

SUPPLEMENTAL TABLE 1: Synovial Fluid Culture/PCR-ESI/MS Discordance

| Case number | Diagnosis | Year | Time to surgery | Antibiotic use | SF cell count/ μ l | Neutrophil % | ESR mm/hr | CRP mg/dl | Purulence | Pathology | Synovial fluid culture | Tissue culture | PCR-ESI/MS | | |
|-------------|-----------|------|-----------------|----------------|------------------------|--------------|-----------|-----------|-----------|-----------|------------------------|--|--|---------|-------|
| | | | | | | | | | | | | | Organism | Q score | Level |
| 180 | PJI | 2001 | 45 days | No | 57304 | 90 | 84 | 16.4 | No | AE | CoNS | CoNS (3/3 samples) | Negative | | |
| 181 | PJI | 2001 | No surgery | Doxycycline | 38948 | 80 | 75 | 3.7 | N/A | N/A | CoNS, broth only | N/A | Negative | | |
| 204 | AF | 2002 | 1 day | No | 780 | 8 | 10 | 2.72 | No | AE, NAI | Negative | Negative (2 samples) | <i>Propionibacterium acnes</i> | 0.98 | 24 |
| | | | | | | | | | | | | | Viridans/salivarius group <i>Streptococcus</i> sp. | 0.96 | 3 |
| | | | | | | | | | | | | | Viridans/mitis group <i>Streptococcus</i> sp. | 0.95 | 4 |
| 214 | AF | 2002 | 7 days | No | N/A | N/A | N/A | N/A | No | AE, NAI | Negative | Negative (3 samples) | <i>Staphylococcus epidermidis</i> | 0.99 | 160 |
| | | | | | | | | | | | | | <i>mecA</i> | 0.97 | 186 |
| 215 | PJI | 2002 | 13 days | No | 34661 | 99 | 74 | 15.4 | Yes | AI | CoNS | CoNS (3/3 samples) | <i>Propionibacterium acnes</i> | 0.98 | 62 |
| | | | | | | | | | | | | | <i>Candida tropicalis</i> | 0.96 | 32 |
| 221 | AF | 2002 | No surgery | No | 10008 | 68 | N/A | N/A | N/A | N/A | Negative | N/A | <i>Staphylococcus haemolyticus</i> | 0.94 | 10 |
| 234 | PJI | 2003 | 1 day | No | 2465 | 91 | 83 | 18.7 | Yes | AI | Negative | CoNS, broth only (1/3 samples) | <i>Staphylococcus epidermidis</i> | 0.97 | 24 |
| | | | | | | | | | | | | <i>Lactobacillus</i> sp., broth only (1/3 samples) | <i>mecA</i> | 0.97 | 10 |

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|------------------|-----------------|------|-----------|--------------|------|----|-----|------|----|---------|----------|--|--|-------------------------------------|------|---|
| 277 | AF ^a | 2004 | 45 days | No | 104 | 31 | 2 | 0.02 | No | NAI | Negative | <i>Klebsiella</i> sp., broth only (1/3 samples) | <i>Propionibacterium acnes</i> , broth only (1/3 samples) | <i>Enterobacter cloacae</i> complex | 0.96 | 3 |
| | | | | | | | | | | | | | | <i>Acinetobacter baumannii</i> | 0.94 | 4 |
| 285 | AF ^a | 2004 | 2 months | No | 52 | 26 | 40 | 1.33 | No | AE, NAI | Negative | Negative (3 samples) | <i>Staphylococcus aureus</i> | 0.9 | 3 | |
| | | | | | | | | | | | | | <i>mecA</i> | 0.98 | 1 | |
| 287 | AF ^a | 2004 | 20 days | no | 1924 | 16 | 10 | 0.41 | No | AE, NAI | Negative | Negative (3 samples) | <i>Propionibacterium acnes</i> | 0.98 | 149 | |
| 297 | AF ^a | 2004 | 1 day | No | 572 | 0 | N/A | N/A | No | AE, NAI | Negative | Negative (3 samples) | <i>Staphylococcus warneri</i> | 0.98 | 24 | |
| 331 | AF ^a | 2005 | 2 months | No | 364 | 14 | 3 | 0.3 | No | AE, NAI | Negative | Negative (2 samples) | <i>Methylobacterium mesophilium</i> | 0.94 | 4 | |
| 332 ^a | AF ^b | 2005 | 16 months | No | 988 | 14 | 5 | 0.30 | No | AE, NAI | Negative | Negative (3 samples) | <i>Micrococcus lylae/luteus</i> | 0.9 | 15 | |
| 350 | AF ^c | 2005 | 3 days | Tetracycline | 2236 | 14 | 14 | 0.8 | No | NAI | Negative | Negative (3 samples) | <i>Micrococcus lylae</i> | 0.99 | 14 | |

