The Complex Abdomen
A Wound Nurse's Perspective

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Disclosure Slide

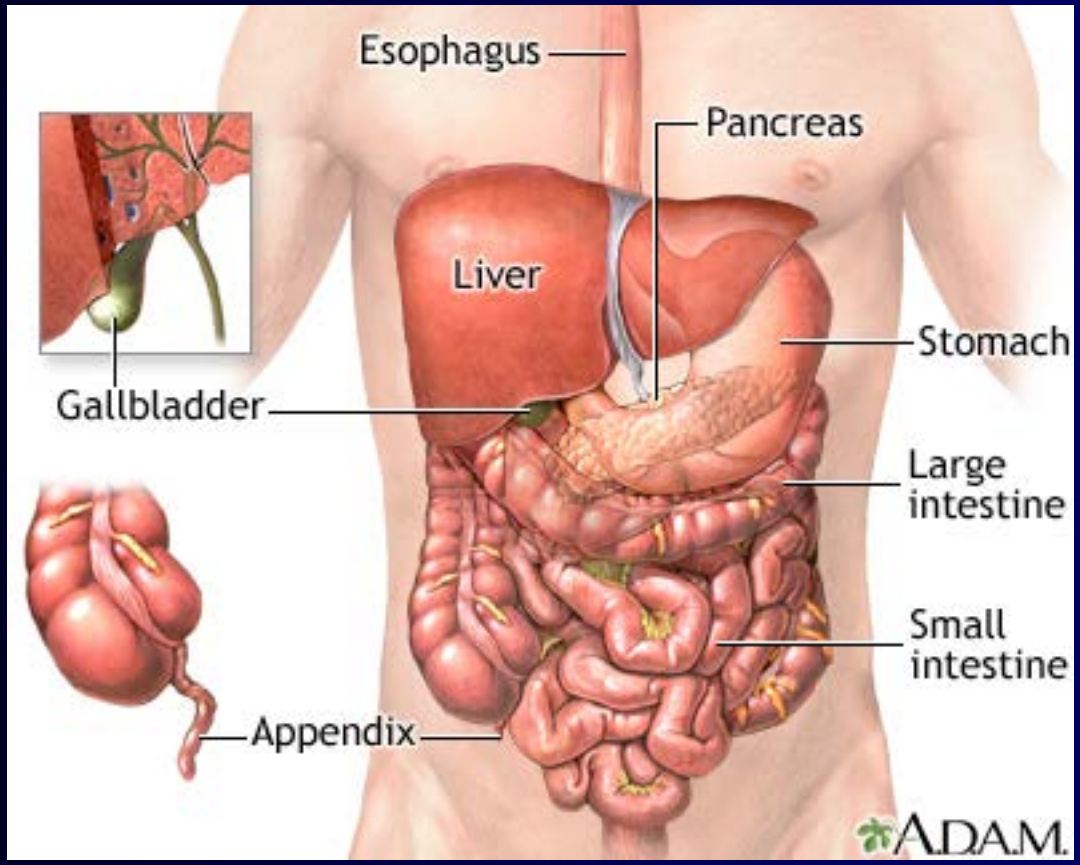
Mary Anne Obst, RN BSN, CWON, CCRN

- **Disclosure of Relevant Financial Relationships**
  - **Acelity Companies (Acelity.com) - Education Consultant**
  - **Fistula Solution Corporation - co-patent owner**
- **Disclosure of Off-Label and/or Investigative Uses**
  - **– I will not discuss off label and/or investigational use of any medications in my presentation.**

