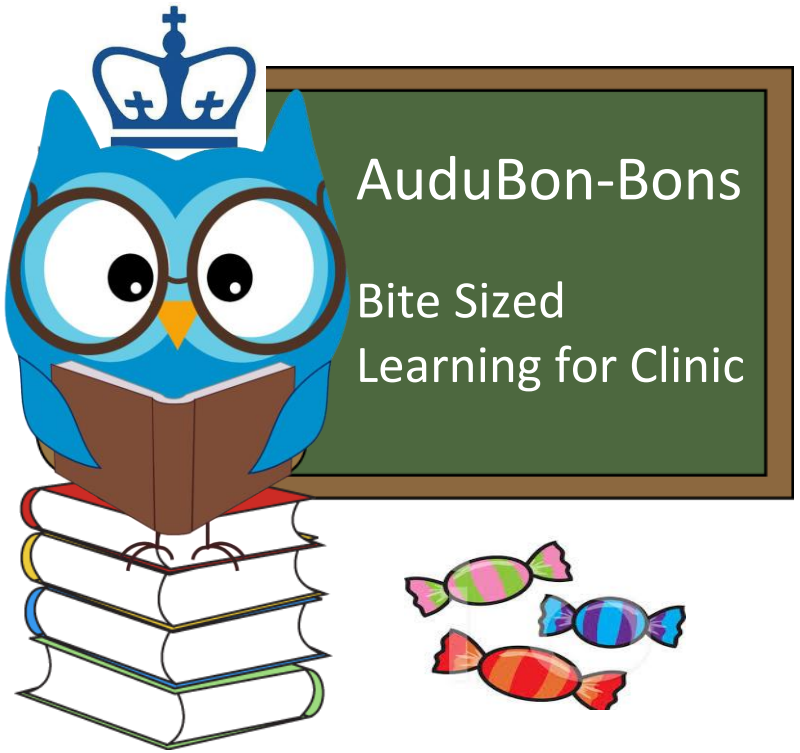
WOUND COMPLICATIONS AFTER CESAREAN DELIVERY



Week 36

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Reading Assignment:
Pearls of Exxcellence, “Management of wound complications of cesarean delivery,” https://www.exxcellence.org/pearls-of-exxcellence/list-of-pearls/management-of-wound-complications-of-cesarean-delivery

LEARNING OBJECTIVES 

- Understand the most common types of wound complications after cesarean delivery
- Understand the risk factors for wound complications
- Understand how to manage common wound complications
- Understand measures to prevent wound complications

CASE VIGNETTE

- A 35 yo G4 P3013 woman presents on post-operative day 4 after a primary cesarean section with bleeding from her incision.
- She denies any other complaints and had a routine postoperative course.

FOCUSED HISTORY

- OBHx: 3 FT C/S, 1 VTOP
- GynHx: No hx of STI/abnormal paps/fibroids/cysts
- PMH: Obesity
- PSH: C/S x 3
- FH: Neg
- SH: No toxic habits, lives with partner and children
- Meds: PNV
- All: NKDA

PERTINENT PHYSICAL EXAM FINDINGS

- VS: Height 168 cm, Wt 98 kg, BMI 34.7 kg/m^2, BP 138/70, P 90, T 37.0
  - Gen: NAD
  - Chest: CTAB
  - CVS: RRR
  - Abd: Soft, minimally distended, bandage over incision soaked with blood. Small amount of bleeding noted from right aspect of incision; more dark blood expressed with pressure; no erythema over incision
  - Ext: NT, WWP

DIFFERENTIAL DIAGNOSIS

- **Wound complications**
  - Hematoma/seroma (2-5%)
  - Surgical site infections (2.5-16%)
    - Cellulitis
    - Necrotizing fasciitis (0.18%)
  - Fascial dehiscence (2-5%)
    - Evisceration

RISK FACTORS FOR WOUND COMPLICATIONS

- **Obesity** (depth of SC tissue > 2 cm)
- **Coexisting infection** (chorioamnionitis)
- **Unscheduled cesarean delivery**, **2nd stage cesarean delivery**
- **Blood transfusion**
- **Anticoagulation therapy**
- **Subcutaneous hematoma**
- **Maternal comorbidities** (malnutrition, alcohol/drug/tobacco abuse, immunosupression, diabetes, vascular disease, older age)

EVALUATION

- Clinical exam
  - Probe the incision with sterile q-tip. Remove staples/cut subcuticular stitch with scalpel as needed; lidocaine SC as needed
  - Assess fascial integrity
  - Assess for presence of erythema, warmth, pain out of proportion to presentation, crepitus
  - Assess quality of drainage, if any; i.e. serosanguinous, bloody, purulent
  - Collect wound cultures if concerned for infection
- Imaging
  - CT abdomen/pelvis can be useful in some cases but not necessary

MANAGEMENT

- **Hematomas/seromas**
  - Small collections can be managed expectantly
  - Large collections should be explored, drained, irrigated with NS, packed
  - Negative pressure wound therapy may be beneficial for women with large wounds
- **Surgical site infections**
  - Antibiotics (e.g. used in cellulitis) & wound exploration (bedside or OR depending on extent), irrigation/debridement with sterile normal saline, packed
  - Necrotizing fasciitis: emergent surgical debridement, broad-spectrum antibiotics (e.g. Zosyn + vanc), consultation w/ oncology/general surgery
- **Fascial dehiscence**
  - Moist dressing over incision and emergent surgical management

  exploration, debridement, and closure

PREVENTION

- Antimicrobial Use
  - Antibiotics prophylaxis within 60 minutes before the start of CD
    - Azithromycin added in the setting of ruptured membranes
  - Usual abdominal skin cleansing with chlorhexidine-based solution; vaginal cleansing in laboring/SROM patients
  - Additional dose of antibiotics with 1) length of surgery > 4 hours, 2) EBL >1500 mL

