

Disclosure



Cook <u>Endoscopy</u>	Consultancy Travel <u>grant</u> <u>Speaker's fee</u>
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A photograph of a cable-stayed bridge over a body of water. The bridge has a tall, dark, triangular pylon on the left side, with numerous cables fanning out to support the bridge deck. The water in the foreground shows a wake, suggesting the photo was taken from a boat. In the background, a city skyline is visible under a clear blue sky with a bright sun in the upper right corner, creating a lens flare effect.

Endoscopische interventies bij complicaties van pancreatitis

Cursorisch onderwijs Veldhoven maart 2015

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the Netherlands



“In der Beschränkung zeigt sich der Meister”dus 20 min is helaas het absolute maximum, dan stop ik je...;-))

complications of pancreatitis & endoscopy



acute

- fluid collections
 - infected walled-off necrosis
 - sterile necrosis
 - acute fluid collection
- vascular
- abdominal compartment syndrome
- fistula
- ERCP

chronic

- pseudocysts
- bile duct obstruction
- gastric outlet obstruction
- ductal strictures and stones
- vascular
- pancreatic ascites & pleural effusion

complications of pancreatitis & endoscopy



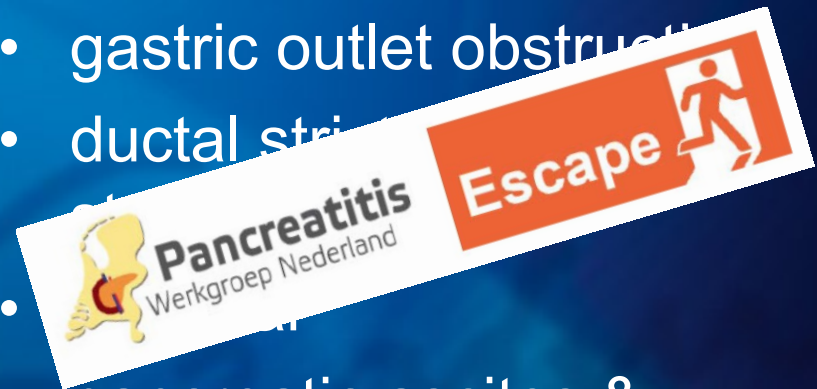
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Endoscopische interventies bij complicaties van pancreatitis



- treatment of pancreatic fistula / ascites / pleural effusion
- treatment of pseudocysts
- treatment of bile duct obstruction



Endoscopic treatment of pancreatic fistula

- pancreatic fistula is characterized by leakage of pancreatic fluid as a result of ductal disruption
 - acute pancreatitis
 - chronic pancreatitis
 - pancreatic resection / surgery
 - trauma
- malnutrition
- skin problems
- infection





Pancreatic fistula

- internal fistula
 - fluid collection (retroperitoneal; mediastinal; perihepatic; lesser sac) -> may develop into pseudocyst
 - erosion into stomach, duodenum, small bowel, colon, esophagus, vessels
 - “free fluid” -> ascites or pleural effusion
- external fistula
 - communication with the skin (with or without percutaneous drainage)



