Controvérsias na Pancreatologia Moderna

Drenagem (ECO)Endoscópica de Colecções Pancreáticas

Susana Lopes

Serviço de Gastrenterologia, Centro Hospitalar São João

Faculdade Medicina Universidade do Porto

Outline

- Definitions
- Indications and timing for drainage
- Technical aspects
- Type of stent
- DEN
- Our experience

Pancreatitis local complications

- Acute peripancreatic fluid collection (APFC)
- Pancreatic pseudocyst (PP)
- Acute necrotic collection (ANC)
- Walled-off necrosis (WON)

Suspect when:

- persistence or recurrence of abdominal pain,
- secondary increases in serum pancreatic enzyme activity,
- increasing organ dysfunction, and/or the development of clinical signs of sepsis

Banks PA. Gut 2013;62:102–111.

Pancreatitis local complications

- **Acute peripancreatic fluid collection (APFC)**
  - Peripancreatic **fluid** in the context of interstitial edematous pancreatitis
  - No associated peripancreatic necrosis
  - **First 4 weeks** after onset of pancreatitis
  - **No definable wall**
  - Adjacent to pancreas (no intrapancreatic extension)
  - **Resolve spontaneously**

Banks PA. Gut 2013;62:102–111.

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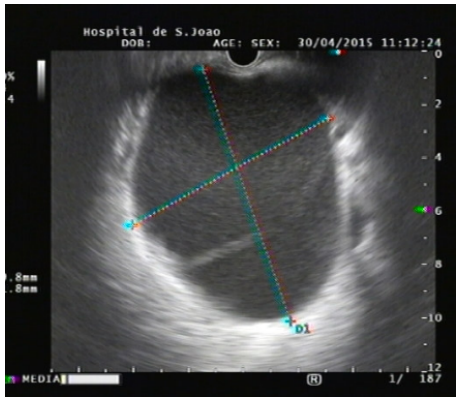
  - **Resolve spontaneously**

- **Pancreatic Pseudocyst (PP)**
  - Peripancreatic well circumscribed **fluid collection**
  - **Well defined wall**
  - No non-liquid component
  - **>4 weeks** after onset of acute pancreatitis



Banks PA. Gut 2013;62:102–111.

Pancreatitis local complications

- **Acute necrotic collection (ANC)**
  - Variable amounts of both **fluid and necrosis** associated with necrotizing pancreatitis
  - Pancreatic parenchyma and/or the peripancreatic
  - **No definable wall**
  - **First 4 weeks** after onset of pancreatitis

Banks PA. Gut 2013;62:102–111.

Pancreatitis local complications

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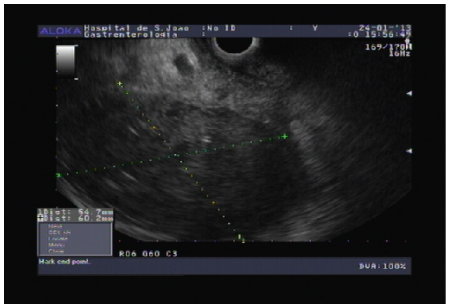
  - Pancreatic parenchyma and/or the peripancreatic
  - **No definable wall**
  - **First 4 weeks** after onset of pancreatitis

- **Walled-off necrosis (WON)**
  - Collection of pancreatic / peripancreatic necrosis
  - **Well defined wall**
  - Liquid and non-liquid component
  - **>4 weeks** after onset of acute necrotizing pancreatitis
  - May be infected, multiple and distant from the pancreas



Banks PA. Gut 2013;62:102–111.

Indications for drainage

- Refractory /persistant abdominal pain
- Clinical or radiologic evidence of gastric outlet , biliary or intestinal obstruction
- Vascular compression
- New onset or persistent organ failure
- Infection
- Disconnected duct syndrome with persistent symptomatic collections