SF, Synovial fluid; ESR, Erythrocyte sedimentation rate; CRP, C-reactive protein; N/A, not applicable; AE, Arthroplasty effect; NAI, No acute inflammation; AI, Acute inflammation; CoNS, Coagulase-negative *Staphylococcus* species; AF, Aseptic failure; PJI, Prosthetic joint infection.

^aCases in which sonicate fluid culture was available and negative

^bCase 332 had negative sonicate fluid culture and PCR-ESI/MS

^cCase 350 had sonicate fluid culture with <5 cfu/10 ml *Corynebacterium* sp. (considered negative)

SUPPLEMENTAL TABLE 2: Follow-up of Aseptic Failure Cases with Positive PCR-ESI/MS Results

| Case Number | PCR-ESI/MS Result | Year of Specimen Collection | History of Prior PJI | Use of Antibiotic-Coated Cement on Revision Surgery | Follow up Events |
|-------------|--|-----------------------------|--|---|---|
| 204 | <i>Propionibacterium acnes</i> , Viridans/ <i>salivarius</i> group <i>Streptococcus</i> sp., Viridans/ <i>mitis</i> group <i>Streptococcus</i> sp. | 2002 | No | Vancomycin-gentamicin | 2007: Asymptomatic |
| 214 | <i>S. epidermidis</i> | 2002 | 2001: <i>Streptococcus agalactiae</i> infection same joint | N/A (polyethylene liner replacement only) | 2004: Patient fell and developed knee pain; aspiration and inflammatory markers not suggestive of infection; radiologic lucency present 2005: Revision surgery: cultures negative, no intraarticular purulence, pathology negative for acute inflammation 2006: Cellulitis around knee and <i>Streptococcus agalactiae</i> bacteremia; infection suspected, but not proven (aspiration not attempted; chronic antimicrobial suppression administered) 2009: Asymptomatic |
| 221 | <i>S. haemolyticus</i> | 2002 | No | No surgery performed | No data |
| 277 | <i>Enterobacter cloacae</i> complex, <i>Acinetobacter baumannii</i> | 2004 | No | Vancomycin-gentamicin | 2006: Developed chronic pain postoperatively, with no radiologic evidence of infection (plain radiographs) 2009: Improved pain; small area radiologic lucency |

| | | | | | |
|-----|-------------------------------------|------|---|-----------------------|--|
| | | | | | Postoperative chronic joint pain, inflammation and waxing/waning erythema with increased ESR and CRP |
| 285 | <i>S. aureus</i> | 2004 | 2001: <i>S. aureus</i> infection in the same joint prosthesis | Vancomycin-gentamicin | 2007: Minocycline administered empirically (undetermined duration) 2010: Knee aspiration negative. ESR and CRP elevated 2012: Abnormal triple phase bone scan. No joint symptoms |
| 287 | <i>P. acnes</i> | 2004 | No | Gentamicin | Postoperative chronic joint pain 2012: Radiographic lucency 2013: Revision surgery scheduled (pending) |
| 297 | <i>S. warneri</i> | 2004 | No | Gentamicin | 2006: Minor knee discomfort, no X-ray findings of infection |
| 331 | <i>Methylobacterium mesophilium</i> | 2005 | No | Gentamicin | 2010: Asymptomatic |
| 332 | <i>Micrococcus lylae/luteus</i> | 2005 | No | Vancomycin-gentamicin | 2011: Asymptomatic |
| 350 | <i>Micrococcus lylae</i> | 2005 | No | Vancomycin-gentamicin | 2012: New onset knee pain 2013: Revision surgery. Synovial fluid leukocyte 2170 cells/ μ l (8% neutrophils); ESR, 15 mm/hr; CRP 0.7 mg/dl. Cultures (synovial fluid, tissue and sonicate fluid) negative. No intraarticular purulence, no acute inflammation. |

N/A: Non-applicable; ESR, Erythrocyte sedimentation rate; CRP, C-Reactive protein