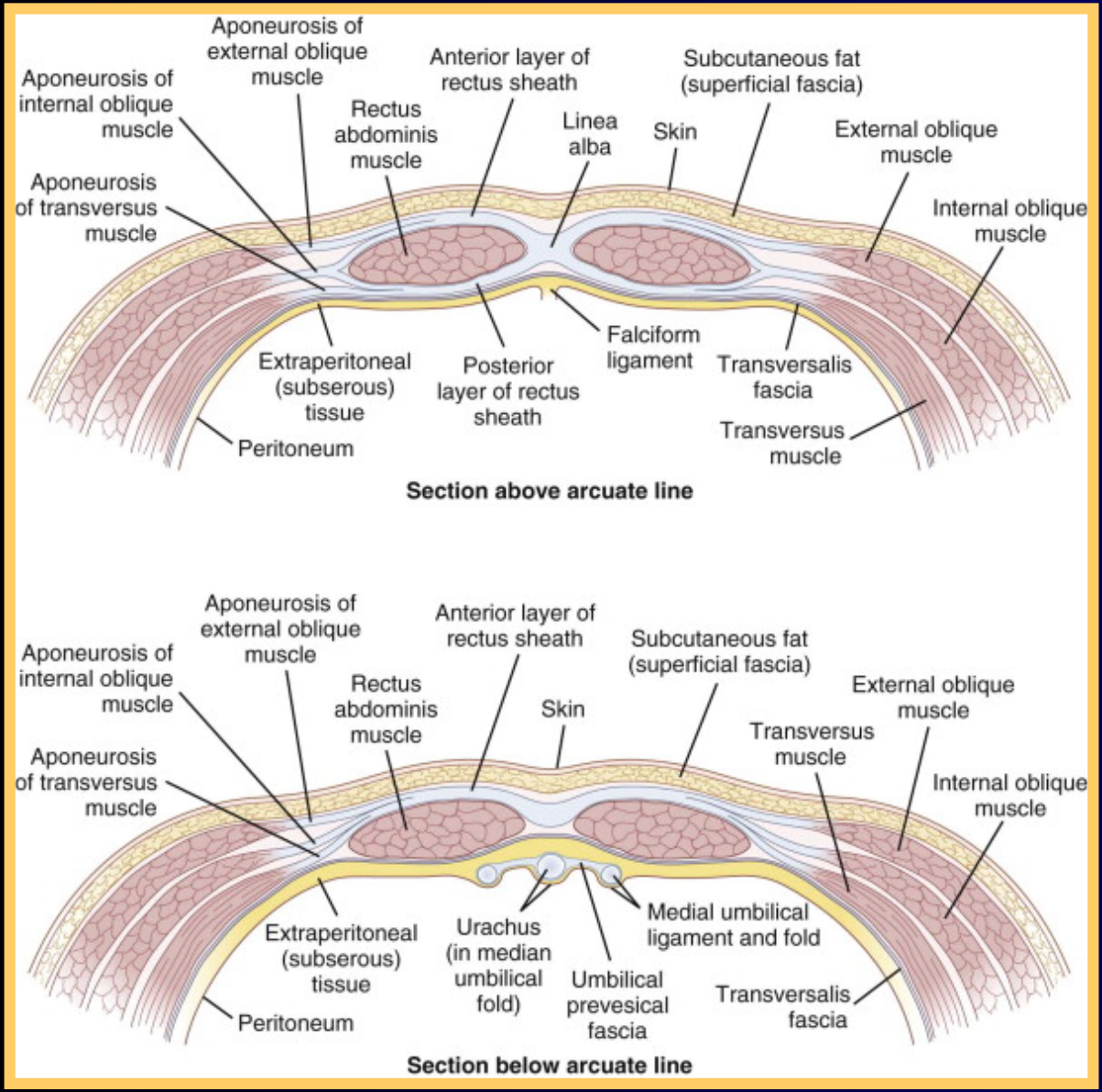
Objectives

- Demonstrate management techniques for complex abdominal wounds
- Demonstrate dressing techniques for enteric fistula management
- Discuss new strategies for the open abdomen

The Amazing Abdomen



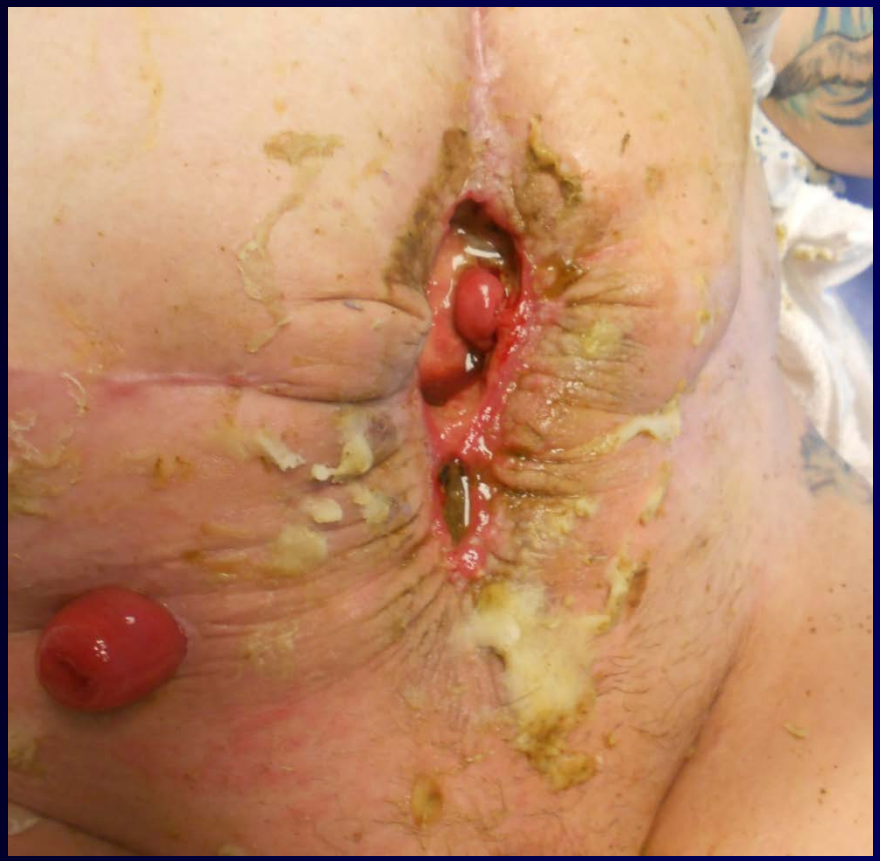
https://www.google.com/search?rlz=1C5CHFA_enUS722US722&tbm=isch&q=anatomy+of+abdomen&chips=q:anatomy+of+abdomen,g_4:abdominal+viscera&sa=X&ved



