The 24th Annual Beyond The Scope October 22nd, 2016 Educational Symposium

Presented by: The Connecticut Society of Gastroenterology Nurses and Associates
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CTSGNA gratefully acknowledges our Sponsors for their generous support of our educational endeavors!

**Gold Sponsor**

Connecticut GI P.C.

**Silver Sponsor**

Colon and Rectal Surgeons of Greater Hartford
CTSGNA gratefully acknowledges our Exhibitors for their generous support. This is a great opportunity for attendees to obtain information on products used in GI practice.

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Each year ABCGN recognizes four award recipients at the Annual Gala during the SGNA Annual course. The awards are listed below.

**Excellence in Professionalism Award**: This award is given to the department with 50% or better employees that are certified. Closing date for application is February 15th, 2017.

**Outstanding Regional Society Award**: This recognizes the SGNA Regional Society most active in supporting ABCGN certification.

**Certified GI Professional Of The Year Award** - Through awards this organization seeks to recognize those nurses who are dedicated in validating their qualifications through certification, and those who demonstrate commitment and leadership among colleagues and patients to enhance the practice of gastroenterology nursing.

**Recertification Scholarship Award** - The ABCGN Recertification Scholarship has been established to financially assist candidates for recertification by contact hours. Scholarships will be awarded each November; the number of scholarships awarded will depend on funds available.

For more information on these wonderful opportunities please for to:
http://www.abcggn.org/Resources/Awards-Scholarships
**CONTACT INFORMATION** (Please print or type) * Required field

- * First
- * MI
- * Last
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Please provide both addresses and check your preferred mailing address:

- Work
  - * Street Address
  - * City
  - * State/Province
  - * ZIP
  - * Country
  - * Phone
  - Fax

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  - * Street Address
  - * City
  - * State/Province
  - * ZIP
  - * Country
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**REFERRED BY**

(Members who refer other members will be entered into an annual prize drawing.)

The following information will be used for demographic purposes only. Your response is optional but appreciated.

**Gender:**
- Male
- Female

**Ethnicity:**
- African-American
- Asian
- Caucasian
- Hispanic/Latino
- Native American
- Pacific Islander
- Other
do Not Care To Respond

Date of Birth

**PAYMENT INFORMATION • dues subject to change**

**A. Membership** (SGNA membership runs on a calendar year from January 1 to December 31.) If you are applying mid-year please indicate the 18-month option below. Check the category of membership for which you are applying:

<table>
<thead>
<tr>
<th>Voting Status</th>
<th>Type</th>
<th>Definition</th>
<th>Annual Dues</th>
<th>Two-Year Dues</th>
<th>18-Month Dues (Available July 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voting</td>
<td>Licensed Nurse</td>
<td>Limited to Registered Nurses and Licensed Vocational/Practical Nurses involved in or associated with gastroenterology and/or endoscopy nursing practice</td>
<td>$125</td>
<td>$235</td>
<td>$205</td>
</tr>
<tr>
<td>Voting</td>
<td>Associate</td>
<td>Limited to Assistive Personnel; such as technicians, technologists and assistants involved in or associated with gastroenterology and/or endoscopy nursing practice</td>
<td>$95</td>
<td>$180</td>
<td>$150</td>
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<tr>
<td>Non-Voting</td>
<td>Affiliate</td>
<td>Includes, but is not limited to, physicians, consultants, industry representatives and educators involved in or associated with gastroenterology and/or endoscopy nursing practice</td>
<td>$110</td>
<td>$220</td>
<td>$175</td>
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<tr>
<td>Non-Voting</td>
<td>Non-Practicing</td>
<td>Limited to those that have retired from the GI/endoscopy nursing field but want to continue to receive benefits and information regarding this profession</td>
<td>$60</td>
<td>$120</td>
<td>$90</td>
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**SUBTOTAL A**
### B. Regional Societies

*All voting members residing in the U.S. are required to affiliate with an SGNA regional society.*

<table>
<thead>
<tr>
<th>Regional Society Preference:</th>
<th>Regional Society Dues:</th>
<th>Non-Voting Affiliate and Non-Voting Non-Practicing</th>
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<tr>
<td></td>
<td><strong>Voting Licensed Nurses and Associates</strong></td>
<td>Optional payment; if interested, please indicate preferred region above and remit an additional $15</td>
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<tr>
<td></td>
<td>No additional payment needed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Included in Annual Dues Amount</td>
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</tbody>
</table>

**SUBTOTAL B (If applicable):**

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### C. E-SIGs (Electronic Special Interest Groups) — FREE!

Please **CHECK** box if you would like to join SGNA’s e-SIGs and circle the group(s) of particular interest. These are online special interest groups only. For more information on SGNA e-SIGs visit [www.sgna.org](http://www.sgna.org).

<table>
<thead>
<tr>
<th>Advanced Practice</th>
<th>Legislative</th>
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<td>Ambulatory GI Practice</td>
<td>Manometry</td>
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<tr>
<td>Associates</td>
<td>Nurse Endoscopist</td>
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<tr>
<td>Capsule Endoscopy</td>
<td>Pediatric</td>
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<tr>
<td>Endoscopic Ultrasound</td>
<td>Pulmonary</td>
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<tr>
<td>ERCP</td>
<td>Research</td>
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<tr>
<td>Hepatology</td>
<td>University</td>
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<tr>
<td>Lab Management</td>
<td>VA Nurses</td>
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<td>LPN/LVN</td>
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**Total Dues and Method of Payment**

TOTAL A + B =

- **Check enclosed for (amount) **
- **Credit card (please do not provide credit card information on this form. To pay by credit card, click "Join" in the upper right hand corner at www.sgna.org)**

**Please mail your completed application and payment to:**

SGNA Membership, 8287 Solutions Center, Chicago, IL 60677

If paying by check, please send in a sealed envelope.

SGNA membership dues are non-refundable and non-transferable. Contributions or gifts to SGNA are not tax deductible as charitable contributions for income tax purposes, but may be deductible as a business expense. Please consult your tax advisor. SGNA Federal I.D. #51-04-9057.
0700 – 0745 Registration

0745 – 0800 Introduction – CTSGNA President
    Chris Sarisley, APRN, MS, CGRN

0800 – 0900 Irritable Bowel Syndrome: Flora, Function, and Fallacies
    Mae Tighe, MD

0900 – 1000 Endoscopic Microsurgery: The Next Frontier in GI Endoscopy
    Michael Karasik, MD

1000 – 1045 Break with Vendors

1045 – 1145 Pancreatic Overview
    James Farrell, MD

1145 – 1245 “Water” Exploring a Basic Element used in GI Endoscopy
    Kristie Briggs, BSN, RN

1245 – 1300 Awards

1300 – 1400 Lunch

1400 – 1500 “Nutrition and Diet in the GI Patient”
    Amy Coates Harvill, APRN, MS-BC

1500 – 1600 “You Want What?” Being prepared…. for the patient with a GI Bleed
    Patti Pontilillo, BSN, RN, CGRN
    Joanne Struble MSHA, BSN, RN, CGRN
Irritable Bowel Syndrome: Flora, Function, and Fallacies

An update on the diagnosis and management of IBS, including newer treatment modalities, the role of the intestinal flora, carbohydrate malabsorption and altered gut motility.

By:

Mae Tighe, MD
Gastroenterology/Western Connecticut Medical Group

Objectives:

At the conclusion of this presentation, the participant will be able to:

- Explain diagnosis of IBS
- Define the pathophysiology of IBS
- Compare testing options available to rule in/out IBS
- List traditional treatment options as well as newer modalities.
- Questions & Answers
Irritable Bowel Syndrome: Flora, Function and Fallacies
Mae K. Tighe, M.D.
October 22, 2016

IBS: Rome IV Criteria
  Recurrent abdominal pain, on average, at least one day per week
  in the last three months, associated with >= two of the following:
  – Related to defecation
  – Onset associated with a change in stool form
  – Onset associated with a change in stool frequency

IBS affects 15% of North Americans
Global Problem
Most patients manage undiagnosed
2:1 female predominance
More commonly young patients at time of diagnosis
Major burden of chronic illness, lost work, healthcare dollars spent

IBS: Subtypes:
  Diarrhea or constipation predominant, mixed, unclassified
  Equal numbers of patients in each category
IBS: Associated symptoms: urgency, incomplete evacuation, cramping,
bloating, mucus, fibromyalgia, urinary urgency, dyspareunia

IBS should NOT be a diagnosis of exclusion
Most patients can be diagnosed by a good history (symptom-based
diagnosis) and one study showed that only 2-5% ever turn out to have a
significant other diagnosis in long term follow up

Look for Red Flags in the history, physical and labs:
Weight loss, nocturnal awakening, family history of IBD, colon cancer,
heme positive stool, and anemia. Red Flags mean more work up is
warranted.
**Differential Diagnosis of IBS**, some things to think about:
- Inflammatory Bowel Disease: Crohn’s, microscopic colitis
- Infectious: Giardia
- Malabsorption: celiac disease
- Structural: partial small bowel obstruction, colon cancer
- Endocrine: thyroid disease, hormone-secreting tumors
- Psychiatric: anxiety disorder
- Dietary: carbohydrate malabsorption, caffeine

