

389. Risk Factors and Outcomes of Patients with Infectious Complications After Surgical Treatment of Blount Disease

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Background. Blount disease (idiopathic tibia vara) is an uncommon pediatric growth disorder characterized by unequal endochondral ossification of the medial aspect of the proximal tibial growth plate. Management of Blount's disease involves performing osteotomy for improved outcomes. The objective of the study was to assess risk factors for infection, microbiology, and outcomes in patients following surgical correction.

Methods. This study is a retrospective case-control study of patients who underwent surgery for Blount disease at Children's Hospital of Michigan, Detroit from January 1, 2000 to January 31, 2019. Charts from 44 patients who underwent surgical correction were reviewed (22 cases and 22 control patients) and analyzed for basic demographics, surgical risk factors, microbiology, treatment durations, and outcomes.

Results. A total of 44 patients (22 cases and 22 controls) were included. Baseline characteristics, risk factors, and outcomes are shown in Table 1. Significant risk factors for infection included increased obesity and BMI ($P < 0.05$). The median time to infection from index surgery was 12.5 days, with 11 (52.4%) of the infections categorized as superficial and 10 (46.6) as deep or organ space. 7 (31.8%) infections were polymicrobial and the common pathogen was *Staphylococcus aureus* ($n = 7$, 31.8%) (Table 2). Infected patients had an average of 3.25 incision and drainage procedures, and the average duration of antibiotic therapy was 23 days.

Conclusion. Obesity with an increased BMI was associated with increased risk of infectious complication following the surgical treatment of Blount's Disease with *Staphylococcus aureus*, is the most common pathogen.

Table 1 – Demographics, Risk Factors, and Outcomes of Patients and Controls

Patient Characteristics	Infected Cases n=22	Uninfected Controls n=22	p
Gender – Male n (%)	13 (59)	11 (50)	0.7
Age (mean)	10.8	9.7	0.4
Race n (%)			0.84
Caucasian	1 (4.5)	2 (9)	
African American	17 (77.3)	16 (72.7)	
Other	4 (18.2)	4 (18.2)	
Diabetes n (%)	0	1 (4.5)	1
Obesity n (%)	19 (86.4)	11 (50)	0.02
Body Mass Index (mean)	41.3	28.7	0.001
ASA Score n (%)			
1	7 (31.8)	0	-
2	10 (45.5)	19 (86.6)	-
3	5 (22.7)	3 (13.6)	-
average	1.9	2.1	0.2
Length of Hospitalization -Index Surgery (days - mean)	4.8	2.7	0.1
Duration of Surgery (minutes -mean)	121.9	127.1	0.7
Type of Surgical Prophylaxis n (%)			0.4
Vancomycin	0	0	
Cefazolin	18 (81.8)	19 (86.4)	
Clindamycin	1 (4.5)	1(4.5)	
Oxacillin	0	1 (4.5)	
Type of Implant n (%)			0.2
Metallic	22 (100)	19 (86.3)	
Cadaveric	0	2 (9.1)	
Other	0		
Number of Surgeries after Index Surgery n (mean)	1.6	1.3	0.3
Mortality -1 year	0	0	

Table 2 – Microbiology of Cases

Gram Positive Organism	n (%)	Gram Negative Organism	n (%)
Methicillin Sensitive Staph aureus	5	Enterobacter Cloacae	3
Methicillin resistant Staph aureus	2	Pseudomonas Aeruginosa	1
Corynebacterium spp	3	Acinetobacter	1
Bacillus spp	1	Escherichia coli	1
Group B Streptococcus	1	Serratia Marcescens	1
Propionibacterium spp	1		
Enterococcus Faecalis	1		
Brevibacterium	1		
Coagulase Negative Staphylococcus	1		

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390. Treatment and Outcome of Methicillin-Resistant *Staphylococcus aureus* Hip and Knee Prosthetic Joint Infection

