Managing Ileal Pouch-anal Anastomosis Patients with IBD

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Indications for Colectomy in UC
J, K Pouches vs. Ileostomy

Brooke Ileostomy  Kock Pouch  Pelvic J Pouch

Anatomy of Pelvic Pouches

Afferent limb (neo-TI)
Tip of “J”
Efferent limb
Outlet/cuff/anal transitional zone

“J”  “S”  “W”
## Disorders of the Ileal Pouch

<table>
<thead>
<tr>
<th>Surgical/Mechanical</th>
<th>Inflammatory/Infectious</th>
<th>Functional</th>
<th>Neoplastic</th>
<th>Systemic/Metabolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Anastomotic leak</td>
<td>• Pouchitis</td>
<td>• Irritable pouch syn.</td>
<td>• Pouch/ATZ Neoplasia</td>
<td></td>
</tr>
<tr>
<td>• Pelvic sepsis</td>
<td>• Cuffitis</td>
<td>• Anismus</td>
<td>• Lymphoma</td>
<td></td>
</tr>
<tr>
<td>• Sinus</td>
<td>• Crohn’s dis.</td>
<td>• Poor compliance</td>
<td>• Squamous cell cancer</td>
<td></td>
</tr>
<tr>
<td>• Fistula</td>
<td>• Small bowel overgrowth</td>
<td>• Pseudo-obstruction/me gapouch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Strictures</td>
<td>• inflammatory polyps</td>
<td>• Hypersensitive suture lines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Afferent limb syn.</td>
<td>• “Pouchalgia fugax”</td>
<td>• “Pouchalgia fugax”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Efferent limb syn.</td>
<td></td>
<td></td>
<td>• Anemia</td>
<td></td>
</tr>
<tr>
<td>• Infecundity</td>
<td></td>
<td></td>
<td>• Bone loss</td>
<td></td>
</tr>
<tr>
<td>• Sexual dysfunction</td>
<td></td>
<td></td>
<td>• Vit D/B12 def.</td>
<td></td>
</tr>
<tr>
<td>• Portal vein thrombi</td>
<td></td>
<td></td>
<td>• Renal stone</td>
<td></td>
</tr>
<tr>
<td>• Prolapse</td>
<td></td>
<td></td>
<td>• Celiac dis.</td>
<td></td>
</tr>
<tr>
<td>• Twist/volvulus</td>
<td></td>
<td></td>
<td>• High PTH</td>
<td></td>
</tr>
<tr>
<td>• Foreign body</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Updated from Shen B, et al. *AJG* 2005;100;93-101

## Owl’s Eyes and Pouch Dysfunction

- Anemia
- Bone loss
- Vit D/B12 def.
- Renal stone
- Celiac dis.
- High PTH

*Updated from Shen B, et al. *AJG* 2005;100;93-101*
S pouch (no owls’ eyes)

Afferent Limb Syndrome

Efferent Limb Syndrome


Twisted Pouch
Kock Pouch

Pathogenetic Model of Pouchitis

Why not in FAP Pouches?

- Abnormal Immune Response
- Genetic Susceptibility
- Mechanical factors (e.g., ischemia)
- Luminal factors (e.g., NSAIDs)

Therapeutic Target

- Alteration commensal bacteria (dysbiosis)
- Pathogens

Navaneethan U & Shen B. AJG 2010;105:51-64
**Natural History of Pouchitis**

- Ischemia
- Surgery-associated anatomic comp
- Refractory Pouchitis
- Relapsing Pouchitis
- Episodic Pouchitis
- NI pouch or FAP pouch

**Disease Activity**

- Months

**Medications**

- Metronidazole
- Cipro
- Rifaximin
- Tinidazole
- Antifungals
- FMT

**Endoscopic Clues for Etiology of Pouchitis?**

- Hemorrhagic
- NSAID
- C. Diff
- Ischemia

- Fever-CMV

**Chronic Pouchitis**
Risk Factors for Pouchitis

- Extensive UC
- Backwash ileitis
- Primary sclerosing cholangitis
- P-ANCA
- IL-1ra, NOD2 polymorphisms
- NOD2 gene polymorphisms
- Precolectomy thrombocytosis
- Non-smoker
- NSAIDs
- Arthralgia
- Male patients

