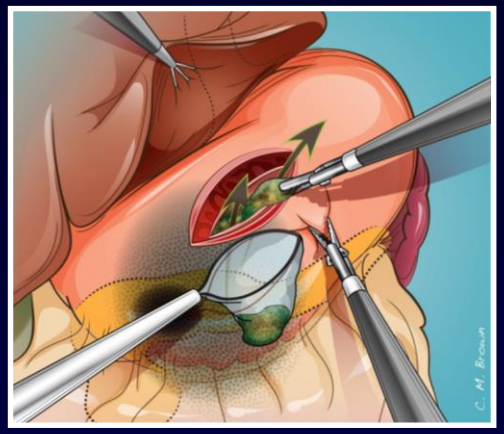
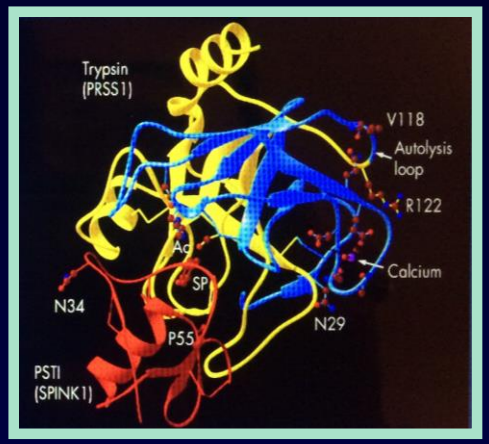
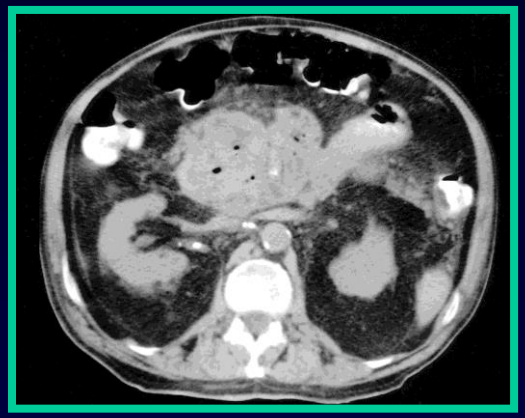


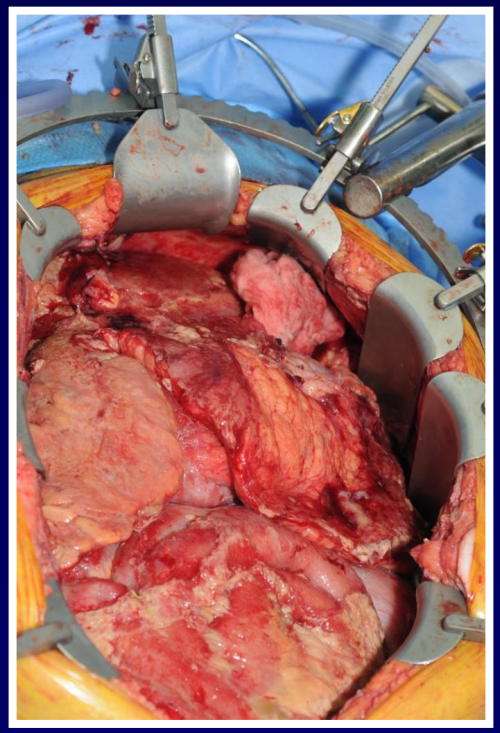


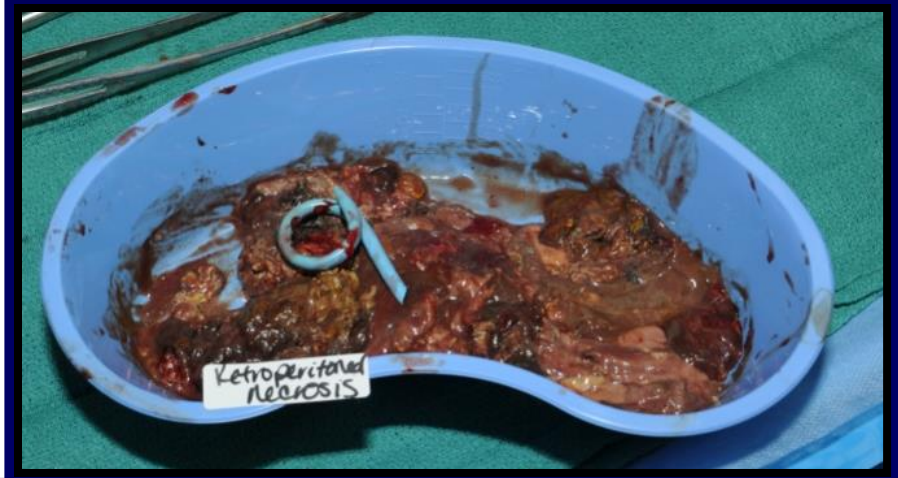


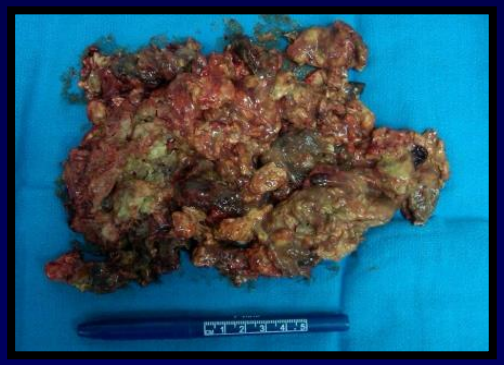
EFFECT OF ANATOMY: SHOULD ANATOMIC CONSIDERATIONS DRIVE APPROACH?

