

Diagnosis and therapy of acute pancreatitis

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Disclosure:



-
- No conflict of interest

ORIGINAL ARTICLE

Classification of acute pancreatitis—2012: revision of the Atlanta classification and definitions by international consensus

Peter A Banks,¹ Thomas L Bollen,² Christos Dervenis,³ Hein G Gooszen,⁴
Colin D Johnson,⁵ Michael G Sarr,⁶ Gregory G Tsiotos,⁷ Santhi Swaroop Vege,⁸
Acute Pancreatitis Classification Working Group

Treatment guideline



IAP/APA Evidence-based Guidelines on the Management of Acute Pancreatitis



Pancreatology 2013



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Pancreatology

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



Original article

IAP/APA evidence-based guidelines for the management of acute pancreatitis

Working Group IAP/APA Acute Pancreatitis Guidelines^{a,b,*}

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^bAmerican Pancreatic Association, PO Box 14906, Minneapolis, MN 55414, USA

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Search: IAP/APA



iBooks

Search: pancreatitis

Diagnosis

Diagnosis acute pancreatitis



- Definition acute pancreatitis: 2 of these 3 criteria
 1. clinical (upper abdominal pain)
 2. laboratory (serum lipase / amylase >3x upper limit of normal)
 3. and/or imaging (CT, MRI, ultrasonography) criteria.

Remarks:

- *usually (>95%) imaging not required for diagnosis*

(GRADE 1B, strong agreement)

Imaging in early phase?



- Indication for early ultrasonography:
 - Screening for biliary cause (gallstones, sludge)
- Indication for initial CT assessment:
 - *Diagnostic uncertainty*
 - *Confirmation of severity*
 - *Failure to respond to conservative treatment*

Optimal timing for initial CT assessment is at least 72-96 hrs after onset of symptoms

(GRADE 1C, strong agreement)

Diagnosis necr. pancreatitis

“Inflammation associated with pancreatic parenchymal necrosis and/or peripancreatic necrosis”

- CECT criteria:

- ▶ Lack of pancreatic parenchymal enhancement
- ▶ Presence of findings of peripancreatic necrosis



NB: pseudocyst acute pancreatitis <0.1%

Therapy

General, acute pancreatitis

General treatment



- Fluid
- Feeding
- ERCP / cholecystectomy
- Anti / pro-biotics

Fluid

- 5-10 ml/kg/h until goals have been reached
 - *Goals: heart rate <120/min, MAP 65-85 mmHg, urine output >0.5-1 ml/kg/h.*
 - *Usually 2.5-4 L Ringer's lactate will suffice in first 24hrs*
 - *High infusion with either 10-15 ml/kg/h or aiming at hematocrit <35% within 48hrs = **HIGHER MORTALITY***

Grade 2B, weak agreement

Feeding



- Mild pancreatitis: oral diet
- Predicted severe pancreatitis: oral diet, if no oral intake after 72-96 hrs, nasogastric or nasojejunal feeding tube

Grade 1B, strong agreement

No benefit of routine nasoenteral feeding <24hrs after diagnosis



The NEW ENGLAND
JOURNAL of MEDICINE

Early versus On-Demand Nasoenteric Tube Feeding in Acute Pancreatitis

O.J. Bakker, S. van Brunschot, H.C. van Santvoort, M.G. Besselink, T.L. Bollen, M.A. Boermeester, C.H. Dejong, H. van Goor, K. Bosscha, U. Ahmed Ali, S. Bouwense, W.M. van Grevenstein, J. Heisterkamp, A.P. Houdijk, J.M. Jansen, T.M. Karsten, E.R. Manusama, V.B. Nieuwenhuijs, A.F. Schaapherder, G.P. van der Schelling, M.P. Schwartz, B.W.M. Spanier, A. Tan, J. Vecht, B.L. Weusten, B.J. Witteman, L.M. Akkermans, M.J. Bruno, M.G. Dijkgraaf, B. van Ramshorst, and H.G. Gooszen, for the Dutch Pancreatitis Study Group

