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Background

- Periprosthetic joint infections (PJI) are a rare but severe complication following total hip arthroplasty (THA), occurring in approximately 0.5%–1.7% of cases.
- PJIs are associated with substantial morbidity, prolonged hospital stays, and a financial burden estimated up to 5.6 times that of the index procedure.
- Intraoperative irrigation with antiseptic solutions, including 10% povidone-iodine and 0.05% chlorhexidine-based solutions, is commonly used to reduce microbial load and biofilm formation.
- However, the optimal irrigation solution in hip-specific revision arthroplasty remains unclear.

Irrigants	Saline (n=58)	Betadine (n=8)	Irissept (n=38)	Combination (n=92)	P-value
Gender (%)					0.994
Female	45	50	40.54	37	
Male	55	50	59.46	58	
Age (years, mean ± SD)	58.07 ± 15.13	59.38 ± 10.22	59.9 ± 20.2	65.17 ± 14.38	0.229
BMI (kg/m², mean ± SD)	26.54 ± 7.04	31.01 ± 6.57	31.91 ± 16.87	29.68 ± 6.53	0.378
Diabetes Mellitus (%)	16.1	25	36.8	17.39	0.038
CCI (median)	1	3.5	3	3	0.279
ASA (median)	3	3	3	3	0.478
Smoking Status (%)					0.547
Never	37.5	50	57.9	60.9	
Current or History	62.5	50	42.1	39.1	
Causal Organism (%)					0.008
Gram-Positive	21.1	74.0	22.2	27.1	
Gram-Negative	7.0	0	2.8	11.8	
Fungal	7.0	12.5	11.1	9.4	
Culture-Negative	63.2	12.5	50.0	41.2	
Multiple Organisms	3.5	0	13.9	10.6	
ESR (Mean ± SD)	61.3 ± 36.9	82.5 ± 32.56	44.65 ± 33.4	52.47 ± 31.05	0.089
CRP (Mean ± SD)	6.67 ± 13.29	5.43 ± 4.18	4.13 ± 4.81	11.01 ± 19.83	0.436
HbA1c (Mean ± SD)	5.57 ± 0.68	5.1 ± 0.17	5.53 ± 0.70	5.57 ± 0.74	0.833
Operation Time (minutes, Mean ± SD)	234.9 ± 109.8	165.63 ± 54.15	149.2 ± 84.3	197.4 ± 95.1	0.149
Length of Antibiotics (weeks, Mean ± SD)	5.64 ± 2.63	5.38 ± 2.07	8.74 ± 7.8	7.39 ± 5.67	0.090

Table 1: Patient Demographics and Clinical Characteristics

Methods

- A retrospective study
- 196 infected THA across two hospitals
- Dec 2017–Mar 2025
- Performed by three fellowship-trained orthopedic surgeons.
- Joints were irrigated with: saline, 10% povidone-iodine, 0.05% chlorhexidine gluconate, or combination irrigation.
- Patients underwent liner exchange, revision arthroplasty, or staged revision.
- Outcomes included 30- and 90-day ED visits, readmissions, reinfection, reoperation, and mortality.
- Firth’s penalized logistic regression evaluated associations between irrigation type and outcomes, adjusting for antibiotic duration, culture status, Charlson Comorbidity Index, ASA class, sex, body mass index, diabetes, smoking, erythrocyte sedimentation rate, C-reactive protein, and hemoglobin A1c.

	ED Visits Related to Surgery (n, %)	Readmission (n, %)	Reinfection (n, %)	Reoperation (n, %)
30-Day	S: 9 (16%) B: 0 (0%) I: 6 (16%) C: 13 (14%) P = 0.691	S: 7 (12%) B: 0 (0%) I: 4 (11%) C: 23 (25%) P = 0.053	-	-
90-Day	S: 7 (12%) B: 0 (0%) I: 4 (11%) C: 12 (13%) P = 0.762	S: 10 (18%) B: 0 (0%) I: 4 (11%) C: 19 (21%) P = 0.283	-	-
1 Year	-	-	S: 3 (5%) B: 0 (0%) I: 6 (17%) C: 17 (20%) P = 0.059	S: 9 (16%) B: 1 (13%) I: 7 (19%) C: 23 (27%) P = 0.399

Table 2 Significant Outcomes Between Irrigants at 30-Days, 90-Days, and 1-Year

Results

- No irrigation type was significantly associated with ED visits, readmissions, reinfection, reoperation, or mortality.
- These findings suggest that while antiseptic irrigation may reduce infection risk compared with saline, the choice of 10% povidone-iodine versus 0.05% chlorhexidine gluconate does not significantly affect short-term outcomes in revision THA.



Figure 1; Revision Total Hip Arthroplasty

Conclusions

- Antiseptic irrigation appears beneficial compared with saline, but high-quality, hip-specific studies are needed to guide optimal agent selection.
- 10% povidone-iodine offers rapid, broad-spectrum antimicrobial action, whereas 0.05% chlorhexidine gluconate may provide biofilm control with prolonged exposure, though cytotoxicity remains a consideration.