Skin and Soft Tissue Infections in the ED

Daniel R. Martin, MD, MBA, FACEP, FAAEM
Clinical Professor
Department of Emergency Medicine
Vice Chair of Education Dept. of Emergency Medicine
The Ohio State University Wexner Medical Center

Skin and Soft Tissue Infections in the ED

- Recognize the most common skin and soft tissue infections and the FEW infections which are TRUE EMERGENCIES
- Discuss the diagnosis and treatment of common cases of cellulitis and abscesses
- Discuss indications for surgical consult, admission and systemic antibiotics
- Evaluate the treatment of "Special Cases" in skin and soft tissue infections!

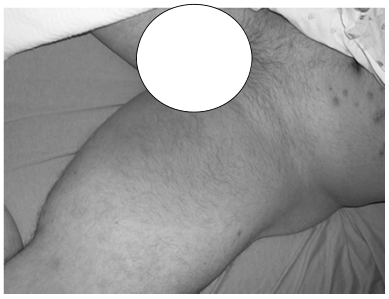
Cellulitis

Cellulitis

- Involves skin and sub-cutaneous tissues
- Etiology: Group A Strep, S. aureus
- Usually inciting trauma, skin break or tinea
- Differential Diagnosis
  - DVT
  - Erythema Nodosum
  - Venous Stasis
  - Dermatitis

Cellulitis

- What you should expect to see… warmth, erythema and swelling

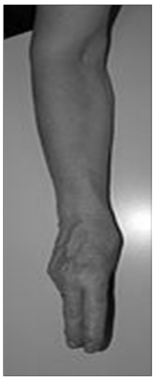


Cellulitis Treatment

- Penicillinase-resistant penicillin
- Cephalosporin
- Clindamycin
- If MRSA suspected clindamycin or Bactrim/cephalexin, doxycyclene

Lymphangitis

- Etiology: usually Group A Strep with spread into the subcutaneous lymphatics and enlarged tender regional LNs
- Clinically: red streaks with distal site of infection and proximal adenopathy
- Treatment: rest, elevation, Penicillinase resistant pcn or macrolide and close follow-up or admission

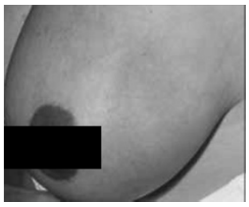


Pearls and Pitfalls

- Consider X-rays or CT to check for gas
- Mark the borders of the cellulitis
- Cultures of the ”leading edge”
  - Yield = 10%
- Know your local susceptibilities
- BEWARE of toxic presentations!

Case

Breast feeding female with breast pain, fever, myalgias and pain. Four weeks post partum.

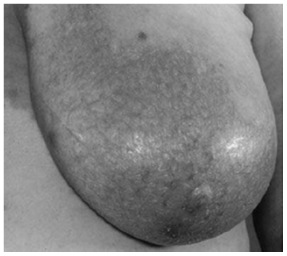


Mastitis

- **Involves skin and sub- cutaneous tissues**
- **Etiology: S. aureus and at times MRSA**
- **Usually due to poor drainage and breast engorgement if lactation mastitis**
- **Differential Diagnosis:**
  - **Plugged duct, galacticele, abscess, dermatitis, inflammatory breast cancer**

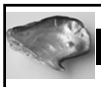
Mastitis

- **What you should expect to see…**
  - **warmth, erythema, swelling, firmness**



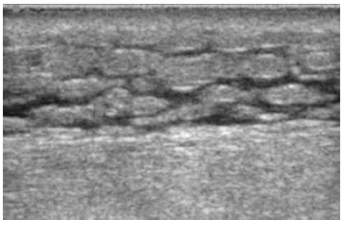
Mastitis

- **Treatment: empty the breast by breast feeding or pumping**
- **Dicloxacillin, cephalexin or clindamycin**
- **If MRSA risk factors; clindamycin or trimethoprim-sulfamethoxazole**



Pearls and Pitfalls

Consider using ultrasound to screen for abscess or cobble-stone pattern

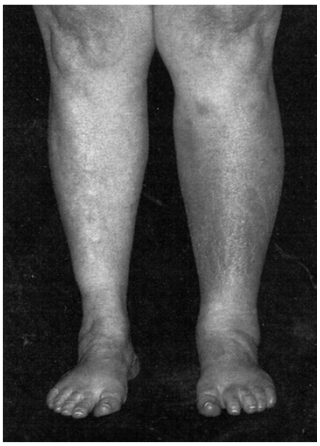


Skin and Soft Tissue Infections in the ED

Colin Kaide, MD, FACEP, FAAEM
Associate Professor-Clinical
Department of Emergency Medicine
The Ohio State University Wexner Medical Center

Case

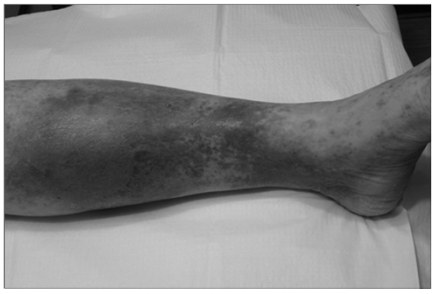
- **Male in his 50s with chronic venous stasis changes now presents with redness, warmth and swelling of the lower extremity**