**Pathophysiology of IBS:**

**Motility disorder**
- Alteration in the normal motor function of the gut

**Visceral hypersensitivity: “Brain-gut connection”**
- Studies show lower pain threshold in gut of IBS patients
- Gut hormones such as serotonin may play a role
- Signals back to brain via afferent nerve pathways

**Inflammatory bowel disorder**
- Evidence of increased inflammatory cells on biopsies of intestinal lining

**Post-infectious IBS**
- Up to 30% of IBS cases occur after a GI illness

**Alteration in gut flora**
- Gut microbes may be altered in IBS

**Small intestinal bacterial overgrowth**
- A syndrome of overgrowth of bacterial colonies in the small bowel, which can be seen in patients with motility disorders including IBS patients

**Carbohydrate malabsorption:**
- Our small bowel has a limited capacity to absorb CHOs in our diet and the excess CHOs go to the distal small bowel and colon, leading to fermentation by intestinal bacteria, giving cramping and gas, and diarrhea due to the osmotic gradient created by these sugars
Treatment Options:

Motility/Visceral Hypersensitivity:

**Fiber, Osmotic Laxatives for IBS-C:**
- Bulking fibers: psyllium, inulin – can help IBS-C or D
  - Fibers can worsen bloating
- Osmotic agents: PEG, MOM for IBS-C

Antidiarrheal options for IBS-D: loperamide, Kaopectate, bismuth subsalicylate

**Pro-motility Drugs:**

- Lubiprostone – chloride channel activator - draws fluid into bowel and thereby stimulates peristalsis for IBS-C; the drug may also tighten “leaky gut”
- Linaclootide – peptide which acts on the guanylate cyclase receptor, activates chloride channels, draws fluid into bowel and stimulates peristalsis for IBS-C; increased cGMP may also decrease pain
- Tegaserod – 5HT4 agonist- stimulates serotonin receptor in gut and stimulates peristalsis – for IBS-C- removed from market due to CV side effects
- Alosetron – 5HT3 receptor antagonist – blocks serotonin receptor and slows peristalsis – for IBS-D- available through a limited prescriber program/ black box warning label due to cases of ischemic colitis and constipation at a higher dosage
Alteration in Gut Flora:

Probiotics
Antibiotics: Rifaximin for IBS-D
Bacterial overgrowth breath testing and treatment

Carbohydrate Malabsorption:

Lactose and Fructose breath testing and elimination diets

Low FODMAP Diet
  Fermentable Oligo-, Di-, Monosaccharides and Polyols
  These are CHO's, which are poorly broken down and therefore malabsorbed by many people. They include Fructose, Lactose, Fructans, Galactans and Polyols. These CHO's can act like laxatives and can lead to gas as a byproduct of bacterial fermentation.

Very low CHO diet
  Last resort. People on Atkin's generally get constipated.

Gluten Free Diet
  - Not clear if effective because wheat is a fructan or because there may be gluten sensitive people who do not actually have celiac disease. Worth considering if other options have failed.
Endoscopic Microsurgery (ESD, STER, EFTR, and POEM):
The Next Frontier in GI Endoscopy

By
Michael Karasik, MD
Connecticut GI, PC; Hartford, Bloomfield, Glastonbury, Farmington

Objectives:

At the conclusion of the presentation, the participant will be able to:

- Describe current treatment for resections, dissection, and myotomy.
- Compare microsurgeries for esophagectomy, partial gastrectomy and colectomy for early GI neoplasms and how to better serve this population of patients as well as identify patients who are candidates for these procedures.
- Discuss nursing responsibilities for patients undergoing ESD, STER, EFTR, POEM techniques in the GI lab and how these new endoscopic surgical procedures enhance care.
- Illustrate usefulness of new techniques using data supporting replacement of surgery by endoscopy for curative management of many luminal GI neoplasms, pre-cancers, and achalasia.
Esophageal Cancer = Esophagectomy

ENDOSCOPIC RESECTION OR SURGERY?

FIGURE 1. A, Gross specimen showing distal esophagus and proximal stomach with a distended segment of esophagus and the 13 cm multilobulated mass. B, Close up of esophageal polypoid lesion.

Endoscopic Submucosal Dissection of Superficial Rectal Cancer

NATURAL ORIFICE ORGAN-SPARING ENDOSCOPIC MICROSURGERY

THE NEXT FRONTIER (AT WHARP SPEED)

• Acknowledgements
• Historical
• Rationale for Endoscopic “Surgery” vs. Laparoscopic/Open Surgery
• ESD
• STER
• Endoscopic Suturing
• EFTR
• POEM

ACKNOWLEDGEMENTS

* Endoscopy Nurses of Hartford Hospital
  * Joanne Buchanan, RN
  * Marilyn Tudella, RN
  * Jennifer Gross, RN
  * Samantha Schmal, RN
  * Kathleen VanDeVlis, RN
* Endoscopy Technicians
  * Andrea Rivera
  * Shawn Simmons
  * Catherine Ramirez-Taylor
  * Anastasia
  * Yuri Dominguiz

Special Thanks for Lecture Support: Emily Karaasik (13) and Audrey Karaasik (9)

HISTORICAL PROGRESSION OF GI LUMENAL TUMOR RESECTION

“Non-Invasive” --------------------------------- “Invasive”

POLYPECTOMY

EMR  ESD  EFTR  LAPAROSCOPIC RESECTION  OPEN RESECTION
**HISTORICAL: INVASIVENESS OF ENDOSCOPIC RESECTION**

"Non-Invasive" —————————— "Invasive"

(Touch) —————————— (No Touch)

**Colon and Stomach**
- Polyps (Basic)
  - Carcinoids
  - GIST/Leiomyomas?

**Duodenum**
- Polyps
  - Carcinoids

**Esophagus**
- Anything

**MANAGING EARLY LUMINAL GI NEOPLASMS**

A PARADIGM SHIFT FROM SURGERY TO ENDOSCOPY

**Surgery**
- Traditional
  - Definitive w/ LN sampling: Esophagectomy, Gastrectomy, Colectomy, Whipple
  - Significant complications (Short and Long term)

**Endoscopic (Microsurgery)**
- Curative, Healed
  - Organ sparing
  - Significantly lower complication rate than surgery
  - Does not eliminate the ability to have surgery, if still needed

---

**RATIONAL FOR ENDOSCOPIC THERAPY**

Large Laterally Spreading/Complex Colon Polyps

- 75% Removable Endoscopically (Center of Excellence)
- Non-removable due to nonlifting in 30% and severe cancer in 4%
- Cancer progression in 2-5% if non-removable vs Surgery (best AE data)
- LOS reduced by 2-3 days
- 16-32% Residual Adenoma w/Piecemeal EMR Resection (vs < 3% w/ESD)
  - Significantly less with APC of edges
- 24% Adverse events w/ Surgery of Benign Lesions vs. 5% w/Endoscopy
  - Up to surgical 4-6% mortality (Multicenter Review of > 15K open resections)

II. Texas MD Anderson Cancer Center: Raju et al., GIE, 2016;84(2):232-40.

**Rationale for Endoscopic Therapy of Early Cancers**

T1 Tumor and LN Metastases

<table>
<thead>
<tr>
<th></th>
<th>Esophageal (SCCA)</th>
<th>Esophageal (AdenoCa)</th>
<th>Gastric</th>
<th>Colon</th>
</tr>
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<tbody>
<tr>
<td>m1</td>
<td>0%</td>
<td>0%</td>
<td>0-0.4%</td>
<td>0%</td>
</tr>
<tr>
<td>m2</td>
<td>3%</td>
<td>3%</td>
<td>0-2.3%</td>
<td>10%</td>
</tr>
<tr>
<td>m3</td>
<td>5%</td>
<td>5%</td>
<td>2-3%</td>
<td>20%</td>
</tr>
<tr>
<td>sm2</td>
<td>15-30%</td>
<td>15-45%</td>
<td>2-3%</td>
<td>10%</td>
</tr>
<tr>
<td>sm3</td>
<td>15-50%</td>
<td>15-45%</td>
<td>20%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Assumptions:
- No U Invasion, Wall-Mod. Differentiated Tumors, No Tumor Budding
- Good Surgical Candidate

**Early Esophageal Cancer (Tis and T1a N0 M0)**

Endoscopic vs. Surgical Treatment in Elderly Patients

<table>
<thead>
<tr>
<th>60 Day Morbidity %</th>
<th>60 Day Mortality %</th>
<th>2-year Survival %</th>
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<tbody>
<tr>
<td>Surgical</td>
<td>80</td>
<td>6 (18)</td>
</tr>
<tr>
<td>Endoscopic</td>
<td>12</td>
<td>TL</td>
</tr>
<tr>
<td></td>
<td>84 (Adeno)</td>
<td>76 (SCCA)</td>
</tr>
</tbody>
</table>

60 Day Morbidity %: Surgical not reported, Endo reported. 2-year Survival: Surgical not reported, Endo reported

Reference:

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Endoscopic Mucosal Resection of Early Esophageal Cancer

<table>
<thead>
<tr>
<th>Band Placement</th>
<th>1st EMR</th>
<th>2nd EMR</th>
</tr>
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<tbody>
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</table>
Endoscopic Mucosal Resection vs Endoscopic Submucosal Dissection

**Advantages**
- Short duration for small lesions
- Less perforation and bleeding
- En bloc resection possible
- True local curability known