Achkar JP, et al. CGH 2005
Shen B, et al AJG 2005
Meier CB, et al. IBDJ 2005
Shen B, et al. CGH 2006
Fleshner P, et al. CGH 2007
Koltun W, et al. DCR 2011
Wu XR, et al. ACG 2014

Management Algorithm in Our Pouch Center

Symptomatic Pouch Patients

Exclusion of Mechanical Complications

Inflammatory Disorders

Cuffitis  Pouchitis  Crohn’s Disease

Microbe-related  Immune-mediated  Ischemia-related
Management Algorithm in Our Pouch Center

Symptomatic Pouch Patients

Exclusion of Mechanical Complications

Inflammatory Disorders

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Crohn’s Disease

Microbe-related

Immune-mediated

Ischemia-related

Dysbiosis

Pathogens

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Management Algorithm in Our Pouch Center

Symptomatic Pouch Patients
→ Exclusion of Mechanical Complications
→ Inflammatory Disorders
  - Cuffitis
  - Pouchitis
  - Crohn's Disease
    - Microbe-related Immune-mediated Ischemia-related

Dysbiosis-associated Pouchitis

- Diarrhea
- Urgency/seepage
- Abdominal pain/cramp

- NO
  - Fever, chills
  - Bleeding
  - Leukocytosis
### RCT of Antibiotic Therapy in Pouchitis

<table>
<thead>
<tr>
<th>Authors</th>
<th>N</th>
<th>Type of pouchitis</th>
<th>Agent</th>
<th>Days</th>
<th>Median ∆ in PDAI score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madden1994</td>
<td>13</td>
<td>Chronic pouchitis</td>
<td>Metro 400 mg TID vs. placebo</td>
<td>7</td>
<td>N/A</td>
</tr>
<tr>
<td>Shen 2001</td>
<td>16</td>
<td>Acute pouchitis</td>
<td>Cipro 1 g/d vs. n Metro. 20 mg/kg/d</td>
<td>14</td>
<td>Cipro -6.7 Metro -5.9</td>
</tr>
<tr>
<td>Isaacs 2007</td>
<td>8</td>
<td>Acute or Chronic pouchitis</td>
<td>Rifaximin 1.2 g/d vs. placebo</td>
<td>28</td>
<td>-1.6 in study group</td>
</tr>
</tbody>
</table>

### Open-labeled Trials of Antibiotics in Pouchitis

<table>
<thead>
<tr>
<th>Study</th>
<th>N</th>
<th>Type of pouchitis</th>
<th>Drugs</th>
<th>Duration (days)</th>
<th>Median ∆ in PDAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shen 2008</td>
<td>51</td>
<td>Antibiotic dependent p.</td>
<td>Rifaximin 200 mg/day</td>
<td>90</td>
<td>-3</td>
</tr>
<tr>
<td>Shen 2007</td>
<td>16</td>
<td>Chronic antx refractory p.</td>
<td>Cipro 1 g/day + Tinidazole 15 mg/kg/d</td>
<td>28</td>
<td>-7</td>
</tr>
<tr>
<td>Gionchetti 2008</td>
<td>18</td>
<td>Chronic antx refractory p.</td>
<td>Cipro 1 g/day + Rifaximin 2 g/d</td>
<td>15</td>
<td>-7</td>
</tr>
<tr>
<td>Abdelrazaq 2005</td>
<td>8</td>
<td>Chronic antx refractory p.</td>
<td>Cipro 1 g/m/d + Rifaximin 2 g/d</td>
<td>14</td>
<td>-12</td>
</tr>
<tr>
<td>Kornbluth 2006</td>
<td>16</td>
<td>Chronic antx refractory p.</td>
<td>Rifaximin 0.6-0.8 g/d</td>
<td>21</td>
<td>Clin response in 81%</td>
</tr>
<tr>
<td>Minura 2002</td>
<td>44</td>
<td>Refractory acute p.</td>
<td>Metro. 800-1000mg/d + Cipro 1 gm/d</td>
<td>28</td>
<td>-9</td>
</tr>
<tr>
<td>Hurst 1996</td>
<td>52</td>
<td>Acute antx responsive p.</td>
<td>Metro. 75O mg/d or Cipro 1 g/d</td>
<td>7</td>
<td>Clin response in 94%</td>
</tr>
</tbody>
</table>
### Probiotics in Primary or Secondary Prophylaxis of Pouchitis