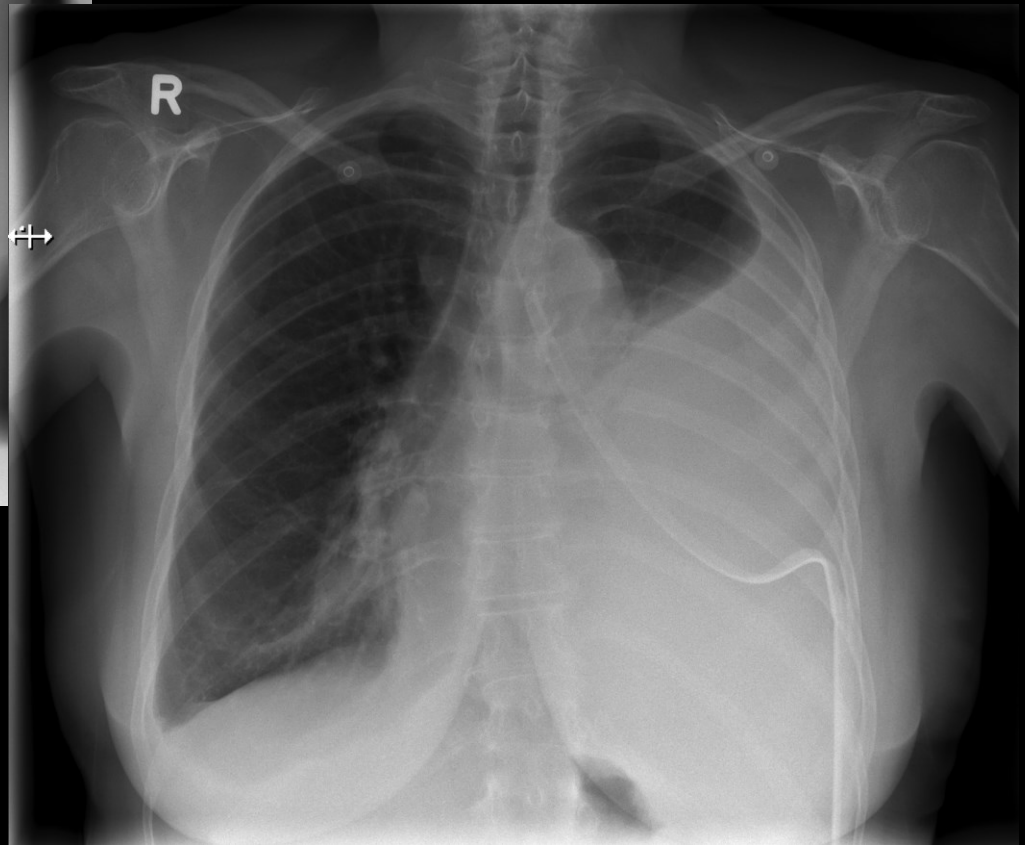
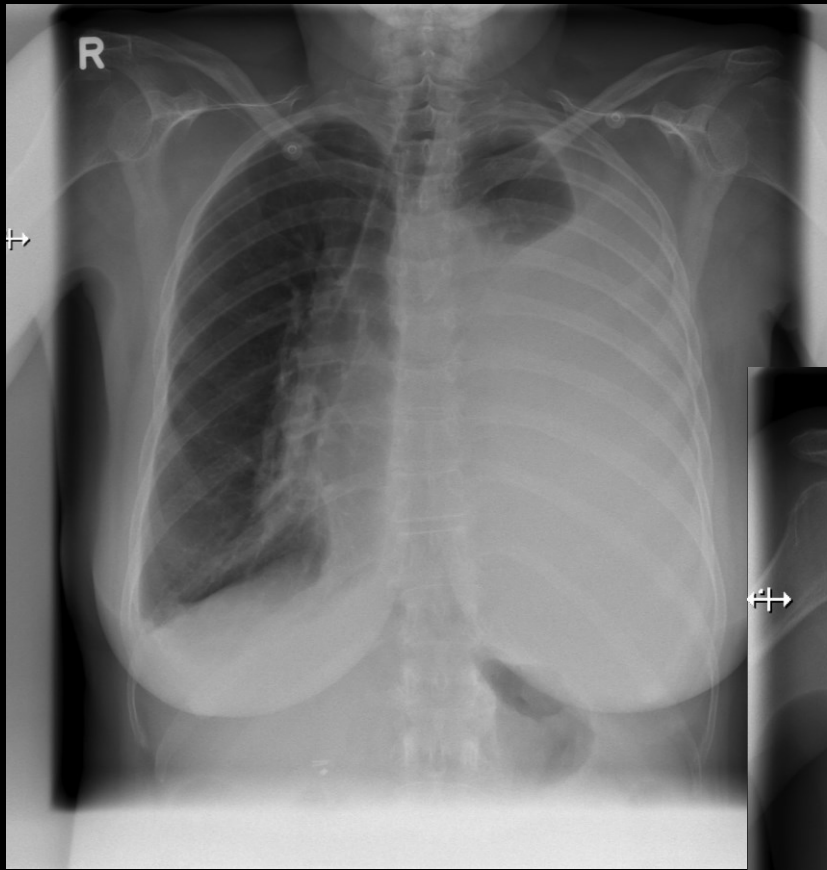
Initial therapy

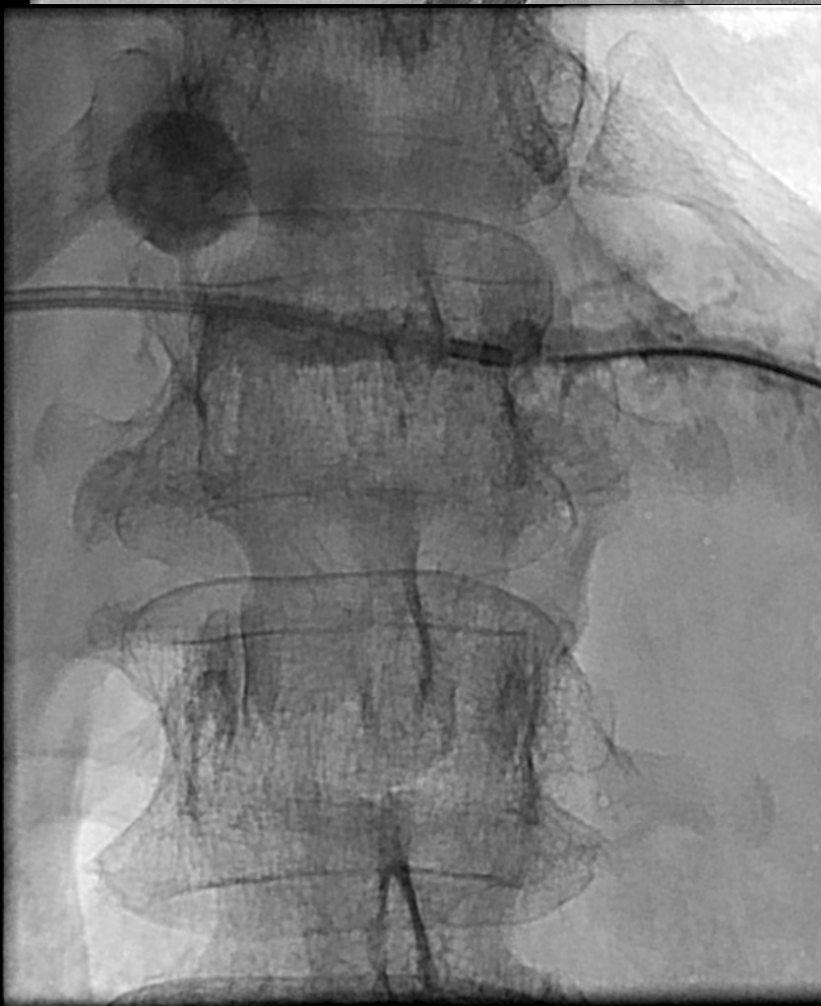
- NPO and nasojejunal feeding
- correction of fluid and electrolyte disturbances
- skin care if necessary
- somatostatin analogues
 - reduction of output
 - no effect on closure (Gans et al; Br J Surg 2012)
- percutaneous drainage recommended for symptomatic / enlarging fluid collections after elective pancreatic resection
- surgical treatment (including completion pancreatectomy) only after failed or unfeasible endoscopic or percutaneous treatment