Cross sections of the rectus abdominis muscle

In: Sabiston Textbook of Surgery: The Biological Basis of Modern Surgical Practice, 19th Edition, 2012, p1130

What is a complex abdomen?



Lessons Learned

- Enteric Fistula output
  - Fistula management principles
  - Many dressings for the ever changing patient
- Poor landing zone for pouches
  - Surgical revision may be necessary
  - Critical thinking – way out of the box
- Non-compliant patient
  - Staff counseling
  - Creative dressing solutions

Notes

Helpful information

- **Short Bowel:**
  - Parrish CR. The Clinician's Guide to Short Bowel Syndrome. Practical Gastroenterology 2005;XXIX(9):67
  - https://shortbowelfoundation.org/get-your-free-copy-today-managing-a-short-bowel-3rd-edition/
  - Oley Foundation (http://www.oley.org), a national independent, non-profit organization that provides information and psycho-social support to consumers of home parenteral and enteral nutrition, helping them live fuller, richer lives.
  - American Society for Parenteral and Enteral Nutrition (A.S.P.E.N) http://www.nutritioncare.org

- **Dressing:**
  - Dressing check list standing orders (attached)
  - Flow chart of decision making for fistula dressings(attached)
  - www.fistulasolution.com

Nutrition Management Protocol for Short Bowel

Goals of Management

1. Maximize the utilization of the existing gut while assuring the patients are provided with adequate nutrients, water and electrolytes to maintain health.
2. Increase nutrient and fluid retention by slowing intestinal transit
3. Control gastric acid hypersecretion
4. Enhance mixing of pancreatic enzymes and bile salts
5. Avoid osmotic agents
6. Treat bacterial overgrowth when necessary

Assess the patients anatomy and stool/ostomy output:
Patient's found to have inadequate functional bowel to support nutrient and fluid requirements:

- 75% loss of small bowel or
- bowel length of 100-200 cm without colon or
- 50 cm of small bowel with a colon

Type of bowel resection	
Colostomy **~ 200-600 ml output/day**	colon ~160 cm length fluid and electrolyte absorption absorbs 1-1.5 liters (4-6 cups) of electrolyte fluids daily soluble fiber beneficial to ferment into short chain fatty acids and provide extra calories (up to 400 calories a day)
Ileostomy w/loss of colon **>1 liter output, usually decreases to ~600 ml/day**	Ileum ~300-400 cm length Slows motility "protective" "ileal break" hormones tell stomach to slow down 95% of bile salts recycled fat soluble vitamin absorption vitamin B 12 absorption Ileum much better at adapting than jejunum
Jejunostomy w/loss of Ileum & Colon **Up to 6 liters of output**	Jejunum ~200-300 cm length Most medications absorbed High fluid and electrolyte losses (Na+, Magnesium, Bicarb) B 12 and fat soluble vitamin absorption lost

Step A		
For All Patients	• Monitor food and fluid intakes • Monitor ostomy output (urine output >1200 ml/day) ? stool hat or cups or # times emptying bag	• Discuss goals of treatment with patient • Referral to RD

Nutrition Management Protocol for Short Bowel

Step B
Output is > Intakes & patient at risk of dehydration/electrolyte derangement

Review Short Bowel Diet – (see full diet attached) *Click on link for diet: Short Bowel Diet*		
With Colon	• Lactose as tolerated • Low fat, High Carb • 5-6 meals/day • avoid oxylates	• Isotonic fluids • Soluble Fiber • Limit Etoh, caffeine
No Colon:	• Lactose as tolerated • High fat, High Carb • Chew foods well • Avoid Concentrated Sweet & hypo/hypertonic fluids • Eat 6-8 smaller meals/day	• Separate solids & liquids • No restriction of oxylates • Drink Isotonic, high sodium fluids • Eat salty snacks, add salt to foods • Limit Etoh, caffeine
Note:	• Avoid Metamucil and other bulk-forming agents in patients with jejunostomies or ileostomies. • A colon is necessary for fiber-containing, bulk forming agens to work. • In high output states, it may draw more fluid into the bowel and potentially drag nutrients out too.	