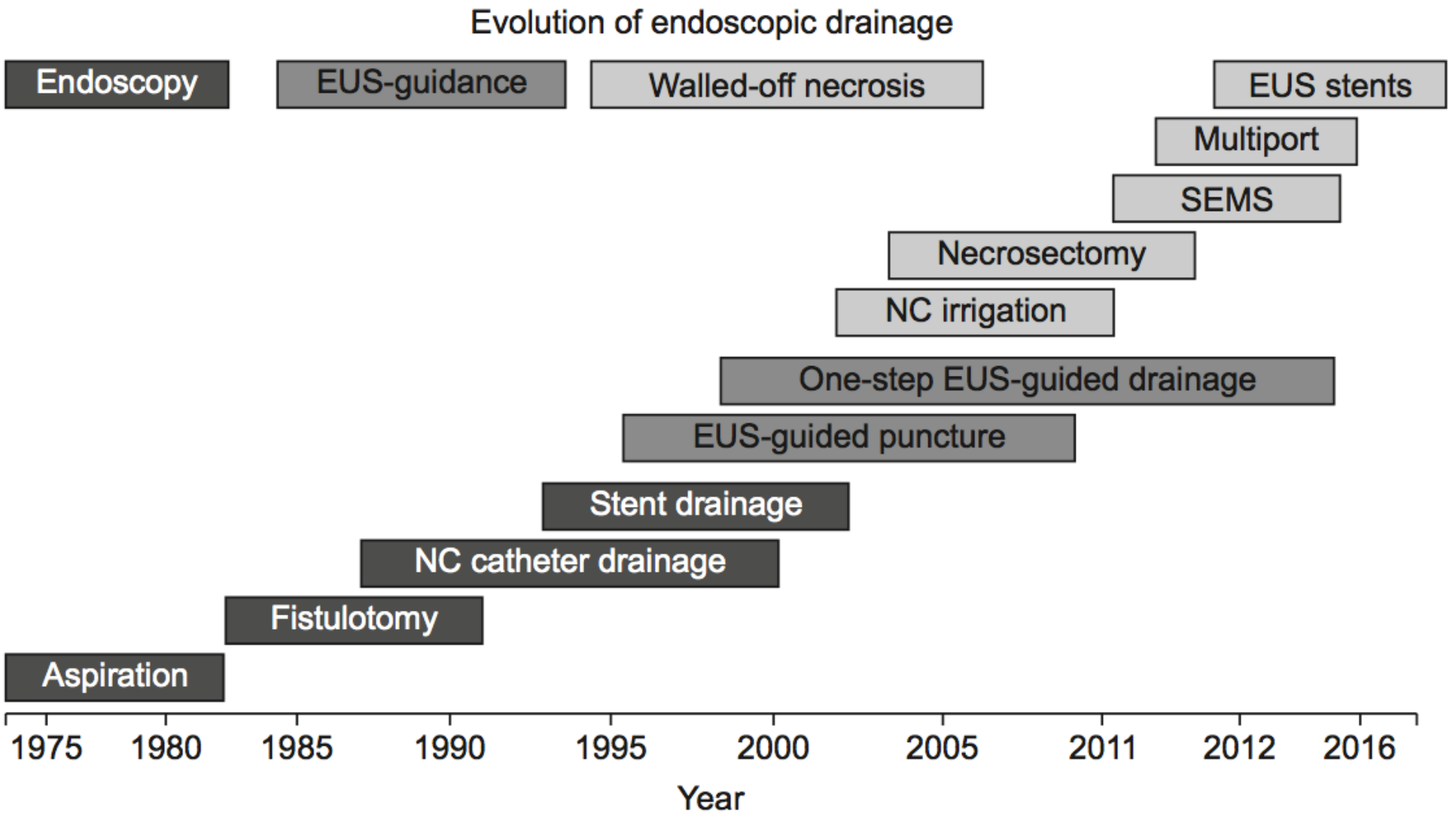
When to drain?

- Drainage should be undertaken only **after the first 4 weeks** after an attack of pancreatitis.
- Percutaneous drainage should be the preferred method if failure of conservative management in this early phase
- Beyond 3-4 weeks after the onset of acute pancreatitis mature collections (PP and WON) are amenable to transmural drainage

Type of drainage

1. Surgical Drainage
2. Percutaneous Drainage
3. Conventional Transmural Drainage
4. **EUS-Guided transmural drainage**

Evolution of endoscopic treatment of PFC



EUS-Guided transmural drainage

EUS-Guided Transmural Drainage

- Firmly established as **the best drainage of PFC**

- **Clinical efficacy similar** to surgical and percutaneous drainage, with **lower morbidity shorter hospital stay and costs**
  - High success rate (80-100%)
  - Low complication rate: 5-16% (bleeding and perforation)
  - Recurrence rate : <18%

- **Superior to non-EUS guided endoscopic approaches**
  - Major advantages:
    - Localize non-bulging PP
    - Identification and avoidance of vascular structures
    - Ensure adequate apposition between PP wall and GI lumen