PYTHON trial

ERCP

- Urgent ERCP is indicated in patients with biliary pancreatitis and cholangitis (GRADE 1B, strong agreement)
- ERCP is probably indicated in biliary pancreatitis with common bile duct obstruction (GRADE 1C, strong agreement)
- ERCP is not indicated in predicted mild biliary pancreatitis without cholangitis (GRADE 1A, strong agreement)
- ERCP is probably not indicated in predicted severe biliary pancreatitis without cholangitis (GRADE 1B, strong agreement)

*Remark: currently no evidence regarding **timing** of ERCP in pts with predicted severe biliary pancreatitis without cholangitis*

Acute biliary Pancreatitis: early ERC plus sphincterotomy versus Conservative treatment



APEC trial: PICO



- *Patients:* 232 patients with predicted biliary pancreatitis
- *Intervention:* ERC + sphincterotomy < 24 hrs
- *Comparison:* conservative treatment
- *Outcome:* major complications and death

Subgroup analysis for patients with/without cholestasis

29 Dutch hospitals 2013-2016

ISRCTN97372133

Let's vote



-
- Should the gallbladder be removed prior to discharge of a patient with mild biliary pancreatitis?

YES

NO

Timing of cholecystectomy following mild biliary pancreatitis

a randomized controlled multicenter trial

PONCHO trial



PONCHO trial: PICO



- *Patients:* 266 patients with first episode mild biliary pancreatitis
- *Intervention:* cholecystectomy <72 after randomization
- *Control:* cholecystectomy 25-30dys after randomization
- *Outcome:* re-admission for biliary complications or mortality

Randomization: when discharge was planned and expected <24-48hrs

23 Dutch hospitals 2010-2013

PONCHO trial: results



Results

	Same admission (N=128)	Interval (N=136)	Risk Ratio (95% CI)	P value
Primary endpoint; No. (%)				
Acute readmission <i>or</i> mortality	6 (5)	23 (17)	0.28 (0.12-0.66)	0.002
Secondary endpoints				
Readmissions for				
Recurrent pancreatitis	3 (2)	12 (9)	0.27 (0.08-0.92)	0.02
Colics	2 (1)	7 (5)	0.3 (0.06-1.43)	0.11
Choledocholithiasis	1 (1)	2 (1)	0.53 (0.05-5.79)	0.6
Cholecystitis	0	2 (1)		
Mortality	1 (1)	0		0.30

Anti/probiotics



- Intravenous antibiotic prophylaxis is not recommended for the prevention of infectious complications in acute pancreatitis. (GRADE 1B, strong agreement)
- Probiotic prophylaxis is not recommended for the prevention of infectious complications in acute pancreatitis. (GRADE 1B, strong agreement).

Probiotic prophylaxis: no reduction of infections



THE LANCET

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www.thelancet.com

Probiotic prophylaxis in predicted severe acute pancreatitis: a randomised, double-blind, placebo-controlled trial

Marc G H Besselink, Hjalmar C van Santvoort, Erik Buskens, Marja A Boermeester, Harry van Goor, Harro M Timmerman, Vincent B Nieuwenhuijs, Thomas L Bollen, Bert van Ramshorst, Ben J M Witteman, Camiel Rosman, Rutger J Ploeg, Menno A Brink, Alexander F M Schaapherder, Cornelis H C Dejong, Peter J Wahab, Cees J H M van Laarhoven, Erwin van der Harst, Casper H J van Eijck, Miguel A Cuesta, Louis M A Akkermans, Hein G Gooszen, for the Dutch Acute Pancreatitis Study Group

PROPATRIA trial

Therapy

Necrotizing pancreatitis

Necrotizing pancreatitis



- 70% sterile necrosis: 6% mortality with a conservative, multidisciplinary approach^{1,2}
- 30% infected necrosis: 15% mortality²
- We cannot prevent infected necrosis (yet)
 - Antibiotics
 - Probiotics
 - Early enteral nutrition

¹Buchler, Ann Surg 2000

²Van Santvoort, Gastroenterol 2011

Indication for intervention



- Infected necrosis usually clinically obvious.
- FNA rarely needed with postponed approach
negative FNA: not reliable
positive FNA: 99% certainty of infection
- Sterile necrosis is rarely an indication for intervention in the 1st admission