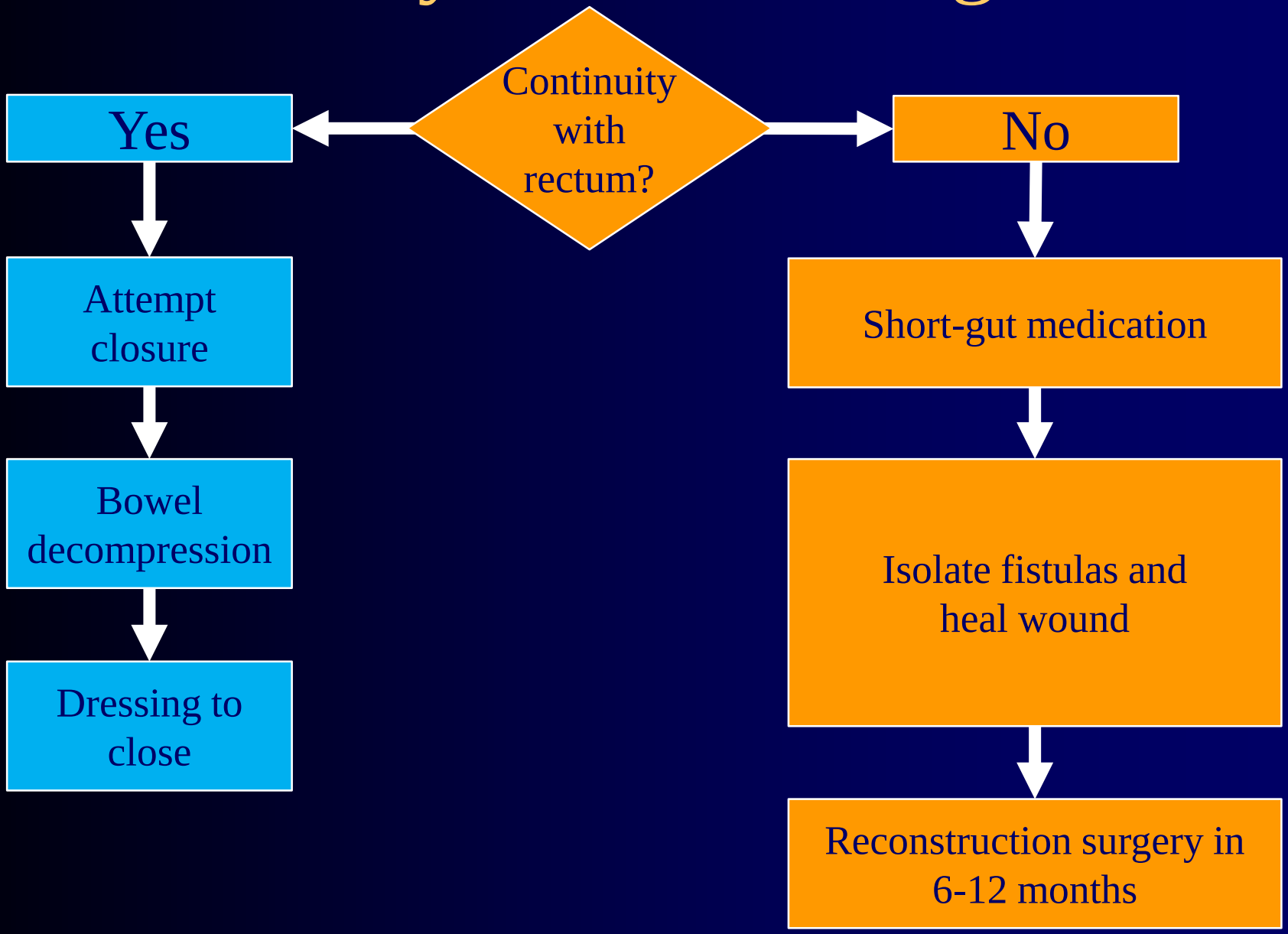
Oral Rehydration vs IV hydration	
Osmotic Diarrhea	• Avoid sweets, fruit juices, sodas, and other sugary beverages. • Patients with end-jejunostomies must **avoid hypotonic fluids such as water, coffee, tea,** juices and Etoh. • Advise to sip slowly "bath the gut" on higher sodium, isotonic liquids and oral rehydration fluids. (see recipes for isotonic beverages).
IV fluids -	Some patients may need to limit all fluids to <2 cups a day and started on IV hydration.
Oral Rehydration	Gatorade® G2 Recipe: • 4 cups Gatorade G2 • ½ tsp salt Broth Recipe • 4 cups water • 1 broth cube • ¼ tsp salt • 2 Tbsp sugar Commercial ORS • CeraLyte® 70 www.ceralyte.com • 888/237-2598

