

Prosthetic Joint Infection: A single center study comparing DAIR (Debridement, Antibiotics, Irrigation, and Retention) vs Exchange Arthroplasty

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INTRODUCTION

- Approximately 600,000 primary arthroplasties are performed in the United States annually, 2.5% of which are complicated by prosthetic joint infections (PJI).
- Effective treatment of PJI involves a combination of the appropriate medical therapy and surgical approach.
- The optimal surgical management of PJI remains unclear. Options for management typically include:
 - 1.) Prosthesis retention with debridement and antibiotics (DAIR)
 - 2.) Exchange arthroplasty (EA) on in either one or two stages.

OBJECTIVE

- 1.) To describe our medical center's experience in the management of PJI involving hip or knee arthroplasty
- 2.) To identify strategy specific risk factors associated with treatment failure
- 3.) To assess outcomes when 2 stage exchange is performed as a primary strategy vs. following a failed DAIR strategy.

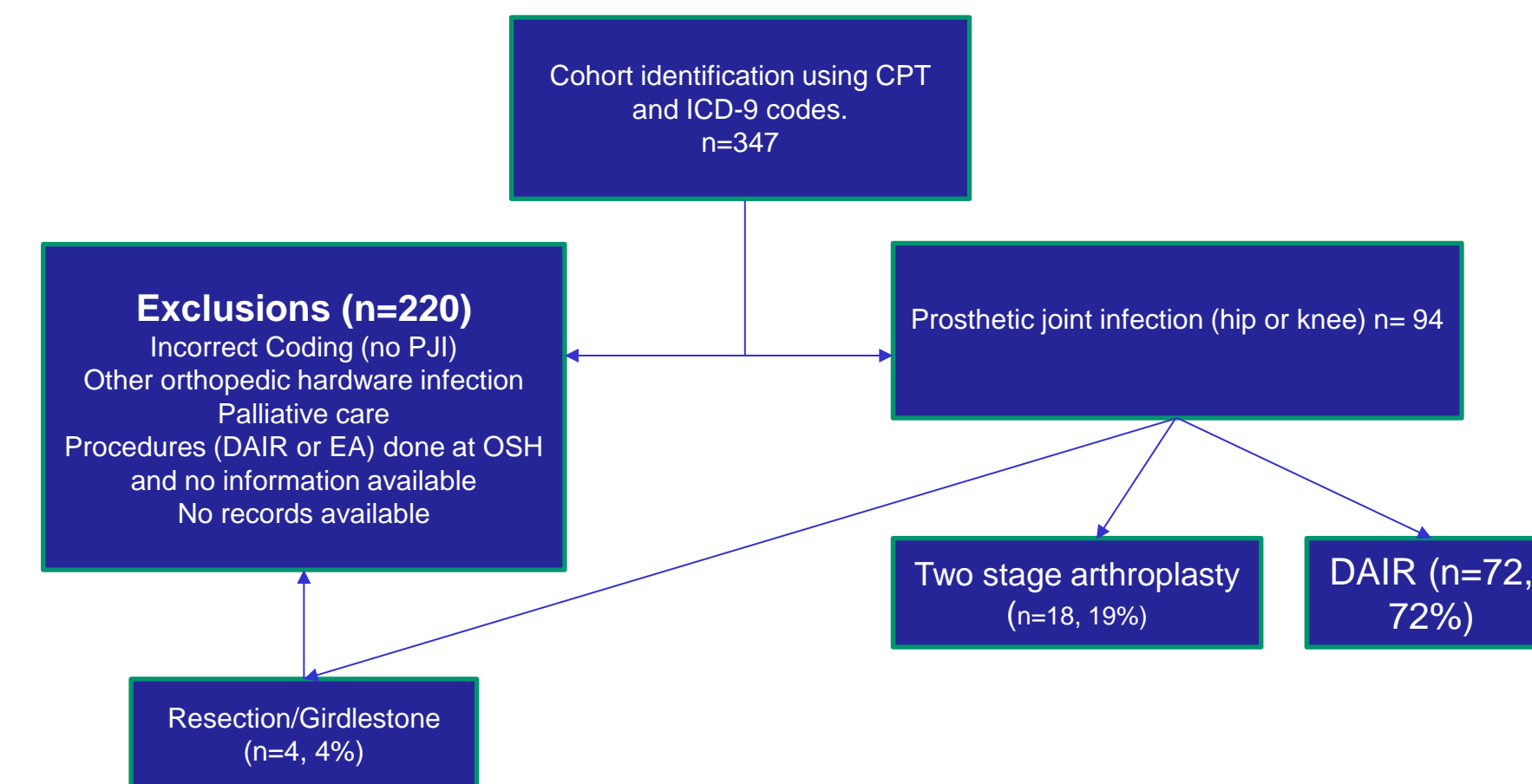
METHODS

- Retrospective cohort study of patients admitted between July 1, 2004 – July 1, 2015.
- Tertiary care center in Boston, MA
- PJI defined by ICD-9 code for infected orthopedic device and CPT code for joint replacement and arthrocentesis.

METHODS (CONT.)

- Additional data: clinical characteristics, microbiology, antibiotic regimen, complications of PJI and surgical intervention.
- The primary outcome was treatment failure, defined by signs/symptoms of persistent infection; the same pathogen was re-isolated within 1 year of diagnosis; and/or death directly related to PJI.

RESULTS



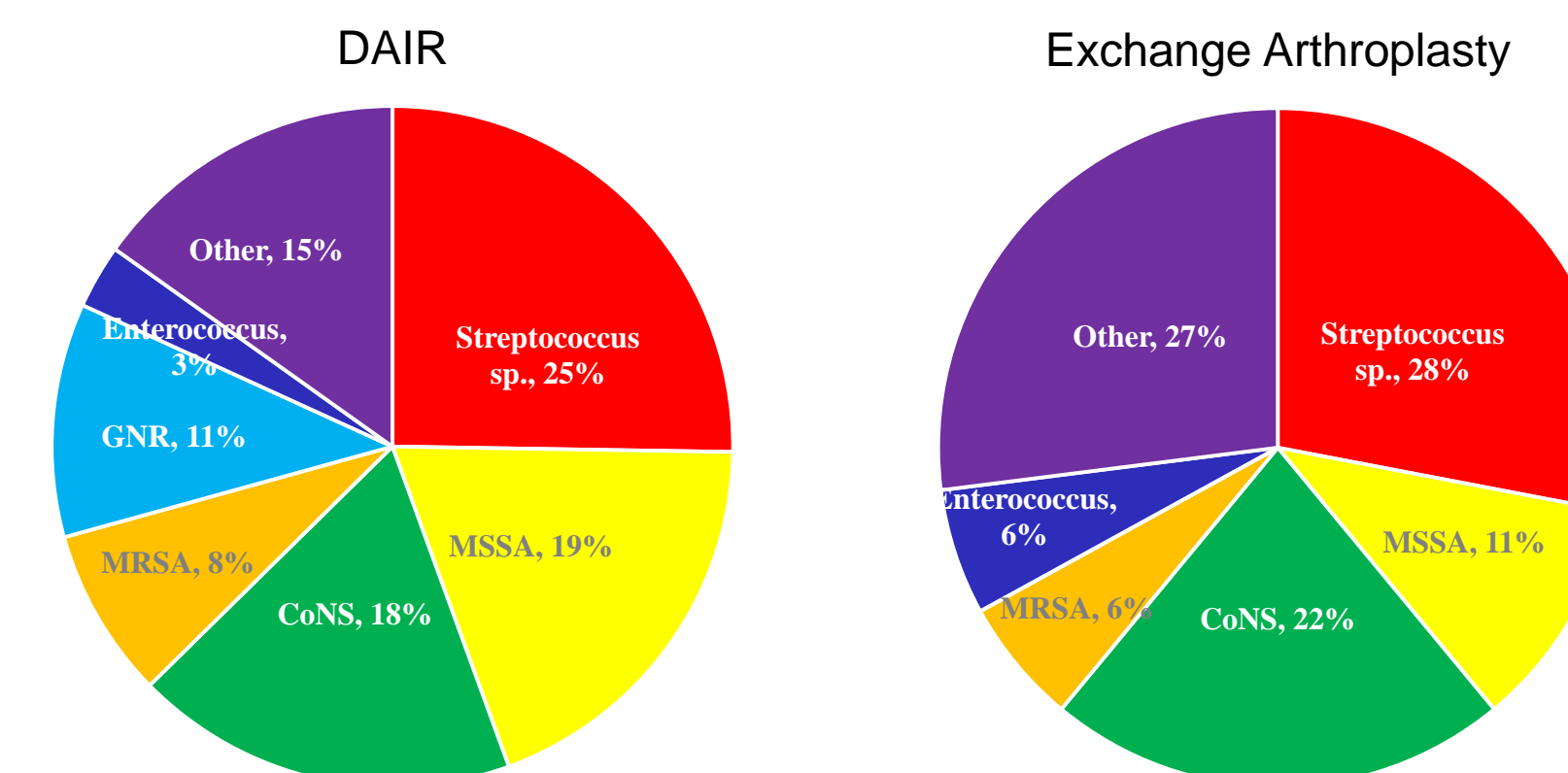
- 94 patients were identified with PJI
 - 4 patients managed with resection arthroplasty were excluded
- 90 patients were included in the final data analysis
 - 72 (80%) were managed with a DAIR strategy
 - 18 (19%) were managed with a 2 stage arthroplasty

