

WOUND INFECTIONS

Incidence:

- Third most frequently reported nosocomial infection
- Culprits: *S. aureus* (20%), *E. coli* (10%), *Enterococcus* (10%), *S. epidermidis*, *Pseudomonas*, *Streptococcus*, other anaerobes

Degree of Intraoperative Contamination:

1. Clean: no gross contamination from endogenous or exogenous sources, e.g. skin or vascular cases
 - Infection rate about 1.5-5%
2. Clean-contaminated: lightly contaminated, e.g. gastric or biliary cases, GU, gyn, respiratory tract surgery
 - Infection rate about 3-7% if prophylactic antibiotics used
3. Contaminated: heavily contaminated, e.g. penetrating trauma, bowel spillage, operations on unprepared colon
 - Infection rate about 10-15%
4. Infected: e.g. gross pus, gangrene, bowel perforation encountered
 - Infection rate 15-40%

Patient characteristics:

1. Diabetes mellitus, uremia, extremes of age, immunosuppression
2. Decreased blood flow to wound: hypoxemia, nicotine
3. Malnutrition: protein depletion
4. Injury: irradiated or devitalized tissue
5. Foreign body

Prevention: CDC recommendations

1. Careful, clean, gentle surgery, minimizing tissue trauma, wound hematomas, number of ligatures, and drying or pressure from retractors
2. Reduction of contamination
3. Support of patient's defenses, including prophylactic antibiotics: indicated when wound contamination during operation likely to be high (contaminated). Antibiotics not shown to reduce incidence of wound infections after clean operations.

Treatment:

1. Open the wound and allow it to drain.
2. Perform digital exam to assess for fascial dehiscence.
3. Antibiotics indicated if patient immunocompromised, if prosthetics involved, if patient has signs of systemic toxicity or if surrounding area of soft tissue erythema and edema
4. Cultures should be performed in case existing infection becomes invasive.

Curveballs:

1. Ascites
 - Patients with ascites at risk of fluid leak through wound, with higher incidence of wound infections and risk of peritonitis through retrograde contamination. Prevention involves closing at least one layer with a continuous suture and preventing accumulation of ascites postoperatively
2. Burns
 - *S. aureus*: Slow onset over 2-5 days; marked increase in temperature and leukocytosis; mortality approx 5%
 - *P. aeruginosa*: Rapid onset over 12-36 hours; high or low temp and WBC; often severe hypotension; mortality approx 20-30%
3. Diffuse necrotizing infections
 - Clinical findings: High fever POD #1 - wound needs immediate inspection for crepitance or air bubbles on xray, cellulitis or skin discoloration
 - Nonclostridial: More common in diabetics; causal organisms are anaerobic *Streptococci*, *Staphylococci*, and *Bacteroides*; clinical findings erythema, edema beyond erythema, crepitance, sepsis
 - Clostridial myonecrosis: bronze-brown seropurulent weeping exudates and mousy odor characteristic of *Clostridia perfringens* (80% of cases of tissue necrosis; creates exotoxins which destroy microcirculation allowing rapid advancement of infection)
 - Treatment: emergent aggressive wide debridement and broad-spectrum antibiotics (IV high-dose Penicillin for *Clostridia*)

References:

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