Submit your Research!

**ACG 2020 Late Breaking Abstracts**

**Submission Dates:** August 17 - September 3, 2020
11:59 PM EDT

**Important Dates**
- August 17: Late Breaking Abstracts Due Online
- September 3: 11:59 PM EDT

**How to Submit:**
- Visit www.gi.org/late-breaking-abstracts

**Grant System Opens:** September 8, 2020
**Deadline:** December 4, 2020

**SEVEN different award types; INCREASED Junior Faculty FUNDING; NEW Mid-Career Bridge Funding; Med Resident and Student Awards**

www.gi.org/research-awards

**Grant System Opens:** September 8, 2020
**Deadline:** December 4, 2020

Read the Grant Flyer, FAQs, or visit the webpage for the RFAs.

### Participating in the Webinar

- All attendees will be muted and will remain in Listen Only Mode.
- Type your questions here so that the moderator can see them. Not all questions will be answered but we will get to as many as possible.
How to Receive CME and MOC Points

LIVE VIRTUAL GRAND ROUNDS WEBINAR

ACG will send a link to a CME & MOC evaluation to all attendees on the live webinar.

ABIM Board Certified physicians need to complete their MOC activities by December 31, 2020 in order for the MOC points to count toward any MOC requirements that are due by the end of the year. No MOC credit may be awarded after March 1, 2021 for this activity.

ACG will submit MOC points on the first of each month. Please allow 3-5 business days for your MOC credit to appear on your ABIM account.

MOC QUESTION

If you plan to claim MOC Points for this activity, you will be asked to: Please list specific changes you will make in your practice as a result of the information you received from this activity.

Include specific strategies or changes that you plan to implement. THESE ANSWERS WILL BE REVIEWED.

ACG Virtual Grand Rounds

Join us for upcoming Virtual Grand Rounds!

Week 24: Combination Therapies in IBD: Assessing the Evidence for and Against
Stephen B. Hanauer, MD, FACG
September 3, 2020 at Noon EDT

Week 25: Management of EoE With Topical steroids: The When and How of Long Term Management
Gary W. Falk, MD, MS, FACG
September 10, 2020 at Noon EDT

Weeks 26-28 and Special Webinars are also open for registration now!
Visit gi.org/ACGVGR to Register

Disclosures:

Vanessa M. Shami, MD
Consultant: Olympus, Interpace Diagnostics
Legal work for Boehringer Ingelheim

Tamas A. Gonda, MD
Consultant: Interventional, Cost Endoscopy
Role of Endoscopy in the Management of Pancreatic Disorders

Vanessa M Shami MD, FASGE
Associate Professor of Medicine
Director of Endosonography
University of Virginia Health System

Objectives

- Role of Endoscopy in:
  - Pancreatic fluid collections
  - Pancreatic duct strictures
  - Pancreatic tumors
  - Pancreatic cysts

2012 Atlanta Classification of Peri-Pancreatic Collections

- Acute Fluid Collection
- Acute Necrotic Collection
- Pancreatic Pseudocyst
- Walled-off Pancreatic Necrosis (WON)

American College of Gastroenterology
PFC's: Indications for Intervention

- Mass effect
  - GOO, Biliary obstruction
- Infection
- Hemorrhage
- Perforation
  - Leakage, fistulization
- Absolute size is not a sole indication for intervention

Why Drain Endoscopically?

Endoscopic vs percutaneous management for symptomatic PFC's: a systemic review and meta-analysis
Khan et al. Endoscopy International Open 2018

Clinical success
Technical success
**PFC's: How to Drain Endoscopically??**

- **Conventional Transmural Drainage (CTD)**
  - Sure of diagnosis
  - Bulging
  - No varices

- **Transenteric Drainage**
  - PD disruption
  - PC communicates with MPD
  - PC < 4cm

- **EUS-guided Drainage**
  - Cyst evaluation
  - No bulging
  - 7 of intervening vessels

**PFC's: CTD vs EUS**

**META-ANALYSIS**


<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>EUS</th>
<th>CTD</th>
<th>Oddes ratio</th>
<th>Odds ratio CI</th>
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<td></td>
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<td></td>
<td>(95% CI)</td>
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</table>

**Technical Success**

- Heterogeneity: τ² = 1.32, I² = 79.3% (P = 0.00, F = 445)
- Test for overall effect: Z = 2.30 (P = 0.03)
Endoscopic Drainage Rule 1:

- Cross sectional imaging
  - Contents (liquid vs. solid)
  - Surrounding luminal & vascular structures

---

Macrocystic Cystadenoma

---
Endoscopic Drainage Rule 2:

- Strongly Consider General Anesthesia

Endoscopic Drainage Rule 3:

- Periprocedural antibiotics

Endoscopic Drainage Rule 4:

- S-MRCP/ MRCP / ERCP
  - Good road map!!!
Transpapillary drainage has no added benefit on treatment outcomes in patients undergoing EUS-guided transmural drainage of PC's: A large multicenter trial

- Retrospective review
- 15 academic centers

<table>
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<tr>
<th>Procedure</th>
<th>Technical Success</th>
<th>AE's</th>
<th>LT Symptomatic Resolution</th>
<th>LT Radiologic Resolution</th>
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<tr>
<td>TMD</td>
<td>97%</td>
<td>19%</td>
<td>99%</td>
<td>71%</td>
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<tr>
<td>CD</td>
<td>44%</td>
<td>14%</td>
<td>62%</td>
<td>67%</td>
</tr>
<tr>
<td>Post 0.5</td>
<td>Post 2.5</td>
<td>Post 0.6</td>
<td>Post 2.5</td>
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</tbody>
</table>

TPD attempt was negatively associated with LT radiologic resolution of pseudocyst.

EUS-Guided Pseudocyst Drainage

EUS-Guided Transenteric Drainage
Are LAMS better in treatment of PFC’s?

<table>
<thead>
<tr>
<th>Brand</th>
<th>Diameter</th>
<th>Stent</th>
<th>GraceFLEX</th>
<th>Steps</th>
<th>Size</th>
<th>Length</th>
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<tr>
<td>LAMS</td>
<td>8 mm</td>
<td>2 mm</td>
<td>Galaxy</td>
<td>10</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>Plastic stents</td>
<td>8 mm</td>
<td>2 mm</td>
<td>Galaxy</td>
<td>10</td>
<td>15</td>
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</tbody>
</table>

Efficacy and safety of LAMS in management of PFC’s: Are they better than plastic stents? A systemic review and Meta-analysis

- 6 studies
  - 504 patients compared performance of LAMS with MPS
84 DPS vs 29 LAMS
• Similar technical success rates: 96% vs 94%
• Significantly higher bleeding rates with LAMS (19% vs 1%)
• Significantly more unplanned endoscopies with LAMS (26% vs 10%)
  • 9% obstruction rate for LAMS

So, the verdict is still out

Lang S et al. GIE 2018
How about Plastic stents vs LAMS in WON?

Bang et al. Gut 2019 Siddiqui et al. GIE 2017

SO the verdict is out!!!

Complications in PC drainage
• Hemorrhage
• Perforation
• Infection

<table>
<thead>
<tr>
<th></th>
<th>Complications in simple PC drainage</th>
<th>Complications in infected PC drainage</th>
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<tbody>
<tr>
<td>Sadik et al. 2011</td>
<td>5%</td>
<td>30%</td>
</tr>
<tr>
<td>Varadarajulu et al. 2011</td>
<td>5%</td>
<td>16%</td>
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Pancreatic Duct Strictures
56yo admitted for his first episode of pancreatitis

MRCP performed at OSH revealed:

Pancreatic Duct Strictures

- IMPORTANT: RULE OUT CANCER!!!
- Traditionally polyethylene stents have been used to bridge the strictures
- FCSMS have been used recently

- IMPORTANT:
  - Dominant stricture
  - Head or Body

Pancreatic Duct Strictures
Treatment of Chronic Pancreatitis with Plastic PD Stents

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>N</th>
<th>Stent (Fr)</th>
<th>F-up (mos)</th>
<th>Early pain relief (%)</th>
<th>Sustained pain relief (%)</th>
<th>Patients operated on (%)</th>
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<td>10</td>
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<td>Smits</td>
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<td>Behrman</td>
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<td>93</td>
<td>5-7-10</td>
<td>58</td>
<td>74</td>
<td>65</td>
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<td>Morgan</td>
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<td>85</td>
<td>NA</td>
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<td>43</td>
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<td>Elmfeldis</td>
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<td>100</td>
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<td>78</td>
<td>69</td>
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<td>Ishira</td>
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<td>Weber</td>
<td>2007</td>
<td>17</td>
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<td>24</td>
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<td>Sauer</td>
<td>2009</td>
<td>163</td>
<td>8.5-10</td>
<td>36</td>
<td>NA</td>
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<td>6</td>
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Partly Adapted from Nguyen-Tang et al. Gastroenterol 2010

