Conclusion.
RD PJIs are more likely to be culture-negative than OA PJIs. Prior PJII, histopathology and better outcomes suggest biologic differences that should be explored further.

Figure 1 The Kaplan-Meier curve representing implant survovlver after prosthetic joint infection treatment for rheumatic disease (RD) was 66% at 1 year and 47% for culture positive (blue), p=0.163.

Disclosures. All authors: No reported disclosures.

385. Arthroscopic vs. Open Surgery for Septic Arthritis of the Knee: A Systematic Review and Meta-Analysis
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Session: 48. Infections of Joints
Thursday, October 3, 2019: 12:15 PM

Background. Septic arthritis is a joint-threatening and life-threatening infection, with the knee representing the most frequently involved joint. There is no definitive treatment algorithm for the management of this condition, which typically includes surgical debridement to decompress the joint, followed by organism-specific intra-venous antibiotics.

Methods. MEDLINE (1965–2018), SCOPUS (1973–2018), The COCHRANE Library (2006–2017), EMBASE (1974–2018), reference lists, and scientific meetings were searched for relevant studies on the treatment of native knee septic arthritis by three independent reviewers. No language restrictions were used. Selection criteria included all studies reporting on native knee septic arthritis in adults treated with arthroscopy and open arthrotomy with irrigation and debridement. Data Collection and Analysis Studies were identified, subjected to inclusion and exclusion criteria, and reviewed by three independent reviewers. Patient characteristics, interventions, and outcomes were extracted, and the trials were rated for quality based on established criteria. A meta-analysis was conducted for the primary outcome, reoperation occurring after arthroscopic vs. open arthrotoomy irrigation and debridement for the treatment of septic arthritis. We used a qualitative analysis for secondary outcomes physical function and hospital length of stay.

Results. From 624 abstracts, eight trials met inclusion criteria, one randomized controlled trial and seven retrospective cohorts. Quantitative meta-analysis showed arthroscopic irrigation and debridement resulted in fewer reoperations compared with open arthrotoomy (RR = 0.76; 95% CI 0.59–0.97, P = 0.03, F² = 24%). Figure 1. A qualitative summary of seven included studies assessing physical function showed arthroscopic debridement results in improved functional outcomes and range of motion compared with open arthrotomy. Based on four trials, qualitative summary demonstrated that arthroscopic debridement decreases hospital length of stay compared with open arthrotoomy.

Conclusion. Arthroscopic irrigation and debridement is favored over open arthrotoomy with regard to lower rates of reoperation, improved functional outcomes, and shorter hospital length of stay.

Disclosures. All authors: No reported disclosures.

386. Blue Light Reduces Cutibacterium (Propionibacterium) Acnes Bacterial Burden: Orthopedic Shoulder Infection Prevention Strategy? Swati Bhargava, MD; Kathleen Boyle, MD; Sara Diletti, Bachelor of Science; Siddhant Nodoo, MD; John Crane, MD and Thomas DuQuin, MD; University at Buffalo, Getzville, New York; Department of Orthopedics, University at Buffalo, Buffalo, New York; University at Buffalo, Buffalo, New York
Session: 48. Infections of Joints
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Background. Cutibacterium acnes (C. acnes) is a common shoulder periprosthetic joint infection (PJI). Blue light (BL) is effectively used in the dermatologic clinical setting against acne vulgaris caused by C. acnes. Photodynamic therapy (PDT) is the use of light source and photosensitizer (PS) to enhance antimicrobial activity. We studied the effect of PDT using BL and PS in vitro on shoulder PJI isolates of C. acnes.

Methods. 19 strains were grown in thioglycollate medium and diluted in sterile normal saline (NS) to a turbidity of 0.5 McFarland standard; OD₅₅₀ of 0.1 to 0.15. 250 µL with PS added were placed in 96-well plates at 37°C, exposed to BL (415 nm) placed 1 cm above for 0 to 60 minutes at 15-minute intervals. Susceptibility to BL and PS was assessed. After serial 10-fold dilution with NS, 3 µL were plated on 5% sheep blood agar plates and incubated anaerobically for 48 hours.

Results. Twice as many with Photodynamic Therapy (PDT) vs. control (p = 0.02).