Endoscopic therapy for pancreatic fistula

- goal is to promote internal drainage and reduce flow of pancreatic juice through fistula
- decrease pressure
 - across papilla
 - across stricture
- pancreatic sphincterotomy and / or stent (nasopancreatic catheter)
- “bridging” if necessary and feasible





Endoscopic Transpapillary Stenting or Conservative Treatment for Pancreatic Fistulas in Necrotizing Pancreatitis

Multicenter Series and Literature Review

Olaf J. Bakker, MD, Mark C. van Baal, MD,* Hjalmar C. van Santvoort, MD, PhD,* Marc G. Besselink, MD, PhD,* Jan-Werner Poley, MD,† Joos Heisterkamp, MD, PhD,‡ Thomas L. Bollen, MD,§ Hein G. Gooszen, MD, PhD,¶ and Casper H. van Eijck, MD, PhD;‡ for the Dutch Pancreatitis Study Group*

Annals of Surgery • Volume 253, Number 5, May 2011

- retrospective analysis of acute pancreatitis cohort (n=731)
- severe acute pancreatitis n = 203
- 115 patients underwent either percutaneous drainage, necrosectomy or both
- 35 patients (30%) developed pancreatic fistula

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TABLE 1. Characteristics of Patients with ETS and Conservative Treatment for a Pancreatic Fistula After Intervention for Infected Necrotizing Pancreatitis

Patient Characteristics	ETS (N = 19)	Conservative (N = 16)	P*
Male gender	11 (37)	8 (50)	0.435
Age (yr)	46 (32–61)	61 (52–70)	0.028
CT severity index	7 (4–9)	8 (6–10)	0.182
Persistent organ failure during admission†	15 (79)	9 (56)	0.156
Pancreatic parenchymal necrosis	14 (74)	15 (94)	0.147
Peripancreatic necrosis/collections only‡	5 (26)	1 (6)	0.147
Infected necrosis	13 (68)	12 (75)	0.668
Time from onset of symptoms to intervention for infected necrosis (d)	26 (11–67)	22 (12–35)	0.227

Type of initial intervention			0.067
Surgical necrosectomy	11 (58)	14 (88)	
Percutaneous catheter drainage	8 (42)	2 (13)	
Octreotide therapy	5 (26)	5 (33)	0.656
Sphincterotomy	8 (42)	5 (31)	0.509
Time from intervention to ERP (d)	34 (18–92)	–	
Type of fistula			1.000
Pancreatico-cutaneous	15 (94)	16 (100)	
Pancreatico-abdominal	1 (6)	0 (0)	
Location of PD disruption			0.178
Head	2 (11)	4 (25)	
Body	7 (37)	4 (25)	
Tail	9 (47)	1 (6)	
Normal pancreatic duct	1 (5)	0 (0)	
Not identified	0 (0)	7 (44)	
Pancreatic duct obstruction	10 (53)	–	
Fistula output (mL/d)	150 (200–300)	250 (75–338)	0.350

*Univariate logistic regression analysis was used to test for differences between groups.

†Organ failure more than 48 hours.

‡No pancreatic parenchymal necrosis.

Data are n (%) or median (interquartile range).

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- fistula closure in 16 / 19 in ETS group (84%) vs 8 / 12 (66%) in conservative group ($p = 0.175$)
- ETS group 1 pancreaticojejunostomy (118 days)
- conservative group
 - 3 pancreaticojejunostomies
 - 1 endoscopic transgastric drainage of fluid collection
- median time fistula closure 71 days (IQR 34 – 142) vs 120 days (IQR 51 -175); $p = 0.130$

- Film internaliseren percutane drain mbv TIPSS naald



Treatment of pseudocysts

- several studies have shown that EUS guided method is more efficacious and probably safer

Prospective randomized trial comparing EUS and EGD for transmural drainage of pancreatic pseudocysts (with videos)

**Shyam Varadarajulu, MD, John D. Christein, MD, Ashutosh Tamhane, MD, MSPH,
Ernesto R. Drelichman, MD, C. Mel Wilcox, MD, MSPH**

Volume 68, No. 6 : 2008 GASTROINTESTINAL ENDOSCOPY

Endoscopic ultrasound-guided versus conventional transmural drainage for pancreatic pseudocysts: a prospective randomized trial

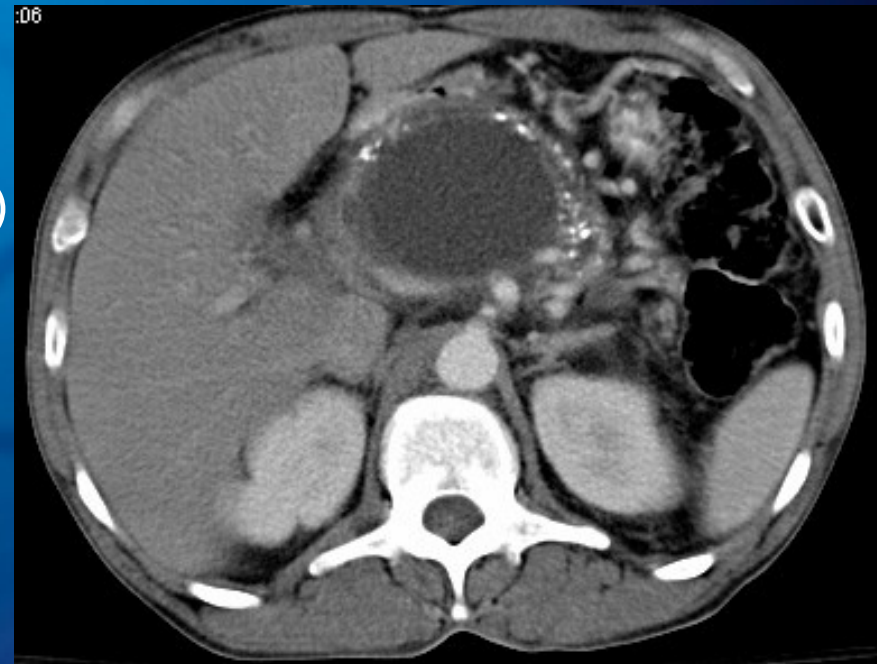
D. H. Park, S. S. Lee, S.-H. Moon, S. Y. Choi, S. W. Jung, D. W. Seo, S. K. Lee, M.-H. Kim