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>N</th>
<th>Design</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gionchetti/Gastro</td>
<td>2000</td>
<td>40</td>
<td>RCT</td>
<td>Relapse 9 mo: 15% vs 100%</td>
</tr>
<tr>
<td>Gionchetti/Gastro</td>
<td>2003</td>
<td>40</td>
<td>RCT</td>
<td>2 (10%) in study group; 8 (40%) in placebo group had pouchitis at 12 mo</td>
</tr>
<tr>
<td>Mimura/Gut</td>
<td>2004</td>
<td>36</td>
<td>RCT</td>
<td>Relapse 9 mo: 6% vs 85%</td>
</tr>
<tr>
<td>Shen/APT</td>
<td>2005</td>
<td>31</td>
<td>Open-labeled</td>
<td>On VSL3 at 8 mo: 19%</td>
</tr>
<tr>
<td>McLaughlin/DDW</td>
<td>2008</td>
<td>13</td>
<td>Open-labeled</td>
<td>Remission 13%</td>
</tr>
</tbody>
</table>

### Management of “Conventional” Pouchitis

- **Pouchitis**
  - **Responded**
    - Infrequent Relapse
  - **Not Responded**
    - Frequent Relapse
    - **Antx-responsive Pouchitis**
      - Antibiotics prn
    - **Antx-dependent Pouchitis**
      - Probiotic or Antibiotic
      - Carbon Microsphere? Lactulose?
  - **Antx-refractory Pouchitis**
    - Cipro + Metronidazole or Rifaximin or Tinidazole x 4 wks
    - Not Responded
      - 5-ASA/steroids/Immunomodulators/Biologics?
Management Algorithm in Our Pouch Center

Symptomatic Pouch Patients

Exclusion of Mechanical Complications

Inflammatory Disorders

Cuffitis

Pouchitis

Crohn’s Disease

Microbe-related

Immune-mediated

Ischemia-related

Dysbiosis

Pathogens

Pathogen-associated Pouchitis

• Fever, chills
• Night sweat
• Weight loss
• Leukocytosis
**Fecal Coliform Culture in Pouchitis**

<table>
<thead>
<tr>
<th>Microorganism</th>
<th>Number Patients</th>
<th>Resistant</th>
<th>Sensitive + Treat</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>E. Coli</em></td>
<td>6</td>
<td>Ciprofloxacín (100%)</td>
<td>Co-amoxiclav (53%)</td>
</tr>
<tr>
<td><em>Klebsiella</em></td>
<td>1</td>
<td>Co-amoxiclav (40%)</td>
<td>Trimethoprim (13%)</td>
</tr>
<tr>
<td>Coliform, not classified</td>
<td>12</td>
<td>Cefixime (60%)</td>
<td>Colistin (33%)</td>
</tr>
<tr>
<td><em>Pseudomonas</em></td>
<td>1</td>
<td>Trimethoprim (73%)</td>
<td></td>
</tr>
<tr>
<td><em>Morganella</em></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4-wk treatment with sensitive antibiotics (N =15):
- Median 24-hr stool frequency: 14 → 9
- Median PDAI symptom score: 4 → 0