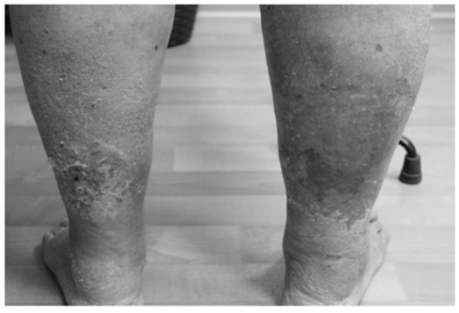
Venous Stasis

- Important to recognize the normal look of venous stasis dermatitis
  - Swelling
  - Redness
  - Brown discoloration
  - Scaling
  - Itching or pain
  - Oozing
  - Open areas (cracking or larger ulcers)

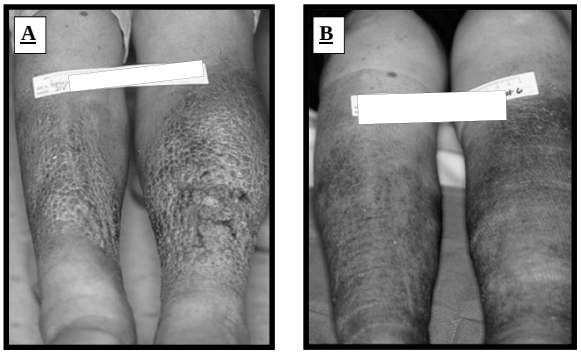
Venous Stasis



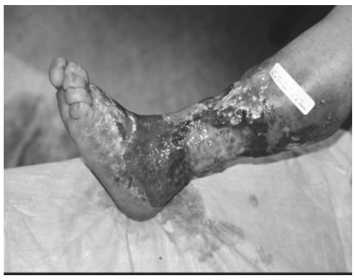
Venous Stasis—Not Infected



Venous Stasis—Not Infected



Severe Infection

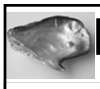


Infected Venous Stasis

- Usually happens with open skin—ulcers, cracks
  - All open ulcers are colonized
  - Not all require treatment
- Common Bacteria: Can be polymicrobial
  - Strep species, Staph (+/-MRSA), Enterobacteriaceae, Pseudomonas, anaerobic Strep, Bacillus fragilis

Treatment

- Severe infections
  - Doripenem, Meropenem, Imipenem (not ertapenem)
  - Piperacillin/Tazobactam
  - Ciprofloxacin/Levofloxacin + Metronidazole
  - Cefipime/Ceftazidime + Metronidazole
  - +/- Vancomycin if MRSA is suspected



Pearls and Pitfalls

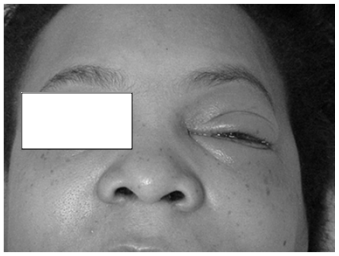
- Not all ulcers are infected
- Minor infections or uncomplicated cellulitis can be treated outpatient
- Do not do swab cultures! Do a tissue culture!

Skin and Soft Tissue Infections in the ED

Daniel R. Martin, MD, MBA, FACEP, FAAEM
Clinical Professor
Department of Emergency Medicine
Vice Chair of Education Dept. of Emergency Medicine
The Ohio State University Wexner Medical Center

Case

46 yo female with cold symptoms for a week and now redness around her left eye



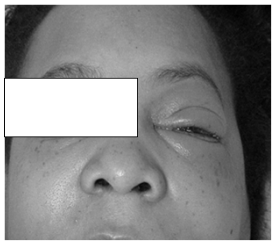
Preseptal Cellulitis

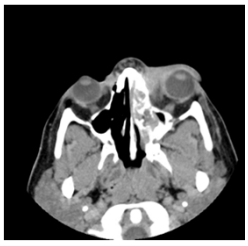
- **Involves tissues anterior to orbital septum not the eye and ocular contents. Comes from face as well as paranasal sinuses (ethmoid)**
- **Etiology: S. aureus, S. pneumonia at times MRSA**
- **Differential:**
  - **Orbital cellulitis, allergic reaction, dacriocystitis, hordeolum (stye), conjunctivitis cancer**

Preseptal Cellulitis

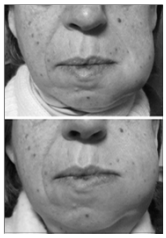
What you should expect to see…

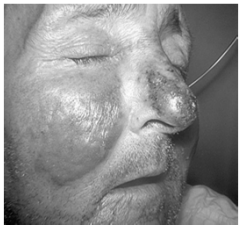
Eyelid swelling to both lids, pain, redness





Not Preseptal Cellulitis





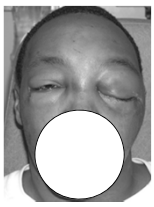
Preseptal Cellulitis

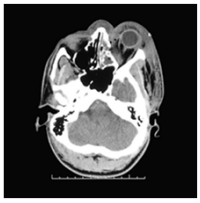
- **Treatment: clindamycin or trimethoprim sulfamethoxazole + (amoxicillin, amox-clavulanate or 3rd generation cephalosporin)**

Pearls and Pitfalls

Imaging the sinuses should be considered

Proptosis, eye entrapment and abnormal vision suggest orbital cellulitis

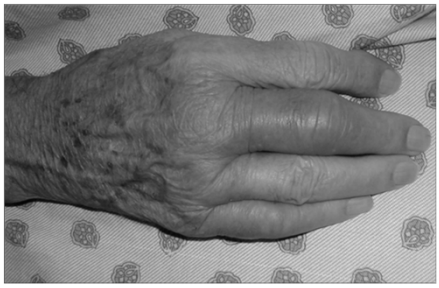




Case

Patient in his 20s had a small puncture wound to his right thumb and 2 days later cannot straighten his thumb

