Colocutaneous Fistula

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Disclosures

• Honoraria
  – Applied Medical
  – Covidien
Colocutaneous Fistula

Common Facts

• They are uncommon
• Usually caused by underlying colonic pathology or a complication from surgery
• Most common cause is diverticulitis
  – 1-4% of patients with diverticulitis
• 50% are asymptomatic, except for external drainage of feces
• Suspect in abdominal or truncal cellulitis

**Symptoms**

- Passage of flatus or feces through the abdominal wall or flank
- Can be via an incision if post-surgical
- Prior to rupture, may be associated with fever, leukocytosis, tachycardia, pain, local peritonitis

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**Classification of fistulas**

<table>
<thead>
<tr>
<th>Category</th>
<th>Type of fistula</th>
<th>Uses of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>Internal vs. external Anatomic course</td>
<td>May suggest cause of fistula</td>
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<tr>
<td></td>
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<td>Assists in planning operative closure</td>
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<td>May predict spontaneous closure</td>
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<tr>
<td>Physiology</td>
<td>Output (ml per day) Low (&lt; 200) Moderate (200–500) High (&gt; 500)</td>
<td>Predicts mortality</td>
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<td>Predicts metabolic derangements</td>
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<tr>
<td>Etiology</td>
<td>By underlying disease process</td>
<td>Predicts closure rate</td>
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<tr>
<td></td>
<td></td>
<td>Predicts mortality</td>
</tr>
</tbody>
</table>
Definition Colocutaneous Fistula

- **Anatomic**
  - Colon to Skin
  - Colon to other visera

- **Physiologic**
  - High output fistulas (> 500 ml/day): small bowel
  - Low output fistulas (< 200 ml/day): colonic

- **Etiologic**
  - Inflammatory bowel disease
  - Colon cancer
  - Diverticulitis/abscess
  - Prior abdominal surgery
  - Fistulas related to malignancy, radiation, or inflammatory bowel disease are less likely to close spontaneously.

Int J Colorectal Dis 1998;13:57-60

Diagnostic Tests

- Computed tomography-determine presence of intraabdominal abscess, define anatomy, source of fistula
- Gastrograffin/barium enema-not reliable, locate fistula 5-80% of the time
- Colonoscopy-help to exclude other pathology

Am J Surg 2003;186:743-6
Eur J Surg 2001;167:924-6
CT Scan

Gastrograﬃn Enema
SOWATS Treatment Guideline

- Sepsis
- Optimization of nutritional state
- Wound care
- Anatomy
- Timing of surgery
- Surgical strategy


Sepsis

- Signs of increased infection parameters
  - Low albumin
  - Positive fluid balance
  - Organ failure

- Antibiotics
- Drain intraabdominal abscesses
Optimization of nutritional state

- Correct fluid and metabolic derangement
  - Start with rehydration and electrolyte correction
  - Start TPN sooner than later
- If output is low can try oral intake and see what happens to volume of output
- Can try low residue diet in these cases
- If wound is difficult to manage or output is too high, TPN better choice

Wound care

- WOCN critical in helping manage CCF
- Prevent skin excoriation
- Collect output
- When wound is also present, may be challenging to prevent leakage and create a system that is manageable
Anatomy

- Imaging studies
  - CT scan
  - Gastrograffin Enema
- Obtain information on:
  - Location of fistula
  - Associated stenosis, obstruction
  - Other associated fistula (to small bowel)

Timing of surgery

- Not until all infections are cleared
- Pt in good physical and nutritional condition
- Anemia, hypoalbuminemia resolved
- Abdominal wall wound soft without local infection
- If spontaneous closure does not occur:
  - Minimum of 6 months after initial surgery if related to postoperative complication
  - Minimum of 6 weeks if related to other pathology
General anatomic characteristics that prevent spontaneous closure

- No resolution of primary pathology/Poor quality of adjacent bowel
- Tract length less than 2 cm
- Bowel wall defect larger than 1 cm
- Complete disruption of the bowel wall or separation of anastomosis
- Distal obstruction
- Associated large abscess