**Disadvantages**
- Risk of recurrence: mucosal and subepithelial
- Pathologic uncertainty: no specimen obtained
- More certain curative margins

**Size Does Matter (If > 15 mm)**

<table>
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<tr>
<th></th>
<th>EMR</th>
<th>ESD</th>
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<tr>
<td>Japan (Esophageal SCCA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk of recurrence with En-bloc Resection</td>
<td>7%</td>
<td>47%</td>
</tr>
<tr>
<td>2-4 pieces</td>
<td>16%</td>
<td>47%</td>
</tr>
<tr>
<td>&gt; 5 pieces</td>
<td>47%</td>
<td></td>
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<table>
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<th>ESD</th>
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<tr>
<td>China (Esophageal SCCA)</td>
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<tr>
<td>En-bloc Resection</td>
<td>45%</td>
<td>100%</td>
</tr>
<tr>
<td>Curative Resection</td>
<td>41%</td>
<td>92%</td>
</tr>
<tr>
<td>Pre-operative Duration</td>
<td>36 +/- 11 min</td>
<td>64 +/- 35 min</td>
</tr>
<tr>
<td>Perforation</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Major Bleeding</td>
<td>2%</td>
<td>17%</td>
</tr>
</tbody>
</table>

1. Ishihara R et al. GIE 2008;67:799-804

**Endoscopic Submucosal Dissection**

**ESD of 6 CM Rectal Adenoma**

**Multifocal SCCA of the Esophagus**

**Esophageal SCCA (Multifocal)**
Endoscopic Submucosal Dissection of Esophagus

- Multifocal SCCA
- En-bloc Resection
- > 50% Circumference

ESD of Barrett's AdenoCa s/p APC x 2 in a Non-Surgical Candidate

DUODENAL BULB CARCINOID
ESD AND CLOSURE

Submucosal Tunneling Endoscopic Resection
STER

ENDOSCOPIC SUTURING- APOLLO

- Needle Advancement
- Defect Closure

Using APOLLO To Prevent Esophageal Stent Migration

- Starting position: No needle on needle driver
- Needle driver in to receiver: Ready to load needle
Needle loaded onto Needle Driver (within receiver)

Backswing with loaded needle

1st suture into stent and back to receiver

Loops into stent - backswing

Suture tied off in tissue above stent

Endoscopic Full Thickness (Wedge) Resection

Organ Sparing

1. ESD
2. Myotomy
3. Closure

CASE 1: GASTROINTESTINAL STROMAL TUMOR

CASE 2: GASTROINTESTINAL STROMAL TUMOR
Video of first EFTR and APOLO closure

COMPLICATIONS OF AGGRESSIVE PROCEDURES
CAN BE AGGRESSIVE
BE PREPARED!

Base of 6 cm Pedunculated Polyp (Duodenum)
Perforation and Bleeding (APOLO - Graham Patch)
Clip Closure

PER ORAL ESOPHAGEAL MYOTOMY (POEM)
ACHALASIA AND SPASTIC ESOPHAGEAL BODY DISORDERS
NO RCT COMPARING PNEUMATIC DILATION, HELPER MYOTOMY, POEM

- POEM: Retrospective Data: Less Pain than LHM, Faster Return to Activities of Daily Living than LHM
- Dysphagia Less Permanent and Inconsistent: LS GIST Instability and Response to PPI's
- Symptom Scores - LHM (median 0) v. POEM (median 2, IQR 0-5), Higher Efficacy
- Common AE's: C/O Bleeding, Cardo-Distortion, Myocardial Ischemia
- Occasional: A/F (< 1/100), Carotid-Arterial, Cervical Perforation, Esophageal
- Early: A/F (4%), Complications: Full thickness 
- Late: Recurrence (<1%), Esophageal Stricture, Pyloroplasty
- Very Rare AE's: Reoperation, Hemorrhage, Aorto-esophageal Fistula

ACHALASIA: Short Myotomy (3 cm above LES to 2 cm below)
SPASTIC BODY DISORDERS: Long Myotomy (Can Be Reflux Lesion or Esophagus)
Controversial: Whether Able to Cut LES (As for Achalasia) vs LES "Normal"

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ENDOSCOPIC FULL THICKNESS WEDGE RESECTION (EFTR)

Per-Oral Endoscopic Myotomy
POEM

1. Mucosotomy
2. Submucosal Tunnel
3. Myotomy
4. Closure

POEM ISSUES

- Managing CTA Still Unlikely: Bases Upon Speed and Muscular Quality & P (Presently) < 40 Cases
- How To Begin GI Expert Triage Endoscopic Fast, Surgical Expert Disagree
- Choosing an Approach:
  - Anterior, Posterior, Lateral
- Multiple Settings:
  - Type of Stones: Diverticular, India Pi or SM Scarring (Division, Pyloroplasty), Tumoral Esophageal, etc?
- Potential Advantages: Can Be Done First And While Other Treatments Fail?
- Potential Complications: Include NCC We May Not Be Able To Manage Ourselves
  - Causes Known Now: Bleeding, Perforation, Reintervention, Cardiac Complications

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THE SECRET TO BUILDING A SUPER ADVANCED INTERVENTIONAL ENDOSCOPY PROGRAM

CORE GROUP OF NURSES & TECHS PERFORMING USUAL ROLES PLUS:

- KNOW THE PROCEDURE: HOW IT CAN BE DONE
- KNOW THE EQUIPMENT: HOW AND WHEN TO USE, HOW TO TROUBLESHOOT
- KNOW THE DISEASE: RECOGNIZE NORMAL ANATOMY AND PATHOLOGY
- ASSIST IN DECISION MAKING:
  - INCISION DIRECTION, POTENTIAL BLEEDING SITES, APPROACH, EQUIPMENT CHOICES
  - ANTICIPATE POTENTIAL COMPLICATIONS AND BE READY IMMEDIATELY TO MANAGE THEM
- SPEAK UP REGARDING ANY CONCERNS AT ANY/ALL TIMES
- BE READY: SOMETIMES ONE GETS ONE CHANCE ONLY FOR SUCCESS
- KEEP DOCTOR CALM AND DON'T PLAY COUNTRY MUSIC

NO OBSERVERS: ALL ACTIVE AND ESSENTIAL PARTNERS

SUMMARY: PARADIGM SHIFT FROM SURGERY TO ENDOSCOPY

- ESD, STER, EFTR: ORGAN-SAVING, CANCER-CURATIVE EN-BLOC RESECTIONS OF EARLY GI TUMORS
- POEM TREATS ADENOCARCINOMA AND OTHER SPASTIC ESOPHAGEAL DISORDERS
- ENDOSCOPIC SUTURING CLOSES PERFORATIONS AND PORTAL VEIN EMBOLISATION, IMMEDIATELY ENSURES STENTS, TIGHTENS ANASTOMOSIS
- HIGHER RISK, LOWER FREQUENCY PROCEDURES: BEST RESULTS WHEN PERFORMED AT
  - HIGHLY EXPERIENCED CENTERS WITH CORE GROUP OF DEDICATED NURSES AND TECHS
- IF REFERRING FOR THESE PROCEDURES PLEASE ATTEMPT TO REDUCE SM FISSURES
  AVOID DEEP EXC, PARTIAL EX, CAUTERY, SUBMUCOSAL INJECTIONS, SPOT WITH 3 CM OF LESION

FINAL FRONTIER?

THANK YOU
Pancreatic Overview:
Precision Medicine and Pancreatic Cancer 2016, from early diagnosis to treatment

By
James Farrell, MD
Smilow Cancer Hospital, Yale New Haven Health

Objectives:

At the conclusion of the presentation, the participant will be able to:

- Understand role of early diagnosis in pancreatic cancer
- Discuss various stages and treatment options for pancreatic cancer
- Compare the role of diagnostic and therapeutic endoscopic ultrasound (EUS) in the management of patients with pancreatic cancer.
“Water”
Exploring a Basic Element used in Gastrointestinal Endoscopy

By

Kristie Briggs, BSN, RN

Objectives:
Discuss the diagnostic and therapeutic uses of water in Endoscopy.
Discuss “Infection Control” measures in Endoscopy.
Identify emerging trends of water in Endoscopy.
Water

*Exploring a Basic Element Used in Gastrointestinal Endoscopy*

*Kristie Briggs, RN, BSN*
Objectives

• Define the basic properties of water.

• Discuss the diagnostic and therapeutic uses of water in Endoscopy.

• Discuss Infection Control measures in Endoscopy.

• Identify emerging trends of water in Endoscopy.
Water (H₂O) is the most abundant compound on Earth's surface.

In nature, water exists as a

- Liquid
- Solid
- Gas

H₂O – water molecules organize through hydrogen bonding (negatively charged hydrogen atoms and a positively charged oxygen atom).
Uses of Water in Endoscopy

Water is standard -

- Used in all endoscopic procedures.
- Necessary for lavage, i.e. debris from suboptimal preps, oozing, mucous, etc.
- Lens washing to aid in visualization.
- Accessories can be
  - Reusable
  - Disposable
Uses of Water in Endoscopy

More recent uses -

- Water Method Colonoscopy*
  - Water infusion in lieu of air insufflation
  - Alternative to glucagon and hyoscyamine for colonic spasms*
  - As reported in literature –
    - Less pain
    - Improved patient procedure tolerance
    - Less expensive than antispasmodic medications
    - Less sedation – potential for reducing the risks of sedation medications
    - Increased polyp detection rates

Uses of Water in Endoscopy


Uses of Water in Endoscopy

Figure 2. Combined type 0-IIa and 0-Is (Pans classification\textsuperscript{16}) adenoma involving one-third to one-half circumference of the second duodenum. A, Appearance before resection. B, The opened duckbill snare is positioned to include normal mucosa at the margins of the adenoma, which has been marked by diathermic “dots” using argon plasma coagulation. C, Appearance after resection. D, Surveillance endoscopy 3 months after resection. Biopsy specimens from the scar site were negative for adenoma.

