

Management of Enterocutaneous Fistula

Kelley A. Sookraj, MD
Kings County Hospital Center
August 25th 2011

Case Presentation

- CC: drainage of fluid and air from umbilicus
- HPI: This is a 56 y/o female who underwent a subtotal colectomy with ileorectal anastomosis for recurrent diverticulitis with stricture and obstructive symptoms in December 2010 at another institution.

Postoperatively, she developed an intra-abdominal abscess which was drained by IR, and she was placed on TPN and broad-spectrum antibiotics for presumed leak.

Case Presentation

- HPI: cont'd

After discharge home on oral antibiotics, she presented to KCHC in March 2011 for a second opinion regarding drainage from her umbilicus which was being treated as a suture granuloma.

- PMHx: asthma, diverticulitis, morbid obesity
- PSHx: subtotal colectomy 12/2010
- Allergies: NKDA
- Meds: zyvox, claritin, albuterol inhaler
- SHx: denies smoking, ETOH, IVDA
- FHx: non-contributory

- Radiologic Studies

Barium Enema: contrast filled tract arising from distal ileum adjacent to ileorectal anastomosis



CT scan of Abd/Pelvis: 2.3 x 1.6 x 9cm collection of contrast and gas which appears to be arising from the ileorectal anastomosis



- Flexible Sigmoidoscopy: no evidence of IBD/ lesions
- Vitals: Temp 97.8 F BP 132/64 HR 86 RR 16
- Physical Exam:
 - General: AAOx3
 - Chest: CTA bilaterally
 - CVS: S1S2, rrr
 - Abdomen: midline scar, drainage at umbilicus, soft, NT, +BS
 - Rectal: good tone, no gross blood

- Labs:

CBC: 5.81 / 10.2 / 31.4 / 377

Chem: 139 / 5.0 / 106 / 24 / 15 / 0.58 / 105

LFTs: 6.8 / 3.4 / 32 / 18 / 72 / 0.1

Coags: 9.7 / 23 / 0.9

- intra-op: placement of bilateral ureteral stents, exploratory laparotomy, lysis of adhesions, revision of ileorectal anastomosis, intraoperative colonoscopy
- pathology: perforated ileorectal anastomosis, moderate chronic inflammation

- post-op:

POD #0-3: extubated, A-line and foley d/ced, abdominal binder in place, ambulating

POD #4: SOB, wheezing, tachypneic, tachycardic, pain over midline wound, RA ABG pO₂ 66, CTA neg PE

emesis x1, resp distress requiring intubation, transferred to SICU, febrile, hypotensive, sepsis protocol initiated, midline wound opened, fascial defect at level of umbilicus

POD #5: CT scan Abd/Pelvis: no free air or obvious leak

POD #6: malodorous/feculent drainage from midline wound, TPN, octreotide

- post-op:
POD #7: CT scan Abd/Pelvis confirmed anastomotic leak with collection in RLQ



- post-op:

POD #8: Pt taken to OR for abdominal washout and possible creation of diverting ostomy

Intra-op: frozen abdomen, washout and drainage with placement of Malecot drain near anastomotic leak and 2 large sump drains (LLQ anterior to anastomosis, RLQ posterior), fascial defect closed with Surgisis and vac dressing applied

POD #15: CT scan abd/pelvis – evacuation of previous collection, drains in place with no collection

- post-op:

POD #27: tracheostomy performed

POD #51: BE showed no evidence of leak or filling of LLQ drains

Currently: hemodynamically stable, on TC, (+) flatus and BM, minimal drainage from Malecot and left sump drains, wound granulating with vac dressing in place

www.downstatesurgery.org

Enterocutaneous Fistula

- Enterocutaneous Fistula – abnormal connection between small or large bowel and skin
- Complicated by abscess formation, sepsis, electrolyte derangements, dehydration and malnutrition
- Despite advances with antimicrobial and nutritional therapy, overall mortality rate ranges from 5-20%

www.downstatesurgery.org

Enterocutaneous Fistula

- Epidemiology
 - 75% postoperative
 - 15-25% trauma, cancer, irradiation, IBD, ischemic or infective diseases (TB)
- Etiology
 - majority of fistula formation occurs following abdominal surgery and is related to tissue integrity and healing

- Presentation
 - abdominal pain, distension
 - tachycardia
 - fever
 - drainage of enteric contents from wound
 - peritonitis

- Differential Diagnosis

Anastomotic leak

Unrecognized enterotomy

Fascial suture through bowel

Ischemic bowel segment

Erosion into bowel by suction drains or mesh

Perforated viscous (e.g., peptic ulcer or colonic diverticula)