McLaughlin SD. *CGH* 2009;7:545

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**Clostridium difficile Infection in Pouch**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>N</th>
<th>Prevalence</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann/ DCR</td>
<td>2003</td>
<td>1</td>
<td>-</td>
<td>Recovered</td>
</tr>
<tr>
<td>Shen/ DDS</td>
<td>2006</td>
<td>1</td>
<td>-</td>
<td>Recovered</td>
</tr>
<tr>
<td>Shen/ CGH</td>
<td>2008</td>
<td>115</td>
<td>18%</td>
<td>Risk factors: Male (OR=5.0)</td>
</tr>
<tr>
<td>Shen/NRGH</td>
<td>2009</td>
<td>1</td>
<td>-</td>
<td>Fatal</td>
</tr>
<tr>
<td>Li,Shen/IBDJ</td>
<td>2013</td>
<td>196</td>
<td>11% (PCR for toxin B)</td>
<td>Refractory/Recurrence to vancomycin</td>
</tr>
</tbody>
</table>

C. diff

C. diff

pouchitis

enteritis
Range of *C. difficile* Pouchitis

Fever, malaise, dehydration

Rx: Erythromycin

Campylobacter Pouchitis

Fever, malaise, dehydration

Rx: Erythromycin

CMV Pouchitis

He XS, Shen B. IBDJ 2010

Candida Pouchitis

Navaneethan U, Bennett A, Shen B. AJG 2010;105:51-64
Histoplasma capsulatum-associated Pouchitis


Management Algorithm in Our Pouch Center

Symptomatic Pouch Patients

- Exclusion of Mechanical Complications
- Inflammatory Disorders
  - Cuffitis
  - Pouchitis
  - Crohn's Disease
    - Microbe-related
    - Immune-mediated
    - Ischemia-related
  - Dysbiosis
  - Pathogens
Ischemic Pouchitis

- Male
- "Difficult pouch surgery" (the issue of "reach")
- Obese or excessive weight gain (>15% of baseline)
- Abdominal surgery (hernia repair, mesh)
- Portal vein thrombi
- Antibiotic refractory
- Concurrent anastomotic leaks or stricture

Imaging Features of Ischemic Pouchitis

Ischemic Pouchitis

Crohn’s Disease


Implication of Dx of Ischemic Pouchitis

- Different from ischemic colitis or mesenteric ischemia
  - Necrosis/bowel infarction hardly occurs
  - Doppler or angiogram often negative
- Potential surgical treatment
  - Lysis of adhesion
  - Pouch revision or redo pouch (J→J; J→K)
Frequency of Chronic Pouchitis with Different Pouch Configurations

- J pouch: 13.0%
- S pouch: 0.0%
- K pouch: 8.3%

N = 215, N = 45, N = 36

Mukewar S, Wu XR, Shen B, JCC 2014

Lysis of Adhesion in Treatment of Ischemic Pouchitis

[Images of medical procedures and stages of treatment]

Cleveland Clinic

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Management Algorithm in Our Pouch Center

Symptomatic Pouch Patients
   ↓
Exclusion of Mechanical Complications
   ↓
Inflammatory Disorders
   ↓
Cuffitis
   ↓
Pouchitis
   ↓
Immune-mediated
   ↓
Crohn’s Disease
   ↓
Microbe-related
   ↓
Dysbiosis
   ↓
Pathogens
   ↓
Immune-mediated Pouchitis

- Pouchitis + enteritis
- Chronic antibiotic-refractory pouchitis
- Concurrent PSC or autoimmune disorders
- Serum autoantibodies
Lab “Pouch Panel”

- CBC, CMP (AKP and Bi)
- IgG1,2,3,4
- ANA
- Microsomal ab
- Celiac disease
- HLA-B27 (if joint symptom)

Management Algorithm in Our Pouch Center

Symptomatic Pouch Patients

↓

Exclusion of Mechanical Complications

↓

Inflammatory Disorders

↓

Cuffitis

Pouchitis

Crohn’s Disease

↓

Immune-mediated

Microbe-related

Ischemia-related

↓

PSC-associated

IgG4-associated

Autoimmune Disorder-associated

Autoinflammatory Disorder-associated
Enteritis in PSC-associated Pouchitis/Colitis + Enteritis

IgG4-associated Pouchitis

Navaneethan U, Shen B. JCC 2011;5:570-6
Autoimmune Disorder-Associated Pouchitis

Normal Pouch

Autoimmune Pouchitis


NAID: NOD2-associated Auto-inflammatory Diseases

Shen B. 2013
IBD/Pouchitis: 
Association w/ Other Immune-mediated Disorders

Extra-intestinal manifestations (EIM)