It has been reported...

• In the US, there are over 20 million GI endoscopic procedures performed annually.*

• Issues related to reprocessing failures have been discussed for decades.

• Recent events have raised the level of concern and instilled a sense of urgency for action, as well as an incentive for change.

• In reality, the true incidence of endoscopy associated infections are impossible to determine.

• So...what do we do?

Water can play a role in the transmission of waterborne disease.

Infectious agents can be transmitted to many people by the use of a common vehicle, thus creating a thread for Hospital Acquired Infections (HAIs).

Water bottles, as a common vehicle, have been implicated as the source of some pathogen outbreaks.
Irrigation in Endoscopy

• Prior to 2002, tap water was routinely used for irrigation in Endoscopy.

• In 2002, SGNA issued the Position Statement: “Sterile water should be used in the water bottle for all endoscopic procedures”.

*SGNA Position Statement: Reprocessing Water Bottles, 2011
"Reprocessing of Water Bottles Used During Endoscopy"

1. “Water bottles should be manually cleaned and high-level disinfected or sterilized on a daily basis.”

(or use disposables)

2. “Sterile water should be used in the water bottle for all endoscopic procedures.”

In addition, all water bottle surfaces should be thoroughly dried to reduce the potential for bacterial colonization prior to storage.
POSITION STATEMENT

Reprocessing of Water Bottles Used During Endoscopy

Disclaimer

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Definitions

For the purpose of this document, SGNA has adopted the following definitions:

- Reprocessing refers to the validated process of cleaning, disinfecting, or sterilizing endoscopes and accessories.
- Water Bottle refers to the water container, cap, and tubing that is used for instillation of air and rinse wash (ASGE, 2011).

Background

There is limited research available on the proper cleaning and reprocessing of water bottles used in endoscopy. Recently, other organizations have advocated changing the water bottle and tubing with each patient however there is no existing data to support this recommendation (American Society for Gastrointestinal Endoscopy [ASGE], 2011). SGNA encourages research on the topic to better define guidelines for the proper reprocessing of the water bottle.

Position

SGNA supports the following positions:

A. The water bottle should be manually cleaned and high-level disinfected or sterilized (according to manufacturer’s recommendations) on a daily basis.

   Prior to storage, there should be no residual fluid or moisture remaining in the water bottle assembly. All water bottle surfaces are thoroughly dried to reduce the potential for bacterial colonization (Alvaredo et al., 2000; ASGE, 2011; SGNA, 2009).

B. Sterile water should be used in the water bottle for all endoscopic procedures (Alvaredo et al., 2000; ASGE, 2011; Beilerhoff et al., 2008).

References


Irrigation – Reusable Water Bottles

Studies have described -

Patient-ready reusable water bottles often do not meet the high-level disinfection criteria for semi-critical medical items, as established by the CDC and FDA.*

The instances of endotoxin contaminated and improperly reprocessed reusable water bottles have been related to breaches in infection control practices, but were still routinely being used in Endoscopy.

As a result, more and more facilities are moving toward disposable irrigation accessories.

What are Biofilms?

*(Some other names – Bioburden, Biodirt)*

- Bacterial in origin and can form in all wet environments, even in intermittently wet environments.
- Biofilms form on living or non-living surfaces in natural, industrial and hospital settings.
- Form glue-like secretions that adhere to each other on a surface and are generated from the cells of microorganisms.
- Frequently embed within a self-produced matrix of extracellular polymeric substance (EPS) - also referred to as *slime*.
Bacterial biofilms –

• Commonly occur in endoscopes and accessories due to improper reprocessing.

• Further, surface defects of scope channels are associated with an accumulation of soil, contributing to biofilm colonization.

• And, use of simethicone may attribute to biofilm build-up, further causing difficulty with cleaning and disinfection of endoscopes.
Biofilms: Why should we care?

- “Microbial biofilms, which often are formed by antimicrobial-resistant organisms, are responsible for 65% of infections treated in the developed world.”

Biofilms can be very resistant

*Providing a safe environment for patients*

Meticulously follow:

- The established cleaning, disinfection, and sterilization guidelines written by regulatory agencies, i.e. FDA, CDC, AORN, SGNA, APIC.
- The manufacturer’s ‘Notes on Use’.
- Infection Control efforts.
- Standard Precautions – Hand washing, wearing Personal Protective Equipment (PPE), etc.

For the 5th year in a row, inadequate reprocessing of endoscopic devices is listed again as one of the TOP 10 Health Technology Hazards (2014).
Flexible endoscopes acquire high levels of microbial contamination because of the body cavities they enter.

Plus, due to their narrow channels and complex design, high-level disinfection of the flexible endoscope poses a particular challenge.

Measures to reduce the risk of potential cross-contamination due to reprocessing lapses are necessary.
Reprocessing Compliance in Endoscopy

Joint Commission targeting GI labs for non-compliance

Regulatory Agencies Watching... and Counting

Virtually everyone involved with GI is aware of the 2008 Joint Commission report in Las Vegas that was tasked to an endoscopy center, comprising a team of 500 nurses, physicians and staff for haphazard IVF. While some of the nurses and doctors at similar sites of violations have been punished, there's no obvious repercussions for the executives.

Meeting Compliance Requirements

Infection control was the primary reason Kaiser Permanente adopted Compliance Kits and the ClingPad. Even says, “We had been carrying the scope on a tray with less and less of tools, but that didn’t protect the scope and would chip badly sometimes on the tray. The tray was doubled to carry and took two hands."

He continues, “The ClingPad has been fantastic. A couple of nurses were resistive at the beginning, but when they saw it was so easy to use and there was no possibility of a contaminated scope slipping out and hitting them in the chest, they changed their minds.”

Rivas is such a strong believer in the value of Compliance Kits that he has shared them with other departments within Baldwin Park Medical Center and has been talking with infection control leaders at other Kaiser facilities.

“Infection control benefits everyone – patients and staff,” Rivas says. “We are absolutely dedicated to following the proper procedures to contain bioburden and achieve the highest levels of cleanliness.”

This article is excerpted from a new white paper, Standardizing Endoscopic Procedures to Achieve Compliance and Increase Efficiency. For a copy, go to www.endocheck.com/compliance or call 866-452-1616.
# Reprocessing Lapses: What Are We Missing?

Cori L. Ofstead, MSPH\(^1\), Alexandra M. Dirlam Langlay, PhD\(^2\), Harry P. Wetzler, MD, MSPH\(^1\), Pritish K. Tosh, MD\(^2\), Todd H. Baron, MD\(^3\)

\(^1\)Ofstead & Associates, Inc., Saint Paul, MN; \(^2\)Division of Infectious Diseases and \(^3\)Division of Gastroenterology & Hepatology, Mayo Clinic, Rochester, MN

<table>
<thead>
<tr>
<th>Geographic location</th>
<th>Facility types</th>
<th>Errors exposing patients to contaminated scopes</th>
<th>Patients notified</th>
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</thead>
<tbody>
<tr>
<td>Colorado</td>
<td>Medical center</td>
<td>Improper cleaning</td>
<td>71</td>
</tr>
<tr>
<td>Minnesota-1</td>
<td>ASC; Outpatient clinic; 5 hospitals</td>
<td>7 incidents reported: Improper cleaning/HLD; Reprocessing single use device; Inadequate training</td>
<td>6 to 2,600 per incident</td>
</tr>
<tr>
<td>North Carolina</td>
<td>Hospital</td>
<td>No cleaning/sterilization of one channel</td>
<td>10</td>
</tr>
<tr>
<td>New Jersey</td>
<td>ASCs</td>
<td>Improper reprocessing; Unchanged water/cleaning solution</td>
<td>NR</td>
</tr>
<tr>
<td>Ontario</td>
<td>Clinic</td>
<td>Multiple cleaning/HLD breaches</td>
<td>6,800</td>
</tr>
<tr>
<td>Louisiana</td>
<td>Medical center</td>
<td>Wrong HLD temperature</td>
<td>360</td>
</tr>
<tr>
<td>British Columbia</td>
<td>Hospital</td>
<td>Bioburden allowed to dry before cleaning</td>
<td>536</td>
</tr>
<tr>
<td>California</td>
<td>Hospital; Surgery center</td>
<td>Improper HLD; Expired disinfectant</td>
<td>3,400</td>
</tr>
<tr>
<td>Minnesota-2</td>
<td>Medical center</td>
<td>No HLD of one channel</td>
<td>2,600</td>
</tr>
<tr>
<td>Florida</td>
<td>Two acute care hospitals; Cancer treatment center</td>
<td>Improper cleaning of elevator channel</td>
<td>191</td>
</tr>
<tr>
<td>Georgia</td>
<td>Surgery center</td>
<td>Wrong HLD time</td>
<td>1,300</td>
</tr>
</tbody>
</table>
Let’s Discuss Endoscope Basics

- Light Guide Tube
- Control Body
- Internal Instrument Channels
- Insertion Tube
- Bending Section
- Video Remote Switches

![Endoscope Image]
Endoscope Functionality

Utilizes an air and water system –

- Air for insufflation is provided by internal air pump.