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for 48 hours. Eradication was defined as below the limit of detection. Definitions include Sensitive (S) if 3-log decrease in bacterial density or eradication at any time point, Weakly Sensitive (WS) with 1- to 3-log decrease and Resistant (R) with no decrease.

**Results.** Based on BL alone, (n = 19), 68% strains were S, 32% were resistant. BL+ R (10 μg/mL) effect in 25% (n = 3) and exerted a protective effect against 33% (n = 4). BL+ F (1 μg/mL) potentiated in 67%. BL+ D (0.1-1.5 μg/mL) in 83% of strains tested. The most resistant strain was eradicated using BL + D at an increased concentration of demeclocycline (2.5 μg/mL).

**Conclusion.** F and D enhanced the potential for eradication compared with BL exposure alone. It was a photo-protectant to BL for select strains. Prior studies have hypothesized endogenous intracellular porphyrins excited by BL causing energy transfer and production of highly cytotoxic reactive oxygen species causing bacterial death. Future clinical research evaluating the use of preoperative PS and surgical site exposure to BL as a preventative PJI strategy are needed. Our research with the addition of PS significantly reduces the bacterial burden of critically relevant PJI shoulder isolates of C. acnes in an in vitro model.

**Disclosures. All authors:** No reported disclosures.

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**387. A Rare Manifestation of a Common Disease: Tenosynovitis Associated with C. difficile: Case Report and Review of Literature**

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**Session:** 48. Infections of Joints

**Thursday, October 3, 2019: 12:15 PM**

**Background.** Reactive arthritis typically develops following enteric or genitourinary infection. The most common offending pathogens are Chlamydia, Salmonella, Shigella, Yersinia, and Campylobacter. We report a unique case of polyarticular tenosynovitis attributed to Clostridium difficile (C. difficile), and review of the literature.

**Methods.** We searched PubMed for “reactive arthritis” and “C. difficile” and found 53 cases. Two additional cases were excluded as they were published in French.

**Results.** An 18-year-old healthy male presented with nine days of abdominal pain and diarrhea, and two days of pain and swelling of bilateral fingers with an erythematous/ecchymotic rash over the second and third digits. Four weeks prior to symptom onset he received antibiotics for streptococcal pharyngitis. On presentation he had diffuse abdominal tenderness and edema of the PIP/DIP joints with tenderness throughout the phalangeal soft tissue, consistent with tenosynovitis. He had a leukocyte count of 33.0 thousand/μL and C-reactive protein of 12.0 mg/dL (normal < 1.0 mg/dL). C. difficile toxin PCR was positive, toxin EIA was negative. CT scan of the abdomen/pelvis demonstrated mural thickening consistent with extensive severe colitis. He received 14 days of oral vancomycin, with complete symptom resolution, including the tenosynovitis. Our literature review revealed 22.6% (12/53) of cases had involvement of hands, although all also had involvement of other joints. Our patient’s isolated tenosynovitis of bilateral hands is unique, and has only been reported once prior to our knowledge. Literature suggests treatment of the underlying C. difficile infection should result in rapid clinical improvement of tenosynovitis symptoms, as in our patient.

**Conclusion.** C. difficile continues to pose a significant threat to health and burden on the healthcare system. The association of reactive arthritis and C. difficile was first reported in 1976, with only 53 subsequent cases reported. Reactive arthritis classically presents as asymmetrical oligo- or polyarthritis involving lower extremities or large joints. Our case demonstrates isolated tenosynovitis of the hands may also be a possible presentation. Given the continued rise of C. difficile infection should be an area of increasing concern.

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**388. Spinal Implant Infections Treated with Debridement and Hardware Retention**

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**Session:** 48. Infections of Joints

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**Background.** Surgical site infections following spinal surgery affect 0.3 to 20% of patients. The longer the infection, the greater the chance of antibiotic treatment failure due to the establishment of mature microbial biofilm on the hardware, requiring its removal for infection eradication.