Nicholas J. Zyromski, MD
Indiana University

Pancreas Fest
15 July, 2022





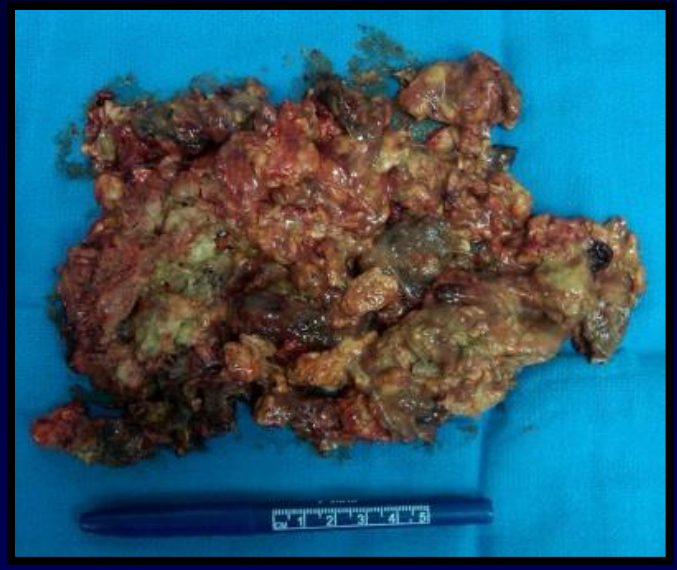


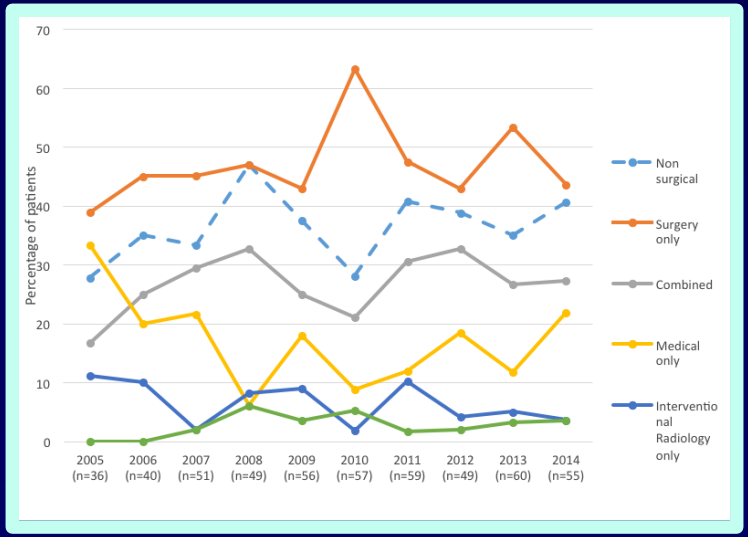
OBJECTIVES

- *Problem of necrosis*
- *Treatment goals*
- *Therapeutic techniques*
- *Morphologic considerations*

NATURAL HISTORY

- Acute Pancreatitis
  – 300,000/yr
- Severe AP (necrosis)
  – 15%-20%
- Mortality (severe)
  – 20% (!)





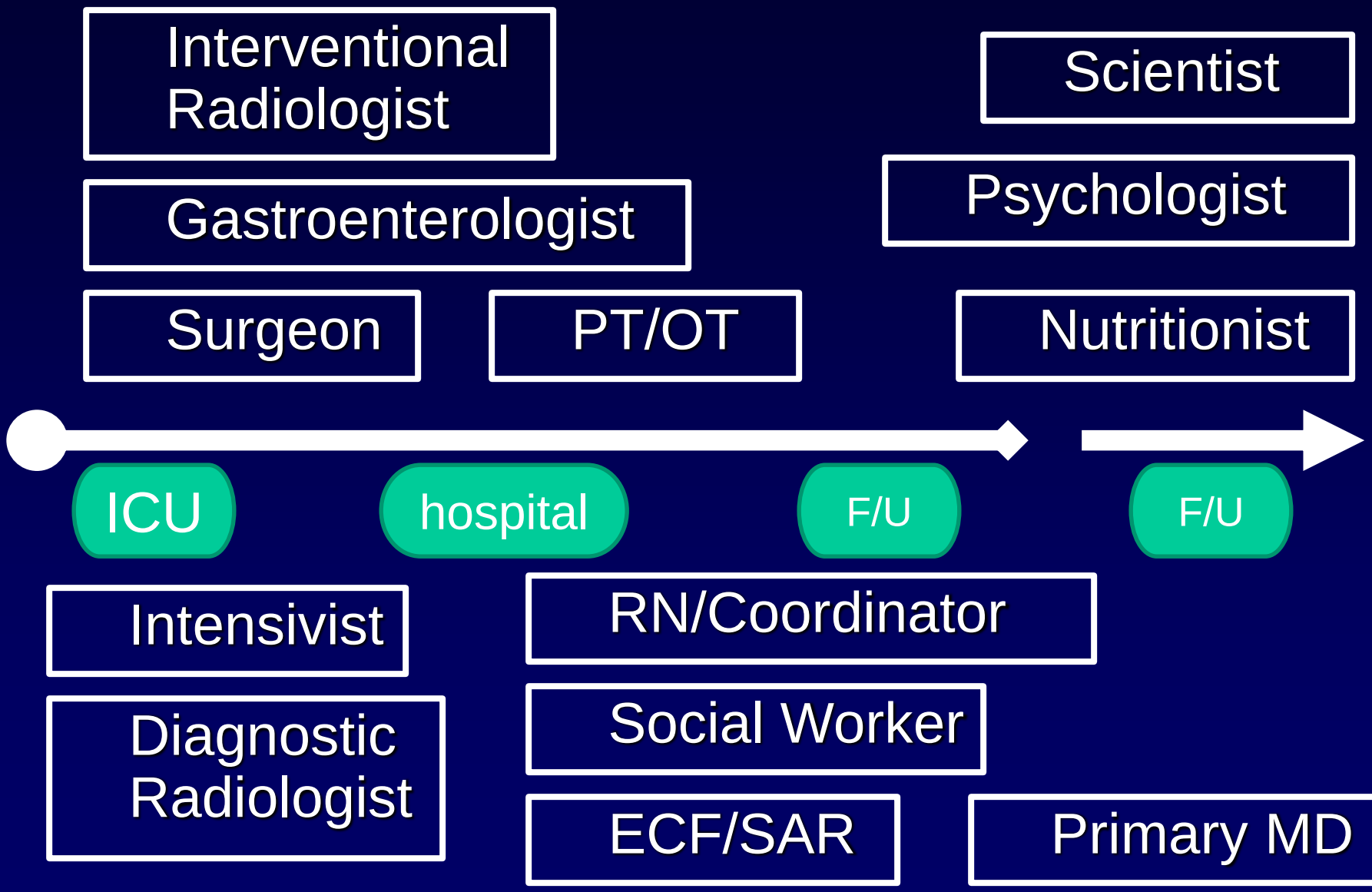
IU Pancreatitis 2005-14

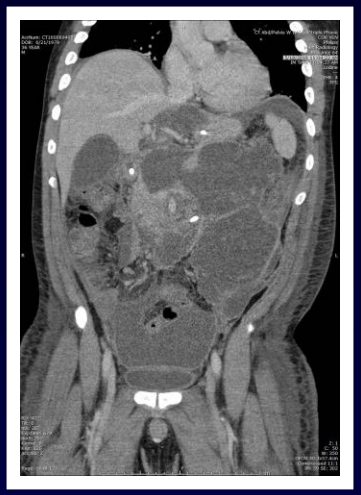
Peery Gastroenterology 2015;149:1731
Fagenholz. Pancreas 2007; 35: 302
Frey. Pancreas 2006; 33: 336-44