- Water for rinsing the lens is by pressurized water bottle.
Endoscope Functionality

Auxiliary Water Channel

- An open, dedicated channel controlled by the irrigation pump.

- Its only function is for irrigation of the lumen to optimize visualization.
Flexible Endoscopes

Sample Schematic of Scope Channels
Irrigation in Endoscopy

Pumps
Irrigation Accessories

Port Connectors

Reusable/Reprocessed
   Single-use

Disposable
   Daily-use

Disposable
   Single-use

Port connectors attach the output tubing from an irrigation pump to the auxiliary/forward water jet channel of the endoscope.
Reusable (Reprocessed) versus Disposable

- CLEANING
- COST
- CONVENIENCE
- COMPLIANCE

Reusable

Disposable
Sterile disposable irrigation accessories for Daily Use includes:
- Water bottles (sterile)
- Water bottle caps
- Tubing sets
- Port Connectors

Sterile disposable irrigation accessories for Single Use includes:
- Port Connectors
- Endoscopy Channel Adapter with Back Flow Valve
After testing the function of the endoscope suction and air/water valves:

- Secure all irrigation tubing connections using aseptic technique.
- Prime the irrigation tubing and the endoscope’s auxiliary/forward water channel with sterile water.
- Very important - observe for water flowing from the distal endoscope tip.
- Ready for use.
Irrigation – Patient Safety

- Comprehensive and intensive training, as well as periodic repeat training for all instrument reprocessing staff is necessary.

- If reusable items cannot be adequately cleaned and reprocessed, then sterile, disposable items should be used.

- Manufacturer’s ‘Instructions For Use’ outline validated best practices. The IFUs must be strictly followed.

Note: If contamination is suspected, replace all involved or potentially involved components.
Irrigation Accessories

Making informed decisions

Additional considerations...

Are the products -

• Latex-free?
• DEHP-free?
What is Latex?

• What is latex? It is a natural rubber harvested from certain trees.

• With the increased use of latex, particularly in the 1980’s, a dramatic emergence of latex allergy evolved.
The Problem with Latex

...Allergies

Symptoms can include any of the following:

- skin redness
- itching
- urticaria hives or welts
- angioedema
- runny nose
- sneezing
- rhinitis
- nasal congestion
- redness, itching or tearing eyes
- conjunctivitis
- periorbital edema
- asthma: chest tightness, wheezing, or shortness of breath
- **Anaphylaxis (shock)!!**
What is DEHP?

- DEHP is a plasticizer (softener) which is added to polyvinyl chloride (PVC) to create flexibility, strength and bondability.

- Most medical devices contain 20-40% DEHP by weight, but PVC tubing may contain up to 80% DEHP.

- DEHP does not chemically bind to PVC; therefore, leaching can occur when a medical device comes into contact with fluids, lipids, and/or heat.

Summary of FDA Safety Assessment

• September 5, 2001 the FDA warned that some medical products made from PVC expose patients to unsafe amounts of DEHP.

• The FDA further recommended that health care practitioners take action to reduce exposures.

The Problem with DEHP

San Francisco Chronicle on June 9, 2005

Toxic agent found in treated newborns is linked to plastic

By Jane Kay

Researchers have found a plastic-softening chemical used in some medical devices in the systems of newborn babies getting treatment in intensive-care units at high enough levels to drive...

Kaiser Permanente, Alta Bates Summit Medical Center, Catholic Healthcare West and the John Muir Medical Center in Walnut Creek, among others, already are buying mostly DEHP-free plastic devices, and pressuring manufacturers and suppliers to produce safe alternatives, according to representatives.

In addition, the American Academy of Pediatrics and the California Medical Association have recommended against using...
Health Care Institutions Undertaking Efforts to Reduce Polyvinyl Chloride (PVC) and/or Di(2-Ethylhexyl) Phthalate (DEHP)
Now...

...let’s dive into the therapeutic uses of water in GI endoscopy
Therapeutic Applications of Water/Fluid

0.9% Sodium Chloride (Normal Saline) is isotonic and can be used as a tissue dissection or injection medium.
Water jet technology has been used since the early 1970’s for precision industrial cutting:

- Cardboard
- Disposable diaper lining material
- Toilet paper
- Insulating material
- Soft gasket material
- Carpet material for automotive applications
- Food products
- Components for shoes and leather products
During the 1980’s, water jet technology using saline was adapted for surgical dissection, particularly as a vessel-sparing method to reduce blood loss during liver surgery:

- Pump mechanism forces a fine saline stream through a small applicator tip at high pressures.

- Selectively separates soft tissue, such as parenchymatous organs, skeletonizing vital structures without damaging fibrin-rich structures i.e. blood vessels.

- Chief advantage is the absence of heat – no thermal damage to tissue.
Evolution of Water Jet Technology

Submucosal Injection

- Water jet technology was first used in GI in 2006 for needle-free submucosal injection using saline.
- The water jet applicator delivers a 120 micron high-pressure stream via a flexible needle-free probe, breaching the mucosa.
- The desired fluid cushion is formed in the submucosa, sparing fibrin rich structures such as the muscularis propria.
Why Submucosal injection?

Submucosal injection provides an additional cushion to protect the muscularis and also aids in dispersing electrosurgical current during electrosurgical procedures, including APC.

### Submucosal Injection Therapy
Commonly Used Fluid Mediums

As reported in literature (Note: most are used off-label)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>0.9% sodium chloride / normal saline (NS)</th>
<th>Vasoconstrictors</th>
<th>Tissue staining solutions</th>
<th>Sodium hyaluronate (SH)</th>
<th>Hydroxypropyl methylcellulose (HPMC)</th>
<th>Hypertonic solutions</th>
<th>Electrolytic solutions</th>
<th>Colloidal solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Approved and most common</td>
<td>• Epinephrine • Used in attempts to decrease the risk of bleeding</td>
<td>• Indigo Carmine and Methylene Blue • Used to differentiate pathological and non-pathological tissues</td>
<td>• Long-lasting bleb, very expensive</td>
<td>• Inexpensive and accessible solution • Creates long lasting lifts with minimal harm to the injected tissue</td>
<td>• 20% Glucose, 20% Mannitol, and Glycerol • Longer lasting bleb • Increased tissue damage has been reported</td>
<td>• Hyaluronic acid (HA) • Type of Glycosaminoglycan • Long-lasting fluid cushion • Expensive and lack of FDA approval have limited its use</td>
<td>• Hydroxyethyl starch (HES) • A plasma expanding solution that dissipates slowly</td>
<td></td>
</tr>
</tbody>
</table>

References:
Needle Injection Technique

Saline-Assisted Polypectomy

- Technique first used in 1955 during rigid sigmoidoscopy; in 1973 used in flexible colonoscopy.

- Frequently used for large flat polyps.

- Submucosal space is injected with saline, creating a cushion to protect the muscularis propria.

- Offers traction to the tissue, facilitating resection.

Needle-Free Injection Technique

Mucosal Elevation in Human Subjects utilizing a novel Hand-Held Needle-Less System
KL Obstein¹, CC Thompson¹, D Maurice², EL Matthes³, DL Carr-Locke¹
¹Department of Medicine, Brigham and Women’s Hospital, Boston, MA, USA
²ERBE-USA, Marietta, GA, USA

Results
All 15 patients (40% female, median age 63.5 [51-89] years) had successful mucosal lifts performed without perforation or other acute complication. Twelve patients had colonic lesions (2 ascending, 5 transverse, 1 hepatic flexure, 2 sigmoid, 2 rectum) and 3 had upper gastrointestinal lesions (1 esophageal, 1 gastric antrum, 1 duodenal). Median lesion size was 3 [1.5-8] cm diameter with a median injection volume of 18 [5-62] cc normal saline. All 15 nurses who utilized the needle-less injection system rated the device as simple to use. The endoscopist rated all needle-less injections as simple to use. All resections were completed successfully [Figure 2].

Figure 1. Hand-Held Needle-Less System

- The needle-free submucosal saline injection technique evolved further, with introduction of a hand-held injection system in 2008.
- Cost effective alternative.
- Alternative to conventional submucosal saline fluid cushion with needle.
Submucosal Fluid Injection
Needle-Free Injection

Benefits:

• Angle-Independent, can be used during scope retroflexion.

• Can be performed with previous intervention with scarring.

• No scope damage.

• No staff needle injuries.

• Finds the submucosal plane.

• Enough force to breach the mucosa, sparing fibrin-rich structures such as the muscularis propria.
Submucosal injection provides an additional cushion to protect the muscularis and also aids in dispersing electrosurgical current during electrosurgical procedures, including APC.

Making Alphabet Soup
Endoscopic Mucosal Resection - EMR

Most lesions are less than 2cm
Resected Piecemeal or En bloc

Developed for removal of sessile lesions and pathology confined to superficial layers of GI tract.