Treatment of Benign Pancreatic Strictures with FCSMS

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>No of patients</th>
<th>Technical success (%)</th>
<th>Clinical success (%)</th>
<th>Stent duration (mos)</th>
<th>Adverse Events</th>
<th>F/u duration (mos)</th>
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<tr>
<td>Park et al.</td>
<td>2008</td>
<td>15</td>
<td>100</td>
<td>100</td>
<td>7</td>
<td>Stent mig = 1, Cholestasis = 2</td>
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<tr>
<td>Sauer et al.</td>
<td>2008</td>
<td>6</td>
<td>100</td>
<td>66</td>
<td>3</td>
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<td>Min et al.</td>
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<td>15</td>
<td>100</td>
<td>100</td>
<td>5</td>
<td>Stent duct changes = 5</td>
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<tr>
<td>Akhbar et al.</td>
<td>2012</td>
<td>9</td>
<td>100</td>
<td>88-4</td>
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<td>Mild AP = 1</td>
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<td>Gauhar et al.</td>
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<td>100</td>
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<td>Lard et al.</td>
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<td>100</td>
<td>100</td>
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<td>Ogura et al.</td>
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<td>Matsushita et al.</td>
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<td>10</td>
<td>100</td>
<td>70</td>
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<td>Stent duct changes = 2, Stent mig = 2</td>
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Adapted from Dawod et al. Clinical Endoscopy 2018

How About if The MPD cannot be Accessed Conventionally?
# Published Series - EUS-Guided Pancreatic Drainage

<table>
<thead>
<tr>
<th>Author</th>
<th>Design</th>
<th>PI (m)</th>
<th>Success in PD Drainage (%)</th>
<th>Clinical Success (%)</th>
<th>Complications (%)</th>
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<tr>
<td>Will et al</td>
<td>RS</td>
<td>12</td>
<td>67</td>
<td>50</td>
<td>43</td>
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<td>Tessier et al</td>
<td>RS</td>
<td>36</td>
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<td>Kahaleh et al</td>
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<td>RS</td>
<td>21</td>
<td>48</td>
<td>86</td>
<td>10</td>
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<td>Ergun et al</td>
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<td>RS</td>
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<td>89</td>
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<td><strong>TOTAL</strong></td>
<td><strong>10 studies</strong></td>
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<td><strong>53-100</strong></td>
<td><strong>7-55</strong></td>
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</table>

Partly adapted from Fabbri et al. *world J Gastroenterol* 2014.
Pancreatic Adenocarcinoma

- 4th leading cause of cancer death in the US
- Death to incidence = 0.99


ERCP

- Little role in the diagnosis of pancreatic masses
- Role in stenting symptomatic patients with obstructive jaundice

EUS

American College of Gastroenterology
**EUS**

- Diagnosis in tumors < 2.5 cm

- Falsely negative
- Chronic pancreatitis
- Recently diagnosed pancreatitis
- Diffusely infiltrative tumors
  - Bhutani et al. Endoscopy 2004

---

**Imaging – EUS vs CT and MRI**

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>No of pts</th>
<th>EUS</th>
<th>CT</th>
<th>US</th>
<th>MRI</th>
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<td>Ainsworth et al.</td>
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<td>Agarwal et al.</td>
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<td>56</td>
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</table>

**Overall sensitivity**

- EUS: 74%
- CT: 67%
- US: 79%

Adapted from Kitano et al. J Gastroenterol 2019

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**Tissue acquisition**
Virtual Grand Rounds: Fine Needle Injection

- Drug: Allogeneic mixed lymphocytes culture
  - Reference: Chang et al.
  - Use: Advanced pancreatic cancer

- Drug: DNA expressing TNF-alpha
  - Reference: Hecht et al., Chang et al., Klein et al.
  - Use: Pancreatic, esophageal and rectal cancer

- Drug: Adenovirus
  - Reference: Mittl et al.
  - Use: Advanced pancreatic cancer

- Drug: Paclitaxel
  - Reference: Linghu et al., Mathews et al., Vakil et al.
  - Use: Pancreatic, esophageal cancer

- Drug: Gemcitabine
  - Reference: Levy et al.
  - Use: Advanced pancreatic cancer

- Drug: Dendritic cells
  - Reference: Itoh et al., Hirooka et al.
  - Use: Advanced pancreatic cancer

- Drug: Carbohydrate sulfotransferase 15
  - Reference: Nishimura et al.
  - Use: Advanced pancreatic cancer

- Drug: Lauraminoglut
  - Reference: Quin et al.
  - Use: Insulinomas

Virtual Grand Rounds: Radiofrequency Ablation

Initial Experience of EUS-guided RFA of Unresectable Pancreatic Cancer
Tae Jun Song et al. Gastrointest Endosc 2016