Unfavorable factors that prevent spontaneous closure

- Poor nutrition status
- Sepsis
- Active Crohn’s disease
- Active malignancy
- Foreign bodies
- Epithelialization of the tract
- High output of fistula
- Low serum transferrin(<200 mg/dl)
Expected time period for spontaneous closure

- Fistulas from esophagus to duodenum: 2~4 weeks
- Small bowel fistulas: 40~60 days
- Colonic fistulas: 30~40 days

Surgical strategy

- Surgical resection to remove pathology or postoperative complication (stenosis)
- Wedge resection/ oversew of colon may be feasible in some cases but results inferior
- Often must address presence of an abdominal wall defect
- Proximal protective stoma may be useful in some cases
- Goals of treatment:
  - Reestablish gastrointestinal continuity
  - Secure closure of abdomen
<table>
<thead>
<tr>
<th>Phase</th>
<th>Time Course</th>
<th>Primary goals</th>
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</thead>
<tbody>
<tr>
<td>1. Recognition and stabilization</td>
<td>24-48 hours</td>
<td>Correct fluid and electrolyte imbalances</td>
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<td></td>
<td>Drainage of intra-abdominal abscesses</td>
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<td></td>
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<td>Control of sepsis</td>
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<td></td>
<td></td>
<td>Control of fistula drainage</td>
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<tr>
<td></td>
<td></td>
<td>Ensure adequate skin care</td>
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<td></td>
<td></td>
<td>Aggressive nutritional support</td>
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<tr>
<td>2. Investigation</td>
<td>after 7-10 days</td>
<td>Determine anatomy and fistula characteristics</td>
</tr>
<tr>
<td>3. Decision</td>
<td>up to 4-6 weeks</td>
<td>Determine likelihood of spontaneous closure</td>
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<td>Plan course of therapy</td>
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<tr>
<td>4. Definitive therapy</td>
<td>after 4-6 weeks or 6months for reop</td>
<td>Closure of fistula</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reestablish gastrointestinal continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secure closure of abdomen</td>
</tr>
<tr>
<td>5. Healing</td>
<td>5-10 days after closure onward</td>
<td>Ensure adequate nutritional support</td>
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<td>Transition to oral intake</td>
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</table>

**New Innovations?**

- Fibrin Sealant Injection
- Gelfoam Embolization
- Endoscopic Clipping
- Porcine Small Intestine Submucosa
Fibrin Sealant

- Study of 4 patients, only 1 with CCF
  - Successful closure with injection
    
  Lamont J Am Surg 2002

- Study of 13 pts randomized to receive fibrin glue or routine care
  - Only 1 colocutaneous fistula
  - All fistulas healed
  - Authors noted that fistula output must be low, no mucosa visible and no intraabdominal abscess
    
  Hwang TL, Chen MF Br J Surg 1996

Gelfoam Embolization

28 yr old man
Small bowel resection for inflammatory mass
Developed colocutaneous Fistula from sigmoid
Failed to heal for 12 mo.
Treated with gelfoam
No drainage for 3 year FU

Lisle D et al DCR 2006
Endoscopic Clipping

78 year old man with colocutaneous fistula after pancreatitis
Endoscopic clipping of fistula performed
Normal barium enema 30 days later
Healed site seen 11 days later

Porcine small intestine submucosa

- Case report of two patients, small bowel fistulas
  - Sepsis controlled
  - On TPN
  - Output <200cc/day
- Percutaneous catherization of fistula tract
- Introduction of submucosa rolled up and placed into tract via an introducer
- Both fistulas resolved

Familiari P et al Dig Liv Dis 2003
Conclusions

• Colcutaneous fistulas are rare
• Treatment should be directed by SOWATS guidelines
• Spontaneous closure may occur
• If surgical treatment is needed, timing is critical
• Better to delay to maximize patients clinical condition
• Newer therapies are on the horizon but need further investigation