Endoscopy 2009; 41: 842 – 848

treatment of pseudocysts in CP



- frequent complication (20 – 40%)
- spontaneous resolution is rare
- PC can occur as a consequence of an acute flare (peripancreatic fluid organized in a “walled-off” collection)
- or obstruction of side branch resulting in saccular dilation or rupture



Indications for drainage



- persistent symptoms / symptom related complications
 - compression of the GI tract
 - biliary compression
 - portal hypertension
 - infection
 - bleeding
 - pain
 - asymptomatic?
- in general risk of late complications is thought to be too small in asymptomatic cysts < 6 cm to justify drainage

Imaging studies



- rule out pseudoaneurysm
- CT
- MRI/MRCP/sMRCP
- ERCP
 - not mandatory
 - guided by symptoms after initial drainage

Alternatives to endoscopic drainage



- percutaneous treatment inferior
 - secondary infection
 - persistent fistulae
- surgical
 - traditionally associated with considerable morbidity and even mortality
 - operator dependent
 - laparoscopic
 - excellent results / efficacy

EUS versus surgical cyst-gastrostomy for management of pancreatic pseudocysts CME

Shyam Varadarajulu, MD, Tercio L. Lopes, MD, MSPH, C. Mel Wilcox, MD, Ernesto R. Drelichman, MD, Meredith L. Kilgore, PhD, John D. Christein, MD

Birmingham, Alabama, USA

Volume 68, No. 4 : 2008 GASTROINTESTINAL ENDOSCOPY 649



TABLE 2. Outcomes of surgical versus EUS-guided cyst-gastrostomy

Clinical outcomes	Surgery (n = 10)	EUS (n = 20)	P value
Technical success (%)	100	100	1.000
Treatment success (%)	100	95	.364
Reinterventions (%)	10	0	.132
Complications (%)	0	0	.000
Length of stay (d)			
Mean (range)	6.5 (range 4-20)	2.6 (range 1-11)	.008
Median	5	1	
Mean cost (US\$)	14,815	9077	.016



New developments

- use of fully covered stents in pancreatic abscess / WOPN drainage
- “traditional” method (using double pigtails)
 - multiple stents
 - small caliber
 - access to cavity requires (repeated) dilation
- first cases published used either biliary or esophageal fcSEMS

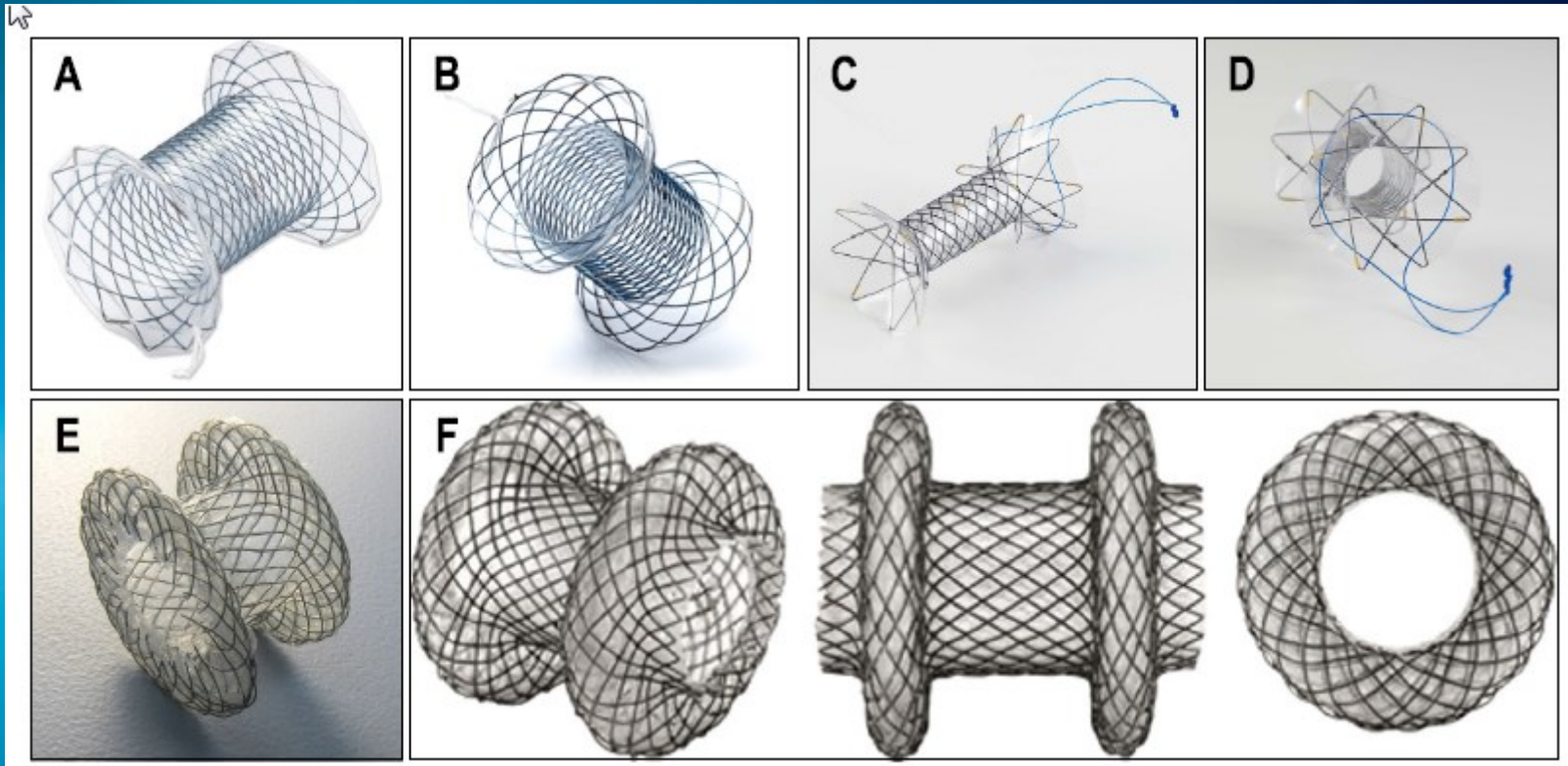
fcSEMS in endoscopic drainage procedures