<table>
<thead>
<tr>
<th>Age</th>
<th>Tumor size, cm</th>
<th>Tumor location</th>
<th>Session of RFA</th>
<th>Follow-up, mo</th>
<th>Adverse Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>73</td>
<td>3.8</td>
<td>Head</td>
<td>1</td>
<td>3</td>
<td>None</td>
</tr>
<tr>
<td>43</td>
<td>5.6</td>
<td>Head</td>
<td>1</td>
<td>4</td>
<td>Abdl pain</td>
</tr>
<tr>
<td>88</td>
<td>3.2</td>
<td>Head</td>
<td>1</td>
<td>6</td>
<td>None</td>
</tr>
<tr>
<td>50</td>
<td>3</td>
<td>Body</td>
<td>2</td>
<td>4</td>
<td>Abdl pain</td>
</tr>
<tr>
<td>57</td>
<td>3.6</td>
<td>Body</td>
<td>1</td>
<td>4</td>
<td>None</td>
</tr>
</tbody>
</table>

Technically feasible and safe

Celiac Plexus Neurolysis
- Axis is w/in cm's of posterior gastric wall
- Less % of paraplegia then posterior approach
  - 10ml 0.25% bupivacaine
  - 20ml absolute alcohol


EUS-Guided CPN
- Prospective study in 58 pt's with non-operable panca and pain with up to 6 mo f/u.
- 78% experienced a decline in pain scores after EUS CPN.
- Pain scores were lower at 2 weeks after CPN with a sustained effect for 24 weeks.

Impact on Survival?
Fujikawa et al. GIE 2015

Pancreatic Cysts
Even with advances in imaging we struggle...

Why are we talking about pancreatic cysts?
Pancreatic cysts are common
- Prevalent in 7-40% of individuals over 50 years
- Age-based prevalence
  - 3% ages 50-60 years
  - 25% ages 70-79 years
  - 37% >80 years
- Pancreatic cysts can progress to cancer

Differentiating Cysts with Malignant Potential

VS.

High risk features

- Dilated PD
- Mural nodule
- Size >3cm
- Symptomatic

Histology

Yung et al. Clin Gastro Hep 2019
100% concordance with surgical specimen

Atrili et al. Endoscopy 2016
Feasibility and safety of microforceps biopsy in the diagnosis of pancreatic cysts

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>EUS guided FNA (41 patients)</th>
<th>Microforceps biopsy (40 patients)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>20 (48%)</td>
<td>20 (50%)</td>
<td>0.80</td>
</tr>
<tr>
<td>Level 2</td>
<td>33 (80%)</td>
<td>33 (82%)</td>
<td>0.30</td>
</tr>
<tr>
<td>Non-diagnostic</td>
<td>18 (44%)</td>
<td>19 (48%)</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Future of Diagnostics: Molecular Biomarkers

<table>
<thead>
<tr>
<th>Pancreatic cyst subtypes with distinguishing molecular biomarkers</th>
<th>Diagnosing molecular biomarkers</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mucinous vs. non-mucinous lesions</td>
<td>ERK1, GNAS, loss of heterozygosity, MUC1AC and endoplasmic reticulum</td>
<td>[36–39]</td>
</tr>
<tr>
<td>Advanced neoplastic (mucinous cysts)</td>
<td>TGF-1, SMAD, RAS, PTEN, CDKN2A, AKT1</td>
<td>[32,40,41,42,43]</td>
</tr>
<tr>
<td>Intestinal-type mucinous neoplasm</td>
<td>ERK1, JNK, GNAS, positive</td>
<td>[32,44,45,46]</td>
</tr>
<tr>
<td>Mucinous cystic neoplasm</td>
<td>ERK1, PHF1-potential, GNAS-negative</td>
<td>[32,44,45,46,47]</td>
</tr>
<tr>
<td>Pancreatic neuroendocrine tumors</td>
<td>Negative for DNA</td>
<td>[48]</td>
</tr>
<tr>
<td>Serous cystadenocarcinoma</td>
<td>VHL positive, VSP-A &gt; 8000 ng/ml</td>
<td>[32,44,46,47]</td>
</tr>
<tr>
<td>Serous-mucinous tumors</td>
<td>Not identified</td>
<td></td>
</tr>
<tr>
<td>Solid pseudopapillary neoplasm</td>
<td>CTNNB1 positive</td>
<td>[32,44]</td>
</tr>
</tbody>
</table>

In Summary: The Role of Endoscopy in the Management of Pancreatic Disorders

- Pancreatic fluid collections
  - Drainage of PFC's is safe and highly successful
  - Drain only if symptomatic
  - Nonbulging PFCs should be drained under EUS guidance

- Pancreatic duct strictures
  - IMPORTANT: Rule out malignancy as etiology
  - Often requires recurrent stenting
In Summary: The Role of Endoscopy in the Management of Pancreatic Disorders

- Pancreatic masses
  - EUS assists in the detection <2cm lesions, staging, and tissue acquisition
- Pancreatic Cysts
  - EUS assists in cyst characterization and identification of high-risk stigmata

Questions?
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Tamas A. Gonda, MD