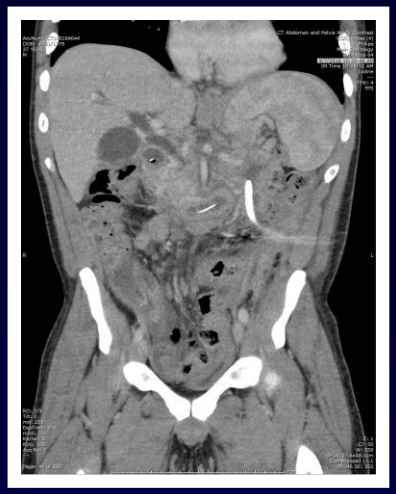
NECROTIZING PANCREATITIS

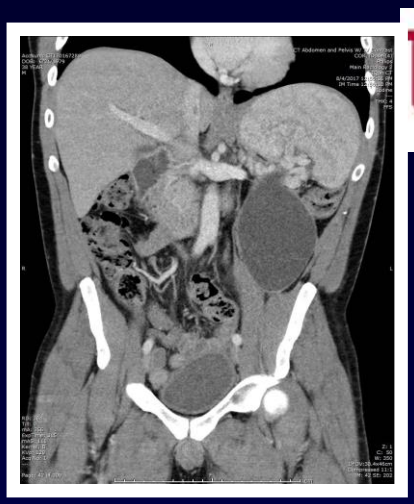
- *Heterogeneous disease – one size Rx does NOT fit all (often multiple approaches)*
- *Consistent care necessary for long term*
- *Patients may reach physiologic exhaustion (don't wait too long)*
- *Once intervention initiated – the clock is ticking (necrosis is catabolic)*
- *Multidisciplinary approach!*

THE (IDEAL) TEAM









ICU

hospital

readmit

F/U

✱✱▲✱✧ ✱✱✧✱✧ ✱✧✧✱✧ ✱✧✱✱✧ ✱✧ ✧ ✧

▲ *Angio - 1*
✱ *CT Scan - 15*
✧ *IR Drain - 9*

INSULT
5/17/2016

D/C (SNF)
8/4/2016

Readmit
8/22-24/16

“Dz resolution”
8/4/2016

Sx p-cyst
9/21/2017

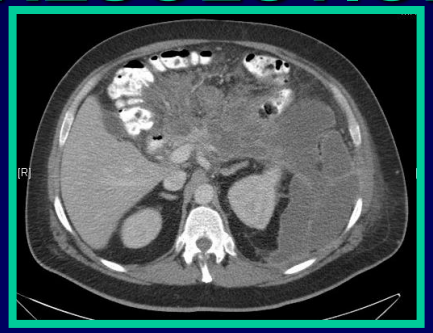
NP – Natural History

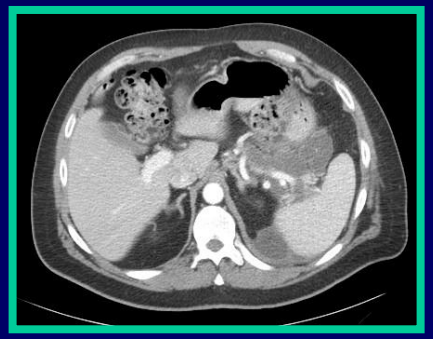
AP – NATURAL HISTORY

(PERI)PANCREATIC COLLECTION

4 weeks

RESOLUTION





INFECTION

INTERVENTION

PERSISTS

SX?

YES

NO

OBSERVE

Intervention

- Historical - surgical
  - Multiple debridements (“Laparostomy”)
  - High perioperative mortality (24%)*
  - High morbidity (fistula, etc.)
- Contemporary – “Step Up”
  - Percutaneous drainage
  - Transgastric debridement (endo/OR)
  - VARD/STN
  - Open debridement

*Buchler et al Ann Surg 2000

Goals of Intervention

- Delay if possible (≈ 4 weeks)*
- Control infection
- Evacuate fluid & necrotic debris
- Drain pancreatic fistula (internal/external)
- Prevent recurrence (biliary AP)
- Establish enteral access
- Accomplish above with minimal physiologic disruption to the patient

*?? Early percutaneous drain

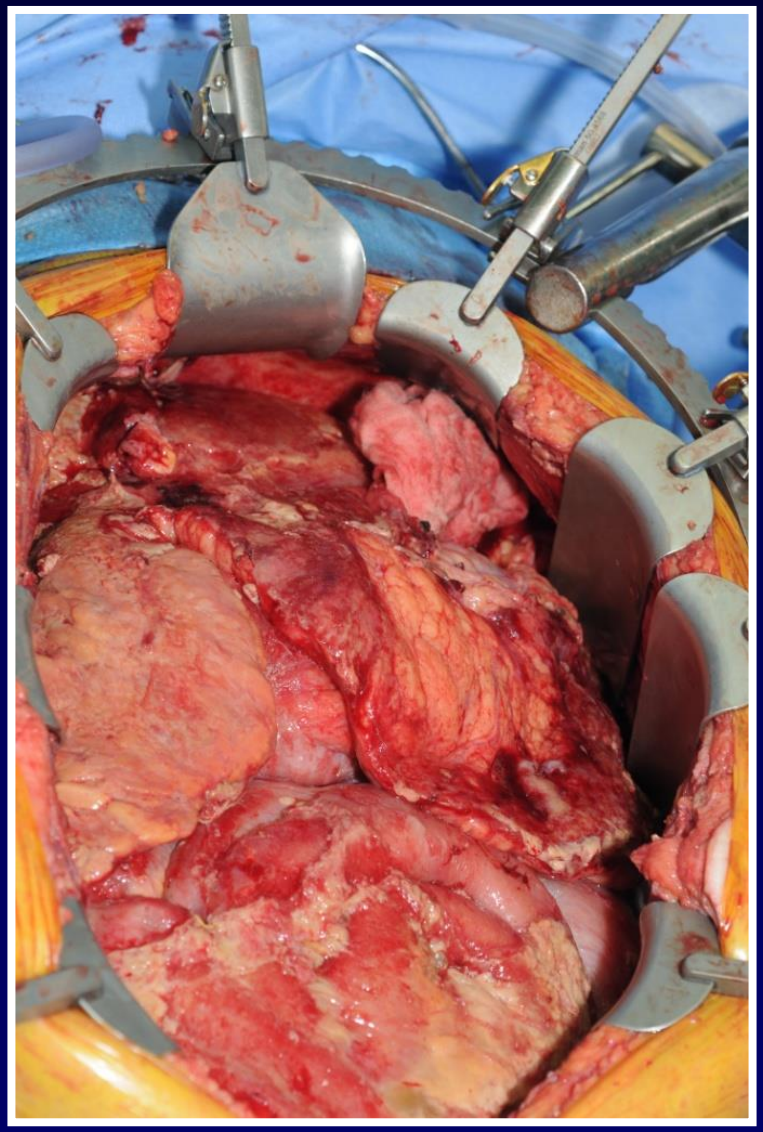
PANCREATIC DÉBRIDEMENT

- One technique does **NOT** fit all
- Dedicated physician/team
- Close care during (long-term) illness
- Long-term follow up mandatory
- Selection/timing – judgement