- **Technical limitations** : design of echoendoscope and accessories used

Akshintala VS. GIE 2014;79: 921-28
Varadarajulu S. Gastroenterology 2013; 145:583-90
Varadarajulu S. GIE 2008; 68:1102-11
Park DH. Endoscopy 2009; 41: 842-48

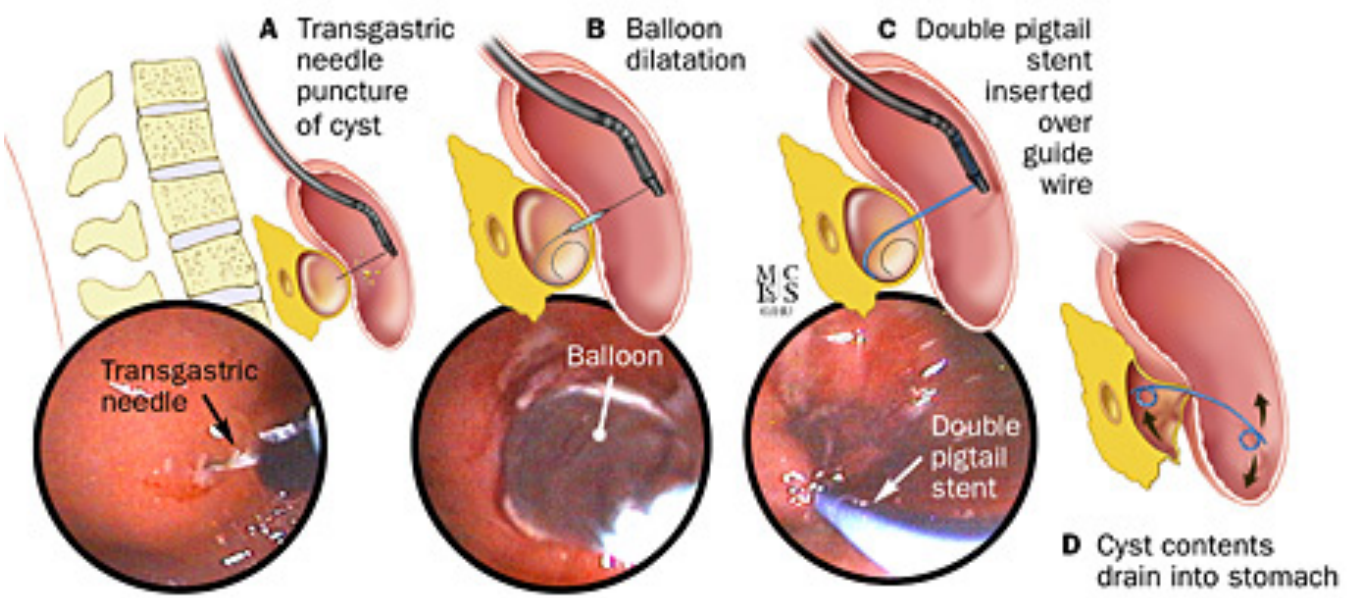
Technical aspects

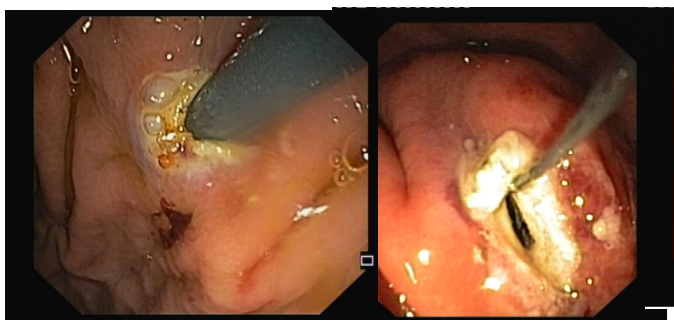
- Endoscopy Unit with proper equipment
- Expertise
- Surgical and Interventional radiologic backup

