

Antimicrobial Irrigation Difference In Implant-based Reconstruction: Triple-antibiotic Solution Versus Chlorhexidine-gluconate Based Solution

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Introduction

- **Implant-based breast reconstruction (IBR)** is commonly used after oncologic mastectomy.
- Complications requiring revision include **capsular contracture, implant malposition, and infection**.
- **Antimicrobial irrigation and implant soaking** are used to prevent infection/complications.
- Common irrigation solutions include:
 - **Triple antibiotic solution (TAS)**
 - **0.05% chlorhexidine gluconate (CHG)**
 - Iodine-based solutions
- There is **no evidence-based consensus** on the optimal irrigation solution for IBR patients.

Objective

Purpose of the study: Compare post-operative infection rates in IBR patients using **CHG-based vs. triple antibiotic solutions**.

Methods

- Retrospective cohort study, 171 patients (304 breasts) performed between April 2020 and July 2024.
- Stratified based on irrigation solution used TAS and CHG
- All breasts pockets irrigated with half-half povidine-iodine solution then washed out with either TAS/CHG
- Postoperative complications assessed at <30 and >60 days.

Results

Patient Population

- In 171 patients, TAS was used in 249 breasts and CHG in 55 breasts
- Most patients were White (54.8%) and median age was 51 (IQR: 17.5).
- Median BMI 25.3 (IQR: 7.1).
- No significant difference in comorbidities (diabetes, hypertension, hyperlipidemia, end stage renal disease, obesity)
- No significant difference in rates of smoking, marijuana use, active steroid use
- Adjuvant radiotherapy at significantly higher rates in TAS (25.9%) vs. CHG (11.5%)

Operative Details

- No significant difference in Initial breast surgery type, incision type, lymph node dissection, drain usage, operative duration, implant placement, and acellular dermal matrix (ADM) usage

Complication rates

- No significant difference in <30 or >60 day complications
- Capsular contracture occurred in 7 patients - 5 TAS (2.02%) vs. 2 CHG (3.64%).
- Degree of contracture: 1st degree: 4 TAS (80%) vs. 0 CHG (0%); 3rd degree 1 TAS (20%) vs. 2 CHG (100%)

Table: Complication Details		Antimicrobial Solution		
	Total Breasts n = 304	TAS n = 249	CHG n = 55	p-value
<30 days post op complication	51 (16.78%)	46 (18.47%)	5 (9.09%)	0.09
Seroma	1 (0.33%)	1 (0.4%)	0 (0%)	0.82
Hematoma	8 (2.63%)	8 (3.21%)	0 (0%)	0.2
Dehiscence	5 (1.64%)	5 (2.01%)	0 (0%)	0.37
Delayed healing	14 (4.61%)	13 (5.2%)	2 (3.64%)	0.47
Mastectomy flap necrosis	15 (4.93%)	13 (5.22%)	2 (3.64%)	0.47
Red breast syndrome	0 (0%)	0 (0%)	0 (0%)	-
Cellulitis	7 (2.3%)	7 (2.81%)	0 (0%)	0.244
SSI	2 (0.66%)	2 (0.8%)	0 (0%)	0.67
Unplanned Return to OR	18 (5.92%)	16 (6.43%)	2 (3.64%)	0.335
>60 day postop complication	32 (10.56%)	29 (11.69%)	3 (5.45%)	0.13
Seroma	4 (1.32%)	4 (1.61%)	0 (0%)	0.447
Hematoma	1 (0.33%)	1 (0.4%)	0 (0%)	0.818
Dehiscence	10 (3.3%)	9 (3.63%)	1 (1.82%)	0.431
Mastectomy flap necrosis	4 (1.32%)	4 (1.61%)	0 (0%)	0.447
Red breast syndrome	0 (0%)	0 (0%)	0 (0%)	-
Cellulitis	4 (1.32%)	4 (1.61%)	0 (0%)	0.447
SSI	7 (2.31%)	6 (2.42%)	1 (1.82%)	0.63
Unplanned implant removal	21 (6.93%)	20 (8.06%)	1 (1.82%)	0.078
Capsular contracture	7 (2.31%)	5 (2.02%)	2 (3.64%)	0.073

Discussion

- **No differences** in terms of **post-operative complications or rate of infection**
- Antimicrobial duration of TAS vs CHG may differ
- Use of ADM may play role in seroma formation and infection
- Radiotherapy history also may play role in postoperative complications
- Pre-pectoral or sub-pectoral implant placement role in capsular contracture rates
- Comparison to saline irrigation?

Limitations

- Retrospective study design
- Imbalanced sample size
- Low complication rate, insufficient power

Conclusion

In this pilot study, we found no significant difference in rates of short- and long-term postoperative infection, capsular contracture, and return to operating room

References

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