Nutrition Management Protocol for Short Bowel

Antimotility Meds	
	• Give 30-60 minutes before meals or snacks but not more than every 6 hours • Scheduled dosing is best to get a handle on high outputs. • Advise to take meds on a schedule, every 6 hours and at bedtime or when get up in the middle of the night to take advantage of slowed gut motility. Take it with solids such as unsweetened applesauce instead of liquids.
Loperamide (Imodium)	• 2 mg tablet • Start= 2-6 mg q6h • Titrate up to 12-24 mg q6h
Codeine	• Start= 15-30 mg q6h • Titrate up to 100 mg q6h
Lomotil,	• Start= 2.5 mg q6h • Titrate up to 5 mg q6h
Tincture of Opium,	• 0.3 ml to 1 ml up to q6h
Paragoric	• 2-4 mg up to q6h

Other Considerations	
Proton Pump Inhibitors	• Prevacid, Prevacid SoluTab® • Prilosec, Omeprazole®
Vitamins & Minerals	• Required when no longer on TPN • Water soluble form of fat soluble vitamins; Aqua ADEK, www.aquadeks.com • 888-469-2766 (25,000 IU vitamin A), 1000 IU vitamin D, 400 IU vitamin E) – 1 tab daily • Vitamin B 12 1000 mcg sublingual vs injection • Iron – Iron Sucrase if unable to absorb, can be arranged by RD. • Daily chewable MVI with at least 18 mg of Fe/tablet, OK to take 2/day • Calcium – 600 mg tab, take 1 tab tid • Magnesium Lactate – 84 mg tab, take 1-2 tabs daily (magnesium may be added to IVF if getting hydration) • Sodium Bicarbonate, 1 ml = 1 mEq, 10 ml tid • Chromium 100 mcg 1 tab tid • Copper 3 mg, 1-2 tabs daily • Zinc sulfate, individualize
Lab Monitoring – Click on link for lab info.	-