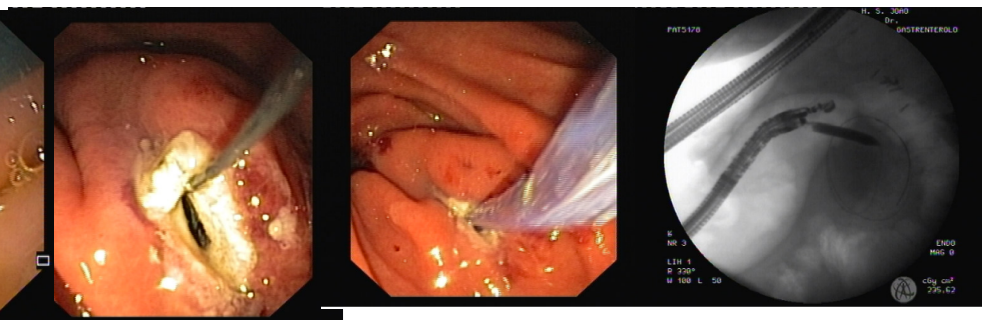
Drenagem Endoscópica de Colecções Pancreáticas

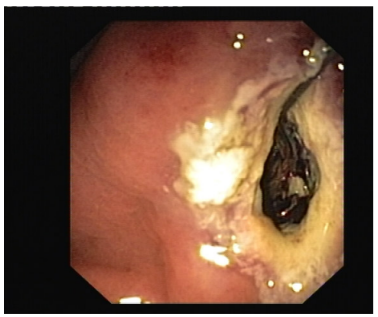
Semana Digestiva 2018

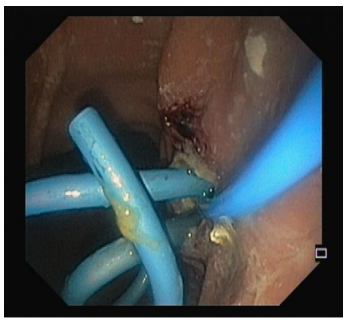
Technical aspects











Type of STENT

PLASTIC STENTS

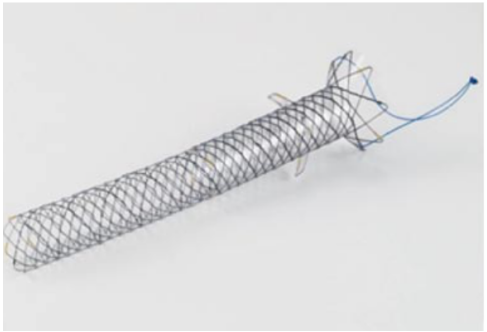
- Small caliber
- Occlusion and secondary infections
- Need to place several stents (time consuming)
- Higher need for reinterventions
- Removal if DEN needed
- Higher procedure related morbidity

vs

METALLIC STENTS (FCSEMS)

- Larger caliber
- Lower rate of occlusion and secondary infections
- DEN
- Single step insertion process

- Risk of migration
- Risk of bleeding
- Risk of leak
- Cost



Type of STENT

METTALIC STENTS (FCSEMS)

- The first metallic stents used were biliary FCSEMS, that did not allow the passage of the endoscope
- Esophageal FCSEMS allowed mechanical debridement
- Small single center studies
- Clinical success ranging from 88%-90%, with limited rate of complications
- Easy to remove
- In a retrospective study, biliary **FCSEMS improved clinical outcomes and reduced adverse events** in 230 pts with PP, **compared to plastic stents**

Sarkaria S. J Clin Gastroenterol 2014; 48: 145-52
Fabbri C. Endoscopy 2012: 44: 429-33
Attam R. Gastrointest Endosc 2014; 80:312-18
Sharaiha RZ. Gastrointest Endosc 2015; 82: 822-27

ENDOPROTHESIS FOR AN INNOVATIVE TREATMENT OF WALLED-OFF PANCREATIC NECROSIS: THE "DIABOLO" EXPERIENCE.

Susana Lopes, Francisco Baldaque-Silva, Pedro Pereira, Filipe Vilas-Boas, Armando Ribeiro, Guilherme Macedo
Gastroenterology Department, Centro Hospitalar S.João, Porto, Portugal

DDW2014 Digestive Disease Week

INTRODUCTION

Acute pancreatitis (AP) is associated with significant morbidity and mortality. Pancretic fluid collections (PFC) complicates AP in nearly half of the cases. Walled-off pancreatic necrosis (WOPN) refers to well circunscribed areas of pancreatic necrosis that may become infected. Endoscopic transluminal treatment of PFC is an effective alternative to surgical treatment. Endosonography guided puncture, either transgastric or transduodenal, allows the performance of drainage, irrigation or direct endoscopic necrosectomy (DEN). Minimally invasive drainage of pancreatic pseudocysts has been recently a proposed approach along with removal of solid necrotic components in WOPN, being considered an example of Natural Orifice Transluminal Endoscopic Surgery (NOTES) in pancreatic diseases.