INTERVENTION

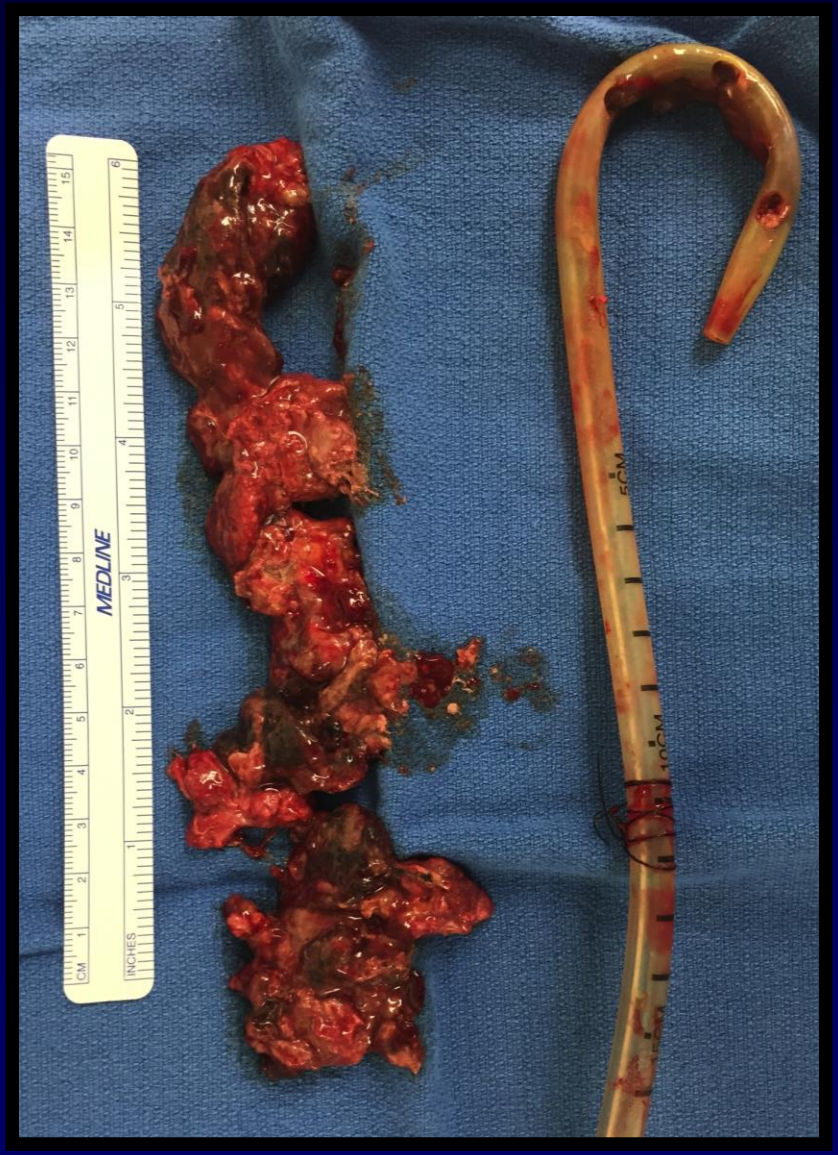
- Percutaneous
- TG – Endo/OR
- VARD / “STN”
- Open débridement
- Combo (dual modality)

- ***INDIVIDUALIZE APPROACH***
- ***Team Effort***
- ***Open Débridement – Gold Standard***



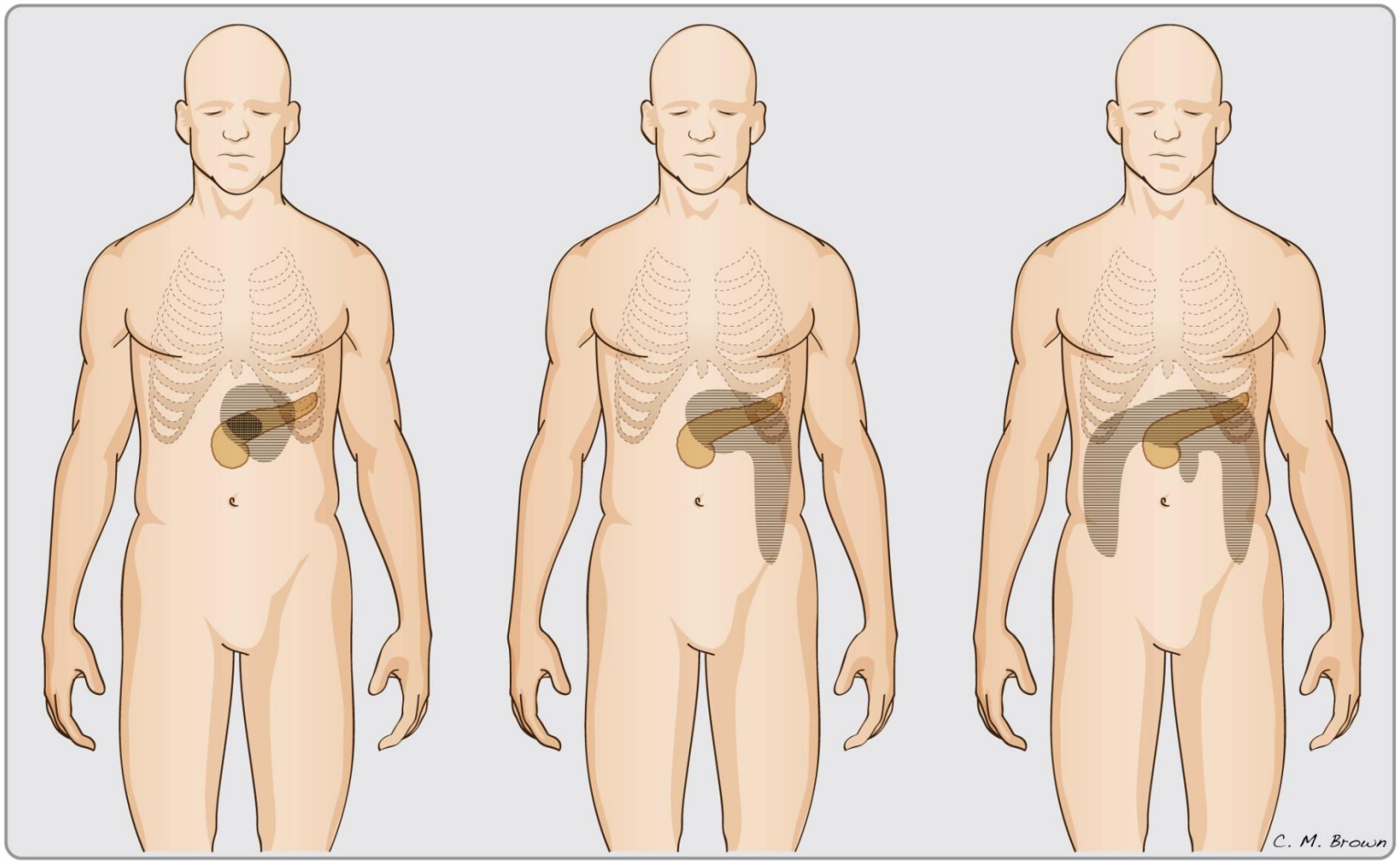
PATIENT SELECTION

- Patient physiology*
  - *Not perfect/window*
  - *Residual necrosis-catabolism*
- Necrosis distribution
- % Solid necrosis
- Parenchyma?
- Infection*
- Etiology – biliary
- Local expertise*