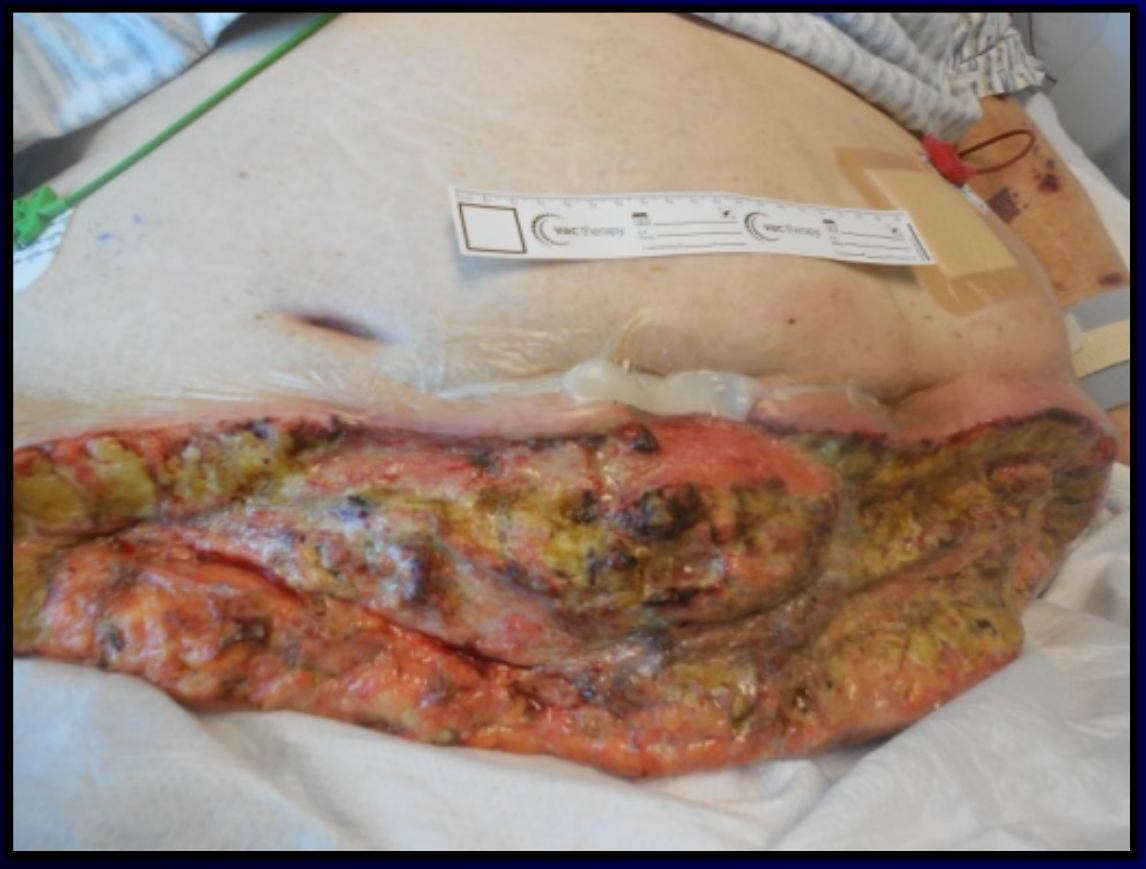
Continuity Drives Management



Pre-Dressing Change Checklist
With NPWT

Key Element	Description	Yes/No?
60-90 minutes prior to device change	Consider anti-anxiety medication (90min)	
	Consider pain medication (60min)	
	Consider bowel anti-motility agent (Eg. Imodium®, opium tincture)	
	Consider holding food and oral fluids (early morning change before breakfast)	
	Plan for 30 -45 min for dressing change	
	Notify surgical team that wound will be available for exam	
30 minutes prior to device change	Identify second staff member to assist, have patient use BR if needed	
	Consider topical anesthetic (4% topical lidocaine elixer) Infuse into current dressing or lay on wound edges with gauze	
	Collect needed supplies (Eg. fistula isolation device, advanced wound dressing, NPWT dressing, NPWT canister, suction, gauze dressing, skin prep, hyrdocolloid, contact layer, pouching system, scisssors, camera	
Removal of device	Pouching system - Empty and remove - Suction for effluent	
	NPWT dressing - Gently peel by pushing dressing away from patient skin	
	Set up VAC pump and canister, have on standby	
	Examine removed dressing - Take photo if needed for team - Identify any areas of leaking	
Wound bed	Examine wound bed - Take photo, if needed - Measure length, width and depth, assess quality of wound bed, identify any new fistula process	
Replace dressing	Critical thinking utilized for replacement dressing, pressure, instillation, schedule, discuss with patient and team how the dressing change went	
Consider 24 hour quick check	Remove dressing and assess the wound bed Replace dressing for a standard wear time	

What is a complex abdomen?



60 x 12 cm

Lessons learned

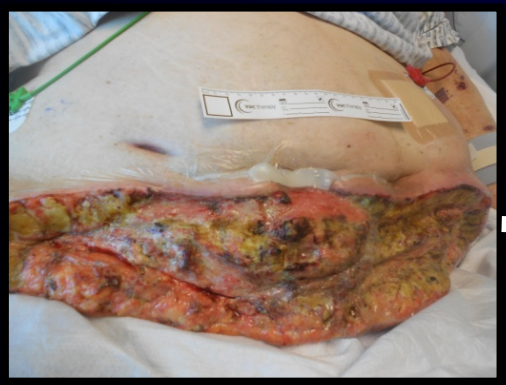
- Multidiscipline care conference
- Slough
  - New dressing for non-surgical “debridement”
  - Critical thinking at the bedside
- Nutrition
  - Wound healing progress
- Pain management
  - Big picture goals

Notes

Helpful information

- Diagram for dressing decision making
  - Vermeulen H, Ubbink D, Goossens A, Vor R, Legemate D. Dressings and topical agents for surgical wounds healing by secondary intention. *Cochrane Database Syst* Rev 2004; (2):CD003554.
- NPWT instillation practice
  - [i] Téot, L., Boissiere, F. and Fluieraru, S. (2017), Novel foam dressing using negative pressure wound therapy with instillation to remove thick exudate. Int Wound J. doi:10.1111/iwj.12719
  - https://www.youtube.com/watch?v=5qto9QLFWCc
- Nutrition
  - Thompson, C. Nutrients and Wound Healing: Still Searching for the Magic Bullet. *Nutr Clin Pract* 2005; 20:331-347.
  - Stechmiller, JK. Understanding the Role of Nutrition and Wound Healing. *Nutr Clin Pract* 2010; 25:61-68.

Dressing decision tree



Surgical Intervention?

Yes

To Operating Room

No

NPWT with instillation and perforated contact sponge

Is wound bed healthy?

No

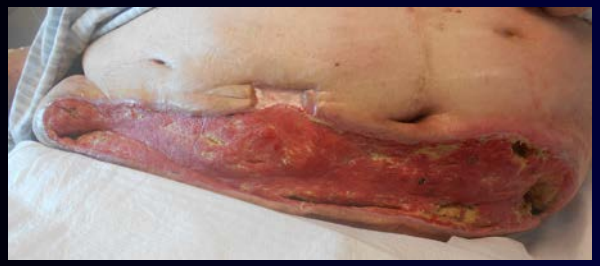
Yes

Clinical decision - NPWT?