Studies suggest most common techniques:
- Injection-assisted EMR
- Cap-assisted EMR
- Ligation-assisted EMR

Image compliments of:
Kenneth F. Binmoeller, M.D.
Submucosal Fluid Injection

Common Techniques

EMR – Injection Assisted

1. Marking
2. Submucosal Injection
3. Snaring
4. Cutting

EMR – Cap Method

1. Submucosal Injection
2. Pre-looping
3. Suctioning
4. Snaring
5. Cutting
Submucosal Fluid Injection

Another Common Technique

Cap & Ligation Method EMR
EMR with Submucosal Injection – Case Study

- 54-year old female
- Screening colonoscopy
  - 5 cm adenomatous growth sigmoid colon.
  - Biopsies revealed a tubulovillous adenoma.
- Referred for EMR
- Endoscopic ultrasonography
  - Thickening of the mucosa with preservation of the submucosa and muscularis propria layers.
- Saline-assisted piecemeal EMR performed.

*Case study and images compliments of Kenneth F. Binmoeller, M.D*
En bloc Resection

- Less invasive than surgery
- Technically challenging and complex - greater risks
- Allows intact specimens – optimal pathological assessment
- Attempt curability
- Inadequate reimbursement

Many types of accessories are available
Steps for ESD:

1. Lesion marking

2. Submucosal Injection

3. Initial/circumferential cutting

4. Dissection with hemostasis
(B.H. Min- Dig. Endos.)
Endoscopic submucosal dissection with a water-jet HybridKnife (ESDH) of mucosal and submucosal lesions in the upper GIT

Horst Neuhaus, M.D.
Evangelisches Krankenhaus
University of Duesseldorf
Germany
Peroral Endoscopic Myotomy for the Treatment of Achalasia: A Prospective Single Center Study

Daniel von Renteln, MD, Haruhiro Inoue, MD, Hiromi Minami, MD, Yuki Birgit Werner, MD, Andrea Pace, MD, Jan Felix Kersten, MSc, Chressen Catharina Much, MD, Guido Schachschal, MD, Oliver Mann, MD, Jutta Keller, MD, Karl-Hermann Fuchs, MD and Thomas Rösch, MD.
2010 ASGE VIDEO FORUM

Endoscopic Submucosal Myotomy for the Treatment of Achalasia

Stavros N. Stavropoulos
In summary...

- Water is the most abundant compound on the earth’s surface. Today, we have explored how water is used daily in diagnostic and therapeutic GI endoscopy, and how it can play a role in the transmission of waterborne diseases.

- Staying well-informed on evidenced-based practices, as well as current regulations, position statements, and guidelines set forth by governing bodies (i.e. SGNA, ASGE, AORN, Joint Commission, CDC, Infection Control, etc.) enhances our ability to make critical decisions, while promoting positive patient outcomes and safety.
“Nutrition and Diet in the GI Patient”
Exploring nutritional and dietary concerns with regard to a variety of GI conditions ~ Celiac Sprue, GERD, and IBD, as well as a discussion of a novel endoscopic procedure for weight loss.

By

Amy Coates Harvill, APRN, MS-BC

Objectives:

At the conclusion of the presentation, the participant will be able to:

- Discuss the impact of diet and nutrition in a variety of GI disorders.
- Describe nutritional deficiencies associated with a variety of GI conditions.
- Compare different modalities available to patients for weight loss.
- Identify the latest advances in endoscopic weight loss technology
Nutrition, Diet, & Weight Loss in the GI Patient

Amy Coates Harvill, APRN, MS-BC

Learning Objectives:

• Identify nutritional deficiencies associated with a variety of GI conditions

• Discuss the impact of diet & nutrition in the treatment of a variety of GI disorders

• Discuss modalities for weight loss, including diet, surgical, and the latest advances in endoscopic weight loss technology

Multifactorial Treatment of GI Diseases

• Diet may be a trigger for disease process or exacerbation

• Diet may be therapeutic in treatment of disease or improvement of symptoms

• Disease process or treatment may lead to nutritional deficiencies

Celiac Sprue

• Definition: genetically-based autoimmune disease that causes inflammation of the proximal small bowel

• Inappropriate T-cell mediated immune response to ingested gluten, found in wheat, barley, and rye

• Intestinal villi become flattened, decreasing absorptive surface area and enzymes. Blunted crypts cause mucosal malabsorption

• Biopsies show increased intraepithelial lymphocytes, changes in villous structure

• Serology: presence of antibodies

• Endoscopically: "scalloped" appearance of duodenum

• Consequences of untreated celiac:
  - Nutritional deficiencies: Iron, folate, calcium, Vitamin D, Fe, Mg, zinc
  - Abnormal LFTs (initial)
  - Symptoms: diarrhea, abdominal pain, fatigue, joint pain, headaches, anemia, weight loss, bloating, numbness, peripheral neuropathy

• Concomitant risk of non-Hodgkin's lymphoma, squamous cell esophageal CA, Type 1 DM, autoimmune thyroid disease, Addison's disease, lupus, Sjogren's syndrome, psoriasis, hyperthyroidism, osteoporosis

Celiac Sprue: Treatment

• Gluten-free diet is the ONLY treatment currently available; must be followed lifelong

• Surface cells of mucosa replaced within 14 days

• Recovery of villi usually occurs within 6 months, but can take up to 5 years

• Refractory celiac sprue (rare): villi do not recover despite gluten-free diet; Rx steroids

• Future therapies: gluten-degrading enzyme supplements, genetically modified gluten-free grains, immunotherapy

Inflammatory Bowel Disease

• Crohn’s and Ulcerative Colitis (UC): inflammatory disease affecting the lumen of the intestinal tract. Altered innate and adaptive immune system response leads to proinflammatory cytokines & interleukins.

• Causes: genetic susceptibility, combined with diet, lifestyle, gut microbiota, environmental triggers.

• Symptoms include diarrhea, abdominal pain, rectal bleeding, and extraintestinal manifestations such as joint pain, fatigue, dermatologic conditions (such as EN).

• Crohn’s can affect entire GI tract; UC limited to colon only. Therefore, malabsorption often more problematic in Crohn’s than UC.

• Nutritional deficiencies in IBD:
  - Iron, Vitamin C, Ca++, Mg, zinc, protein
  - May have decreased intake due to weight loss
  - Protein malabsorption from malabsorptive enteropathy or strictures
  - Vitamin malabsorption

• Dietary treatment:
  - Avoid irritants (fiber, lactose, gluten)
  - Replace vitamins/minerals/electrolytes if low
  - Antioxidants, omega-3/fish oil may be beneficial in reducing inflammation
  - Probiotics & prebiotics
  - Phytochemicals: turmeric, capsaicin, cloves, ginger, anise, fennel, basil, rosemary, garlic, pomegranate may help suppress inflammatory pathways
Fat Malabsorption Syndrome

- Causes: Crohn’s disease, celiac sprue, esophageal-pyloric malformation, bariatric surgery, chronic pancreatitis, small bowel resection, Whipple or partial pancreatectomy, bacterial overgrowth syndrome
- Dietary treatment: limit dietary fat, correct nutritional deficiencies, use medium-chain triglycerides (MCTs) which require less lipase and bile for absorption, more easily absorbed than other fats
- Nutritional deficiencies: fat soluble vitamins (A, D, E & K); protein-calorie deficit

GERD: Gastroesophageal Reflux Disease

- Incidence: 19 million in US
- Symptoms: Heartburn, acid regurgitation, dysphagia, chest pain, globus sensation
- Complications: Esophagitis, Barrett’s esophagus, stricture
- Causes:
  - Primary Causes: Weak lower esophageal sphincter (LES); LES hypotension
  - Secondary Causes: hiatal hernia, disease states, pregnancy, smoking, medications, increase in gastric volume or abdominal pressure
- Dietary factors:
  - Treat underlying disease process (ie Crohn’s)
  - Bile acid sequesterants
  - Pancreatic enzyme supplements
  - Antidiarrheals OK
  - Probiotics may be of benefit

Irritable Bowel Syndrome

- Definition: a functional GI disorder, characterized by at least 3 months of continuous or recurring symptoms of abdominal pain or discomfort relieved with defecation or associated with a change in frequency or consistency of stool
- Diet is a key factor in treatment of IBS
- Diet, stress often causative factors. Serotonin receptors (90-95% in gut) mediate intestinal motility, secretion & sensation.
- Approx 10% of IBS pts begin having symptoms following an acute GI illness

Low-FODMAPs Diet

Foods to Avoid on a Lactose Free Diet

<table>
<thead>
<tr>
<th>Lactose</th>
<th>Artificial cream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whey powder</td>
<td>Feta</td>
</tr>
<tr>
<td>Caseinate</td>
<td>Goat</td>
</tr>
<tr>
<td>Condensed milk</td>
<td>Curr</td>
</tr>
<tr>
<td>Skimmed milk powder</td>
<td>Ricotta</td>
</tr>
<tr>
<td>Cream</td>
<td>Cheese</td>
</tr>
<tr>
<td>Modified milk</td>
<td>Margarine</td>
</tr>
<tr>
<td>Evaporated milk</td>
<td>Butte</td>
</tr>
</tbody>
</table>

Fermentable oligosaccharides, disaccharides, monosaccharides, and polyols are short-chain carbohydrates that have poor absorption, osmotic activity, and rapid fermentation.

