

# Periprosthetic Joint Infections:

## Risk Factors:

- Active Infection
- Immune Suppression-Drugs and Conditions
- Inflammatory Arthropathy (Rheumatoid Arthritis, Lupus)
- Morbid Obesity
- Smoking

Most Common Bacterial Organisms: Staph Aureus, Staph Epidermidis, Coag-negative Staph

Most Common Fungal Organism (much less common than bacteria): Candida

## Diagnosis:

| TABLE I MSIS Criteria for the Diagnosis of PJI and Thresholds for the Minor Diagnostic Criteria <sup>3*</sup> |                                                                                                                                                   | Recommended Threshold                                                      |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Major criteria                                                                                                | (1) Two positive periprosthetic cultures with phenotypically identical microorganisms <u>or</u><br>(2) A sinus tract communicating with the joint |                                                                            |
| Minor criteria                                                                                                | (1) Elevated serum CRP and ESR                                                                                                                    | 10 mg/L, 30 mm/hr                                                          |
|                                                                                                               | (2) Elevated SF WBC count or changes in the leukocyte esterase strip                                                                              | 3,000 cells/ $\mu$ L, + or ++                                              |
|                                                                                                               | (3) Elevated SF PMN%                                                                                                                              | 80%                                                                        |
|                                                                                                               | (4) Positive histological analysis of the periprosthetic tissue                                                                                   | >5 neutrophils per high-power field in 5 high-power fields ( $\times$ 400) |
|                                                                                                               | (5) A single positive culture                                                                                                                     |                                                                            |

\*PJI is present when 1 of the major criteria, or 3 of 5 of the minor criteria, are met. CRP = C-reactive protein, ESR = erythrocyte sedimentation rate, SF = synovial fluid, WBC = white blood cell, and PMN% = polymorphonuclear neutrophil percentage.

## Treatment Options:

- Nonoperative Suppressive Antibiotic Therapy-Poor Results
- Irrigation and Debridement with Component Retention: ~50% Success
- One-Stage Exchange: Variable Success (~75%?)
- Two-Stage Exchange: Current Gold Standard (~80-90% Success)
- Resection Arthroplasty: Salvage Option
- Arthrodesis (Fusion): Salvage Option
- Amputation: Salvage Option

## Take Home Messages:

1. Periprosthetic Joint Infections are highly morbid, highly expensive complications for patients, providers, and the healthcare system.
2. Proper Patient Selection and Optimization of Modifiable Risk Factors are keys to prevention.
3. All painful total joint replacements are infected until proven otherwise.
  - a. Follow appropriate algorithms for diagnosis
  - b. Treat aggressively