- potential benefits
 - large caliber
 - easy access for necrosectomy
 - hemostasis at site of cyst-gastrostomy
 - prevents leakage
 - easier?
- potential drawbacks
 - expensive
 - risk of traumatic bleeding
 - migration during necrosectomy
 - more difficult to remove (depending on design)
 - should be removed

The NAGI stent (A, B), consists of a fully-covered stent, 20-mm in length and 16-mm in diameter, with bilateral anchor flanges

The BCF stent (C,D), consists of a fully-covered stent, 30- or 40-mm in length and 10-mm in diameter, with bilateral anchor flanges



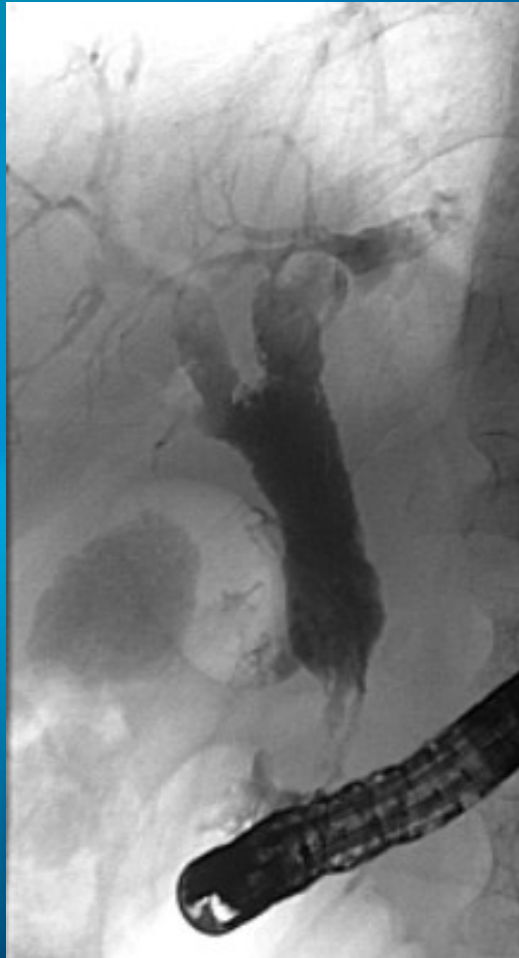
The AXIOS stent E,F, consists of a fully-covered, lumen-apposing stent, 6-, 8-, or 10-mm in length and 6-, 10-, or 15-mm in diameter, with dually-anchored flanges.



Plastic or metal

- no comparative data
- systematic review / meta – analysis Navaneethan et al (GI Endoscopy; 2014; 79 (5): AB167-168)
- 698 vs 91 patients
- no difference in
 - success rate (89% vs 85%)
 - adverse events (17% vs 23%)
 - recurrence (2% vs 1%)