*Long-term, evolving illness

MORPHOLOGY

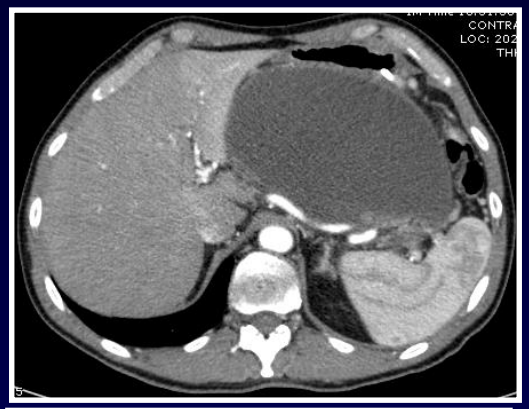


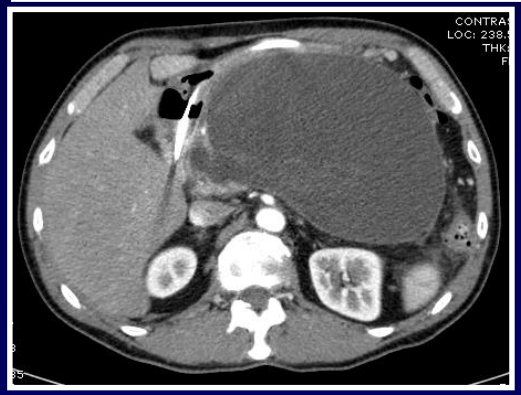
Transgastric **VARD** **? Open**

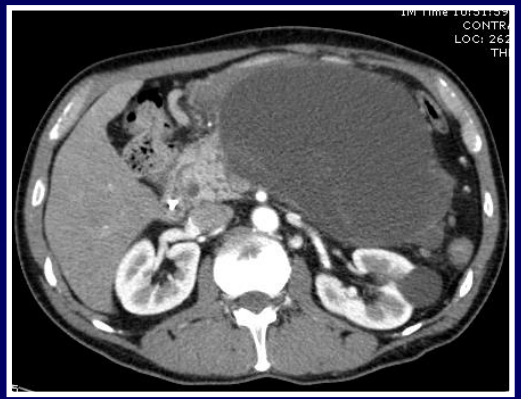
SURGICAL TRANSGASTRIC "ONE STOP SHOPPING"

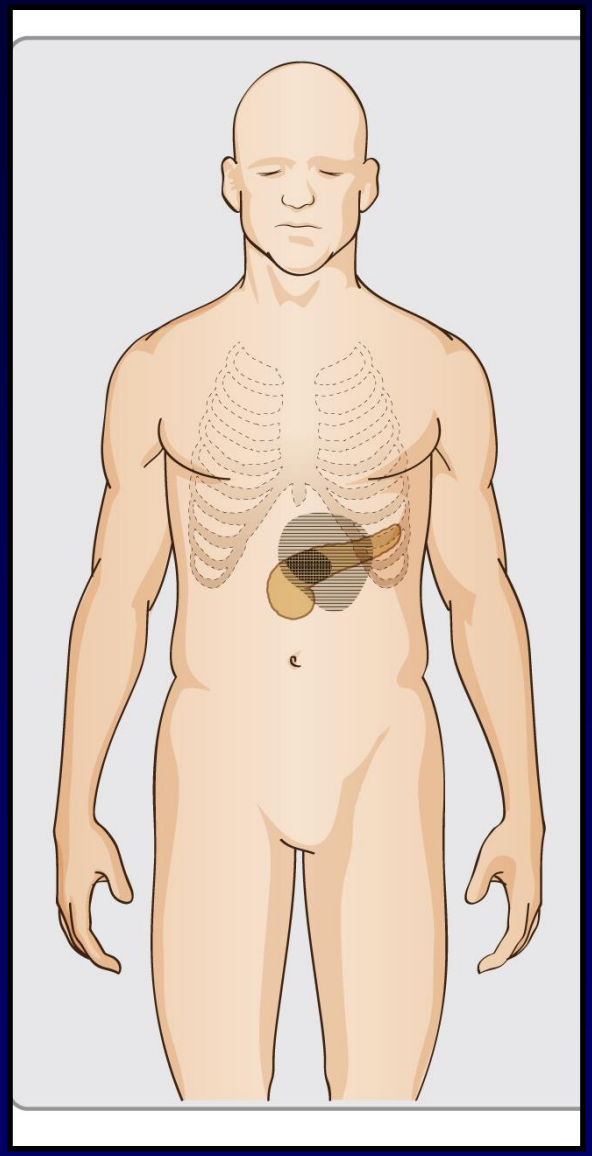
- Thorough Débridement (x1)
- Durable internal drainage
  - Avoid DPDS - "El Diablo"
- Cholecystectomy + IOC
- *15-20% recurrent p-cyst/L sided AP*