MATERIAL AND METHODS

We report an innovative endoscopic approach using a new fully covered, 40mm length, 10mm diameter, self expandable metal stent (FCSEMS), with flared diameter at both ends to provide stability and minimize the risk of migration, and a retrieval suture at the enteric end (Hanarostent® BCF, form Diabolo- fig.1).
The procedure is performed under propofol, with CO2 (Olympus® UCR) using a linear echoendoscope (Olympus® GF-UCT140) for transgastric puncture of the PFC with a 19G needle (EchoTip® Ultra;Cook Endoscopy). After puncture, a 0.035 inch guidewire is inserted in the cavity and a cystotome (Cysto-Gastro-Set Endoflex® 8.5Fr.) is used to perform the fistulous tract, posteriorly dilated with a wire-guided biliary ballon up to 10mm (Boston Scientific CRE™). Finally the FCSEMS is inserted to make a permanent and wide connection between the stomach and the cavity (Fig.2). All procedures were performed using the same echoendoscope and under fluoroscopic guidance.

RESULTS

Sex/ Age	Indication	PFC Size (mm)	Indication for drainage	Technical Success	Clinical success	Number of sessions	Follow-up
M/75	WOPN	65x41	Sépsis	Yes	Yes	1	Uneventful
F/79	WOPN	50x45	Sépsis	Yes	Yes	1	Uneventful
M/44	WOPN	80x55	Sépsis	Yes	No	1	Surgery
F/85	WOPN	75x45	Sépsis	Yes	Yes	1	Uneventful
F/63	WOPN	85x55	Sépsis	Yes	Yes	4	Uneventful
M/40	WOPN	57x40	Sépsis	Yes	Yes	2	Uneventful
M/64	PQ	70x60	Abdominal pain	Yes	Yes	1	Uneventful

Fig.1

Necrosis inside the cavity

Fig.2

DEN using a Roth net

Technical success was defined as the correct placement of FCSEMS and **clinical success** as the resolution of fever and white blood cell count normalization and complete shrinkage of fluid collection without surgery.

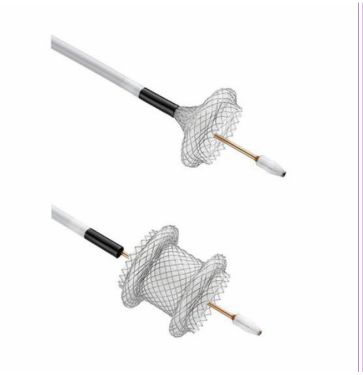
CONCLUSIONS

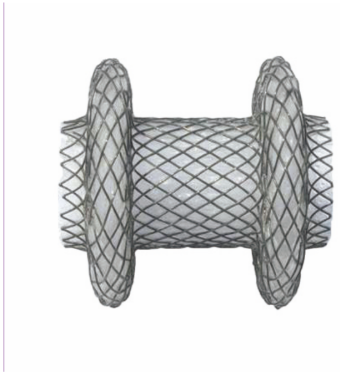
We conclude that this endoscopic approach, using this type of FCSEMS is feasible and a safe and effective alternative to surgery, in the treatment of PFC, either in pancreatic pseudocysts or WOPN.

Type of STENT

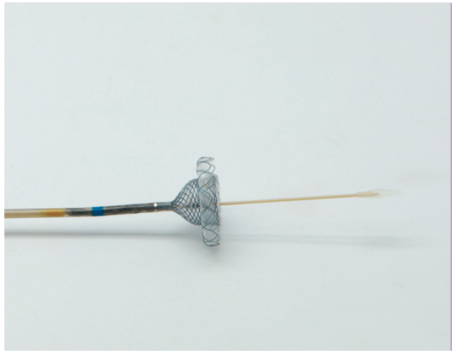
Lumen apposing metal stents (LAMS)

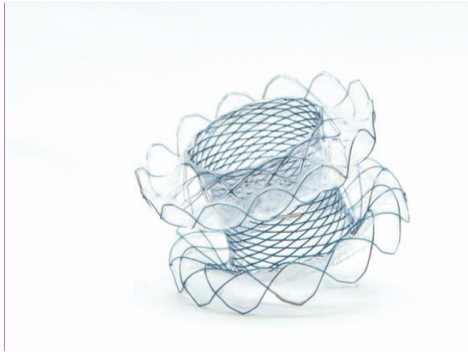
- Dog bone shape; double-flange
- Apposition of the cavity and enteric wall >>> lower migration rate
- Wide diameter (10-16mm) allowing passage of endoscope for necrosectomy