Flexor Tenosynovitis



Flexor Tenosynovitis

- **Etiology: Staph, Strep, GNR and anaerobes with infection traversing the tendon sheath**
- **Differential Diagnosis:**
  - **Cellulitis**
  - **Joint infection**

Flexor Tenosynovitis

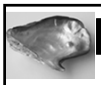
- **What you would expect to see…Kanavel's Tetrad**

1. **Flexion contracture—Finger in flexion**
2. **Fusiform swelling along the finger**
3. **Tenderness along the sheath and MCP**
4. **Pain with passive extension**

Flexor Tenosynovitis

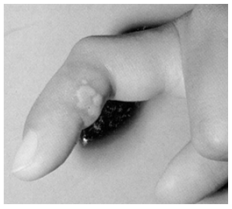
- **Treatment**
  - **Hand surgery**
  - **Vancomycin + Ciprofloxacin or Ceftriaxone**

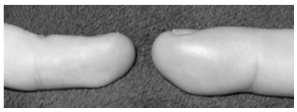
Pearls and Pitfalls



- **Early surgical therapy which includes tendon sheath irrigation and drainage plus or minus debridement**

Other Hand Infections





Skin and Soft Tissue Infections in the ED

Colin Kaide, MD, FACEP, FAAEM
Associate Professor-Clinical
Department of Emergency Medicine
The Ohio State University Wexner Medical Center

Cases

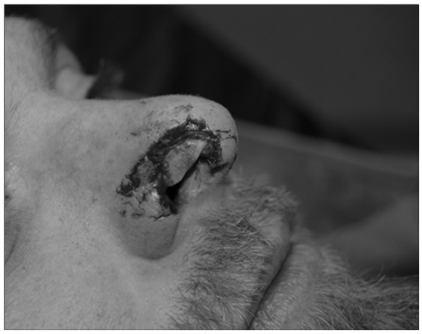
A 17 yo male presents with a bite to his leg from a dog

Animal Bites—Dog, Cat and Human

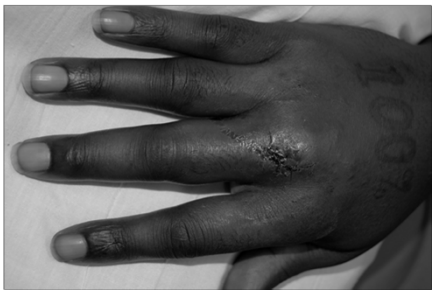
Animal Bites—Dog, Cat and Human

- **Dog—Only 5% of untreated dog bites will become infected, which is the same as any non-bite laceration**
- **Cats—With sharper, narrower teeth get pasturella deeper into wounds–30-80% will become infected!**
- **Human–10-15% get infected. Direct bites and fight bites!**

Human Bite



Fight Bite



Pathology of Animal Bites

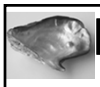
- All are polymicrobial but some bugs predominate. Drugs directed at these bugs
  - Dog: Pasteurella canis, Strep and Staph
  - Cat: Pasteurella multocida
  - Human: Eikenella corrodens, Viridans strep, Staph epi, Bacteroides, and Peptostreptococcus

Obviously Infected Bites

- Treatment with antibiotics
- Easy to remember!
  - Cat, Dog, Human all get Amoxicillin/clavulanate
  - AKA "Dogmentin"
- Penicillin allergic—
  - Dog: Clindamycin and fluoroquinolone
  - Cat: Cefuroxime or Doxycycline
  - Human: Clindamycin and fluoroquinolone

What About Fresh Bites?

- Tintinalli's, Trotter, Roberts and Hedges, and Rosen's:
  - The only evidence-based benefit is for dog or cat bites of the hands, where infection may decrease to <2% with antibiotics
  - High risk uninfected wounds deserving antibiotics: All cat bites, all human bites, all bites in the immunocompromised, deep dog puncture wounds, hand wounds, and any injury requiring surgery
  - Tetanus prophylaxis



Pearls and Pitfalls

- Suspect a fight bite in anyone with a wound over the MCP joint
- Rabies…Talk to your local health department!
  - Raccoons, skunks, bats, foxes, and coyotes—Rabies vaccination is a YES!

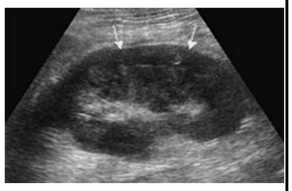
Abscesses

Doc, I Think I Got a Spider Bite!

"Devious MRSA Spider Bites Yet Another Antecubital Fossa, Remains at Large"—Gomer Blog

Abscesses

- Usually begin from skin flora and somehow find their way subcutaneously
- The center is usually liquefied or pus
- Organisms include S. aureus but also Strep and mixed flora are also possible
- Incision and drainage; main treatment



Cutaneous Abscesses

- Staphylococcal strains commonly cause rapid necrosis of tissue, large amount of creamy yellow pus
- Strep usually causes more tissue edema and less necrosis
- Anaerobic bacteria near mouth or genital areas usually cause foul smelling, brown pus

Cutaneous Abscesses

- Treatment is incision and drainage
- What about antibiotics?