Foods to Avoid on a Gluten Free Diet

Lactose intolerance is not usually complete; many patients will tolerate harder/aged cheeses such as cheddar or swiss, and may tolerate small amounts of lactose, such as milk in their coffee. It is up to each patient to determine their level of intolerance.
**Specific Carbohydrate Diet**

**Foods ALLOWED**
- Vegetables (besides carrots) (all are allowed except root vegetables and those with high oxalates)
- Fruits (except bananas and cherries)
- Eggs, dairy, and meat
- Nuts

**Foods NOT ALLOWED**
- Sugar, hydrogenated fats, processed carbohydrates, starches
- High fiber ingredients
- All processed foods such as bread, cakes, cookies, hot dogs, chips, sodas, etc.
- Certain spices, herbs, and seasonings

**Overweight and Obesity**
- More than 2/3 of Americans are overweight (BMI>25)
- More than 1/3 of Americans are obese (BMI>30)

**Complex, multifactorial problem: genetic, social, behavioral, cultural, physiologic, metabolic, & environmental factors**
- Solution is not simple!

**Dietary Treatment**
- Pharmacologic Treatment
- Surgical Treatment/Bariatric surgery
- Endoscopic nonsurgical weight loss devices
- All of the above strategies incorporate dietary modifications!

**Comparison of Diet Programs**

<table>
<thead>
<tr>
<th>Diet</th>
<th>Caloric Content</th>
<th>Nutrition Adequacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical American Diet</td>
<td>1800 kcal, 37% fat, 50% carb, 10% protein</td>
<td>Varies</td>
</tr>
<tr>
<td>Low-Carb Diet (Atkin’s, Zone, SugarRx, Protein Power)</td>
<td>1200 kcal, 60% fat, 20% carb, 15% protein</td>
<td>Deficient in thiamine, B1, B2, B3, B5, B6, B12, vitamin A, C, D, E, K, folate, copper, iron, calcium, magnesium, zinc, manganese, selenium, iodine, phosphorus, potassium, sodium, sulfur, copper, iron, cobalt, nickel, molybdenum, vanadium, and chromium</td>
</tr>
<tr>
<td>Moderate Macronutrient Diet (USDA Pyramid, DASH, American Diabetes Assoc, MyPlate, Jenny Craig)</td>
<td>1450 kcal; 13% fat, 50% carb, 30% protein</td>
<td>Low in vitamin A, B1, B2, B3, B5, B6, B12, vitamin D, vitamin E, calcium, phosphorus, magnesium, iron, zinc, thiamine, folate, potassium, and sodium</td>
</tr>
<tr>
<td>Low &amp; very low-fat diet (Dean Ornish, Volumetrics, Pritikin)</td>
<td>1200 kcal; 25% fat, 50% carb, 20% protein</td>
<td>Deficient in thiamine, B1, B2, B3, B5, B6, B12, vitamin A, C, D, E, K, folate, copper, iron, calcium, magnesium, zinc, manganese, selenium, iodine, phosphorus, potassium, sodium, sulfur, copper, iron, cobalt, nickel, molybdenum, vanadium, and chromium</td>
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**Nutrition & Diet for Weight Management**
- Slow & steady weight loss is optimal; initial goal should be 1% weight loss from baseline; thus reasonable. Individualized planned low-calorie diet with 500-1000 kcal deficit leading to 1 to 2 pounds lost per week is ideal.
- Weight cycling (“yo-yo dieting”) leads to higher body fat percentage, lower metabolic rates, and higher BMI.
- Increased physical activity helps with weight loss by burning calories, increases cardiovascular fitness, and decreases abdominal fat. Goal: at least 30 minutes of moderate activity most days of the week.
- "Fad" diets are often ineffective or even unsafe. Very low-calorie diets (VLCD) can cause orthostatic hypotension, sodium depletion & depressed nervous system function. Diets very low in carbohydrates can increase risk of heart failure due to sodium and fluid imbalances, high LDL, and total cholesterol due to increased protein and fat intake, and metabolic abnormalities due to increased ketones. Diets that limit intake to only a few foods can be deficient in key nutrients.

**The Zone Diet: Low Carbohydrate**

**Atkin's Diet - Low Carbohydrate**
DASH Diet – Moderate Macronutrient

Ornish Diet – Low Fat

Medications Used for Weight Reduction

- Phentermine (Adipex, Suprenza, Qsymia) – Appetite suppressant. Side effects include GI distress, insomnia, excitability, dry mouth. Use limited to less than 3 months. Combo with topiramate can also cause elevated HR, teratogenicity, metabolic acidosis, and psychiatric adverse events. Weight loss 4–6% with drug alone.

- Orlistat (Xenical (Rx), Alli (OTC)) – Decreases pancreatic lipase and fat absorption. Diarrhea/leakage may occur, esp if consuming >90g fat. Long-term tolerability. Approved for BMI >30 or >2 with additional risk factors. May decrease absorption of fat-soluble vitamins. Weight loss 8% when combined with behavioral approaches (Rx).

- Dextroamphetamine, methamphetamine – Stimulates CNS activity, appetite suppressant, sympathomimetic. High abuse/dependency potential. Use short term in monitored programs. Potential adverse effects include HTN (severe), elevated HR, insomnia, psychosis, mania, MI, stroke, cardiomyopathy, seizures, withdrawal.

- Lorcaserin (Belviq) – 5HT2C receptor agonist – promotes satiety. Potential side effects include valvulopathy, cognitive impairment, psychiatric disorders, hypoglycemia.

- Naltrexone/buproprion (Contrave) – Opioid receptor antagonist/inhibits neuronal uptake of norepinephrine and dopamine; exact mechanism of action for weight loss unknown. Potential side effects include neuropsychiatric disorders, depression, MI, HTN, seizures, glaucoma – angle closure. Common SE’s include nausea, constipation, headache.

New USDA Food Guide Recommendations

Surgical Options for Weight Loss

- Gastric Bypass: Donut-shaped saline-filled band is placed around the stomach, creating a small upper pouch. Limits ability to ingest large amounts of food; meal size limited to ½ – 1 cup.

- Gastric Sleeve: ~75% of stomach removed, leaving a narrow tube or “sleeve.” Reduces volume of stomach.

- Sleeve Gastrectomy: ~75% of stomach is removed, leaving a narrow tube or “sleeve.” Reduces volume of stomach.

Indications: BMI >40 (>35 w/ complicating factors A/W obesity such as heart disease, DM Type 2, obstructive sleep apnea) Weight loss attempts by other means (ie diet) have been unsuccessful.

- Pros: Adjustable, reversible. Less invasive surgery (laparoscopic)

- Cons: Less dramatic weight loss. Side effects: vomiting, band slippage (rare)
Surgical Options for Weight Loss

Indications: BMI >40 (>35 w/ complicating factors A/W obesity such as heart disease, DM Type 2, obstructive sleep apnea)

Weight loss attempts by other means (ie diet) have been unsuccessful

- Roux-en-Y Gastric Bypass: stomach is divided into 2 portions; upper portion connected to jejunum, bypassing the duodenum
  - Pros: Swift & dramatic weight loss; often durable
  - Cons: Malabsorption of Ca++, iron, B12; dumping syndrome. More invasive surgical procedure than banding or sleeve. Hernias and gallstones more likely than with other procedures.

- Biliopancreatic Diversion w/Duodenal Switch: More drastic than Roux-en-Y; approx. 70% of stomach removed, more of small intestine bypassed.
  - Pros: similar to Roux-en-Y, more pronounced
  - Cons: Malabsorption and dumping syndrome more pronounced than traditional Roux-en-Y

Maestro Device: Implanted electrical stimulator, stimulates vagus nerve to send satiety signals to brain. 5 minutes on, 5 minutes off while awake. FDA approved 1/2015
  - Pros: minimally invasive surgical procedure; removable
  - Cons: requires charging 1 to 2x per week; side effects include nausea, vomiting, heartburn, chest pain, dysphagia. High cost: 20-25K, currently not covered by insurance

Endoscopic Weight Loss Options

Endoscopic Sleeve Gastroplasty
  - Transoral, plications made inside lumen of stomach to create a vertical sleeve
  - Mayo pilot study: 51% of body weight in first 6 months
  - Pros: Reversible, dramatic weight loss; nonsurgical
  - Cons: Not quite as dramatic a weight loss as laparoscopic sleeve. Newer procedure, longterm data not yet available

ReShape Integrated Dual Balloon System, Orbera Intragastric Balloon System; both FDA approved in 2015
  - Endoscopic balloon placement
  - Pros: Temporary, noninvasive, less cost than bariatric surgery, no malabsorption.
  - Cons: Pts must continue dietary & lifestyle modifications after balloon removal. Potential complications: nausea, PUD, balloon deflation/migration

AspireAssist
  - Approved June 2016, for pts with BMI 35-55 who have been unable to lose weight
  - Endoscopically placed device with an abdominal wall port
  - Patient connects to external flushing device up to 30 minutes after meals to drain remaining stomach contents
  - In clinical trial, pts lost average of 12.7% of body weight in 1 year
  - Pros: Decreases caloric absorption approx. 30%
  - Cons: Longterm device, side effects include GI upset, nausea, diarrhea, port site infections or inflammation

Q & A
“You Want What?”
Being prepared for low volume high acuity interventions for the patient with a GI bleed.