AXIOS® stent





Spaxus® stent

Type of STENT

Fully covered self-expanding metal stents versus lumen-apposing fully covered self-expanding metal stent versus plastic stents for endoscopic drainage of pancreatic walled-off necrosis: clinical outcomes and success (CME)

- N= 313; retrospective
- Technical success : 99% (similar between groups)
- **Early adverse events were lower in FCSEMS** compared to DP and LAMS (p<.01)
- Complete WON resolution at 6M was significantly lower with DP
- Mean **number of procedures** required was significantly **lower with LAMS** compared with FCSEMS and DP (p=.04)
- Multivariable analysis **: DP predicts failure of WON resolution (OR 5.5; p=.002)**
- **Stent migration was lower with LAMS** (0%, 2.8%, 5.8%; P = .063) >> lower reinterventions

EUS-guided drainage/debridement of WONs using FCSEMSs and LAMSs is superior to DP stents in terms of overall efficacy. The number of procedures required for WON resolution was significantly lower using the LAMS

Siddiqui AA. Gastrointest Endosc 2017;85:758-65

Type of STENT

Efficacy and Safety of Lumen-Apposing Metal Stents in Management of Pancreatic Fluid Collections: Are They Better Than Plastic Stents? A Systematic Review and Meta-Analysis

- LAM vs Plastic stents
  - 6 studies; 504 pts
  - Technical success : RR 1.71 (p=.481)
  - **Clinical success** : RR 0.37 (p=.001)
  - **Adverse events** : RR 0.39 (p=.016)
  - **Number of sessions** : RR -0.84 (p=0.053)

LAMS may be preferred over plastic stents due to their better clinical success and lesser AE

Hammad T. Dig Dis Sci 2018 Feb;63(2):289-301

Type of STENT

FCSEMS for drainage of all PFC?

- Uncomplicated PP
  - DPS : excellent success rate, low morbidity and cost
- WON
  - DEN needed: FCSEMS is cost effective
- Recurrence of PFC (pancreatic duct disruption)
  - FCSEMS can not be left in place for a long period

Direct Endoscopic Necrosectomy

- In some pts WON resolves after drainage with no need for DEN
- Immediate DEN may be associated with an higher rate of complications (bleeding, stent dislodgment)
- Solid debris can occlude the stent leading to secondary infection and incomplete resolution of WON
- Early DEN allows early mobilization and debridement of solid debris improving clinical outcomes
- The amount of necrosis inside the cavity may be a factor in this decision

Lakhtakia S. Gastrointest Endosc 2017;85:1243-52
Rana SS. Endosc Ultrasound 2014;3:118-22
Law R. Gastrointest Endosc Clin N Am 2017;27:715-26.

Direct Endoscopic Necrosectomy

- US clinical practice guidelines recommend stepping up to direct necrosectomy only if transmural drainage alone is unsuccessful
- Several recent reviews support this approach
- However, many experts consider debridement part and parcel of the initial treatment strategy since it is reasonably safe and may reduce time to resolution and resource utilization
- Data comparing the effectiveness of these strategies are greatly needed.

Committee ASoP. Gastrointest Endosc 2016;83:481-88
Alali A. Clin Endosc 2017;50:117-25
Law R. Gastrointest Endosc Clin N Am 2017;27:715-26
Nabi Z . World J Gastroenterol 2017;23:2660-72
Kumar N. Pancreas 2014;43:1334-9

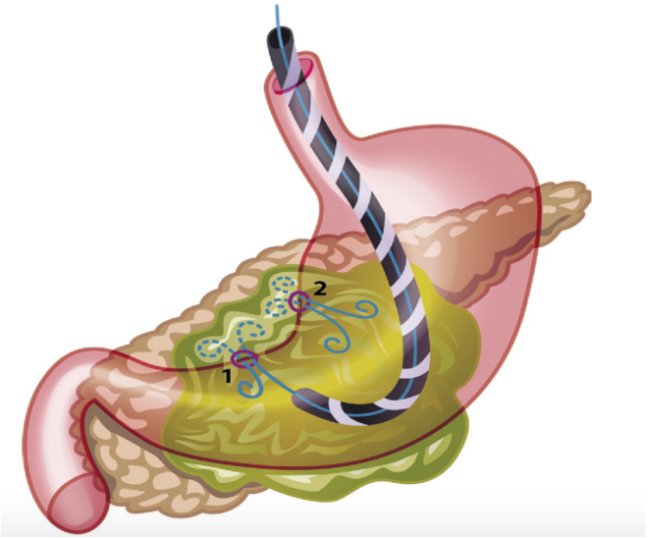
Multiple transluminal gateway technique for EUS-guided drainage of symptomatic walled-off pancreatic necrosis