Literature Summary

- Schmitz et al. demonstrated that their was no significant difference in treatment failure at 7 day follow-up for uncomplicated abscesses following I/D between the tmp/smx and placebo group. There was a significant difference between new lesions at 30 days between the tmp/smx and placebo group.
- Rajendran et al. demonstrated that their was no significant difference in cure rates after I/D of uncomplicated abscess in the cephalexin vs. placebo group

Literature Summary

- Duong et al also observed similar improvement between tmp/smx and placebo in ED children, with treatment failure in 4% of patients with antibiotics and 5% without.
  - They also found significantly more new lesions in the placebo group at 10 days (26% versus 13%) but no such difference at 3 months.

Literature Summary

- Talan, et al, NEJM, March 2016. TMP/SMX vs. Placebo
  - In the setting of a high prevalence of MRSA, the addition of TMP/SMX to I & D resulted in a higher cure rate than placebo

My Practice…

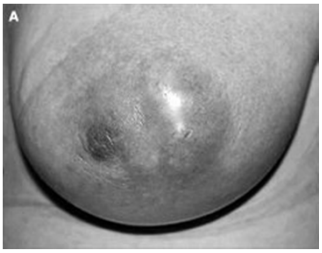
- Antibiotics = NO for uncomplicated, immunocompetent without valvular heart disease
- Consider antibiotics for lymphangitits, large surrounding cellulitis, immunocompromised, systemic symptoms, etc.
- Consider antibiotics if MRSA is likely

Skin and Soft Tissue Infections in the ED

Daniel R. Martin, MD, MBA, FACEP, FAAEM
Clinical Professor
Department of Emergency Medicine
Vice Chair of Education Dept. of Emergency Medicine
The Ohio State University Wexner Medical Center

Case

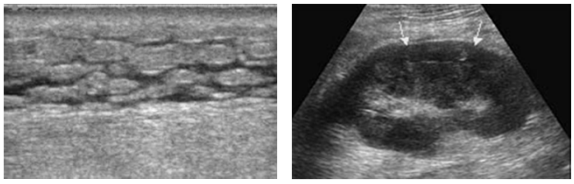
Breast feeding female with breast pain, fever, myalgias and pain. Four weeks post partum.



Courtesy of Michael J Dixon, MD.

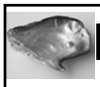
Breast Abscess

- Similar presentation to the case of mastitis but now ultrasound is positive for abscess



Breast Abscess

- Treatment:
  - I & D
  - Needle aspiration with ultrasound guidance
  - Dicloxacillin, cephalexin, penicillin or clindamycin
  - If MRSA risk factors; clindamycin or trimethoprim-sulfamethoxazole, doxycycline



Pearls and Pitfalls

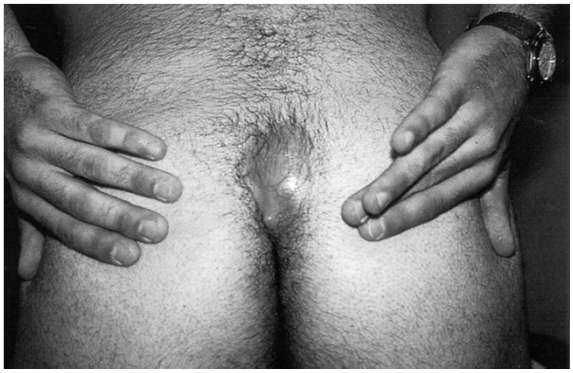
- Usually 2 to 3 aspirations needed and surgery if skin necrosis or compromised
- Abscesses involving the nipple or around the areola might involve ducts…best done by a surgeon

Case

- 25 yo male college student presents with a painful lump on his buttocks at the top of the gluteal cleft

Skin and Soft Tissue Infections in the ED

Colin Kaide, MD, FACEP, FAAEM
Associate Professor-Clinical
Department of Emergency Medicine
The Ohio State University Wexner Medical Center



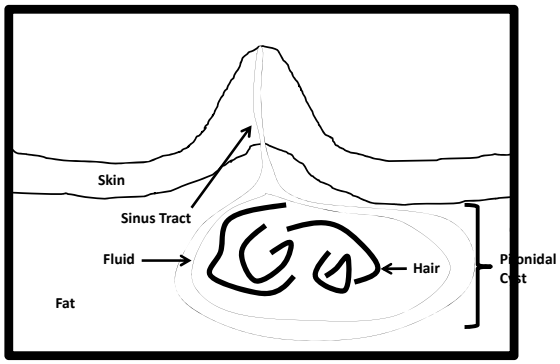
Pilonidal Abscess (Gluteal Cleft Abscess)

- **70,000 a year in the US**
- **Pilonidal disease varies from a chronically inflamed area in the gluteal cleft and/or sinus with persistent drainage to the acute presentation of an abscess or extensive subcutaneous tracts**

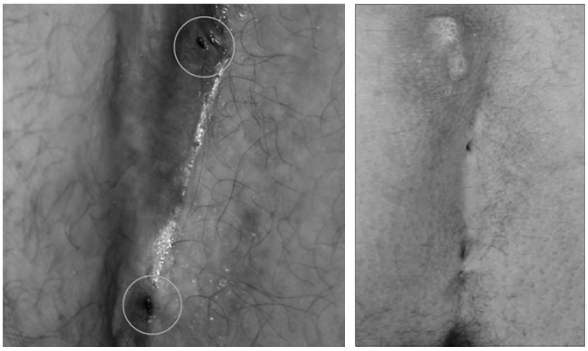
Pathophysiology

- **Originally felt to be congenital secondary to abnormal skin in the gluteal cleft**
- **The current thinking is that pilonidal disease as an acquired condition related to the presence of hair in the cleft**
  - **Foreign body reaction resulting midline pits and, in some cases, secondary infection**