Yes

Standard NPWT

Yes

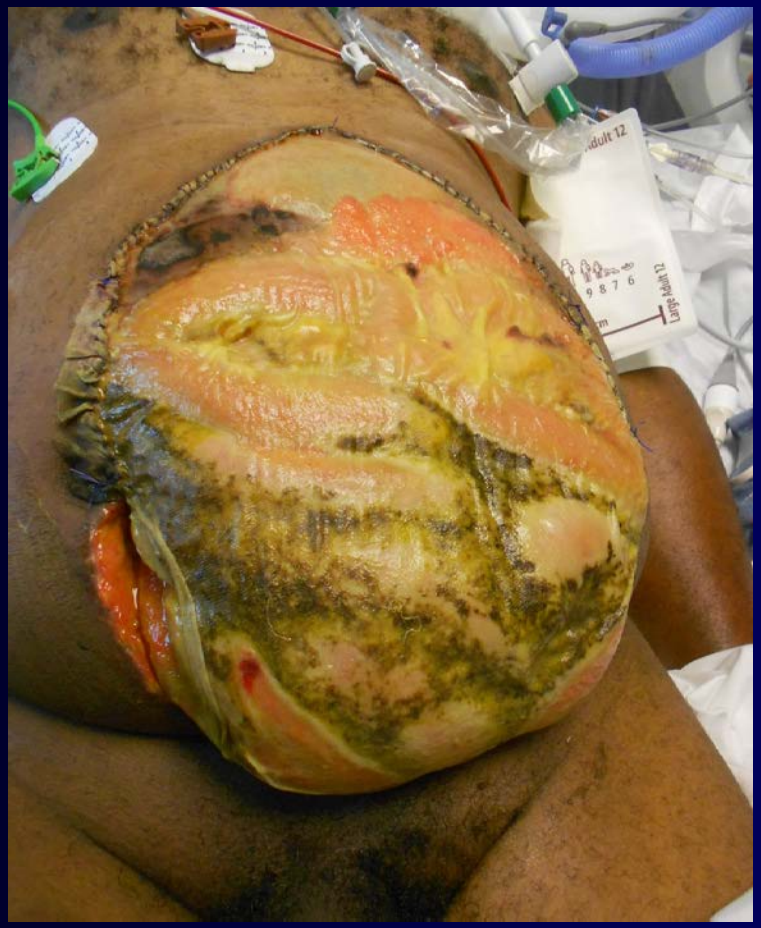


No

Advanced Wound Dressing

- Primary (non-adherent)
- Secondary

What is a complex abdomen?



Lessons learned

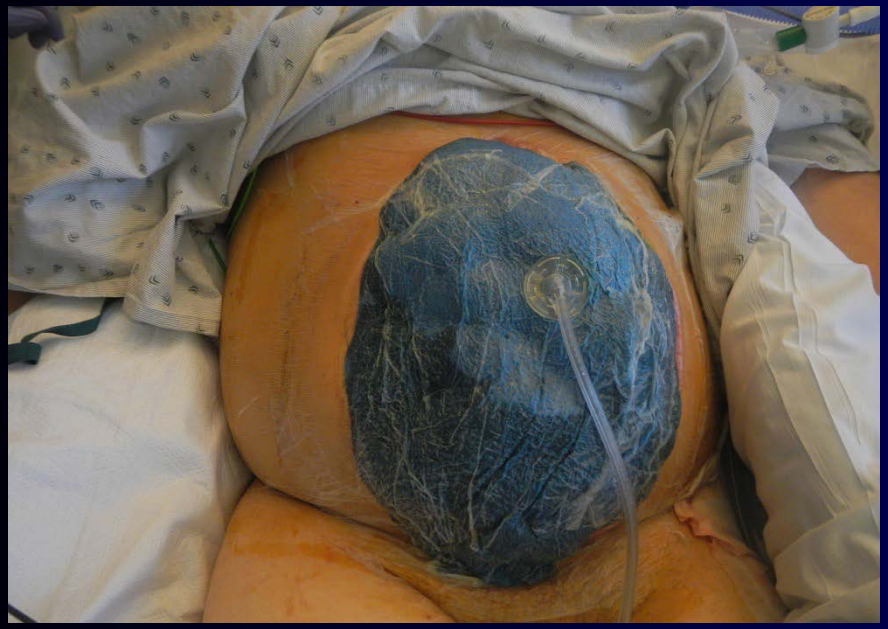
- Challenges *change*
- Enteric management principles
  - First do no harm
  - Know your wound *and* patients anatomy
- Dressings
  - Pouch in pouch
  - Landing zone
  - Bowel isolation
  - High output pouch