By

Patti Pontolillo, BSN, RN, CGRN
&
Joanne Struble, MSHA, BSN, RN, CGRN

Objectives:

At the conclusion of the presentation, the participant will be able to:

- Review etiologies of bleeding
- Discuss the initial management of the GI Bleed patient
- Explain the specific tools used by the GI staff for hemostasis
- Understand the role of the GI nurse and tech in the care of the GI Bleed Patient
YOU WANT WHAT??
DEALING WITH THE HIGH ACUITY LOW VOLUME BLOOD BLEEDING EMERGENCIES IN GI

OBJECTIVES

▪ REVIEW THE ETIOLOGIES OF GI BLEEDING
▪ DISCUSS THE INITIAL MANAGEMENT OF THE GI BLEED PATIENT
▪ EXPLAIN THE SPECIFIC TOOLS USED BY GI STAFF FOR HEMOSTASIS
▪ UNDERSTAND THE ROLE OF THE GI NURSE AND TECH IN THE CARE OF THE GI BLEED PATIENT

“I CAN SMELL A GI BLEED FROM ALL THE WAY DOWN THE HALL…”

GI BLEEDING

UPPER
▪ PROXIMAL TO THE LIGAMENT OF TREITZ
▪ 300,000 HOSPITAL ADMISSIONS YEARLY
▪ 3.5-10% MORTALITY
▪ MORE PREVALENT THAN LOWER GI BLEEDS
▪ ENDOSCOPY SHOULD BE PERFORMED WITHIN 24 HOURS

LOWER
▪ DISTAL TO THE LIGAMENT OF TREITZ
▪ USUALLY HEMODYNAMICALLY STABLE BLOOD LOSS
▪ STOPS SPONTANEOUSLY 80-85% OF THE TIME
▪ URGENT COLONOSCOPY DOES NOT ALTER OUTCOMES

GI BLEEDING

▪ 50% OF UGI BLEEDS PRESENT WITH HEMATEMESIS (VOMITING BLOOD)
▪ 11% OF BRISK UGI BLEEDS HAVE HEMATOCHESIA (PASSAGE OF FRESH BLOOD IN THE STOOL)
▪ MELENA (BLACK, TARRY STOOLS) DEVELOPS WITH APPROXIMATELY 150-200ML OF BLOOD IN THE UGI TRACT AND THE STOOL TURNS BLACK AFTER ABOUT 8 HOURS OF SITTING IN THE GUT

BLEEDING SCORES

Glasgow-Blachford Score
Likelihood of intervention for UGI bleed

Rockall Score
Risk of adverse outcome from UGI bleed
GI BLEEDING CAUSES: A MNEMONIC

<table>
<thead>
<tr>
<th>A: Angiodysplasia/AVM</th>
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<tbody>
<tr>
<td>B: Bowel Cancer</td>
</tr>
<tr>
<td>C: Colitis</td>
</tr>
<tr>
<td>D: Diverticulitis/Diverticular Bleed/Duodenal Ulcer/Dieulafoy lesion</td>
</tr>
<tr>
<td>E: Epistaxis/Eosophagus/cancer, esophagitis, varices, tears)</td>
</tr>
<tr>
<td>F: Fistula (anal, aortoenteric)/Fissure/Foreign Body</td>
</tr>
<tr>
<td>G: Gastric (cancer, ulcer, gastritis)</td>
</tr>
<tr>
<td>H: Hemorrhoids</td>
</tr>
<tr>
<td>I: Infectious Diarrhea/IBD/Ischemic Bowel</td>
</tr>
</tbody>
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A: Angiodysplasia/AVM

B: Bowel Cancer

C: Colitis

D: Diverticular/Duodenal Ulcer, Dieulafoy Lesion

E: Esophagus- Cancer, Erosive Esophagitis, Mallory-Weiss Tear, Varices
F: Fistula (A-E); Foreign Body

G: Gastric- Cancer, Erosive Gastritis, Ulcer

H: Hemorrhoids

I: Ischemic Bowel, Infectious Diarrhea, IBD

PATIENT ASSESSMENT

- ABC’s
- ABDOMINAL EXAM
- SYMPTOMS
- DIAGNOSTICS (VS, LABS, EKG, XRAY)
- HISTORY
  - ANTICOAGULANTS/NSAIDS
  - ETOH/DRUG USE
  - LIVER DISEASE
  - RECENT ILLNESS/ MEDICAL PROBLEMS
  - WEIGHT LOSS/ BMI
  - NPO STATUS

BE PREPARED

- PROTECT AIRWAY
- POSITION PATIENT
- SUCTION
- 2 IV’S
- LOCATION OF CODE CART/BUTTON
- NECESSARY EQUIPMENT
- CALL A CODE IF...
  - OXYGEN DESATURATION
  - BLOOD PRESSURE DROPPING
  - SEVERE TACHYCARDIA OR BRADYCARDIA
  - EKG CHANGES-QRS WIDENS
  - SEVERE SHORTNESS OF BREATH
  - ALTERED LEVEL OF CONSCIOUSNESS
  - UNCONTROLLED BLEEDING
GI BLEEDING INTERVENTIONS

- HEMOCLOGS
- BANDING
- SCLEROTHERAPY (INJECTIONS)
- GOLD PROBE/BICAP
- ARGON
- MINNESOTA/BLAKEMORE TUBE

HEMOCLOG

- Used to control bleeding from ulcers, post-polypectomy bleed
- Through or over the scope

OVER THE SCOPE HEMOCLOG

BLAKEMORE/MINNESOTA TUBE

- Indications
  - Esophageal or gastric varices
  - Tear at the G-E Junction
- Contraindications
  - Bleeding stopped
  - Recent esophageal gastric junction surgery
  - Known esophageal strictures
- Complications
  - Esophageal rupture
  - Esophageal or gastric necrosis
  - Airway obstruction

BLAKEMORE OR MINNESOTA TUBE

• Blakemore Placement
  - Sengstaken-Blakemore Tube
  - Salem Sump
  - 60 ml Luer-lock Syringe
  - 60 ml Slip-tip Syringe
  - 2 christmas tree to male luer lock converters
  - 3 three-way stopcocks
  - 3 medlock caps
  - Surgilube
  - Roller-bandage (Kling)
  - 1 one-liter bag of crystalloid
  - Optional: 2 Hollister ETAD ET tube securing devices
  - Possible Need: Laryngoscope, McGill Forceps, Hemostat

Gastric Port Set-Up

Esophageal Port Set-Up

How to Do It

1. Patient should be intubated and the head of the bed up at 45 degrees.
2. Test balloons on Blakemore and fully deflate. Mark salem sump at the 50 cm mark of the Blakemore with the tip 2 cm above gastric balloon and then 2 cm above esophageal balloon.
3. Insert the Blakemore tube through the mouth just like an NGT. You may need the aid of the laryngoscope and sometimes McGill forceps. Make sure the depth-marker numbers face the patient's right-side.
4. Stop at 50 cm. Test with slip syringe while auscultating over stomach and lungs. Inflate gastric port with 50 ml of air.
5. Get a chest x-ray to confirm placement of gastric balloon in stomach.
6. Inflate with additional 200 ml of air (250 ml total)
7. Apply 1 kg of traction using roller bandage and 1 liter IV fluid bag hung over IV pole. Mark the depth at the mouth. The tube will stretch slightly over the next 10 minutes as it warms to body temperature.
8. After stretching, the tube may be secured to the ETAD tube holder.
9. Insert the salem-sump until the depth marked gastric is at 50 cm on the Blakemore. Suction both Blakemore lavage port and salem sump. You may need to wash blood clots out of the stomach with sterile water or saline.
10. If bleeding continues, you will need to inflate esophageal balloon:
11. Pull salem sump back until the esoph. mark is at the 50 cm point of the Blakemore. Attach a manometer to the second 3-way stopcock on the esophageal port of the Blakemore. Inflate to 30 mm Hg. If bleeding continues, inflate to 45 mm Hg.
12. Consider switching traction to Hollister ETAD Device.

SOURCE: EMCRIT.ORG

You want the Blakemore Tube???

“I've never done that!!!”

Cheat sheet can be found at EMCrit.org
**BLAKEMORE REMOVAL**

- Maximum of 24-36 hours for esophageal balloon and 48-72 hours for the gastric balloon
- Tamponade must be discontinued in stages
- Deflate esophageal balloon first, wait 24 hours to monitor for bleeding recurrence (re-inflate balloon if necessary)
- Deflate the gastric balloon once no further bleeding noted and wait 24 hours to monitor for bleeding (re-inflate if necessary)
- Once there has been no bleeding for 24 hours, the balloon lumen can be cut and the tube slowly and carefully removed

**BLEEDING KIT**

- Quick access to the supplies needed...

**PEARLS AND TAKE-AWAYS**

- Be prepared for everything!
- Create GI bleeding kits
- Create cheat sheets/step by step instructions
- Keep current
- Monthly inservices
- Product champions
- Utilize reps for education

Keep calm and carry on!

**REFERENCES**

- [Google images](http://www.ovesco.com/index.php?id=33)
- [https://www.youtube.com/watch?v=sl5CjtzFV8](https://www.youtube.com/watch?v=sl5CjtzFV8)
- [https://en.wikipedia.org/wiki/Glasgow-Blatchford_score](https://en.wikipedia.org/wiki/Glasgow-Blatchford_score)
Thank-you for attending CTSGNA’s 24th Beyond The Scope Program