Pilonidal Cyst



Pilonidal Cyst Draining to Surface

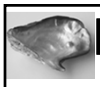


Diagnosis

- The diagnosis of pilonidal disease is most often clinical based on the patient's history and physical findings in the gluteal cleft
  - Especially in patients with chronic or recurrent disease
- Differential Diagnosis
  - Hidradenitis suppurativa, infected skin abscesses, Crohn's disease, perianal fistula

Treatment

- Shaving the affected area can help in chronic disease
- Antibiotics have limited value
  - Amoxicillin/Clavulanate, clindamycin, metronidazole
- Incision and Drainage—40% recurrence rate
- Wide excision with primary closure or healing by secondary intention—8-15% recurrence



Pearls and Pitfalls

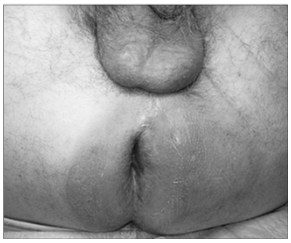
- Effective emergency department I & D may be best accomplished with procedural sedation!
  - Also for axillary abscesses or other particularly painful areas
- Antibiotics may be helpful in patients with a lot of surrounding cellulitis
- Warn the patient of likely recurrence and need for possible definitive surgery

Skin and Soft Tissue Infections in the ED

Daniel R. Martin, MD, MBA, FACEP, FAAEM
Clinical Professor
Department of Emergency Medicine
Vice Chair of Education Dept. of Emergency Medicine
The Ohio State University Wexner Medical Center

Case

- **Pain near rectal area but also with bowel movements and systemically ill**



Perianal versus Perirectal Abscess

- **Perianal = infection of an anal crypt gland but can penetrate deeper structures**
- **Etiology: Anaerobes versus S. aureus and at times MRSA**
- **Differential: Hemorrhoid, Plugged duct**

Perianal vs. Perirectal Abscess

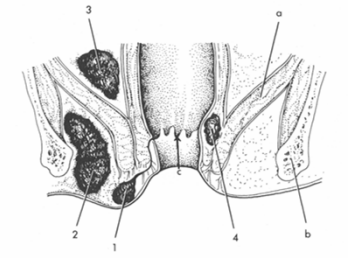


FIG. 157-2. Perirectal abscesses. *a*, Levator ani. *b*, Ischeal tuberosity. *c*, Anal crypts. *1*, Perianal abscess with anal fistula. *2*, Ischiorectal abscess. *3*, Supralevator ani (pelvirectal) abscess. *4*, Intersphincteric abscess.

Perianal vs. Perirectal Abscess

- What you should expect to see…
  - Pain, swelling, firmness
  - Systemic signs
  - Purulent drainage

Perianal vs. Perianal Abscess

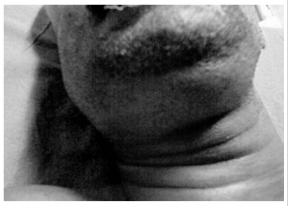
- Treatment: Perianal can be drained in the ED/office Many may need to go to the OR
  - Ischiorectal
  - Inter-sphincteric
  - Supralevator
- Broad spectrum antibiotics (with anaerobic coverage)

Pearls and Pitfalls

- DO THE RECTAL EXAM!!
- Consider CT, MRI or EDUS…can be used if highly suspicious

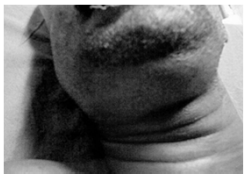
Case

- This 40 year old male noted swelling beneath her chin after after a recent molar was extracted because of a possible infection. He has pain with swallowing or talking.



What is the diagnosis?

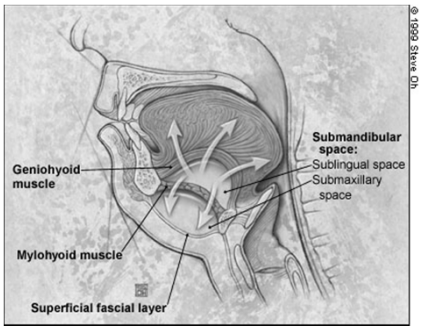
a. Peritonsilar abscess
b. Mumps
c. Herpangina
d. Vincent's angina
e. Ludwig's angina



Ludwig's Angina

- Involves submandibular and sublingual spaces and begins in floor of mouth at 2nd or 3rd mandibular molar = odontogenic origin
- Etiology: Strep viridans, Staph aureus and anaerobes especiallly Bacteroides
- Differential Diagnosis: Lemierre's, PTA, mono, periodontal abscess

Ludwig's Angina



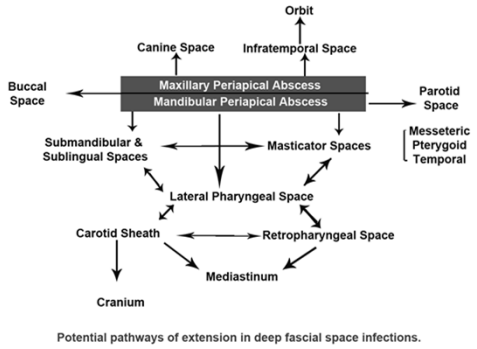
http://www.aafp.org/afp/1999/0701/p109.html

Ludwig's Angina

- What would you expect to see…
  - Mouth pain, trismus, submental swelling, muffled voice, dental pain
  - Exam with trismus, tongue elevation, stridor, Woody swelling to submandibular area. Floor of mouth is firm and tender.