Shyam Varadarajulu, MD, Milind A. Phadnis, PhD, John D. Christein, MD, C. Mel Wilcox, MD
Birmingham, Alabama, USA

GASTROINTESTINAL ENDOSCOPY Volume 74, No. 1 : 2011

Take-home Message

- The multiple transluminal gateway technique (MTGT) entails the creation of multiple transmural tracts under EUS guidance for effective drainage of necrotic contents.
- Patients treated by MTGT had better clinical outcomes and less need for surgery compared with patients managed by conventional drainage techniques.



Management of walled-off necrosis using the multiple transluminal gateway technique with the Hot AXIOS System

Digestive Endoscopy 2016; 28: 98–105

Nasocystic tube and Lavage of cavity

- Nasocystic tube was associated with **higher short term success** (85% vs 63%) and **lower stent occlusion rates** (13% vs 33%)
- Nasocystic tube was associated with **lower adverse events and shorter hospital stay**

Siddiqui AA. GIE 2013; 78: 589-95
Gurusamy KS. Cochrane Database Syst Rev 2016; 4; CD011392

- **H2O2 irrigation facilitates necrotic tissue dislodgement**, debridement, and debris extraction during endoscopic therapy of WON
- H2O2 irrigation of the necrotic cavity has been associated with a **decreased number of necrosectomy sessions needed**

Parra V. GIE 2015; 81 (5): 1261
Galasso D. Endoscopy 2015; Suppl 1
Abdelhafez M. Surg Endosc 2013; 27: 3911-3920
Siddiqui AA. Dig Dis Sci 2014; 59: 687-690

Our experience

2011-2017

- 81 PFC (49 PP + 32 WON)
- Technical success = 88% (71/81)
  - No differences between type of collection (87% WON *vs* 89% PP ; p>.05)
  - No differences between type of stent (92% plastic stents vs 89% FCSEMS; p>.05)
- The majority of pts with WON were drained with FCSEMS (71% vs 29%), while plastic stents were preferably used in PP (63% vs 29% WON) (p=.005)
- FCSEMS were preferentially use in larger infected collections
- No differences in clinical success between type of stent or type of collection

Our experience

HOT-AXIOS

- 16 patients
  - 6 PP; 10 WON;
  - 6 with previous failed therapy
- Technical success: 87,5%
- Clinical success 3M: 78%
- Adverse events:
  - 1 migration with bowel obstruction
  - 1 hemorrhage
  - 2 stent obstruction

A multi-institutional consensus on how to perform endoscopic ultrasound-guided peri-pancreatic fluid collection drainage and endoscopic necrosectomy

Jintao Guo, Adrian Saftoiu[1], Peter Vilmann[2], Pietro Fusaroli[3], Marc Giovannini[4], Girish Mishra[5], Surinder S. Rana[6], Sammy Ho[7], Jan-Werner Poley[8], Tiing Leong Ang[9], Evangelos Kalaitzakis[10], Ali A. Siddiqui[11], Jose G. De La Mora-Levy[12], Sundeep Lakhtakia[13], Manoop S. Bhutani[14], Malay Sharma[15], Shuntaro Mukai[16], Pramod Kumar Garg[17], Linda S. Lee[18], Juan J. Vila[19], Everson Artifon[20], Douglas G. Adler[21], Siyu Sun

- **LAMS** should be the standard of care for **WON** (72.7%)
- **Large diameter LAMS** should be used (15mm) (95.5%)
- **DEN should be delayed** (86.4%)
- Half of the experts recommend the use of lavage of the cavity (H2O2), leaving a nasocystic tube for lavage after the initial drainage
- Mean optimal interval recommended for DEN = 6 days
- Mean optimal interval recommended for LAMS removal = 4.6 weeks

Endoscopic ultrasound 2017. Vol 6; Issue 5 (sept-oct)

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