Local inflammation (e.g., Crohn's disease)

- Classification

Low output < 200 cc/day

Moderate output 200-500 cc/day

High output >500 cc/day

- Factors Inhibiting Spontaneous Closure

High fistula output (>500 ml/24 hours)

Short fistula tract

Abscess

Distal bowel obstruction

Foreign body

Malignancy

Radiation

Steroids

Chronic epithelialization

- Diagnosis
 - GI contrast study (UGI series, BE)
 - CT scan
 - fistulogram

- Treatment

- goals of therapy are early recognition and stabilization to prevent life-threatening metabolic, septic and nutritional complications

- intervention should focus on resuscitation, correction of electrolyte abnormalities, control of sepsis, nutritional support and skin care

www.downstatesurgery.org

Enterocutaneous Fistula

- Treatment: Resuscitation and Electrolyte Disturbances
 - aggressive intravascular volume repletion with crystalloid
 - strict Is and Os, monitor urine output
 - replace electrolytes (K^+ , Mg, HCO_3)
 - monitor fistula output and replace
 - octreotide (\downarrow GI secretions)

- Treatment: Control of Sepsis
 - uncontrolled sepsis is major cause of mortality
 - broad-spectrum antibiotics
 - drainage of intra-abdominal abscess
 - percutaneous
 - surgical (resection, drainage, ostomy)
 - tincture of time and adequate control may result in spontaneous closure

www.downstatesurgery.org

Enterocutaneous Fistula

- Treatment: Nutritional Support
 - severely malnourished, high catabolic state secondary to sepsis
 - protein and caloric requirements: 1.5-2 g/kg/day; 30 kcal/kg/day
 - TPN: high output fistula, uncontrolled intra-abdominal sepsis
 - enteral feeds: associated with increased mucosal integrity and immunologic host defenses; contraindicated with proximal fistulas, bowel obstruction, short gut syndrome

www.downstatesurgery.org

Enterocutaneous Fistula

- Treatment: Skin Care
 - prevent skin maceration and breakdown from corrosive effluent; wound infection
 - utilize paste, zinc, stoma appliances, vac dressing and wound care nurse to control output, protect skin and promote healing

www.downstatesurgery.org

Enterocutaneous Fistula

- Treatment: Definitive Care
 - spontaneous closure occurs approx. 10-40% with conservative management
 - if persistent 4-8 wks after resolution of sepsis and nutritional deficits, will require definitive, elective procedure
 - typically requires delineation of anatomy (preop imaging)
 - Operation: mobilization of bowel, resection of fistula and involved intestinal segment, primary anastomosis

www.downstatesurgery.org

Enterocutaneous Fistula

Management of enterocutaneous fistulae: A 10 years experience

Taggarshe D, Bakston D, Jacobs Michael, Mittal, V; World J Gastrointest Surg
2010 July;2(7):242-46.

- retrospective study; 83 patients; 1997-2007
- aim: compare outcomes of conservative vs surgical treatment of enterocutaneous fistulae
- 58 women; 25 men
- MC cause of fistula was post-operative
- 66 conservative management: NPO, TPN, somatostatin analogue, control of fistula output, skin care; 43 (65%) spontaneous closure

Management of enterocutaneous fistulae: A 10 years experience

Taggarshe D, Bakston D, Jacobs Michael, Mittal, V; World J Gastrointest Surg
2010 July;2(7):242-46.

- 17, plus 18 from conservative arm underwent surgery; 28 (80%) successfully treated
- no statistical difference: length of stay, recurrence rate, mortality
- concluded: mode of treatment is individually based however, conservative management is an important bridge to definitive surgical intervention as it allows for control of sepsis, correction of nutritional status and improvement in wound management

References

1. Cameron et al. Current Surgical Therapy 9th Ed. pgs. 143-145
2. Townsend, Beauchamp et al. Sabiston Textbook of Surgery 17th Ed.
3. Taggarshe D, Bakston D, Jacobs Michael, Mittal, V; World J Gastrointest Surg 2010 July;2(7):242-46.
4. Pritts T, et al; Postoperative enterocutaneous fistula, Surgical Treatment: Evidence-Based and Problem-Oriented, NIH
5. Vikram, K et al; Enterocutaneous Fistula Treatment and Management <http://emedicine.medscape.com>
6. Kaushal, M et al; Management of Enterocutaneous Fistulas; Clinics in Colon and Rectal Surgery, 2004 pgs 79-87
7. Schecter WP, Hirshberg A et al; Enteric Fistulas: Principles of Management, JACS, 2009 article in press