**Methods.** Retrospective cohort of patients with microbiologically confirmed SII following spinal surgery treated with debridement and retention. SII was defined as the presence of clinical signs of deep surgical site infection with 2 or more positive culture results of tissue surrounding the implant taken during surgical debridement; or from CT guided biopsy. Inclusion criteria: adults with a 1° episode of microbiological confirmed SII diagnosed from 2008 to 2017 with >2 years of follow-up, treated with implant retention. Definitions Early-onset infection (EOI): infection < 1 month following implant placement. Late-onset infection (LOI): between 30 days and 1 year after implant placement. Delayed onset infection (DOI): >1 year of implant placement.

**Results.** We analyzed 19 patients with SII treated with hardware retention. Mean age was 54 (21-70) years, 63% were female. Comorbidities, clinical manifestations and motive for surgery are in Table 1 and Figure 2. Hardware material used was titanium (84.2%) and steel (21%). In addition to the hardware, 11 patients (57.9%) underwent bone grafting, 4 experienced treatment failure (4/11 = 36.4%); 2 patients had nonmetallic material inserted (carbon polymer), the 2 patients experienced failure. 16 patients (84.2%) had EOI, 2 (10.5%) LOI, 1 (5.3%) DOI. Failure requiring implant removal was observed in 26.3% (n = 5), 2 of the cases were EOI, 2 LOI and 1 DOI. Bacterial characteristics of patients are shown in Table 2. 47.4% of patients required more than one debridement (Figure 2). In the linear regression model, treatment failure was associated with bone grafting (P = 0.04) and the use of carbon polymer materials (P = 0.007).

**Conclusion.** Treatment of SII with debridement plus antimicrobials treatment is acceptable, with a rate failure of 26%. In LOI and DOI spinal implant retention is more prone to fail. Bone grafting and the presence of polymers seem to be associated with treatment failure of conservative strategies.

| Table 1. Comorbidities | Charactersitics Value | N (%) |
|-------------------------|-----------------------|-------|
| Diabetes                |                       | 4(21.1%) |
| Smoking                 |                       | 2(10.5%) |
| Liver Diseases          | 0                     |       |
| Steroid use             | 2(10.5%)              |       |
| Hypoalpinurina          | 2(10.5%)              |       |
| Immunosuppressive therapy |                       | 3(16.8%) |
| Systemic malignancy     | 4(21.1%)              |       |
| Haematomalurgical malignancy |                 | 2(10.5%) |
| Radiotherapy            | 1(5.3%)               |       |
| ASA score 1-2           | 11 (57.9%)            |       |
| ASA score 3-4           | 8 (42.1%)             |       |

| Table 2. Bacteriological characteristics of patients with spinal implant infection included in the study (n = 19) |
|-------------------------|-----------------------------|-----------------|-----------------|
| Early                  |                             |                 |                 |
| MSISS                  | 3 (21.2%)                   |                 |                 |
| MRNCMS                 | 2 (10.5%)                   |                 |                 |
| MRNC                  | 1 (5.3%)                    |                 |                 |
| Enterococcus sp.       | 1 (5.3%)                    |                 |                 |
| Staphylococcus aureus  | 1 (5.3%)                    |                 |                 |
| Streptococcus viridans | 1 (5.3%)                    |                 |                 |
| Staphylococcus epidermidis | 1 (5.3%)                  |                 |                 |
| MDR                   | 1 (5.3%)                    |                 |                 |
| Pseudomonas aeruginosa | 1 (5.3%)                    |                 |                 |
| Pseudomonas aeruginosa  | 1 (5.3%)                    |                 |                 |
| Pseudomonas aeruginosa  | 1 (5.3%)                    |                 |                 |
| Lute                   | 1 (5.3%)                    |                 |                 |
| C. difficile           | 1 (5.3%)                    |                 |                 |
| Delayed                |                             |                 |                 |
| MRNC                  | 3 (19.3%)                   |                 |                 |
| MDR                   | 1 (5.3%)                    |                 |                 |
| C. difficile           | 1 (5.3%)                    |                 |                 |
| MRNC                  | 1 (5.3%)                    |                 |                 |
| Pseudomonas aeruginosa | 1 (5.3%)                    |                 |                 |
| Pseudomonas aeruginosa | 1 (5.3%)                    |                 |                 |
| Pseudomonas aeruginosa | 1 (5.3%)                    |                 |                 |
| Lute                   | 1 (5.3%)                    |                 |                 |
| C. difficile           | 1 (5.3%)                    |                 |                 |

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