Step-up approach: DDD



- Delay
 - Using antibiotics, until encapsulation
- Drain
 - Percutaneous catheter drainage (PCD)
 - Endoscopic transluminal drainage (ETD)
- Debride
 - Retroperitoneal percutaneous necrosectomy (MIRPN)
 - Retroperitoneal 5cm incision necrosectomy (VARD)
 - Laparoscopic transgastric necrosectomy (LTN)
 - Endoscopic transluminal necrosectomy (ETN)
 - Open necrosectomy

Let's vote



- Is the step-up approach (drainage before necrosectomy) current 'best practice' for treating infected necrosis?

YES

NO

Recent survey: 87% of experts used step-up approach

Step-up approach: DDD



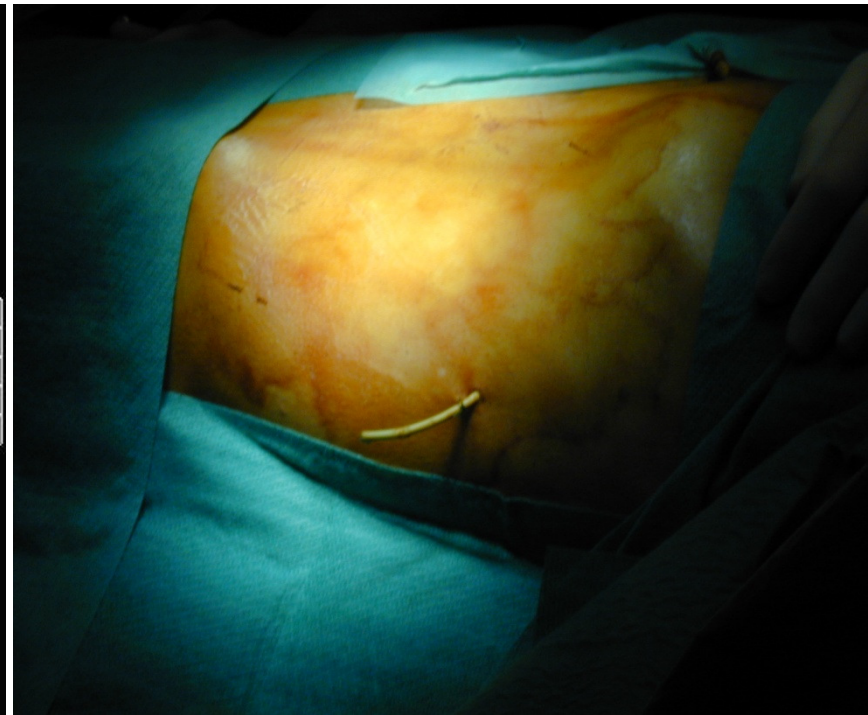
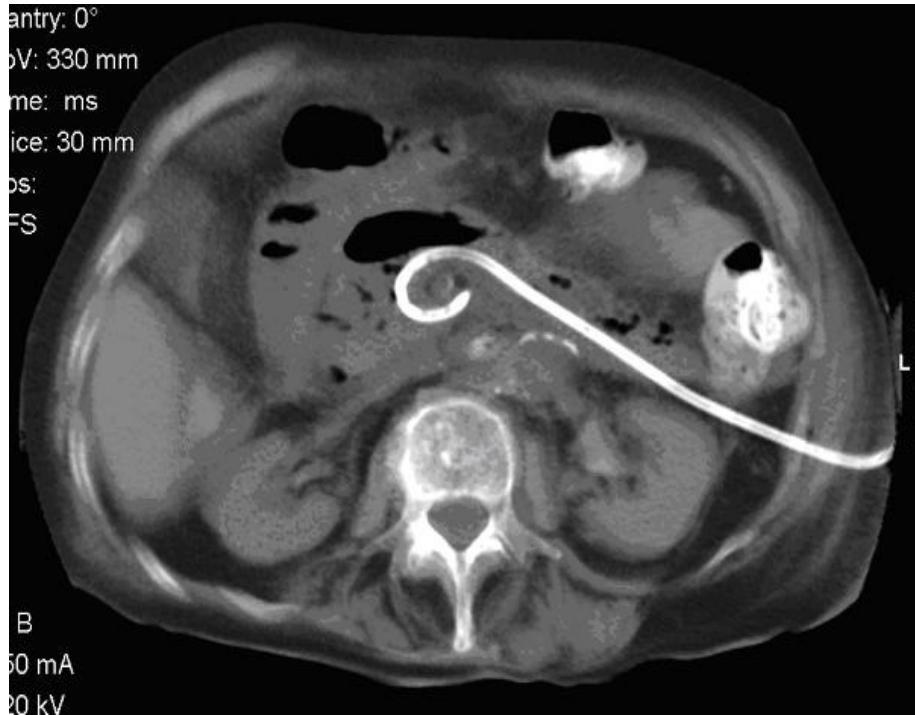
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Minimally invasive



