

**Infectious Bursitis:
Evaluation & Management**

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Disclosures

- No financial conflicts to disclose

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Objectives

- Background and approach to infectious bursitis from an Infectious Diseases perspective
- Diagnostic and therapeutic management
- Case review and general management considerations

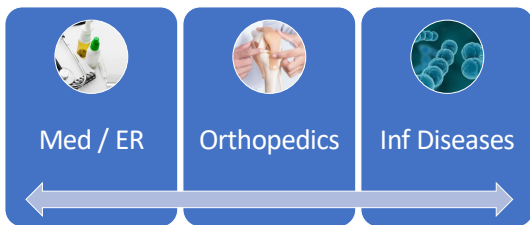
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Quick Overview

- Much higher incidence in men (esp ages 40-60)
- Exposure most frequently via microtrauma
- Pre-existing inflammatory conditions and immunocompromised status
- Septic olecranon bursitis 4 times greater than prepatellar bursitis
- 80% cases secondary to Staph aureus

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Perspective



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Considerations

- Timeline: Acute vs sub-acute vs chronic
- Traumatic event vs repeated microtrauma
- Immunocompetent vs immunocompromised
- Typical vs atypical exposures
- Adjacent or underlying hardware

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Infectious Etiologies of Septic Bursitis

Most Common	Staph spp. MSSA, MRSA <i>Staph. lugdunensis, Staph. epidermidis</i> Strep spp. (<i>S. pyogenes, S. dysgalactiae, S. anginosus, S. agalactiae (GBS)</i>)
Less Common (But not unusual)	<i>Enterococcus</i> spp. <i>Cutibacterium acnes</i> (formerly <i>Propionibacterium acnes</i>) Gram negatives (<i>E. coli, Klebsiella</i> spp., <i>Pseudomonas, Enterobacter, Serratia</i> , etc)
Much less common (Sub-acute / chronic)	<i>Mycobacterium</i> TB, Non-tuberculous mycobacteria (<i>M. marinum, MAC</i>) <i>Nocardia</i> spp. <i>Brucella</i> Fungal → <i>Candida</i> spp., <i>Aspergillus, Cryptococcus, Histo / Blasto, Sporothrix</i> Algae → <i>Prototheca</i>

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Clinical Presentation

- Clinical diagnosis often feasible
- Absence of pain with passive motion of the joint
- Systemic signs
- Associated cellulitis, penetrating trauma, foreign object




Saumbach et al

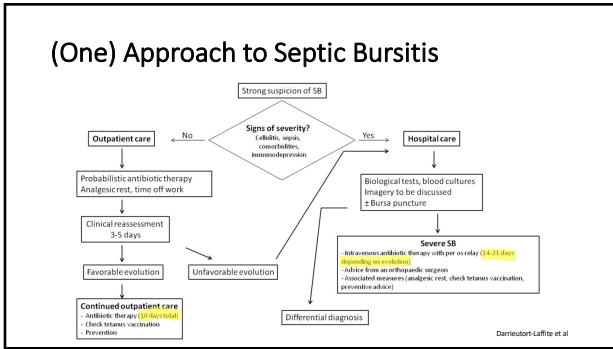
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Case Study #1

- A 31 yo man, who works at a desk, with no previous medical hx presents with 3 days of progressive redness, pain and swelling of the LEFT elbow
- No fevers, rigors
- Started on Bactrim x 1 day without significant improvement



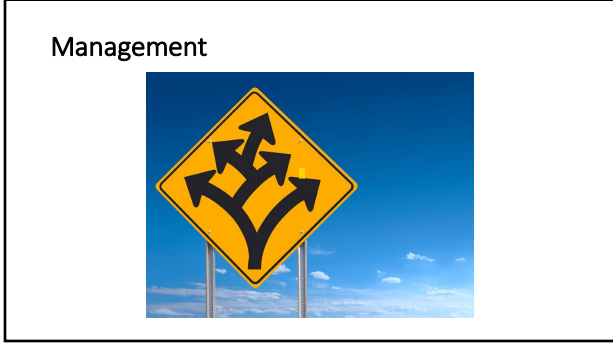
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- ### Case Study # 1
- Acute → favors typical bacterial flora (Staph, Strep)
 - Works at desk, leans on elbow at work → Microtrauma / irritation
 - Healthy, not immunocompromised → Reduced likelihood of atypical organisms, typical course of management
 - No unusual exposure → Most likely Staph / Strep

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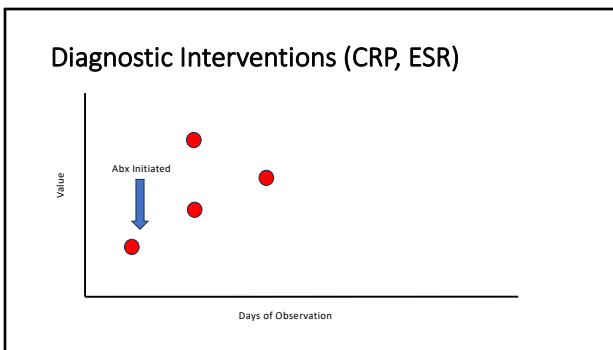
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Diagnostic Interventions

Labwork	WBC Ct \leftrightarrow	CRP \uparrow ESR Pro-cal	Blood Cultures \leftrightarrow
Ultrasound	Confirm bursitis / assess for joint effusion	Effusion vs Synovial Thickening	Calcification / Tophi
MRI	Abscess	Osteomyelitis	Joint effusion \leftrightarrow
Plain Films	Foreign objects	Effusion	

Darrinross Laffie et al


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Bursal Aspiration: Always Necessary?