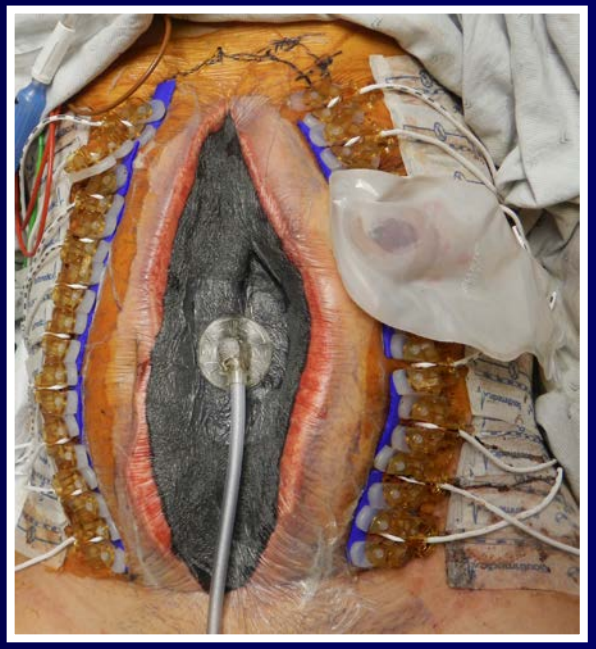
Notes

Helpful information

- Fistula isolation techniques (previous case)
- Pouching products
  - https://www.coloplast.com
  - Wound and fistula manager Maxi # 14070

What is a complex abdomen?



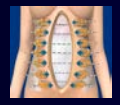


Lesson learned

- Abdominal closure system
  - Staff intensive but shorter in duration
  - Screen patients for best technique
- Daily wound cares
  - Protection is our goal
  - Less NPWT foam is better
- Education is key

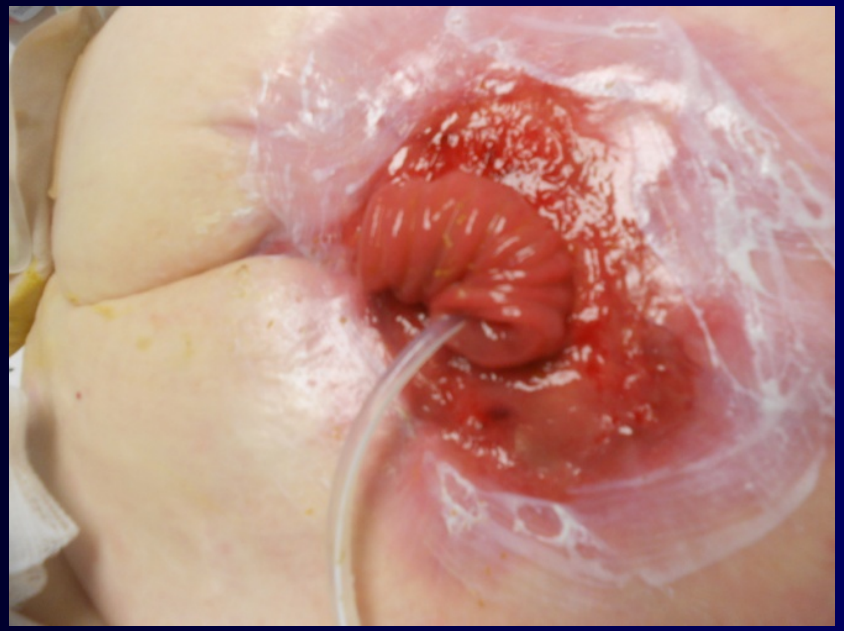
Notes

Helpful information

- ABRA 
  - https://www.youtube.com/watch?v=RR63VPUUYZk
- ABthera 
  - https://www.youtube.com/watch?v=IXhrSKe3_pg
  - https://www.youtube.com/watch?v=27_PBNfeSbM
- History of the open abdomen - literature
  - https://www.ncbi.nlm.nih.gov/pubmed/23823991
  - https://www.ncbi.nlm.nih.gov/pubmed/22487141
  - Barkers https://www.ncbi.nlm.nih.gov/pubmed/10697075


Hernia

What is a complex abdomen?



Lessons learned

- Understanding your patients anatomy can change the course
- Fistulocylsis needs wound nurses
- Assisting specialties
- RD involvement - *before you need them*

Notes

Helpful information

- Fistulocylsis
  - www.practicalgastro.com/pdf/September10/WillcuttsArticle.pdf

Review of Objectives

- Demonstrate management techniques for complex abdominal wounds
- Demonstrate dressing techniques for enteric fistula management
- Discuss new strategies for open abdomen

Questions ?