-
- Hypothesis: less surgical stress in an already critically ill patient

Percut. catheter drainage



Syst review perc drainage



- 384 patients in 11 studies (1 RCT)
 - Preoperative organ failure: 67%
 - Infected necrosis: 71%
- Successful PCD: **55%** (no debridement needed)
 - Complications: 27%
 - Mortality 17%

ORIGINAL ARTICLE

A Step-up Approach or Open Necrosectomy for Necrotizing Pancreatitis

Hjalmar C. van Santvoort, M.D., Marc G. Besselink, M.D., Ph.D.,
Olaf J. Bakker, M.D., H. Sijbrand Hofker, M.D., Marja A. Boermeester, M.D., Ph.D.,

PANTER trial

Tom Karsten, M.D., Ph.D., Eric J. Hesselink, M.D., Ph.D.,
Cornelis J. van Laarhoven, M.D., Ph.D., Camiel Rosman, M.D., Ph.D.,
Koop Bosscha, M.D., Ph.D., Ralph J. de Wit, M.D., Ph.D.,
Alexander P. Houdijk, M.D., Ph.D., Maarten S. van Leeuwen, M.D., Ph.D., Erik
Buskens, M.D., Ph.D., and Hein G. Gooszen, M.D., Ph.D.,
for the Dutch Pancreatitis Study Group*

PANTER trial: PICO



- *Patients:* 88 patients with clinical evidence of infected (peri-)pancreatic necrosis
- *Intervention:* step-up approach (delay, drain, debride)
- *Comparison:* open necrosectomy (delay, debride)
- *Outcome:* composite endpoint of major morbidity and mortality

19 Dutch hospitals, 2005-2008

PANTER trial: results 1/2



- Percutaneous catheter drainage was technically feasible in **98%** of patients
- Percutaneous catheter drainage was the only intervention needed in **35%** of patients in the step-up arm
- Step-up approach (vs primary open) decreased incidence of new multi-organ failure from **40% to 12%**