- Favorable for diagnosis and microbiological investigation
- Quicker recovery? (i.e. source control?)
- Risks for complications \rightarrow Longer recovery



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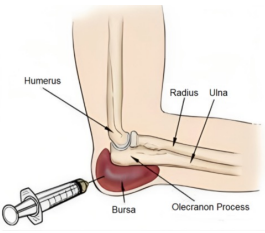
Bursal Aspiration: Always Necessary?

Deal et. al	Retrospective 2020	Olecranon	11 / 30 underwent aspiration 6 / 11 draining sinus; 8/11 bursectomy 19/30 empiric abx; 16 /19 w resolution
Thomas et. al	Retrospective ED Review 2022	Pre-patellar	61 / 157 discharged w empiric abx 58 /61 with f/u 51 / 58 had resolution w empiric abx 21 / 26 patients admitted w/o asp → resolution on abx
Beyde et. al	Retrospective ED Review 2022	Olecranon	147 / 264 discharged with empiric abx 134 with follow-up 118 / 134 had resolution w empiric abx

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Bursal Aspiration


- Ideally prior to antibiotics
- Wide range for sensitivity
- Bursal cell counts, gram stain, aerobic / anaerobic cultures
 - Fungal / AFB cultures in some circumstances



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Bursal Aspiration: An ID View


- Source control, source control, source control
- Diagnostic confirmation
- Microbiologic identification and susceptibility testing



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Post-Operative Management

- Uncertain duration of antibiotic management post-surgical treatment
- Most recommendations vary from 1 week to 3 weeks
- Heterogeneous mixture depending on surgical tx, organism, patient history



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Post-Operative Management

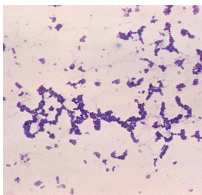
El Zein et al	Retrospective 2024	Olecranon	91 patients underwent bursectomy 84 / 91 received post-op antibiotics Median 21 days duration S. Aureus (64% cases) 7.4 marked reduction vs no abx
Charret et al	Retrospective 2021	Olecranon Pre-patellar	71 / 272 patients treated surgically 5 s/p surgery → failure 11 w/o surgery → failure Failure → [?] with abx < 14 days Surgically treated 14d vs not 21d
Perez et al	Retrospective 2010	Olecranon Pre-patellar	343 cases (94% treated surgically) 85% cure rate Total antibiotic duration negligible

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Antibiotic Management

MRSA coverage for consideration in the following circumstances:

1. Signs of systemic toxicity (tachycardia, fever, rigors)
2. Underlying or adjacent foreign material (graft, hardware)
3. History of or known colonization with MRSA
4. Exposure for MRSA high (healthcare exposure, surgery, dialysis)
5. Failure of regimen without MRSA coverage



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Antibiotic Treatment (Empiric Outpatient)

MRSA and Streptococci	MSSA and Streptococci
Doxycycline plus amoxicillin	Cefadroxil (BID) or cephalexin (QID)
Trimethoprim-sulfamethoxazole	Amoxicillin-Clavulanate
Clindamycin (Alternative) (Resistance?)	Clindamycin (Alternative) (Resistance?)
Linezolid (Alternative) (D-D interactions)	Linezolid (Alternative) (D-D interactions)

*Data on outpt management retrospective; no RCTs

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Antibiotic Treatment (Empiric Inpatient)

MRSA and Streptococci	MSSA and Streptococci
Vancomycin	Cefazolin
Daptomycin (Alternative)	Nafcillin
Clindamycin (Alternative)	Clindamycin (Alternative)
Linezolid (Alternative)	Linezolid (Alternative)

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Antibiotic Management (Additional)

Association with Animal Bites / Scratches	Consider additional gram negative coverage (Pasteurella, Capnocytophagia) and anaerobes with agents such as amoxicillin-clavulanate, clindamycin, cephalosporins / FQs with metronidazole. Inpatient → Amp-sulbactam, piperacillin-tazobactam +/- MRSA coverage
Water exposure	Consider additional gram negative coverage for Pseudomonas, Aeromonas with fluoroquinolone tx (outpt), cefepime / pip-tazo (inpatient)
Contaminated wound (soil, trauma)	Gram positive coverage plus gram negative coverage +/- anaerobic coverage
Association with IVDU	Gram positive coverage (Staph, Strep) plus gram negative coverage (3 rd / 4 th gen cephalosporins)

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Case Study #2

A 45 yo M landscaper with rheumatoid arthritis on methotrexate plus recent dose of steroids returns with 3 weeks of persistent redness, swelling and mild pain of the RIGHT elbow.



S/p a 7 day course of Augmentin and another 7 day course of Bactrim without any relief.

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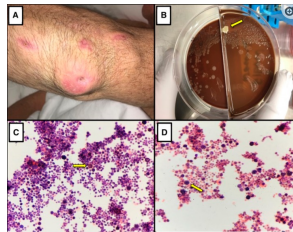
Case Study # 2

- Sub-acute / nearing chronic + failed abx → Atypical or resistant organisms
- Works outside with exposure to soil, water → gram negatives, fungal, mycobacterial, nocardia, anaerobes
- Immunocompromised (esp steroids) plus condition a/w bursitis

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Case Study # 2

- DDx incl fungi (Histo, Blasto, Sporothrix), Nocardia spp., Mycobacterium spp.
- This case was due to *Prototheca wickerhamii*



Cohen et al., 2023

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Takeaways

- Management remains heterogeneous with data suggesting majority of cases can be managed with empiric PO antibiotics.
- Failure to respond to 1st line therapy effective against Staph / Strep → Better diagnostic data and / or source control.
- Medical therapy alone may be adequate and optimal in majority of cases.

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Questions?

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