The Art of Abscess I&D

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Objectives

- Differentiate skin and soft tissue infections
  - cellulitis versus erysipelas versus abscess
- Recognize clinical manifestations
- Discuss procedural approaches to incision and drainage of abscess
- Outline importance of patient education and procedural follow up
Skin and Soft Tissue Infections (SSTI)

• Epidemiology
  – Skin barrier disruption due to trauma
    • Bite, abrasion, penetrating wound, ulcer, injection site, etc
  – Skin inflammation
    • Eczema, radiation therapy
  – Edema due to venous insufficiency and/or impaired lymphatic drainage
  – Immunosuppression
    • Diabetes, HIV
SSTI

• Microbiology—most common causes
  – Staphylococcus Aureus
    • MSSA
    • MRSA
  – Beta-hemolytic Streptococcus
    • Group A Streptococcus
    • Streptococcus pyogenes
SSTI Standard Treatment

• Cellulitis and Erysipelas
  – Warm Compress
  – Antibiotic treatment

• Abscess
  – Incision and Drainage
  – +/- Antibiotic treatment
Soft Tissue Skin Infections
Cellulitis

- Involves deeper dermis and subcutaneous fat
- Skin erythema, edema, warmth
- No fluid collections
- Warm, indurated, erythematous
- +/- Red streaking?
- Mark area of erythema to evaluate improvement
- Responsive to antibiotic treatment
Cellulitis
Erysipelas

- Involves upper dermis
- Clear demarcation between involved and uninvolved tissue
- Erythema, warmth, edema
- Mark area of erythema to evaluate improvement
- Responsive to antibiotic treatment
Erysipelas
Abscess

- Collection of pus within dermis and/or subcutaneous space
- Painful, fluctuant, erythematous nodule
- +/- surrounding cellulitis
- +/- spontaneous drainage
Abscess
Abscess

- Incision & Drainage is curative most abscess
- Wound cultures not routinely performed on otherwise healthy patient
Draining Abscess
Point-of-care Ultrasound

• Useful when examination is equivocal
  – Cellulitis
    • No fluid collection, increased thickness of subcutaneous tissue
  – Abscess
    • Fluid collection identified
    • Estimate size and depth of abscess cavity

• Painful during procedure
Fluid collection on ultrasound
Obtain Procedural Consent

• Review and document diagnosis
  – Specifically document location of abscess
    • Example: Right anterolateral mid thigh abscess

• Explain and document procedure
  – Document procedure and location
    • Example: Incision and drainage right anterolateral mid thigh abscess
  – Do not use abbreviations
Obtain Procedural Consent

• Possible risks and complications
  – Pain
  – Infection
  – Bleeding
  – Scarring
  – Recurrence
  – Need for additional procedures
Procedural Location

• Bedside Incision and Drainage
  – Patient can tolerate sedation with local anesthetic

• Intraoperative Incision and Drainage
  – Difficult airway
  – Aspiration risk
  – Proximity of abscess location to neurovascular structures
Procedural Sedation Precautions

• Patient Factors
  – Difficult airway
  – Aspiration risk
  – Extremes of age
  – Bleeding dyscrasia / coagulopathy
  – Lidocaine allergy
Bedside Incision and Drainage Contraindications

• Abscess location
  – Proximity to neurovascular structures
  – Breast
  – Perirectal

• Abscess type
  – Recurrent
  – Multiple interconnected abscesses
Local Injection and Block

- Plain Lidocaine 1%
  - Max dose = 4mg/kg of 1% plain lidocaine

- Lidocaine 1% with Epinephrine
  - Max Dose = 7mg/kg of 1% lidocaine with epinephrine
  - Additional benefits
    - Decrease local bleeding
    - Reduces systemic lidocaine absorption
    - Extends duration of anesthesia
Equipment needed

- Sterile gloves, drapes, and 4x4 gauze
- Prep solution – chlorhexidine or povidone iodine
- Scalpel – 11 blade
- Laceration set – curved hemostat, scissors, forceps
- Basin with sterile normal saline for irrigation
- +/- penrose drain, vessel loop, packing material – iodoform or plain packing gauze
- Dressing – 4x4 gauze / tape / coban / ace wrap / spandage
Incision and Drainage Procedure

• Incision to conform to natural folds of skin, when possible
• Express and evacuate all purulent material
• Probe for purulent loculations
• Copious irrigation with sterile saline until no purulence remains
Conventional Incision and Drainage

- Linear incision whole length of abscess
- Probe cavity
  - Break up loculations
  - Identify foreign bodies
  - Ensure proper drainage
- Care given not to undermine healthy tissue or create new tunnels / tracks
Conventional Incision and Drainage (I&D)
Conventional I&D Closure Options

• Leave open for secondary intention

• Close loosely with non-absorbable suture
  – Vertical mattress
  – Penrose drain placement

• Abscess cavity packing
Secondary Intention after I&D
Secondary Intention Discharge Instructions

• Follow up 1 week with Primary Care and/or Surgeon

• Change dressing bid to qid prn to keep dry
  – 4x4 gauze, tape / coban / ace wrap / spandage
Penrose Drain Closure
Penrose Drain Discharge Instructions

• Follow up 1 week with Primary Care and/or Surgeon

• Remove drain 7 -10 days when drainage resolved

• Change outer dressing daily or prn to keep dry
  – 4x4 gauze, tape / coban / ace wrap / spandage
Abscess Cavity Packing after I&D Options

• Loosely pack cavity
  – > 5cm in diameter
  – Pilonidal abscess
  – Immunocompromised or diabetic

• Packing Options
  – Sterile noniodoform / iodoform packing gauze
  – Silver-containing hydrofiber packing strips (Aquacel Ag)
Abscess Cavity Packing – Iodoform
Abscess Cavity Packing Discharge Instructions

- Follow up 1 week with Primary Care and/or Surgeon

- Change packing 1 – 2 times daily

- Change outer dressing daily or prn to keep dry
  - 4x4 gauze, tape / coban / ace wrap / spandage
Loop Drainage I&D Benefits

• Decrease
  – Pain – negates need for repetitive packing
  – Scarring
  – Frequency of follow up appointments
  – Lower healthcare cost
    • Wound care supplies
    • Postoperative home health visits
Loop Drainage I&D

- Small puncture incision over abscess
- Curved hemostat to break loculations
- Use hemostat to find outer edge/rim of fluid cavity
- Make separate puncture incision at outer edge/rim of fluid cavity over tip of hemostat
Loop Drainage I&D

- Secure end of vessel loop with hemostat and pull thru to opposite incision

- Tie vessel loop loosely – 4 -5 throws – loop must be able move freely between puncture incisions
Loop Drainage I&D
Loop Drainage I&D
Loop Drainage Discharge Instructions

- Follow up 1 week with Primary Care and/or Surgeon
- Wiggle vessel loop back and forth daily
  - Encourages drainage
- Removal of vessel loop in 7 -10 days when drainage resolved
- Change outer dressing daily or prn to keep dry
  - 4x4 gauze, tape / coban / ace wrap / spandage
Antibiotic Treatment after I&D

• Infectious Disease Society of America recommends antibiotics treatment in addition to I&D
  – Severe or extensive disease (i.e.: abscesses in multiple sites, recurrences)
  – Rapid disease progression with cellulitis
  – Associated systemic illness (i.e.: fever)
  – Immunosuppression or complicating co-existing conditions
  – Extremes of age
  – Abscess in area that is difficult to drain (i.e.: genitalia, face)
  – Septic phlebitis
  – Lack of response to I&D alone
Thank you!