PANTER trial: results 2/2

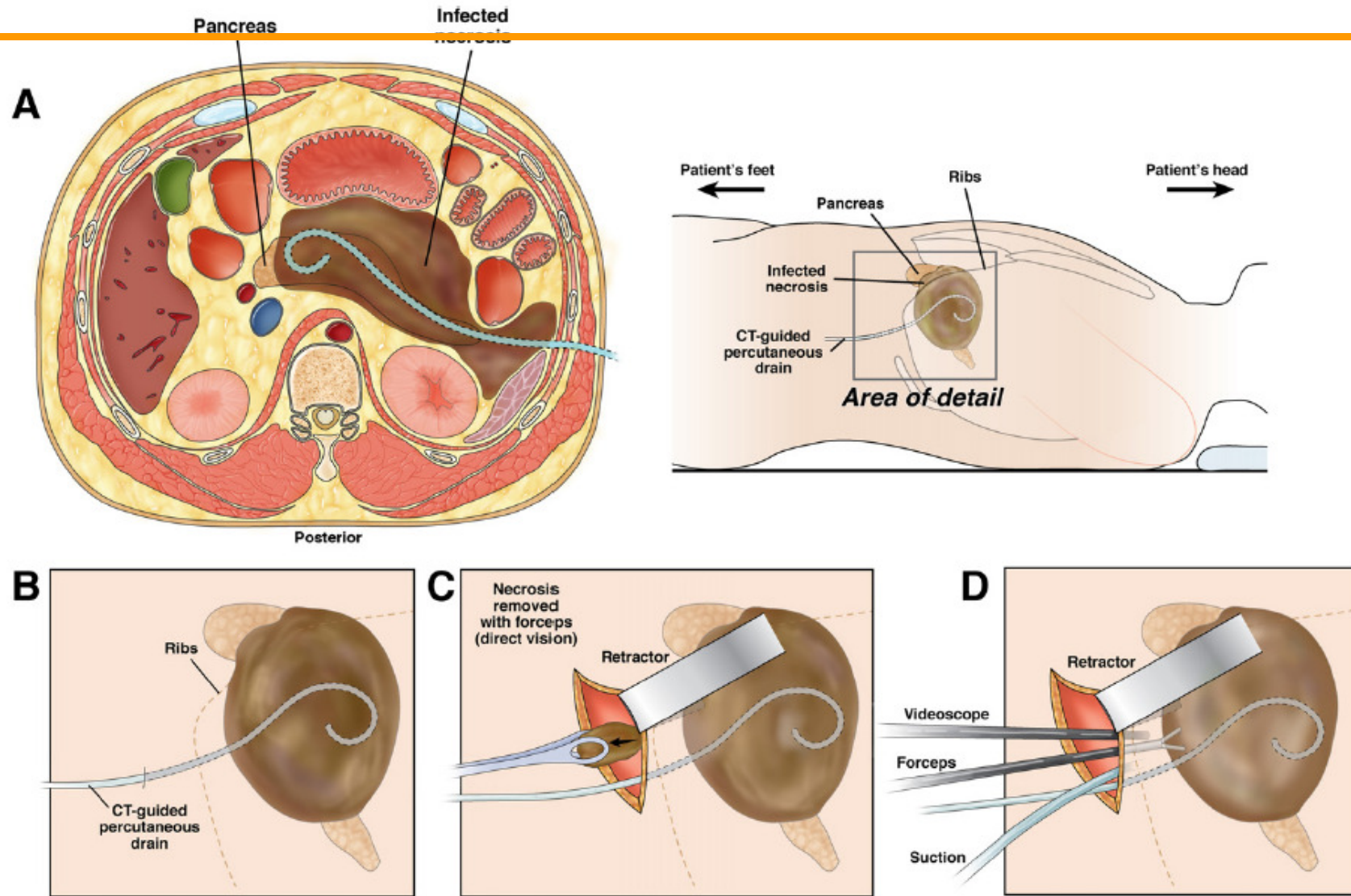


Endpoint	Primary open necrosectomy (N= 45)	Surgical step-up approach (N= 43)	P
Death or major morbidity	31 (69%)	17 (40%)	0.006
New onset multiple organ failure	19 (42%)	5 (12%)	0.001
Intra-abdominal bleeding	10 (22%)	7 (16%)	0.48
Enterocutaneous fistula/ Perforation of a visceral organ	10 (22%)	6 (14%)	0.32
Death	7 (16%)	8 (19%)	0.70