- Microscopic colitis/celiac disease
- Autoimmune disorders (AlmD)
- Autoinflammatory disorders (AlnD)

IBD/Pouchitis: 
A Part of Immune-mediated Colitis/Enteritis

- IBD/Pouchitis +/- Microscopic Colitis
- Autoimmune Disorders
- Autoinflammatory Disorders
- PSC-associated, IgG4 diseases-related Cord colitis syndrome Post-transplant IBD

Shen B. 2014

Shen B. 2013
Management Algorithm in Our Pouch Center

Symptomatic Pouch Patients

Exclusion of Mechanical Complications

Inflammatory Disorders

Cuffitis

Pouchitis

Crohn’s Disease

Cuffitis: Topical Therapy
Refractory Cuffitis-A Sign of CD?

Ischemic/Collagenous Cuffitis

Shen B, et al. *IBD*J 2010
Lysis Adhesion in Treatment of “Refractory Cuffitis”

Management Algorithm in Our Pouch Center

Symptomatic Pouch Patients

Exclusion of Mechanical Complications

Inflammatory Disorders

Cuffitis

Pouchitis

Crohn’s Disease
Classification of Crohn’s Disease of Pouch

Inflammatory  Fibrostenotic  Fistulizing

Crohn’s Disease in Patients with IPAA

Cumulative Frequency %

N = 1519  N = 272  N = 1816  N = 171  N = 196  N = 222  N = 54
Pouch Failure in Patients with Crohn’s Disease

Cumulative Frequency %

Fazio 1995
Peyrnegre 1999
Duetsch 1991
Sagar 1996
Gemlo 1992
Tulchinsky 2003
Keighley 2000
Deilly 1999

N = 67 N = 79 N = 19 N = 37 N = 13 N = 13 N = 23 N = 8

Open-Labeled Trial Infliximab in Fistulizing Crohn’s Disease of the Pouch

Median f/u = 22 months
N = 26

62% Complete Response
23% Partial Response
15% No Response
33% Pouch Failure

Colombel JF, et al. AJG 2005
Adalimumab for Crohn’s Disease of Pouch

<table>
<thead>
<tr>
<th>Factor</th>
<th>Short term</th>
<th>Long term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical response (N=48)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None (%)</td>
<td>14 (29.2)</td>
<td>22 (45.8)</td>
</tr>
<tr>
<td>Partial (%)</td>
<td>10 (20.8)</td>
<td>10 (20.8)</td>
</tr>
<tr>
<td>Complete (%)</td>
<td>24 (50.0)</td>
<td>16 (33.3)</td>
</tr>
<tr>
<td>Clinical response inflammatory or fibrostenotic disease (N=23)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None (%)</td>
<td>7 (30.4)</td>
<td>12 (52.2)</td>
</tr>
<tr>
<td>Partial (%)</td>
<td>6 (26.1)</td>
<td>4 (17.4)</td>
</tr>
<tr>
<td>Complete (%)</td>
<td>10 (43.5)</td>
<td>7 (30.4)</td>
</tr>
<tr>
<td>Clinical response in fistulizing disease (N=25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None (%)</td>
<td>7 (28.0)</td>
<td>10 (40.0)</td>
</tr>
<tr>
<td>Partial (%)</td>
<td>4 (16.0)</td>
<td>6 (24.0)</td>
</tr>
<tr>
<td>Complete (%)</td>
<td>14 (56.0)</td>
<td>9 (36.0)</td>
</tr>
<tr>
<td>Mucosal healing (%)</td>
<td>20 (41.7)</td>
<td>13 (27.1)</td>
</tr>
<tr>
<td>Pouch failure (%)</td>
<td>NA</td>
<td>9 (18.8)</td>
</tr>
</tbody>
</table>