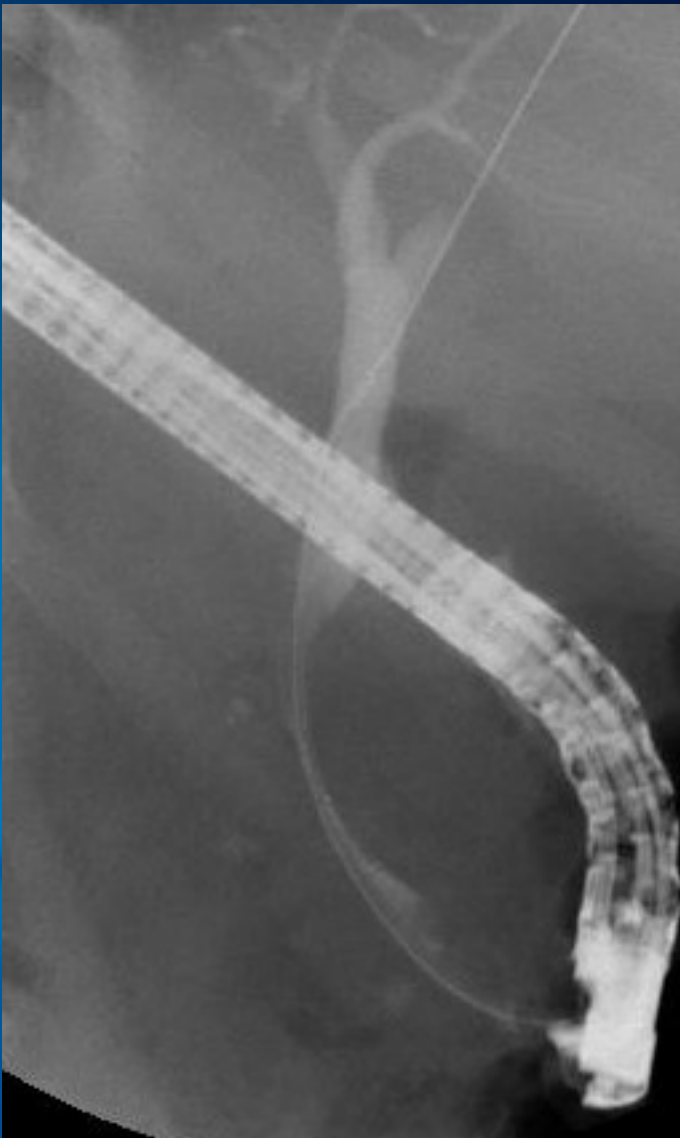
Treatment of biliary strictures in chronic pancreatitis



Causes of biliary obstruction in CP



- (temporary) edema/inflammation in the setting of a flare



Endoscopy

Causes of biliary obstruction in CP



- flare
- obstruction due to pseudocyst
- pancreatic carcinoma
- fibrotic strictures

Fibrotic biliary obstruction in CP



- recurrent inflammation results in periductal fibrotic strictures
- length of stricture usually determined by length of intrapancreatic portion of CBD (1 – 5 cm)
- highest incidence in calcified CP / inflammatory mass

Indications for treatment



Endoscopic treatment of chronic pancreatitis: European Society of Gastrointestinal Endoscopy (ESGE) Clinical Guideline

J.-M. Dumonceau¹, M. Delhaye², A. Tringali³, J. E. Dominguez-Munoz⁴, J.-W. Poley⁵, M. Arvanitaki², G. Costamagna³, F. Costea⁶, J. Devière², P. Eisendrath⁷, S. Lakhtakia⁸, N. Reddy⁸, P. Fockens⁹, T. Ponchon¹⁰, M. Bruno⁵



8.2. Indications for treatment

The ESGE recommends treating chronic pancreatitis-related biliary strictures in the case of symptoms, secondary biliary cirrhosis, biliary stones, progression of biliary stricture, or asymptomatic elevation of serum alkaline phosphatase (> 2 or 3 times the upper limit of normal values) and/or of serum bilirubin for longer than 1 month (Recommendation grade A).

The abovementioned indications are generally accepted [129].

Summary of benign biliary strictures in CP



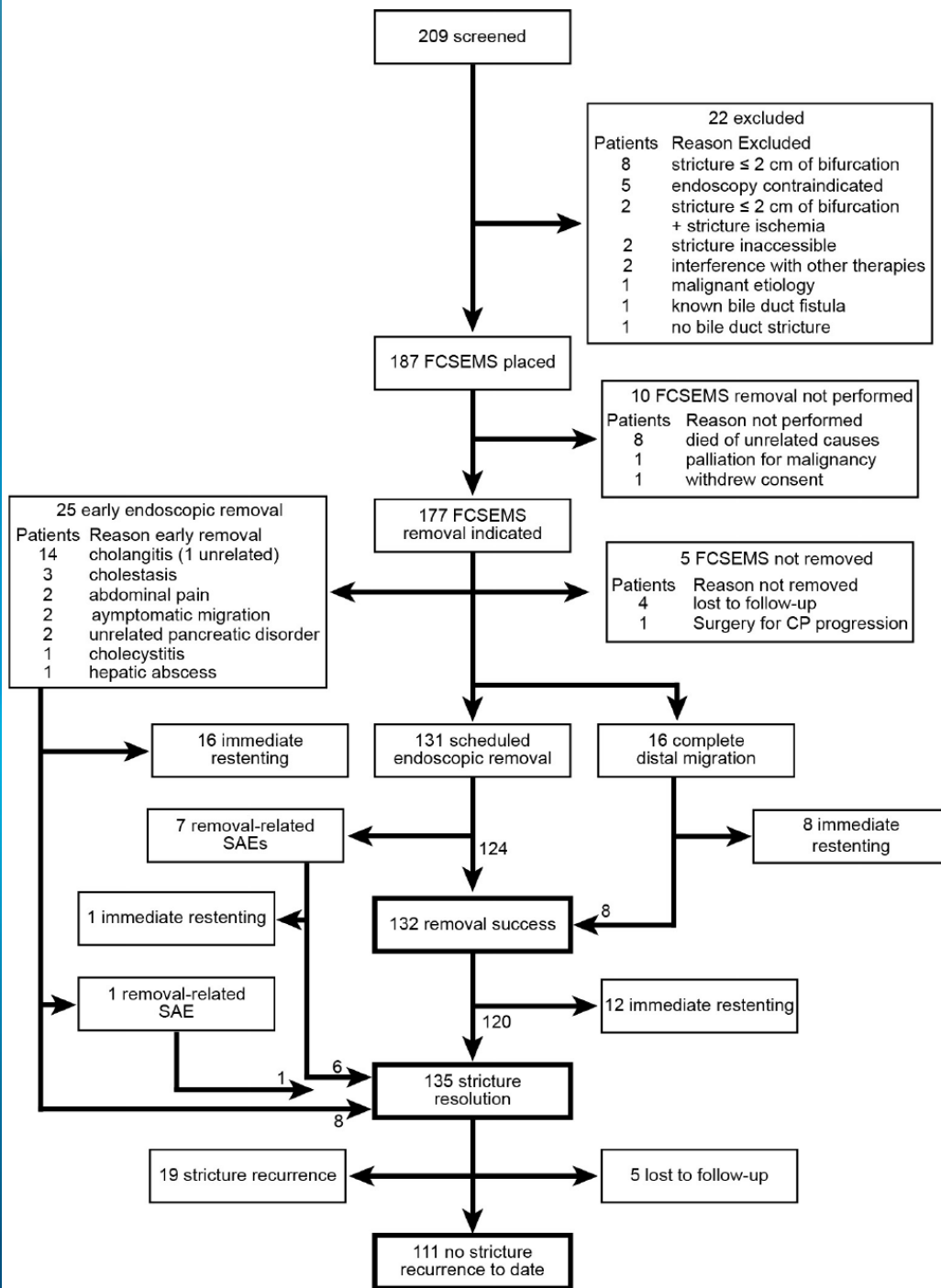
- key is exclusion of malignancy
- BBS due to CP are difficult to treat
 - dilation or placement of single stents not efficacious
 - presence of calcifications is associated with long term failure
 - long term efficacy of progressive plastic stenting 10 – 65%
 - long term efficacy of temporary fcSEMS at best 50 – 60%
- no RCT comparing surgery and endoscopic treatment