Ludwig's Angina

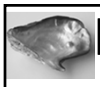
- **Treatment: Plan for definitive airway (up to one third may require airway)**
- **Antibiotics should include pcn or 3rd gen cephalosporin and anaerobic coverage such as clindamycin or metronidazole**
- **Surgical drainage usually required,**
- **May develop DNM**



Potential pathways of extension in deep fascial space infections.

Ludwig's Angina

- **Complications**
  - **DNM**
  - **Jugular venous thrombosis**
  - **Empyema**
  - **Arterial injury**
  - **Pericarditis**
  - **Osteomyelitis**
  - **Sepsis**



Pearls and Pitfalls

- **Palpate the floor of the mouth**
- **Neck CT with contrast is the best diagnostic test and 2nd mandibular molar is the most common source**
- **Submandibular swelling + tongue elevation**

Skin and Soft Tissue Infections in the ED

Colin Kaide, MD, FACEP, FAAEM
Associate Professor-Clinical
Department of Emergency Medicine
The Ohio State University Wexner Medical Center

Very, Very Bad Stuff That Will Kill Your Patient!!

Case

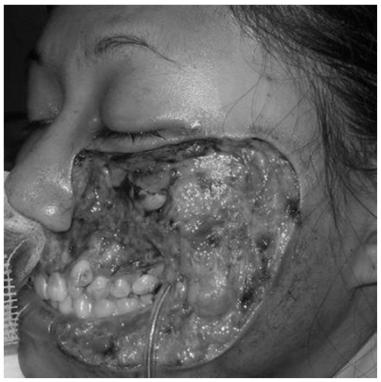
- **65 year old poorly controlled diabetic female presents with a rapidly evolving cellulitis of the lower extremity. It is extremely painful.**

Necrotizing Soft Tissue Infections

- **Includes: Necrotizing fasciitis, crepitant anaerobic cellulitis, non-clostridial myonecrosis, Fournier's disease**
- **500-1500 cases/yr**
  - **Mortality 20-40%**
  - **Survivors usually have severe morbidity**

Necrotizing Fasciitis

- **Clinical: Commonly on the lower extremities but anywhere post-op where tissue injured and more likely in patients with comorbid illnesses**



Necrotizing Fasciitis

- **Findings include rash, swelling, warm skin with blisters, fever and extreme pain, crepitus, drainage**
- **Two distinct types of NF**

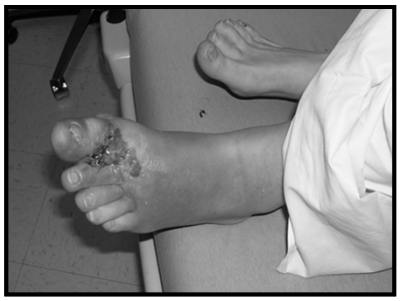
Type 1 Necrotizing Fasciitis (NF)

- **85% of NF**
- **Patient demographics**
  - **PVD, immune compromise, diabetes, or surgery**
- **Inciting factor**
  - **Wound - Trauma to the skin**
    - **Decubitus ulcer, postoperative wound, animal or insect bite, or insulin injection site**

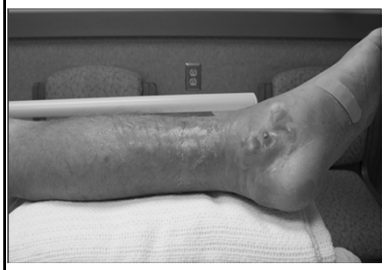
Type 1 NF

- **Polymicrobial disease**
  - **Aerobic and anaerobic bacteria**
    - **Staphylococcus aureus, Escherichia coli, Bacteroides fragilis, and various species of Streptococci, Enterococci, Peptostreptococcus, Prevotella, Porphyromonas, and Clostridium**
  - **Group A Beta-hemolytic strep (pyogenes) makes up the largest quantity of organisms**

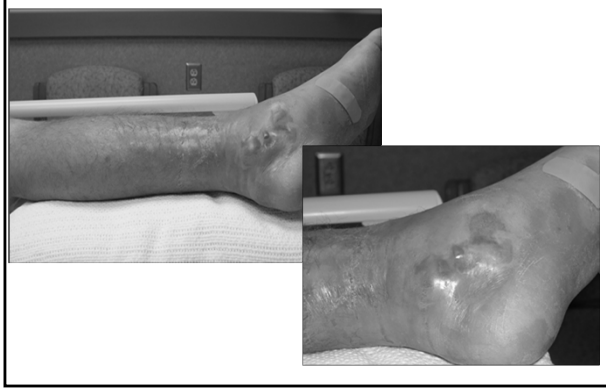
Type 1 NF in DM



Type 1 NF in a Dialysis Pt

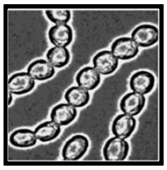


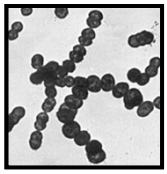
Type 1 NF in a Dialysis Pt



Type 2 Necrotizing Fasciitis

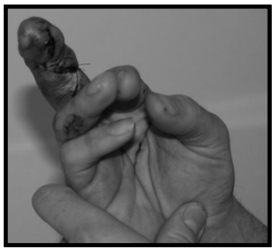
- Monomicrobial: Almost exclusively group A beta-hemolytic strep (pyogenes)
  - Small "blip" of MRSA
- 10-15% of all NF