Chronic Inflammation
Low-grade Dysplasia
High-grade Dysplasia
Invasive Cancer

3 Years
Pouch Cancer/Dysplasia: Is Surveillance Endoscopy Indicated & Adequate?

7 months
# Pouch Neoplasia: Cleveland Clinic Experience N=3203

![Graph showing cumulative incidence of pouch neoplasia over follow-up time](cleveland-clinic-neoplasia-graph.png)

- Adenocarcinoma: 11
- Lymphoma: 1
- SCC: 3
- Dysplasia: 23

---

## Cox Model for Risk Factors for Pouch Neoplasia

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Adjusted HR (95%CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male gender</td>
<td>1.16 (0.56-2.39)</td>
<td>0.686</td>
</tr>
<tr>
<td>Age at pouch</td>
<td>1.01 (0.98-1.04)</td>
<td>0.586</td>
</tr>
<tr>
<td>Duration of UC</td>
<td>1.01 (0.97-1.05)</td>
<td>0.547</td>
</tr>
<tr>
<td>PSC</td>
<td>0.41 (0.05-3.19)</td>
<td>0.394</td>
</tr>
<tr>
<td>Chronic pouchitis</td>
<td>0.69 (0.24-2.00)</td>
<td>0.497</td>
</tr>
<tr>
<td>Extensive colitis</td>
<td>1.53 (0.53-4.39)</td>
<td>0.430</td>
</tr>
<tr>
<td>Colectomy for cancer</td>
<td>13.43 (3.96-45.53)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Colectomy for dysplasia</td>
<td>3.62 (1.59-8.23)</td>
<td>0.002</td>
</tr>
<tr>
<td>Mucosectomy</td>
<td>0.78 (0.34-1.8)</td>
<td>0.559</td>
</tr>
</tbody>
</table>

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Summary and Conclusions

- Mechanical and inflammatory complications of pouch surgery are common
- Pouchitis is a disease spectrum and stratification of possible etiology is possible and important
  - Bacteria-related
  - Immune-mediated
  - Ischemia-related
- *C. difficile* infection is emerging
- Most chronic antibiotic-refractory pouchitis is either immune-mediated or ischemia-related
- *De novo* Crohn’s disease can occur

Thank You!
**Diagnostic Algorithm for Crohn’s Pouch**

Pouch Endoscopy & Biopsy

- Iatrogenic Complications, (fistula, leaks)
- Pouchitis/Ileitis
- Cuffitis
- Antibiotic Failure
- 5-ASA Failure
- 5-ASA Failure
- Crohn’s Disease Suspected
- Crohn’s Disease Confirmed
- Review Colectomy Specimen, Contrasted Enema CTE MRI, EGD, serology?
- Diagnostic/Therapeutic EUA
- Trial of Biologics


**Diagnosis/Management of Pouch Disorders**

Clinical Presentations Consistent with Antibiotic-refractory Chronic Pouchitis

- Pouchoscopy + Biopsy

- Diffuse Pouchitis/Enteritis
- Segmental Pouchitis/Ileitis or Distal Pouchitis ± Cuffitis
- Stricture/Fistula
- Sinus/Obstruction/Structural Disease

- Labs (microbiology, ANA, LFTs, IgG4, celiac/anti-microsomal abs)
- Pathogen-induced Pouchitis
- C. difficile
- CMV
- PSC-associated
- IgG4-associated
- Histology (apoptosis, IgG4, hematoidin)
- Immune-mediated Pouchitis
- Ischemic Pouchitis
- Autoimmune Pouchopathy
- Crohn’s Disease
- Surgical Complications

- Histology, Abdominal Imaging ± Exam under Anesthesia

Shen B. *CGH* 2013
## Endoscopic Predictors of Pouch Failure

### Table: Endoscopic Predictors of Pouch Failure

<table>
<thead>
<tr>
<th>Factor</th>
<th>HR (95% CI)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crohn’s pouch</td>
<td>2.7 (1.2, 6.3)</td>
<td>0.018</td>
</tr>
<tr>
<td>Surgical complications</td>
<td>4.4 (1.7, 11.2)</td>
<td>0.002</td>
</tr>
<tr>
<td>Post-operative biologics</td>
<td>5.3 (2.5, 11.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>2 abnormalities of “Owls’ beak”</td>
<td>3.6 (1.5, 8.7)</td>
<td>0.005</td>
</tr>
<tr>
<td>Cuff endoscopy score</td>
<td>1.5 (1.3, 1.7)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