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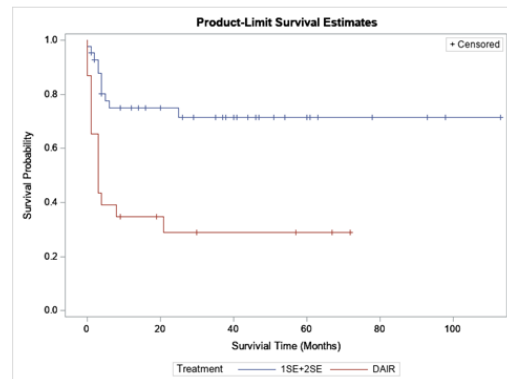
Background. Methicillin-resistant *Staphylococcus aureus* (MRSA) total hip and knee prosthetic joint infections (PJI) can be highly morbid and difficult to treat. Other clinical factors notwithstanding, explantation is usually recommended, although comparative treatment data are lacking. We sought to compare the success of implant retention to two-stage exchange in MRSA-infected PJI to better understand treatment options in this difficult cohort.

Methods. A retrospective cohort of hip and knee PJIs from 2009 to 2016 were identified by ICD code and surgical treatment. All cases met MSIS criteria for PJI, and had culture-confirmed MRSA from synovial or intra-articular tissue culture. PJIs were either treated with exchange arthroplasty or debridement with antibiotic and implant retention (DAIR). Success was defined as no further surgical treatment for infection at two years. Kaplan-Meier estimates were used to calculate the 2-year survival rate free from treatment failure. Univariate logistic regression was performed to identify risk factors associated with treatment failure.

Results. 65 MRSA PJIs were identified with 42 undergoing explantation and 23 undergoing DAIR. Demographics, Charlson comorbidities, infection type (early post-operative, hematogenous or late chronic), and history of prior PJI were not significantly different between treatment groups. Survivorship at two years was 75% (95% confidence interval [CI] 61–88%) for exchange compared with 29% (95% CI 10–48%) for DAIR, $P = 0.0002$. Within the exchange group, knee PJIs were more likely to fail than hip PJI (odds ratio [OR] 7.1, CI 1.3–38, $P = 0.02$), and patients with diabetes were more likely to fail (OR 17, CI 1.6–178, $P = 0.02$).

Conclusion. MRSA PJIs treated with DAIR have worse outcomes than those treated with prosthesis exchange. Further investigation is needed to identify predictors of DAIR success, to optimize surgical treatment choice, and to improve outcomes of these difficult infections.

Figure 1 The Kaplan-Meier curve representing implant survivorship after methicillin-resistant *Staphylococcus aureus* prosthetic joint infection treatment was 75% (95% confidence interval [CI] 61–88%) for exchange (1SE and 2SE) compared to 29% (CI 10–48%) for debridement with antibiotic and implant retention (DAIR), $p=0.0002$



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391. Septic Arthritis and Acute Hematogenous Osteomyelitis in Children: Disease-Specific Antibiogram and Implications for Treatment

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Background. Osteomyelitis and septic arthritis are common pediatric musculoskeletal infections with potential to cause significant morbidity. Empiric antibiotic selection is made prior to the availability of microbiologic data. The aim of this study was to compare the epidemiology of osteoarticular infections (OAI) to antibiotic regimens and local antibiograms.

Methods. A retrospective study was performed on patients aged 6 months to 18 years with a diagnosis of septic arthritis or acute hematogenous osteomyelitis in a large, free-standing children's hospital between July 2012 and July 2017. Exclusion criteria were chronic osteomyelitis, prior trauma or surgery at the site, noninfectious arthritis, and Lyme arthritis. Data collected from the electronic medical record included demographics, initial and discharge antibiotic therapy, and microbiologic results. Data were compared with the local antibiogram during the same time period.

Results. A total of 207 patients were included: 66 patients <4 years (< 4Y) and 141 patients ≥4 years (≥4Y). Causative pathogens were identified in 70% of patients. *Staphylococcus aureus* comprised 55% of positive results in children < 4Y and 73% in