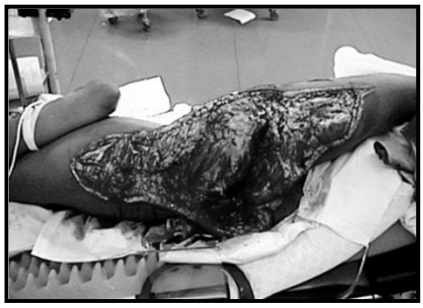


Type 2 NF

- Type 2 NF can develop spontaneously in apparently healthy people who have minimal or no prior trauma and in the absence of a known causative factor or portal of entry for bacteria



Really Bad Type 2: BB Gun

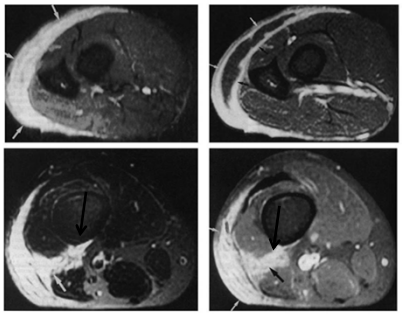


Type III NF

- Although not universally accepted, some experts use the designation of a Type III
- Vibrio vulnificus
  - This is seen in costal communities and is associated with exposure of an open wound to warm sea water

NF

- Gas is present in only 25% of cases!!
- Hard diagnosis to make early
- MRI can help in equivocal cases



Necrotizing Fasciitis

- Treatment: Surgery!!!
- Antibiotics are secondary
  - Beta-lactam/beta lactamase (ticarcillin-clavulanate or piperacillin-tazobactam or carbapenem)
  - Clindamycin or Metronidazole for anaerobes
  - Consider aminoglycoside or FQ

Hyperbaric Oxygen in NF

- HBO is always adjunctive to the OR!
- Unless OR is delayed, HBO after debridement
- 2 Treatments daily until clinical condition achieves maximal improvement
- Can treat right out of the OR, intubated and on pressors!

HBO in NF Escobar, et al - 2005

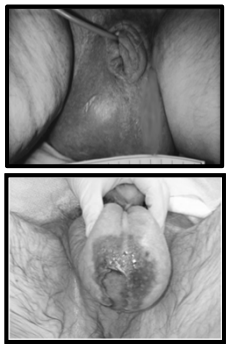
- Standard regimen for HBO added to aggressive surgical debridement, antibiotic therapy and critical care
  - Mortality of 11.9%, compared with the national average mortality rate of 34%
  - There were no amputations in the HBO-treated group compared with the reported rate of 50% nationally

Fournier's Gangrene

- Polymicrobial infection, usually enteric organisms
  - Diabetes: 40 - 60%
  - Chronic ETOH: 25 – 50%
  - Immunosuppression
- 10x more in men
  - Age 60-80 most common

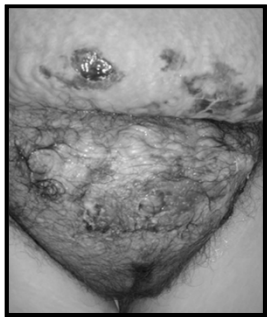
Fournier's Gangrene

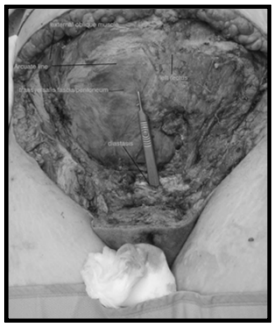
- Polymicrobial infection, usually enteric organisms
  - Diabetes: 40 - 60%
  - Chronic ETOH: 25 – 50%
  - Immunosuppression
- 10x more in men
  - Age 60-80 most common



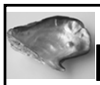
Fournier's in Women

- Typically arises from vulvar or Bartholin's abscess and spreads to involve the vulva or perineum
  - It may also complicate episiotomy, hysterectomy, septic abortion, and cervical or pudendal nerve blocks





Pearls and Pitfalls



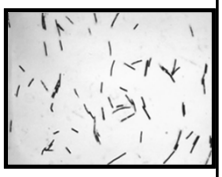
- **Pain out of proportion and rapid spread are the keys to diagnosis**
- **Don't let a surgery resident or attending talk you out of NF without seeing the patient!**

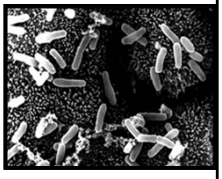
Case

- **50 yo man presents with with severe, sudden foot pain from a puncture wound he sustained when stepped on the tine of a gardening rake yesterday afternoon while gardening. He is hypotensive and tachycardic.**

Gas Gangrene: Clostridial Myonecrosis

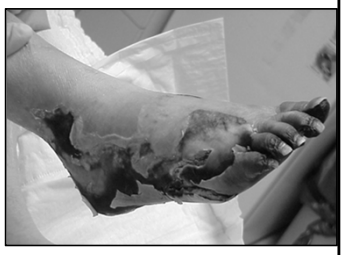
- **Anaerobic infection causing sepsis, edema, tissue death and gas formation**
  - **Gram positive, spore-forming rod, mildly aerotolerant**
    - **Clostridium perfringens (90%)**
    - **Clostridium septicum**





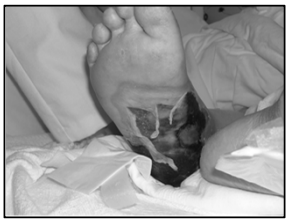
Gas Gangrene

- **Symptoms**
  - **Apprehension**
  - **Pain disproportionate to wound**
  - **Shock with fever, pallor and renal compromise**