- Use clippers instead of razors for hair removal

PREVENTION

- Surgical technique
  - Follow aseptic technique
  - Closure of subcutaneous space when > 2 cm deep
  - Fascial closure techniques to avoid fascial necrosis; i.e., 1 cm from fascial edge, 1 cm from adjacent fascial stitch
  - Skin closure with subcuticular stitching may be associated with less complications
- Surgical bundles
  - Staff training, standards of care

CASE VIGNETTE: EVALUATION & MANAGEMENT

- What are your next steps?
  - The incision is probed and the skin separates easily to midline; a hematoma is noted; the collection extends 5 cm medially and is 3 cm deep; fascia is intact
- What is your diagnosis?
  - **Wound hematoma**
- How do you manage this hematoma?
  - Irrigate with normal saline, assess for active bleeding
  - Pack wound with wet-to-dry dressing
  - Patient will receive VNS services for daily dressing changes until wound he via secondary intention

BILLING AND CODING

- Diagnoses:
  - O90.2, Hematoma of obstetric wound
  - O90.0, Disruption of cesarean wound
  - T81.31XA, Disruption of external operation (surgical) wound
  - O86.0, Infection of obstetric surgical wound
- Procedure:
  - 10140, Incision and drainage of hematoma, seroma, or fluid collection
  - 97597, Recurrent wound debridements

BILLING AND CODING

CPT Code: New outpatient visit

- At least 99203 (higher if attending sees patient with you)

CPT Code: Established outpatient visit

- At least 99213 (higher if attending sees patient with you)

NEW PATIENT VISIT

CPT Code	99201	99202	99203	99204	99205
Required Key Components *(3/3 required)					
History and Exam					
• *Problem-Focused*	X				
• *Expanded Problem-Focused*		X			
• *Detailed*			X		
• *Comprehensive*				X	X
Medical Decision Making (complexity)					
• *Straightforward*	X	X			
• *Low*			X		
• *Moderate*				X	
• *High*					X
Contributory Factors					
Presenting Problem (Severity)					
• *Self-Limited or Minor*	X				
• *Low to Moderate*		X			
• *Moderate*			X		
• *Moderate to High*				X	X
Counseling					
Coordination of Care					
Typical Face-to-Face Time (Minutes)	10	20	30	45	60

ESTABLISHED PATIENT VISIT

CPT Code	99211	99212	99213	99214	99215
Required Key Components **(2/3 required)					
History and Exam					
• *Problem-Focused*	N/A	X			
• *Expanded Problem-Focused*			X		
• *Detailed*				X	
• *Comprehensive*					X
Medical Decision Making (complexity)					
• *Straightforward*	N/A	X			
• *Low*			X		
• *Moderate*				X	
• *High*					X
Contributory Factors					
Presenting Problem (Severity)					
• *Minimal*	X				
• *Self-Limited or Minor*		X			
• *Low to Moderate*			X		
• *Moderate to High*				X	X
Coordination of Care					
Typical Face-to-Face Time (Minutes)	5	10	15	25	40

EVIDENCE

- Chelmow D et al. Suture closure of subcutaneous fat and wound disruption after cesarean delivery: a meta-analysis. Obstet Gynecol 2004; 104 (5, part 1): 974-80.
- Kawakita T et al. Surgical site infections after cesarean delivery: epidemiology, prevention, and treatment. Matern Health Neonatol Perinatol. 2017 July 5;3: 12. doi: 10.1186/s40748-017-0051-3
- Po W. Management of wound complications cesarean delivery. Simas T ed. Pearls of Exxcellence. https://www.exxcellence.org/pearls-of-exxcellence/list-of-pearls/management-of-wound-complications-of-cesarean-delivery. Accessed June 2019.
- Berríos-Torres SI, Umscheid CA, Bratzler DW, et al. Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017. JAMA Surg. 2017 Aug 1;152(8):784-791. doi: 10.1001/jamasurg.2017.0904.
- Use of prophylactic antibiotics in labor and delivery. ACOG Practice Bulletin No. 199. American College of Obstetricians and Gynecologists. Obstet Gynecol 2018;132:e103-19.
- Berghella V. Cesarean delivery: postoperative issues. Lockwood C ed. UpToDate. Waltham, MA: UpToDate, Inc. https://www.uptodate.com/contents/cesarean-delivery-postoperative-issues?csi=73d757e1-f753-456d-8cd1-6d6b270e50eb&source=contentShare. Accessed June 2019.
- Prevention of infection after gynecologic procedures. ACOG Practice Bulletin No. 195. American College of Obstetricians and Gynecologists. Obstet Gynecol 2018;131:e172–89.
- Mizell J et al. Complications of abdominal surgical incisions. Rosen M ed. UpToDate. Waltham, MA: UpToDate, Inc. https://www.uptodate.com/contents/complications-of-abdominal-surgical-incisions. Accessed June 2019.