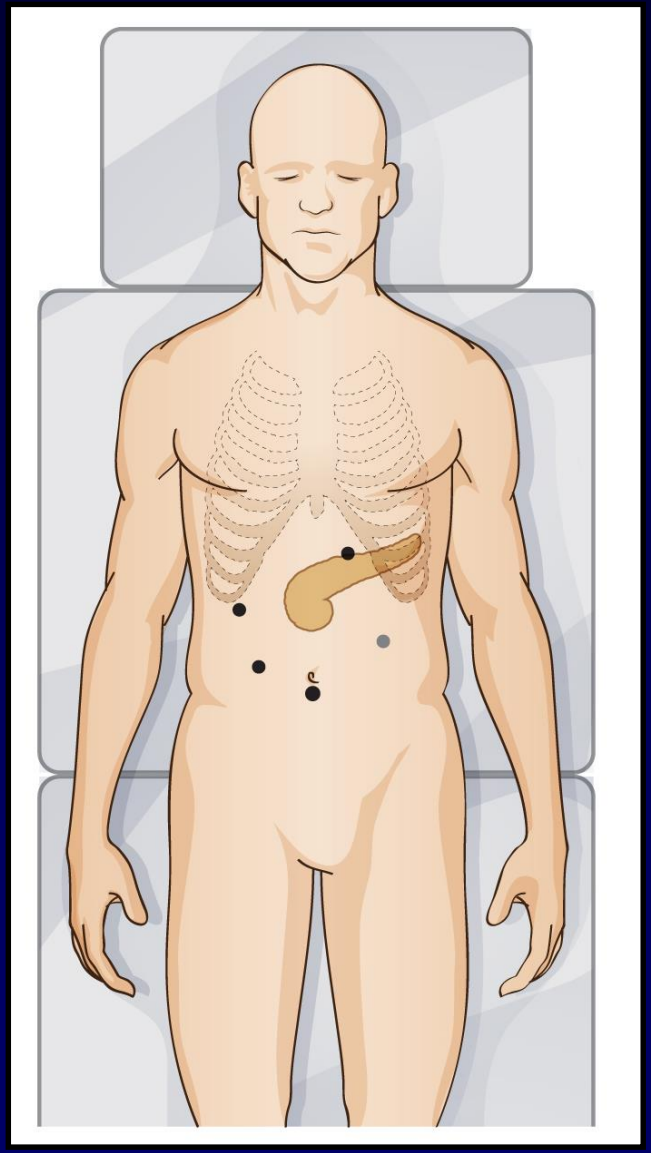
TRANSGASTRIC



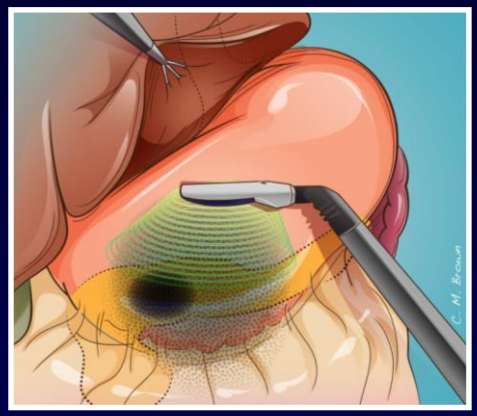
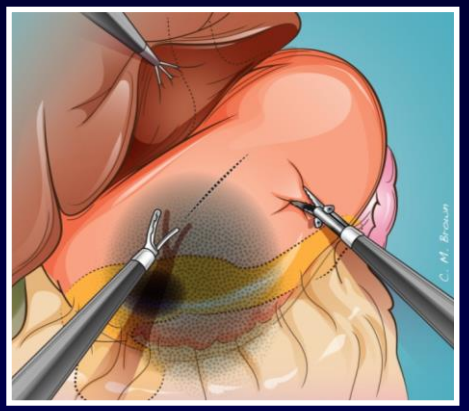
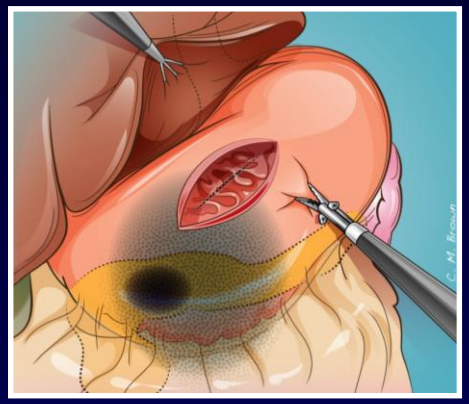
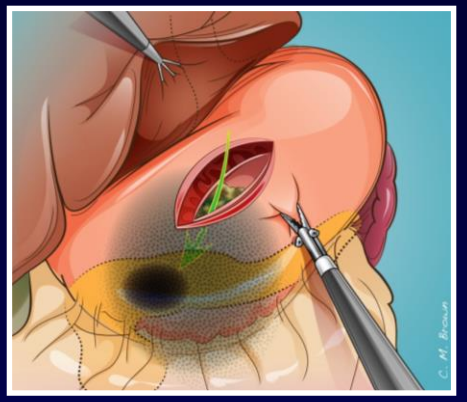
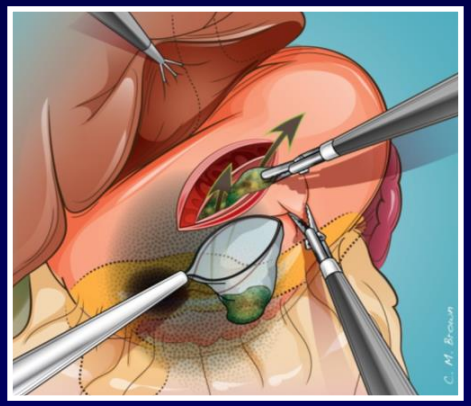
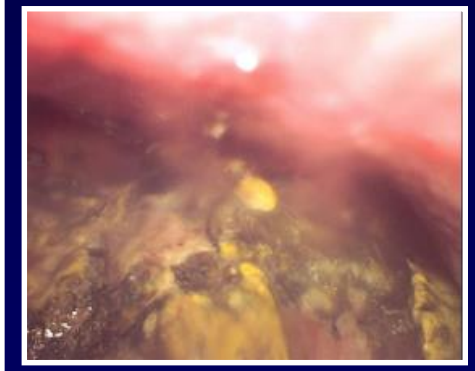
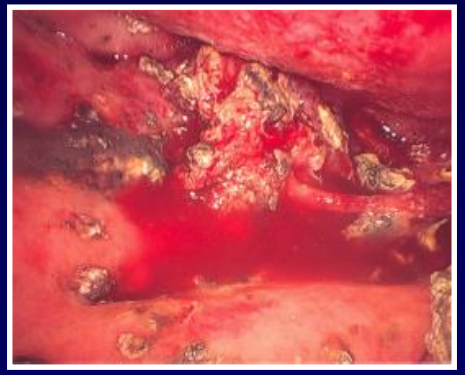
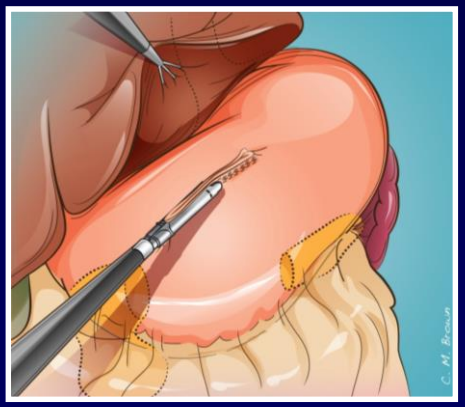
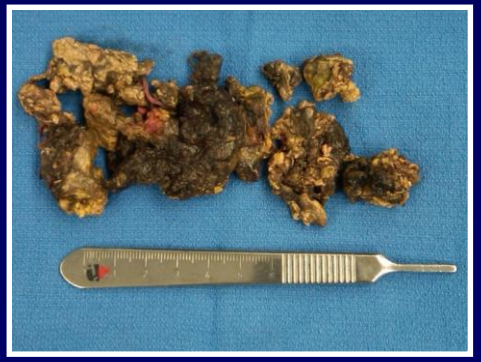
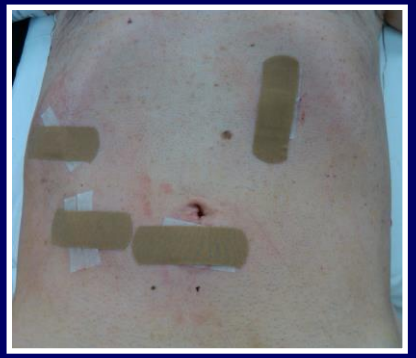




