 UNIVERSITY OF ALBERTA

---

***Endoscopic management of pancreatic pseudocysts and walled-off necrosis***

Christopher Teshima, MD MSc PhD  
Assistant Professor, University of Alberta

---

---

---


---

---

---

---

---

 UNIVERSITY OF ALBERTA

---

Disclosures: none

---

---

---


---

---

---

---

---

 UNIVERSITY OF ALBERTA

---

**Objectives**

1. To demonstrate methods for endoscopic drainage of pseudocysts and walled-off pancreas necrosis.
1. To highlight recommendations regarding pancreatic fluid collection management.

---

---

---

---

---

---

---

---

UNIVERSITY OF ALBERTA

### Pancreatic fluid collections - classification

	Pancreatitis	Duration	Features
Acute fluid collection	Interstitial	< 4 weeks	No encapsulated wall
Acute necrotic collection	Necrotizing	< 4 weeks	No encapsulated wall
Pseudocyst	Interstitial	> 4 weeks	Encapsulated wall Extra-pancreatic No solid debris
Walled-off necrosis	Necrotizing	> 4 weeks	Encapsulated wall Intra or extra-pancreatic Solid debris

Banks et al. Gut 2013

---

---

---

---

---

---

---

---

---

---

UNIVERSITY OF ALBERTA

### PFCs – Options for management

Endoscopic	Percutaneous	Surgical
Transmural endoscopic drainage	CT-guided retroperitoneal catheter	Open debridement with external drainage
EUS-guided drainage		Open debridement with internal drainage
Direct endoscopic necrosectomy		Laparoscopic transperitoneal debridement
		Video-assisted retroperitoneal debridement (VARD)

---

---

---

---

---

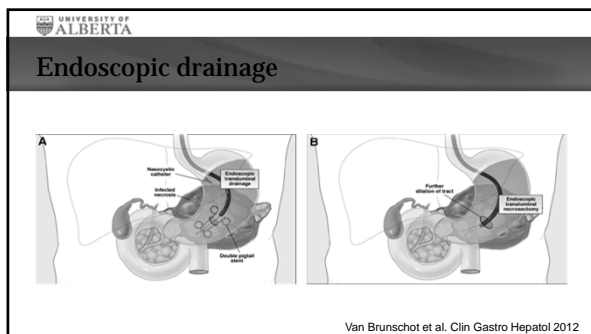
---

---

---

---

---




---

---

---

---

---

---

---

---

---

---

### Case

- History:
  - 78M w/ acute biliary pancreatitis
    - ERCP w/ sphincterotomy in hospital
    - Discharged after 1 week admission
  - Vague abdominal symptoms since d/c
  - ER 3 weeks post-d/c – severe abdo pain, N/V, elevated WBC, N lipase
    - No perforation on X-ray

---

---

---

---

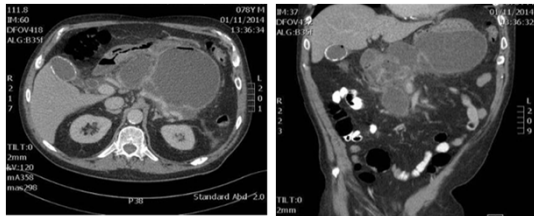
---

---

---

---

### PFCs – Case



---

---

---

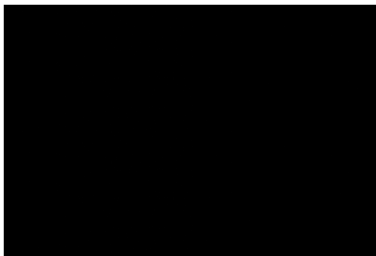
---

---

---

---

---



---

---

---

---

---

---

---

---

UNIVERSITY OF ALBERTA

### Advantage from endoscopic debridement

	Endoscopic necrosectomy (n = 25)	Transmural drainage (n = 20)
<b>Resolution</b>	88%	45% <sup>†</sup>
Time to resolution	4.2 months	4.0 months
Complications*	32%	20%
Need for OR	4%	30% <sup>†</sup>
Need for Perc drain	0	20% <sup>†</sup>
Hospital stay, days	15.4	38.4
Recurrent collection	8%	40% <sup>†</sup>

<sup>†</sup>Statistically significant  
Gardner et al. GIE 2009

---

---

---

---

---

---

---

---



---

---

---

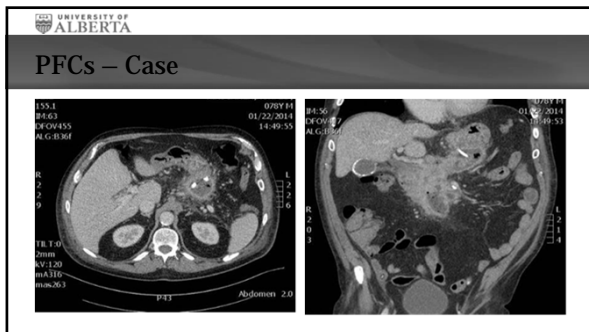
---

---

---

---

---



---

---

---

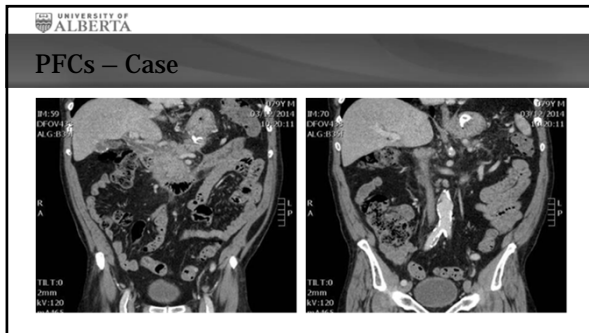
---

---

---

---

---




---

---

---

---

---

---

---

---

UNIVERSITY OF ALBERTA

### Direct endoscopic necrosectomy - outcomes

	Germany (n = 93)	U.S. (n = 104)	Japan (n = 57)
Complete resolution	68%	91%	75%
No. procedures	6	3	5
Need for OR	12%	4%	9%
Recurrence	14%	6%	7%
Complications	26%	14%	33%
Mortality	7.5%	5.8%	11%