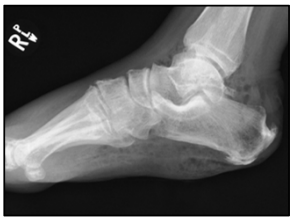


Gas Gangrene

Gas Gangrene

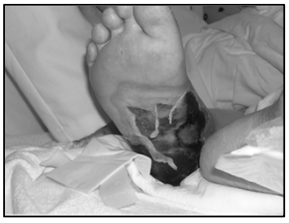


Xray with Gas

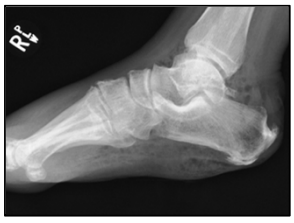


Gas Gangrene

Gas Gangrene



Xray with Gas



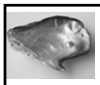
<u>WARNING: Gas is only demonstrable in 50% of cases</u>

Gas Gangrene Treatment

- **Surgical debridement**
- **Antibiotics: Penicillin + Clindamycin**
- **Hyperbaric Oxygen**

HBO in Gas Gangrene

- HBO used for gas gangrene since 1960's
- HBO before OR – esp if patient is unstable!
  - Halting of alpha-toxin production lasts a number of hours
- Additional effects
  - Anti-anaerobic effect and Demarcation of good tissue
- HBO 3x in 24h then BID for 2-5 days



Pearls and Pitfalls

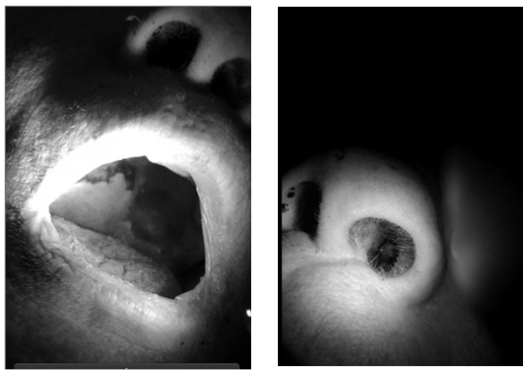
- Rapid, sudden pain at the wound site and shock are common
- Gas may not be seen on x-ray!
- Don't let a surgery resident or attending talk you out of the diagnosis without seeing the patient!

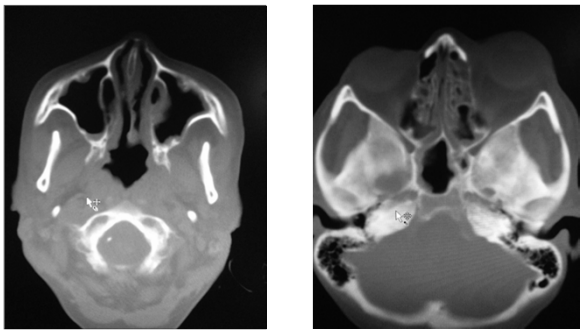
Skin and Soft Tissue Infections in the ED

Daniel R. Martin, MD, MBA, FACEP, FAAEM
Clinical Professor
Department of Emergency Medicine
Vice Chair of Education Dept. of Emergency Medicine
The Ohio State University Wexner Medical Center

Case

Diabetic patient with chronic sinus symptoms, and now has ulcers to hard palate and thy are necrotic looking.





Mucormycosis

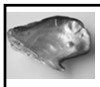
- Organisms proliferate in high glucose, low acidity due to ketone reductase
- Infarction and necrosis of tissue characteristic due to vascular invasion
- Course is via rhino-orbital-cerebral with inhalation into sinuses
- Etiology: Mucormycosis; (order Mucororales) ***Rhizopus***, ***Mucor***, and ***Rhizomucor***
- Differential: Chronic sinusitis,
- Diagnoses with tissue, cultures or PCR

Mucormycosis

- What would you expect to see…
  - Fever, sinus congestion, nasal discharge and headache
  - Palatal eschar is the hallmark
  - Orbital cellulitis can occur
  - Pulmonary, GI, skin, renal and CNS

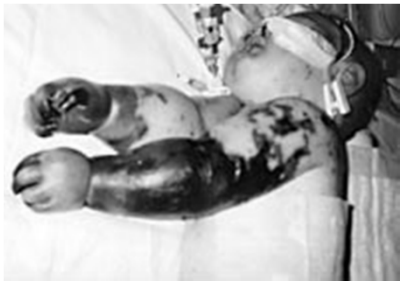
Mucormycosis

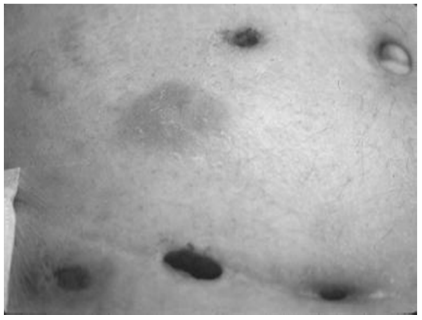
- **Treatment:**
  - **Surgical debridement**
  - **Antifungals; Amphotericin B**
  - **Control risk factors**
  - **HBO**



Pearls and Pitfalls

- **Mortality high at 25% to 60% and CT or MRI can help determine extent, iron may play a role**





Skin and Soft Tissue Infections in the ED

Colin Kaide, MD, FACEP, FAAEM
Associate Professor-Clinical
Department of Emergency Medicine
The Ohio State University Wexner Medical Center

Conclusions

- **Most infections can be dealt with using standard principles and common antibiotics**
- **Look for exceptions to the normally expected course!**
- **MRSA spiders are rare, until you can capture one!**
- **Stay current…with some things, this is a moving target!**

Image sources