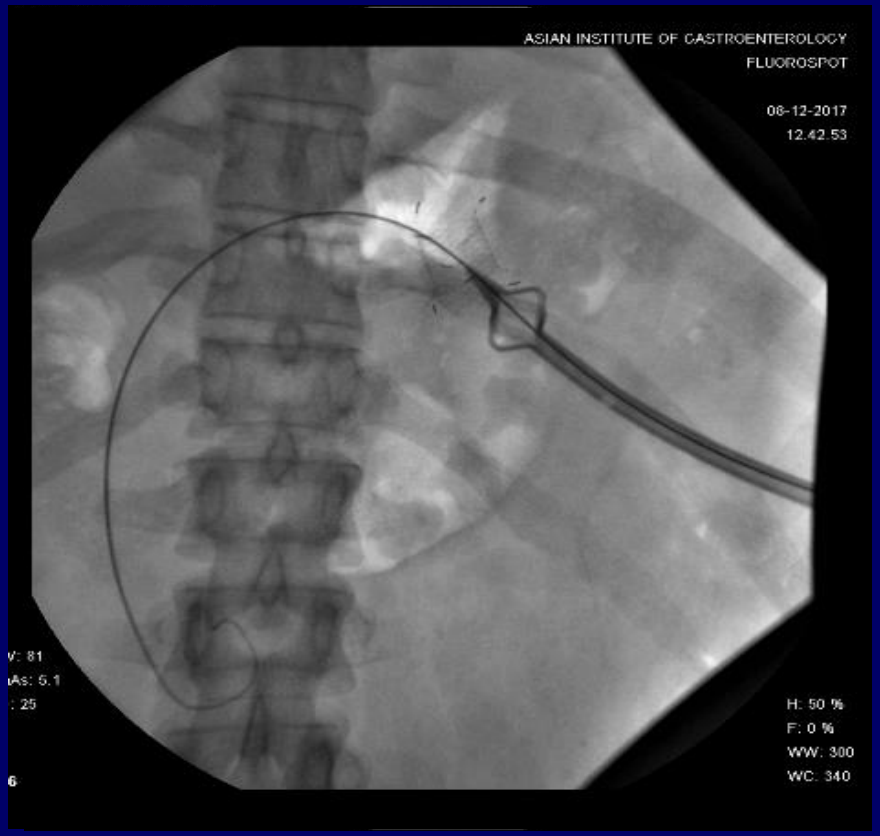


Kaplan-Meier analysis of the probability that PFC recurrence would occur according to group allocation for the 28 randomized patients

M Arvanitakis et al Gastrointest Endoscopy 2007

Combined Procedure





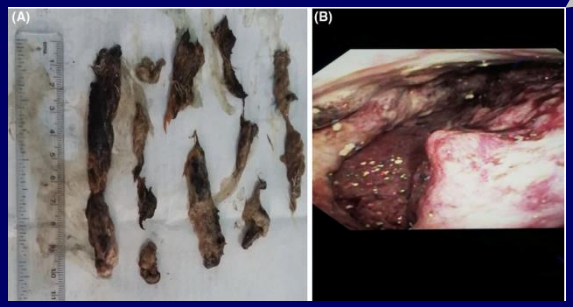
Single or multiport percutaneous endoscopic necrosectomy performed with the patient under conscious sedation is a safe and effective treatment for infected pancreatic necrosis (with video)

D Rajan et al Gastrointestinal Endoscopy 2015

Percutaneous Endoscopic Step-Up Therapy Is an Effective Minimally Invasive Approach for Infected Necrotizing Pancreatitis

177 Infected pancreatic necrosis

- Conservative N=27
- PCD alone N=56
- PC endo necrosectomy N=53
  - Success: 42 (79%)
    - PEN: 34
    - PEN + Sx: 8
- Surgery N=52