CLINICAL—BILIARY

Successful Management of Benign Biliary Strictures With Fully Covered Self-Expanding Metal Stents

Jacques Devière,¹ D. Nageshwar Reddy,² Andreas Püspök,³ Thierry Ponchon,⁴ Marco J. Bruno,⁵ Michael J. Bourke,⁶ Horst Neuhaus,⁷ André Roy,⁸ Ferrán González-Huix Lladó,⁹ Alan N. Barkun,¹⁰ Paul P. Kortan,¹¹ Claudio Navarrete,¹² Joyce Peetermans,¹³ Daniel Blero,¹ Sundeep Lakhtakia,² Werner Dolak,³ Vincent Lepilliez,⁴ Jan W. Poley,⁵ Andrea Tringali,¹⁴ and Guido Costamagna,¹⁴ for the Benign Biliary Stenoses Working Group

- large prospective multicenter study
- chronic pancreatitis
- cholecystectomy
- liver transplant
- 180 patients
- FU 5 years



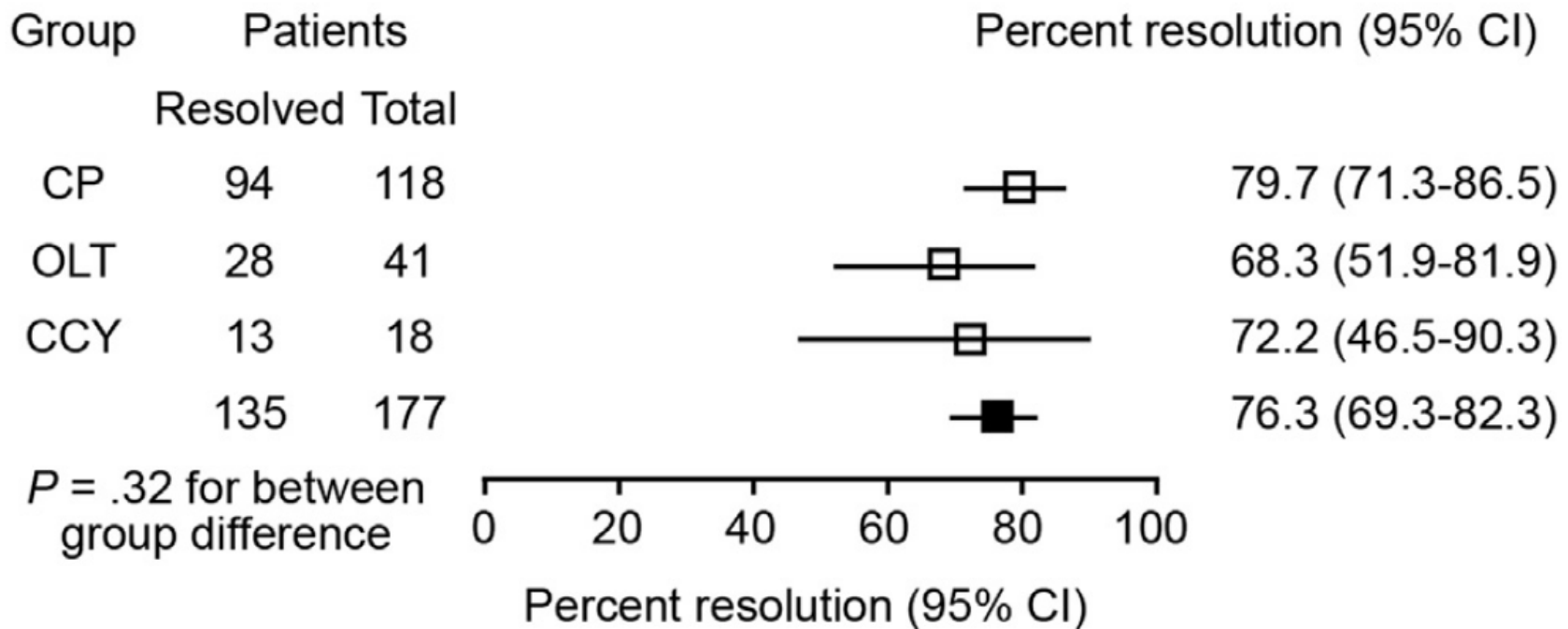
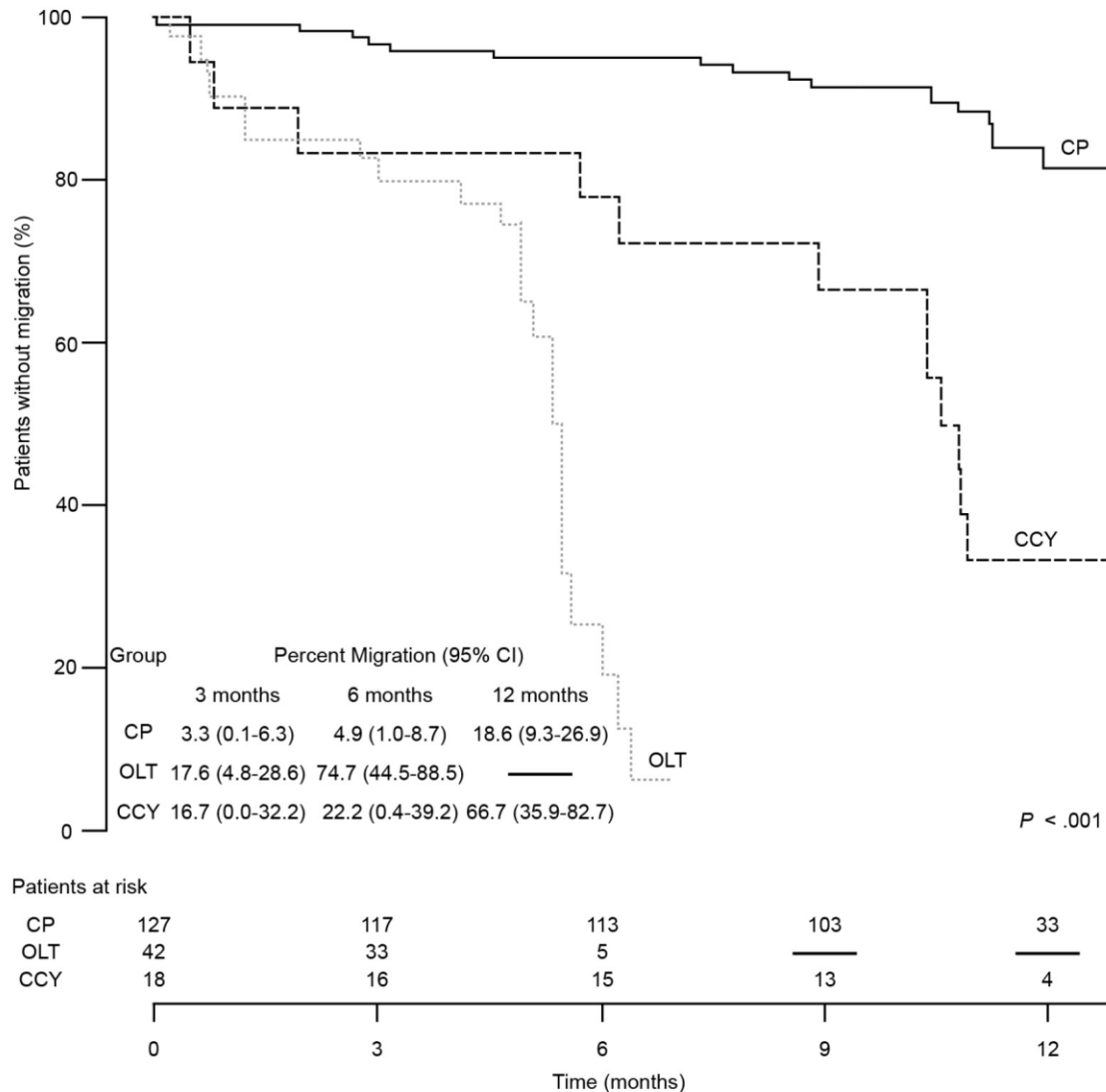


Figure 4. Stricture resolution after FCSEMS placement.

- removal success (scheduled removal or spontaneous migration without SAE or need for immediate re-stenting)
 - CP 80.5% (p=0.017)
 - OLT 63.4%
