Rates of Future Osteonecrosis are Higher among HIV+ Patients Treated with HAART Therapy

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INTRODUCTION: Human Immunodeficiency Virus (HIV) infection and highly active antiretroviral therapy (HAART) have both documented associations with osteonecrosis and postoperative complications. Yet, the majority of the current literature focus on comparative outcomes between HIV-positive and HIV-negative patients. A paucity of literature analyzes outcomes among HIV-positive patients with and without HAART therapy. The aim of this study was to evaluate complication rates and further osteonecrosis among HIV-positive hip arthroplasty patients stratified by HAART use.

METHODS: Between 2010 and 2018, a retrospective review of the Mariner database was performed using PearlDiver to identify HIV hip arthroplasty patients. Groups were 1:1 matched based on age, gender, Charlson Comorbidity Index, obesity, tobacco, and alcohol status. One-year costs, readmission, revision, and complication rates were assessed. Complications included blood transfusions, cardiac arrests, cerebrovascular accidents, deep vein thromboses, pulmonary emboli, myocardial infarctions, pneumonia, respiratory failure, urinary tract infections (UTI), osteonecrosis of the hip, osteonecrosis at any site, and periprosthetic joint infections (PJI). Continuous and categorical outcomes were measured <br bcx0"="">via Student T-tests and Chi-square analyses, respectively.

RESULTS: Of the 5,453 HIV patients identified, 2,965 and 2,488 patients had documentation of HAART and no-HAART use, respectively. Following 1:1 match, each cohort consisted of 1,364 patients, of whom 1,035 males and 329 females, with no intergroup demographical differences (Table 1). Among all complications analyzed, HAART patients reported 1.21 increased odds of osteonecrosis diagnosis at any location following THA (p<0.001). HAART negative patients reported 1.5 and 1.2 increased odds of pneumonia (p=0.004) and UTI (p=0.03), respectively. No significant difference was noted in terms of length of stay (p=0.57), readmission (p=0.42), reoperation (p=0.42), or PJI rates (p=0.67) (Table 2).

DISCUSSION AND CONCLUSION: When treating HIV hip arthroplasty patients, it is critical to assess HAART therapy status. Appropriate follow-up and coordinated care are required to monitor HIV treated and non-treated patients for future

N (%)	HIV-Treated (n=1,364)	HIV Non-Treated (n=1,364)
Age (SD)	55.1 (9.0)	54.0 (9.0)
Male	1035 (75.9)	1035 (75.9)
Female	329 (24.1)	329 (24.1)
Charlson Comorbidity Index (SD)	4.5 (3.7)	4.5 (3.7)
Non-Obese	1102 (80.8)	1102 (80.8)
Obese	202 (14.8)	202 (14.8)
Morbidly Obese	60 (4.4)	60 (4.4)
Tobacco Abusers	562 (41.2)	562 (41.2)
Alcohol Abusers	253 (18.5)	253 (18.5)
Length of Stay (SD)	6.0 (7.0)	6.2 (6.3)

Table 1. Patients demographics.

N (%)	HIV Treated (n=1,364)	HIV Non-Treated (n=1,364)	P-value
Episode of Care Costs[†] (SD)	$22,477 (24,273)	$23,389 (24,471)	0.76
Readmissions	347 (25.4)	328 (24.0)	0.42
Revision Surgeries	55 (4.0)	46 (3.4)	0.42
Complications			
Blood Transfusions	25 (1.8)	38 (2.8)	0.126
Deep Vein Thromboses	65 (4.8)	55 (4.0)	0.401
Hip Dislocations	46 (3.4)	48 (3.5)	0.916
Myocardial Infarctions	21 (1.5)	13 (0.95)	0.227
Osteonecrosis of any Site	460 (33.7)	365 (26.8)	<0.001
Pneumoniae	83 (6.1)	124 (9.1)	0.004
Prosthetic Joint Infections	44 (3.2)	49 (3.6)	0.673
Pulmonary Emboli	29 (2.1)	18 (1.3)	0.14
Respiratory Failures	43 (3.2)	28 (2.1)	0.092
Urinary Tract Infections	84 (6.2)	115 (8.4)	0.027

Table 2. Costs, one-year readmissions, and one-year complication rates.

SD: Standard Deviation

[†]Number provided is the mean figure with standard deviation in parentheses.