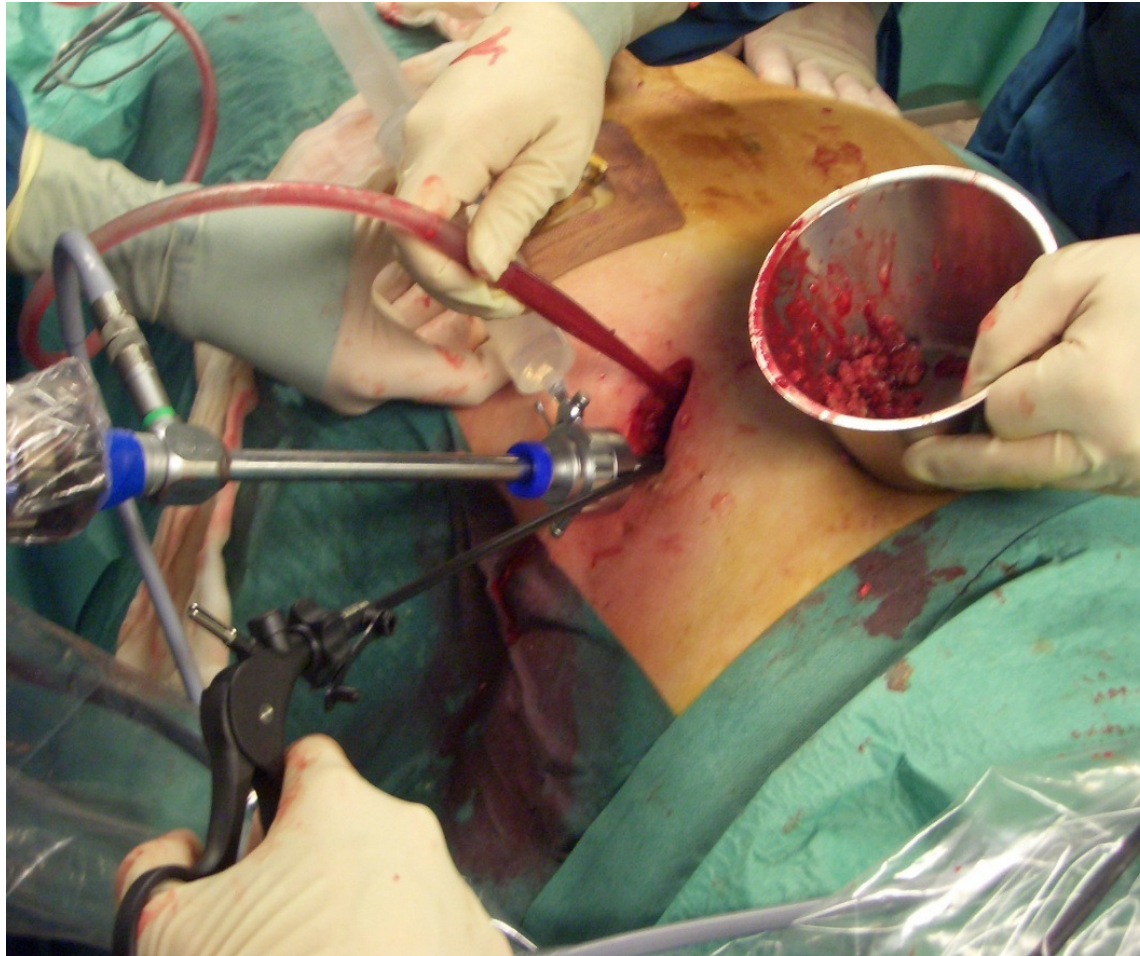
4 pts only treated with PCD



Video-Assisted Retrop. Debridement (VARD)



YouTube: "VARD pancreatitis"



Endoscopic Transgastric vs Surgical Necrosectomy for Infected Necrotizing Pancreatitis