Jain S et al Digestive Diseases and Sciences 2019

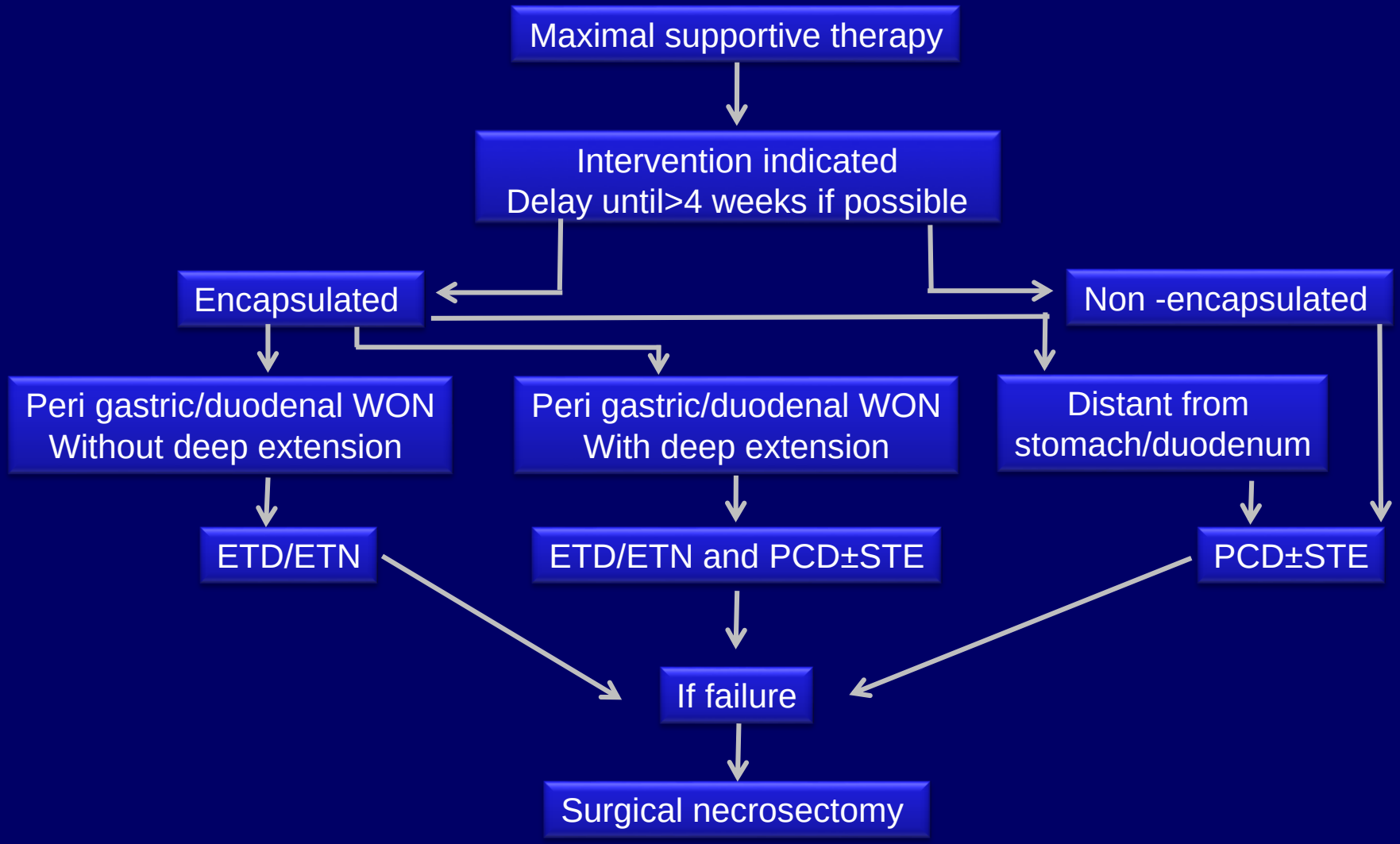
Infected Necrotizing Pancreatitis: Evolving Interventional Strategies From Minimally Invasive Surgery to Endoscopic Therapy—Evidence Mounts, But One Size Does Not Fit All

Summary of 2 Recent Randomized, Controlled Trials Comparing Endoscopic and Minimally Invasive Surgical Step-Up Approach for Suspected/Proven Infected Necrosis

	TENSION Trial		MISER Trial	
	Endoscopic	Surgical	Endoscopic	Surgical
No. of patients	51	47	34	32
Percent infected necrosis	23 (45%)	27 (57%)	31 (91%)	30 (94%)
Outcomes				
Composite end point	22 (43%)	21 (45%)	4(12%)	13(41%)
New-onset organ failure				
Single	7 (14%)	13 (28%)	NR	NR
Multiple	2 (4%)	6 (13%)	2 (6%)	3 (9%)
Death	9 (18%)	6 (13%)	3 (9%)	2 (6%)
Complications				
Bleeding	11 (22%)	10 (21%)	0	3 (9%)
Perforation	4 (8%)	8 (17%)	0	0
Fistula (pancreatic)	2/42 (5%)	13/42 (32%)	0	9 (28%)

P K Garg et al Gastroenterology 2019

Algorithmic Approach to Interventions in WOPN



Adapted from Yukako Nemoto, Pancreatology 2017

Pearls in Practice

- ANC can be drained if needed : PCD/ED
- WON – Step up approach : Endoscopy or MIS
- Hybrid techniques PTD+ED in large lesions
- Metal vs Plastic Stents - ?????
- Multidisciplinary approach


ZIPPER
NECROSECTOMY
AIG