



Plastic Surgery

Role of Antibiotic Duration on Outcomes in Post-Mastectomy Implant-Based Breast Reconstruction

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Background

Women undergoing mastectomy + implant-based reconstruction have **high rates of post-op infection** (despite peri-operative and post-operative antibiotics)

- 5.8-28% of patients develop implant infection^{1,2}
- Infections in breast cancer population → serious consequences:
 - Delay definitive reconstruction → reconstructive failure³
 - Delay cancer treatments (chemotherapy/radiation)⁴
- Antibiotic use in post-operative period not well-studied
- Broad-spectrum antibiotics → antibiotic resistance

Good:

- Treats and/or prevents infections

Bad:

- Alters the microbiome
- Can cause antibiotic resistance

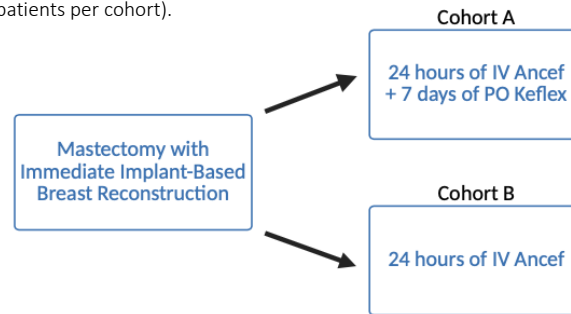


Objective

We aimed to determine which antibiotic regimen (**24 hours vs. 7 days**) led to more favorable outcomes in patients undergoing mastectomy with immediate implant-based reconstruction.

Methods

Study design: two-armed, randomized controlled trial in patients undergoing mastectomy with immediate implant-based reconstruction (enrollment goal: 100 patients per cohort).



Power Analysis (80% power at $\alpha = .05$)

- Primary outcome: infection rate (6-28%)
- Sample size required: N=90 (45 per cohort)

Currently: 116 patients (202 breasts) enrolled with >3 months follow-up

Results

Demographic and treatment data comparison:

- The cohorts are similar in:
 - Age
 - Therapeutic vs. prophylactic mastectomy
 - Reconstructive plane (pre-pec vs. sub-pec)
 - Neoadjuvant chemotherapy, Adjuvant radiation therapy
- **BMI was lower** in Cohort B (24hr) vs. A (7 days) (**23.1 v 24.6, $p=0.02$**)

Results Continued *Surgical Site Infection (SSI) Outcomes:*

	Cohort A (7 days) 59 patients 98 breasts	Cohort B (24hr) 57 patients 104 breasts	p-value
Any infection	18 breasts (18.4%)	16 breasts (15.4%)	0.57
Time to development of SSI, mean $\pm$ SD, days	49.2 $\pm$ 52.3	33.0 $\pm$ 36.4	0.31
Minor SSI (oral abx only)	6 breasts (6.1%)	7 breasts (6.7%)	0.86
Major SSI (admission, IV abx, return to OR)	14 breasts (14.3%)	10 breasts (9.6%)	0.44
SSI requiring TE explant	12 breasts (12.2%)	8 breasts (7.7%)	0.28
Staphylococcus + cultures	9 breasts (9.2%)	7 breasts (6.7%)	0.56
Days to explant, mean $\pm$ SD	60.5 $\pm$ 51.0	50.0 $\pm$ 40.4	0.63
Follow-up Duration, mean $\pm$ SD, days	550.1 $\pm$ 373.5	526.9 $\pm$ 389.0	0.57

Conclusions

- No significant differences in infection rates between cohorts
- Since longer antibiotics are NOT noted to be protective, we should re-evaluate the routine use of prolonged prophylactic antibiotics courses, particularly in patients of normal BMI

References: 1. Fischer JP, Nelson JA, Au A, Cui T, Serletti JM, Wu LC. Complications and morbidity following breast reconstruction - A review of 16,063 cases from the 2005-2010 NSQIP datasets. *J Plast Surg Hand Surg.* 2014. doi:10.3109/2000656X.2013.819003. 2. Kim JYS, Davila AA, Persing S, et al. A meta-analysis of human acellular dermis and submuscular tissue expander breast reconstruction. In: *Plastic Surgery Complete: The Clinical Masters of PRS- Breast Reconstruction.* 2015. doi:10.1097/PRS.0b013e318236166. 3. Ozturk CN, Ozturk C, Soucie A, et al. Expander/Implant Removal After Breast Reconstruction: Analysis of Risk Factors and Timeline. *Anesthetic Plast Surg.* 2018. doi:10.1007/s00266-017-117-1031-8. 4. O'Connell RL, Rattay T, Dave R V, et al. The impact of immediate breast reconstruction on the time to delivery of adjuvant therapy: the IBRA-2 study. *Br J Cancer.* 2019. doi:10.1038/s41416-019-0438-1