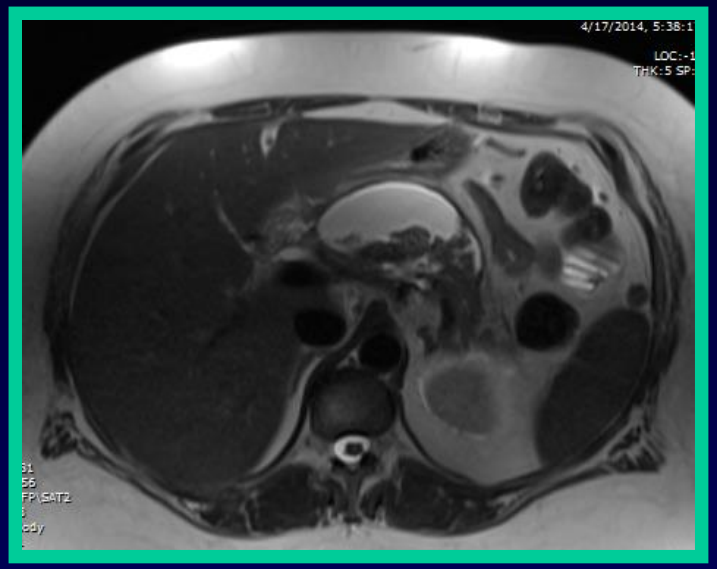


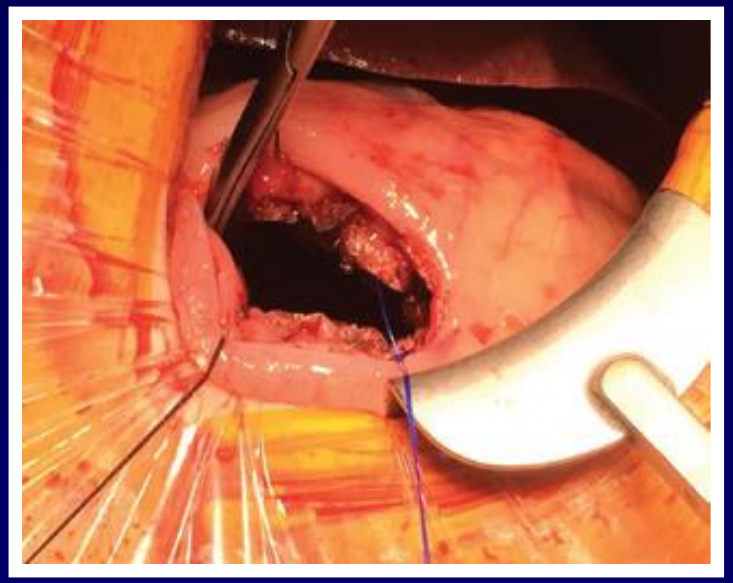


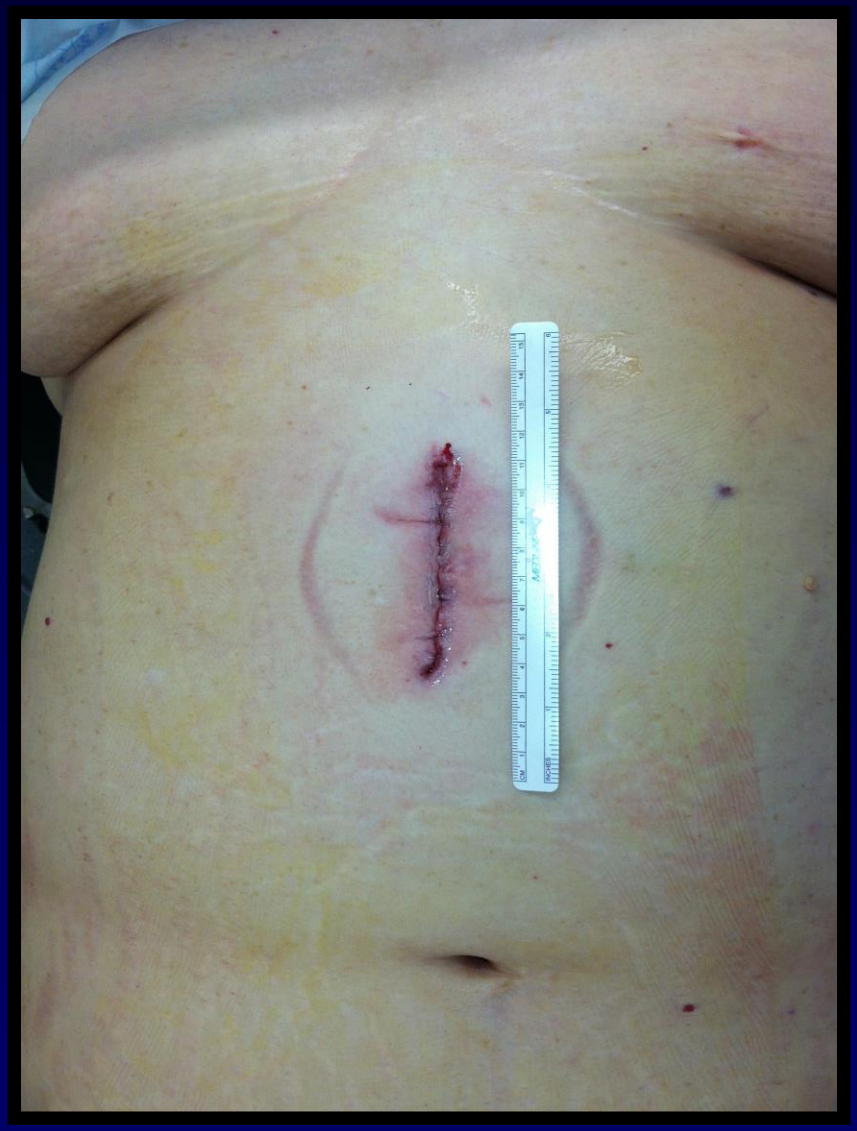
LAPAROSCOPIC TG DÉBRIDEMENT

OPEN TG DÉBRIDEMENT







Zyromski, J Gastrointest Surg 2015

TRANSGASTRIC

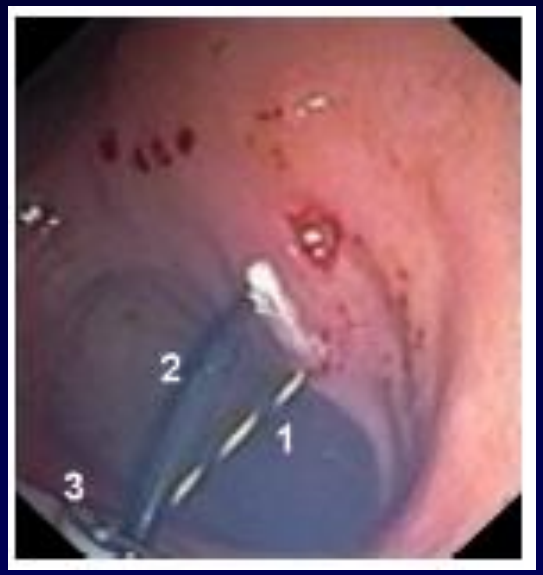
ENDOSCOPY

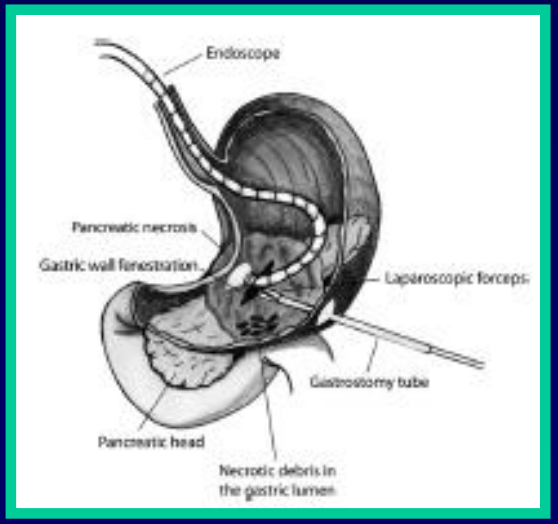
vs

SURGERY

WHAT IS ENDOSCOPY?

- Pure endoscopy?
- Transgastric?
- Multiple gateway?
- VMMC? (endo/perc)
- Transpapillary?





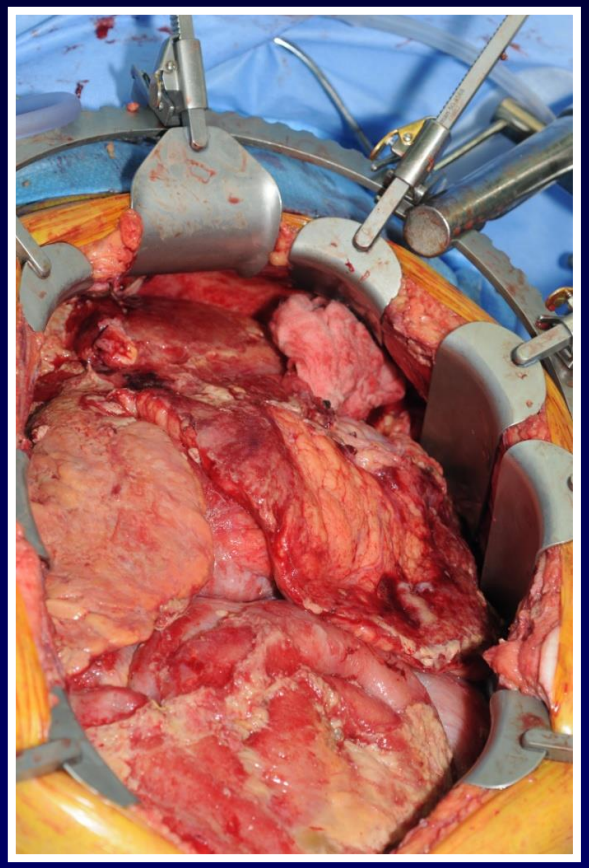
Dual-modality drainage of infected and symptomatic walled-off pancreatic necrosis: long-term clinical outcomes

Andrew S. Ross, MD, Shayan Irani, MD, S. Ian Gan, MD, Flavio Rocha, MD, Justin Siegal, MD, Mehran Fotoohi, MD, Ellen Hauptmann, MD, David Robinson, MD, Robert Crane, MD, Richard Kozarek, MD, Michael Gluck, MD

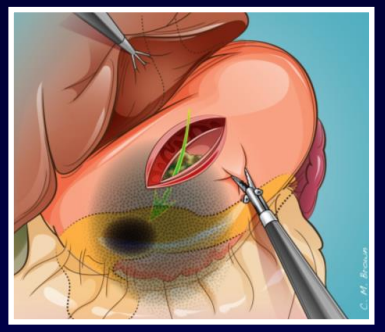
Seattle, Washington, USA

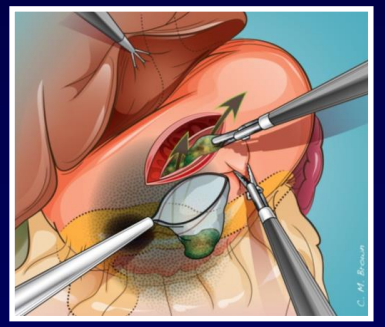
Volume 79, No. 6 : 2014 GASTROINTESTINAL ENDOSCOPY

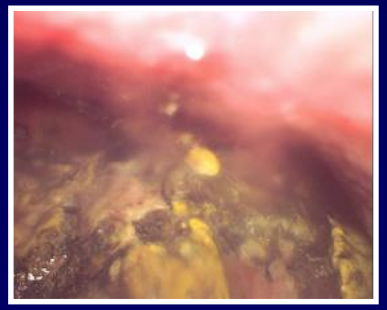
WHAT IS SURGERY?



- Open?
- Transgastric
  - Lap/Open
- VARD?
- STN?
- Laparoscopy?







Conclusion