RESULTS

Table 1. Demographics and clinical characteristics of pts with PJI

Characteristic	DAIR n=72 (80%)	2 Stage Exchange Arthroplasty n=18 (20%)
Age, mean (SD)	64 (52-76)	67 (58-76)
Male (%)	33 (46)	9 (50)
History of DM Type 2 (%)	21 (29)	4 (18)
Knee (%)	60 (83)	12 (67)
Hip (%)	12 (17)	6 (33)
Time Since Initial Replacement (%)		
< 3 months	24 (33)	7 (39)
3-24 months	23 (32)	2 (11)
>24 months	25 (35)	9 (50)
Duration of Symptoms Prior to Intervention (%)		
< 3 weeks	58 (80)	6 (33)
3 weeks – 2 months	11 (15)	4 (22)
2 months – 6 months	3 (4)	3 (17)
More than 6 months	0 (0)	5 (28)
Sinus Tract Present (%)	10 (14)	2 (11)
Hardware Loosening (%)	5 (7)	7 (18)

Figure 1. Microbiologic Cause of PJI by Surgical Strategy



RESULTS

Table 2. Antibiotic Treatment for PJI by Surgical Strategy

Characteristic	DAIR n=72 (80%)	2 Stage Exchange Arthroplasty n=18 (20%)
Duration of Initial IV or PO equivalent Course, %		
< 4 weeks	4 (6)	1 (6)
4-8 weeks	63 (90)	16 (89)
8-12 weeks	3 (4)	1 (6)
Transitioned to oral antibiotic course, %	58 (83)	3 (17)
Duration of oral antibiotics, %		
< 4 weeks	2 (3)	2 (67)
4 weeks – 6 months	25 (43)	1 (33)
> 8 months	31 (53)	0 (0)

Table 3. Outcomes of PJI Management by Surgical Strategy

Outcome	DAIR n=72 (80%)	2 Stage Exchange Arthroplasty n=18 (20%)
Treatment Failure, %	25 (36)	10 (56)
Reintervention Strategy		
2-stage Exchange Arthroplasty	22 (88)	5 (63)
DAIR	3 (12)	3 (37)

- Patients with hardware loosening were more likely to undergo exchange arthroplasty (18% vs. 7% p <0.001)
- Streptococcal sp. were the most common microbiology cause of infection in both groups.
- Treatment failure in both groups of surgical intervention was elevated.

CONCLUSIONS

We have observed an elevated rate of treatment failures in both the DAIR and EA groups. No significant difference in outcome was seen in patients undergoing EA following failed DAIR vs. EA as an initial approach. Our failure rates with EA after DAIR are however greater than those typically noted in published series of primary EA for PJI. Study is ongoing to determine cause for elevated failure rate.