

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

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INTRODUCTION:

Background:

Periprosthetic joint infection (PJI) is a costly and highly morbid complication following total knee arthroplasty (TKA), and the literature on prophylactic strategies in primary TKA 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 (VIP), compared to standard normal saline irrigation.

METHODS:

Methods:

In a large, prospective, multi-center, randomized controlled study, four distinct infection prevention strategies were implemented in high-risk primary TKA patients. Local vancomycin powder, dilute povidone-iodine solution, VIP, 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.

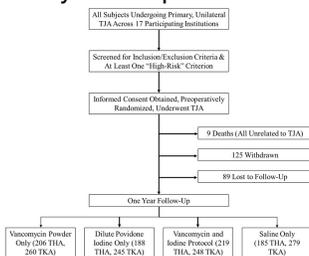
RESULTS:

Results:

After accounting for withdrawals, loss to follow-up, and unrelated deaths, complete one-year follow-up data were available for 1,032 (96%) eligible TKA patients. There were no statistically significant differences in PJI rates among the four groups (1.6% vs. 0.0% vs. 2.0% vs. 0.4%, $p=0.054$), although the p-value approached significance.

DISCUSSION AND CONCLUSION: Conclusions:

There were no statistically or clinically significant differences in PJI rates among TKA 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.



	TKA (n = 1,032)				P-value
	Vanc (n=245)	Iodine (n=260)	Vanc and Iodine (n=248)	Saline (n=279)	
Age, mean [SD] (min-max)	67.6 [10.7] (32-91)	66.3 [10.3] (27-92)	67.9 [9.8] (32-92)	66.9 [10.8] (32-92)	0.293
Sex, n (%)					0.818
Women	169 (69.0)	172 (66.2)	173 (69.8)	193 (69.2)	
Men	76 (31.0)	88 (33.8)	75 (30.2)	86 (30.8)	
Race, n (%)					0.375
White	126 (51.4)	138 (53.1)	140 (56.5)	165 (59.6)	
Black	63 (25.7)	62 (23.8)	53 (21.4)	63 (22.7)	
Unknown/Other	56 (22.9)	60 (23.1)	55 (22.2)	51 (18.5)	
Diabetes, n (%)	76 (31.0)	96 (36.9)	80 (32.3)	85 (30.5)	0.425
Smoking Status, n (%)					0.982
Current	18 (7.3)	19 (7.4)	16 (6.5)	23 (8.3)	
Former	81 (33.1)	87 (34.0)	80 (32.4)	95 (34.3)	
Never	146 (59.6)	154 (59.2)	152 (61.3)	161 (57.7)	
ASA Score, n (%)					0.971
1	2 (0.8)	1 (0.4)	1 (0.4)	1 (0.4)	
2	109 (44.7)	114 (44.0)	118 (47.6)	126 (46.2)	
3	131 (53.4)	140 (53.8)	123 (49.6)	148 (53.0)	
4	3 (1.2)	5 (1.9)	6 (2.4)	4 (1.5)	
BMI, mean [SD] (min-max)	34.2 [7.3] (17-62)	34.9 [7.6] (18-59)	35.0 [7.3] (26-74)	34.6 [6.9] (20-53)	
CCL, mean [SD] (min-max)	3.2 [1.9] (0-11)	3.1 [1.7] (0-10)	3.2 [1.7] (0-11)	3.5 [2.1] (0-12)	0.277
Operative Duration (mins), mean [SD] (min-max)	110.0 [34] (44-255)	106.9 [32.5] (53-252)	110.5 [30.7] (60-248)	107.4 [34.0] (47-265)	0.518

	TKA (n = 1,032)				P-value
	Vanc (n=245)	Iodine (n=260)	Vanc and Iodine (n=248)	Saline (n=279)	
Periprosthetic Joint Infection, n (%)	4 (1.6)	0 (0.0)	5 (2.0)	1 (0.4)	0.054