 - CCY 61.1%



- overall odds of stricture resolution were lower by 78% in patients with migrations



Table 2. Patients with Stent- or Removal-Related Serious Adverse Events

Type	Group, n (%) ^a			
	CP (n = 127)	OLT (n = 42)	CCY (n = 18)	Total (n = 187)
Cholangitis/fever	11 (8.7)	10 (23.8)	5 (27.8)	26 (13.9)
Abdominal pain	6 (4.7)	4 (9.5)	0 (0.0)	10 (5.3)
Pancreatitis	4 (3.1)	0 (0.0)	1 (5.6)	5 (2.7)
Cholecystitis	3 (3.0) ^b	0 (0.0)	0 (0.0)	3 (3.0) ^b
Cholestasis	2 (1.6)	1 (2.4)	0 (0.0)	3 (1.6)
Other ^c	6 (4.7)	2 (4.8)	1 (5.6)	9 (4.8)
Total ^d	28 (22.0)	16 (38.1)	7 (38.9)	51 (27.3)

Conclusions



- endoscopic therapy should be considered treatment of choice for pancreatic fistula when initial, conservative treatment fails
- EUS guided drainage of pseudocysts in chronic pancreatitis is standard of care
- BBS in chronic pancreatitis are difficult to treat endoscopically but promising results from recent study using Wallflex fcSEM