Operative and endoscopic transgastric debridement achieve necrosis resolution with different temporal and procedural profiles. Clear multidisciplinary communication is essential to determine appropriate approach to individual necrotizing pancreatitis patients.

Outcomes in Endoscopic and Operative Transgastric Pancreatic Debridement

Thomas K. Maatman, MD, Sean P. McGuire, MD, Katelyn F. Flick, MD, Mackenzie K. Madison, MS, Mohammad A. Al-Haddad, MD, Benjamin L. Bick, MD, Eugene P. Ceppa, MD, John M. DeWitt, MD, Jeffrey J. Easler, MD, Evan L. Fogel, MD, Mark A. Gromski, MD, Michael G. House, MD, Glen A. Lehman, MD, Attila Nakeeb, MD, C. Max Schmidt, MD, Stuart Sherman, MD, James L. Watkins, MD, and Nicholas J. Zyromski, MD✉

Annals of Surgery • Volume 274, Number 3, September 2021

Endoscopy VS Surgery?

- *Surgical and Endoscopic Debridement are 2 of several often complimentary approaches to treating NP.*
- *Focus effort on defining more objectively which patient warrants which approach and when is best time to "step up" Rx.*
- *Long-term f/u data critically needed*

WHAT WE DON'T KNOW

- Long-term f/u limited (open, TG, Perc, VARD)
  - QOL, recurrent AP, P-cyst, exo/endo fxn, duo/bili stricture (head necrosis)
- Early percutaneous drain?
- Objective physiology measure?
- When to "step up?"
- Metric of success –

  Mortality *vs* FUNCTION