

The One-Year Infection Rates after Vancomycin Powder and Dilute Povidone-Iodine Lavage for Infection Prophylaxis in High-Risk Total Hip Arthroplasty: A Multicenter Randomized Controlled Trial

Braden Vincent Saba¹, William John Long, ANTONIA F CHEN, Herbert John Cooper, Douglas A Dennis, John M Dundon, Vinay Aggarwal, Olivia Schaffer, Joshua B Davis, Anne DeBenedetti, Mia J Fowler, Carlos A Higuera Rueda, Ian S Hong, Nickelas Huffman, Roseann M Johnson, Amethia D. Joseph, Farouk J Khury, Yair David Kissin, Alison K Klika, Shiv Lamba, Brett Russell Levine, Adriana P. Liimakka, Paul M Lombardi, William B Macaulay, Martin Malik, Morteza Meftah, Dylan Oliver, Ignacio Pasqualini, Nicolas Santiago Piuze, Eileen Poletick, Hayley E Raymond, Stephen R Rossman, Gregory James Schneider, Zeynep Seref-Ferlengez, Joshua Craig Rozell, Alex Tang, Walter Leonard Taylor, Vladimir Tress, Jesus M Villa, Olivia Pamela Vyge, Daniel Waren, Yibin Ben Zhang, James C Wittig, Richard S Yoon, Ran Schwarzkopf

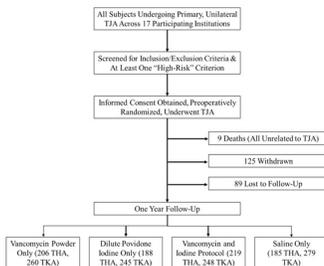
¹Adult Reconstruction

INTRODUCTION: Periprosthetic joint infection (PJI) is a costly and highly morbid complication following total hip arthroplasty (THA), and the literature on prophylactic strategies in primary THA remains mixed. We previously reported three-month outcomes from a large, prospective, randomized controlled trial. This study presents the one-year follow-up of the same cohort, evaluating intraoperative infection prevention protocols using vancomycin powder, dilute povidone-iodine lavage, or a combined vancomycin–povidone-iodine protocol (VPI), compared to standard normal saline irrigation.

METHODS: In a large, prospective, multi-center, randomized controlled study, four distinct infection prevention strategies were implemented in high-risk primary THA patients. Local vancomycin powder, dilute povidone-iodine solution, VPI, and saline control were used. The primary outcome was incidence of PJI within one year of index surgery, defined using the International Consensus Meeting (ICM) criteria. Chi-square tests were used for group comparisons.

RESULTS: After accounting for withdrawals, loss to follow-up, and deaths (all unrelated to the study intervention), complete one-year follow-up data were available for 798 (97%) eligible THA patients. There were no statistically significant differences in PJI rates among the four groups (0.5% vs. 1.7% vs. 1.9% vs. 1.1%, p=0.616).

DISCUSSION AND CONCLUSION: There were no statistically or clinically significant differences in PJI rates among THA patients at one-year follow-up across different intraoperative prophylaxis protocols. These findings suggest that the use of povidone-iodine and/or vancomycin powder can remain at the discretion of the surgeon or institution.



	THA (n = 798)				P-value
	Vancomycin (n=206)	Iodine (n=181)	Vancomycin and Iodine (n=219)	Saline (n=185)	
Age, mean (SD) (min-max)	67.6 (10.7) (52-91)	66.3 (10.3) (27-92)	67.9 (9.8) (32-92)	66.6 (10.8) (32-92)	0.283
Sex, n (%)					0.682
Women	110 (53.4)	111 (61.3)	118 (53.9)	107 (57.8)	
Men	78 (41.5)	95 (56.1)	101 (46.1)	78 (42.2)	
Race, n (%)					0.116
White	124 (66.0)	147 (72.8)	133 (61.5)	135 (73.0)	
Black	33 (18.6)	31 (15.3)	33 (14.4)	30 (16.2)	
Hispanic/Other	32 (17.7)	31 (15.9)	31 (14.2)	29 (15.8)	
Diabetes, n (%)	45 (23.9)	42 (20.0)	50 (22.8)	37 (20.0)	0.088
Smoking Status, n (%)					0.378
Current	27 (14.4)	31 (15.2)	42 (19.6)	30 (16.2)	
Former	78 (41.5)	80 (39.6)	83 (38.2)	69 (35.9)	
Never	85 (44.1)	92 (45.5)	89 (41.6)	95 (51.4)	
ASA Score, n (%)					0.875
1	1 (0.5)	1 (0.5)	2 (0.9)	2 (1.1)	
2	81 (43.5)	87 (43.1)	100 (46.1)	84 (45.7)	
3	99 (51.2)	106 (52.5)	112 (51.6)	95 (51.6)	
4	2 (2.7)	4 (4.0)	3 (1.4)	3 (1.6)	
BMI, mean (SD) (min-max)	32.9 (7.3) (18-52)	32.2 (7.3) (18-57)	33.9 (7.8) (15-59)	32.3 (7.4) (18-59)	0.058
CCL, mean (SD) (min-max)	3.1 (1.9) (0-11)	3.4 (2.1) (0-12)	3.1 (2.4) (0-13)	2.8 (2.0) (0-14)	0.204
Operative Duration (min), mean (SD) (min-max)	113.3 (22.8) (46-210)	114.4 (22.4) (48-200)	115.9 (26.8) (54-209)	110.7 (20.3) (46-204)	0.846

	THA (n = 798)				P-value
	Vancomycin (n=194)	Iodine (n=181)	Vancomycin and Iodine (n=207)	Saline (n=181)	
Periprosthetic Joint Infection, n (%)	1 (0.5)	3 (1.7)	4 (1.9)	2 (1.1)	0.616