A Randomized Trial

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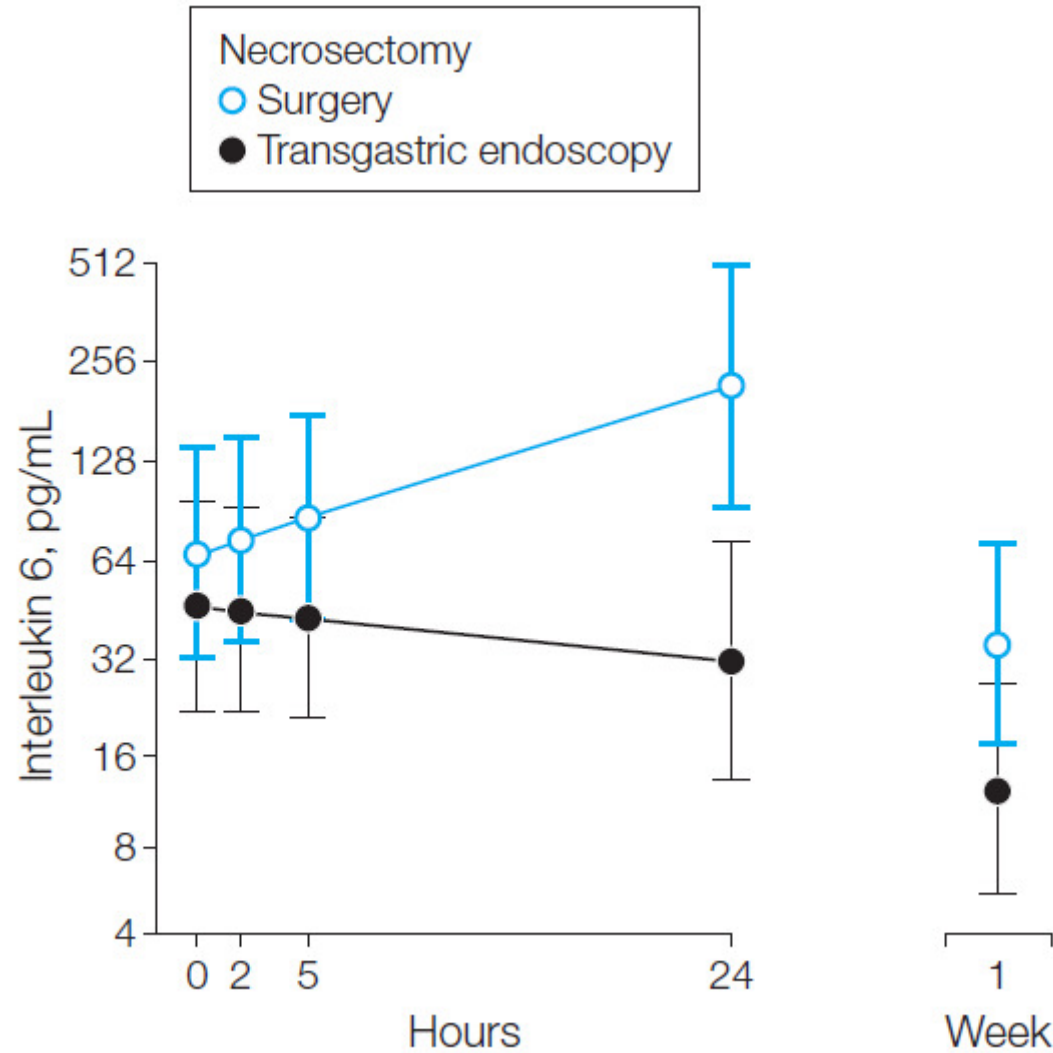
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JAMA[®]
The Journal of the American Medical Association

JAMA, March 14, 2012—Vol 307, No. 10 **1053**
Corrected on March 13, 2012

Results PENGUIN trial (n=20)



($P = .004$)

Results PENGUIN trial (2)



- Reduction of death + major complications: 80% → 20%
- Reduction new multiple organ failure: 50% → 0%
- Reduction pancreatic fistula: 70% → 10%

→ *small study, not powered for clinical endpoints*

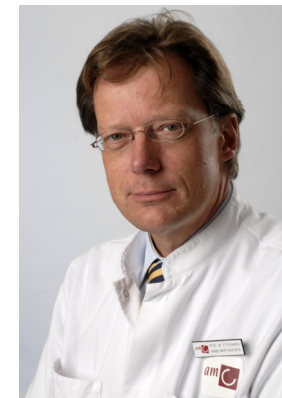
TENSION trial



Transluminal ENdoscopic step-up approach vs Surglcal step-up apprOach in infected Necrotizing pancreatitis



Janneke van Grinsven



Paul Fockens

TENSION trial: PICO



- *Patients:* 98 patients with (suspected) necrosis
- *Intervention:* endoscopic approach
- *Comparison:* surgical up-approach
- *Outcome:* major complications and death

100% randomized

25 Dutch hospitals, 2011-2014

Take home message

1. Use the guidelines, Apps!
 - ✓ Diagnosis: lipase / amylase, CT ideally >3 days
 - ✓ Fluid infusion aimed at goals
 - ✓ ERCP in cholangitis. Pred. severe? = **APEC trial!**
 - ✓ Oral diet
 - ✓ Infected necrosis? Step-up approach
2. Acute (or chronic) pancreatitis?



Thank you



Canisius-Wilhelmina Ziekenhuis