Seifert et al. Gut 2009  
Gardner et al. GIE 2011  
Yacobi et al. Endoscopy 2013

---

---

---

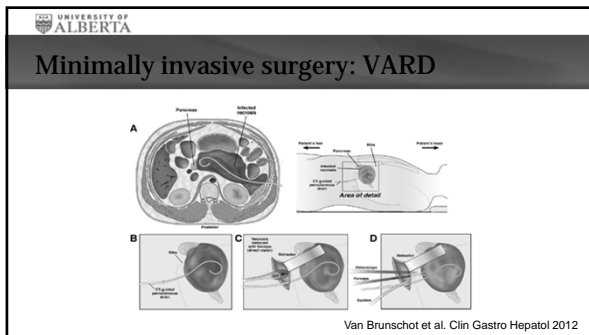
---

---

---

---

---




---

---

---

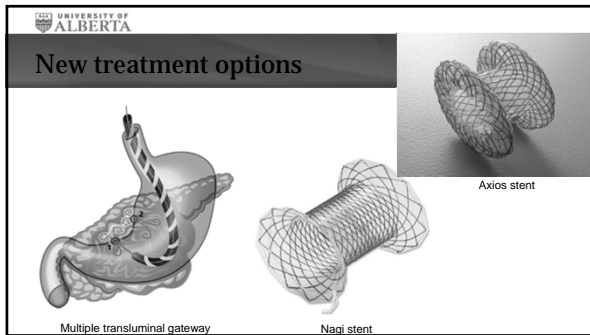
---

---

---

---

---



---

---

---

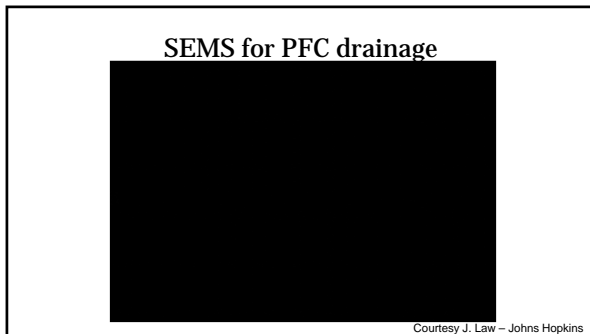
---

---

---

---

---



---

---

---

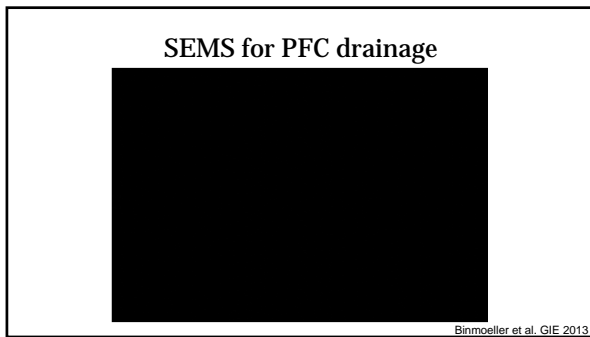
---

---

---

---

---



---

---

---


---

---

---

---

---

 UNIVERSITY OF ALBERTA

**Recommendations**

- Most PFCs resolve without intervention
- Intervention required for persistently symptomatic or infected collections
- Delay intervention > 4+ weeks
- Endoscopic drainage first line for pseudocysts
- EUS guidance should be used in most cases

Freeman et al. Pancreas 2012

---

---


---

---

---

---

---

 UNIVERSITY OF ALBERTA

**Recommendations - WOPN**

- If septic & collection not walled-off (i.e. < 4 weeks) – percutaneous drainage
  - Otherwise delay intervention > 4+ weeks (or longer)
- Percutaneous or transluminal drainage first line for infected necrosis
- Minimally-invasive surgery or endoscopic debridement if necrosectomy required

Freeman et al. Pancreas 2012

---

---


---

---

---

---

---

 UNIVERSITY OF ALBERTA

**Unresolved questions**

- Conservative management – when should we try?
- How long should stents remain in place?
- SEMS designed for PFC
  - Will these remove need for debridement?
- Should debridement be performed by endoscopic necrosectomy or minimally-invasive surgery?
- Predictors of success/failure of endoscopic approach

---

---

---

---

---

---

---

UNIVERSITY OF ALBERTA

Questions?

---

---

---

---

---

---

---

UNIVERSITY OF ALBERTA

**Sterile Necrosis**

- 15% mortality rate  
van Santvoort HC et al. Gastro 2011
- No benefit from prophylactic antibiotics  
Wittau M et al. Scand J Gastro 2011  
Jiang K et al. World J Gastro 2012
- Enteral nutrition to prevent infection  
Al-Omran M et al. Cochrane Rev 2010
- Majority respond without invasive intervention  
Freeman et al. Pancreas 2012

---

---

---

---

---

---

---

UNIVERSITY OF ALBERTA

**Infected Necrosis**

- 22-39% mortality rate  
van Brunschot et al. Clin Gastro Hepatol 2012
- Begin empiric antibiotic Rx without FNA culture  
IAP/APA Working Group. Pancreatology 2013
- Antibiotics alone may be sufficient in some cases  
Mouli VP et al. Gastroenterology 2013
- Intervention to drain infected fluid/remove necrosis if clinical deterioration despite maximal supportive Rx  
Freeman et al. Pancreas 2012

---

---

---

---

---

---

---