### Diagram: Cuffitis Diagnosis at the 1st Visit

- **N = 120**
- **5ASA/steroid-responsive Cuffitis**
  - N = 40
  - Crohn’s Disease
    - N = 19
    - Pouch Excision/Revision/Diversion
      - N = 7
- **5ASA/steroid-refractory Cuffitis**
  - N = 58
  - Refractory Cuffitis
    - N = 25
    - Pouch Excision/Revision
      - N = 5
- **5ASA/steroid-dependent Cuffitis**
  - N = 22
  - Surgical Complications (Fistula, Sinus)
    - N = 14
    - Pouch Excision/Revision/Diversion
      - N = 4

---

*Mean duration of IBD before colectomy = 7.4 ± 7.2 yrs
Mean duration of the pouch = 7.1 ± 5.3 yrs*
Bo Shen, MD, FACG

**Refractory Cuffitis - A Sign of CD?**

**Ischemic/Collagenous Cuffitis**

Shen B, et al. *IBDJ* 2010
Lysis Adhesion in Treatment of “Refractory Cuffitis”

Chronic Inflammation | Low-grade Dysplasia | High-grade Dysplasia | Invasive Cancer

3 Years

Copyright 2014 American College of Gastroenterology
Pouch Cancer/Dysplasia: Is Surveillance Endoscopy Indicated & Adequate?

7 months

Cleveland Clinic
Pouch Neoplasia: Cleveland Clinic Experience N=3203

Adenocarcinoma 11; lymphoma 1; SCC 3; dysplasia 23

Cox Model for Risk Factors for Pouch Neoplasia

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Adjusted HR (95%CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male gender</td>
<td>1.16 (0.56-2.39)</td>
<td>0.686</td>
</tr>
<tr>
<td>Age at pouch</td>
<td>1.01 (0.98-1.04)</td>
<td>0.586</td>
</tr>
<tr>
<td>Duration of UC</td>
<td>1.01 (0.97-1.05)</td>
<td>0.547</td>
</tr>
<tr>
<td>PSC</td>
<td>0.41 (0.05-3.19)</td>
<td>0.394</td>
</tr>
<tr>
<td>Chronic pouchitis</td>
<td>0.69 (0.24-2.00)</td>
<td>0.497</td>
</tr>
<tr>
<td>Extensive colitis</td>
<td>1.53 (0.53-4.39)</td>
<td>0.430</td>
</tr>
<tr>
<td>Colectomy for cancer</td>
<td>13.43 (3.96-45.53)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Colectomy for dysplasia</td>
<td>3.62 (1.59-8.23)</td>
<td>0.002</td>
</tr>
<tr>
<td>Mucosectomy</td>
<td>0.78 (0.34-1.8)</td>
<td>0.559</td>
</tr>
</tbody>
</table>

Tight Nipple Valve Stricture

1-Year Budesonide in PSC-associated Pouchitis/Enteritis

<table>
<thead>
<tr>
<th></th>
<th>Pre-</th>
<th>Post-</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afferent limb Endoscopy Score</td>
<td>2.3 ± 1.9</td>
<td>0.8 ± 1.0</td>
<td>0.001</td>
</tr>
<tr>
<td>Pouch Endoscopy Score</td>
<td>2.5 ± 2.2</td>
<td>0.7 ± 0.9</td>
<td>0.001</td>
</tr>
</tbody>
</table>

- N = 18
- Induction: 9mg/day 1 – 3 months
- Maintenance: 3mg/day
- No impact on LFTs

Navaneethan U, Shen B. JCC 2012;6:536-42
PSC-associated Pouchitis/Enteritis

- Long segment of distal small bowel disease in addition to diffuse pouchitis
- Concurrent autoimmune disorders are common (31% vs. 6% in control)
- Budesonide-1st line therapy

Shen B. *IBDJ* 2011;17:1890-900