Povidone-Iodine Does Not Affect Acellular Dermal Matrix Integration in Patients Undergoing Two-Staged, Prepectoral, Breast Reconstructive Surgery

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INTRODUCTION

In 2000, the FDA banned the use of povidone-iodine with breast implants due to concerns regarding an adverse effect on shell integrity. The ban was based on two animal and in vitro studies that indicated povidone-iodine may impair collagen synthesis, have a toxic effect on fibroblasts and keratinocytes, and impair epithelial cell migration.

Yet, **no human study had demonstrated that povidone-iodine compromises breast implants or tissue expanders**, or that it is cytotoxic or inhibits wound healing. In 2017, the FDA ban was lifted, allowing povidone-iodine to be used with breast implants once again. Additionally, the impact of povidone-iodine on acellular dermal matrix (ADM) integration in humans had not yet been assessed.

As ADM is commonly used to increase tissue support while reconstructing a breast post-mastectomy, we thought it was important to **assess the safety of using povidone-iodine with ADMs in breast surgery** (Figure 1).

FIGURE 1

Acellular dermal matrices presoaked in full-strength povidone-iodine solution

OBJECTIVE

To investigate **whether povidone-iodine impacts acellular dermal matrix integration** in immediate, prepectoral, two-stage breast reconstruction.

METHODS

Patients who underwent immediate, prepectoral, two-stage, breast reconstruction were included in this retrospective study. The study population was divided into povidone-iodine-treated patients (58) and triple-antibiotic-treated patients (53).

The breast pockets were rinsed with the antimicrobial agent and the prostheses and ADMs were presoaked in the agent perioperatively. At implant exchange, the extent of ADM integration was clinically assessed. ADM integration was defined as >25% of matrix vascularization (Figure 4).

ADM integration and postoperative complications were compared between the groups.

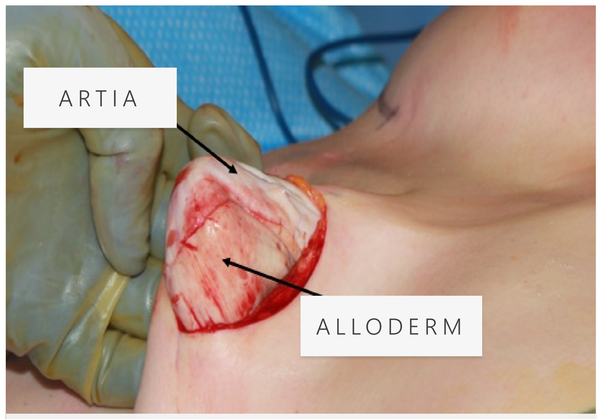


FIGURE 2

Integrated acellular dermal matrix in breast reconstruction pocket

FIGURE 3: TOTAL COMPLICATIONS

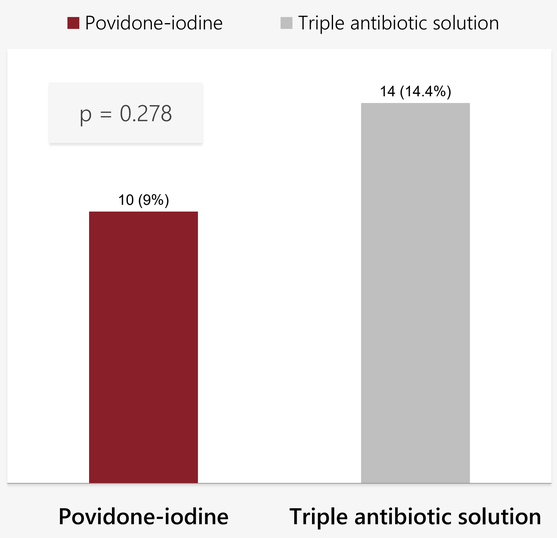
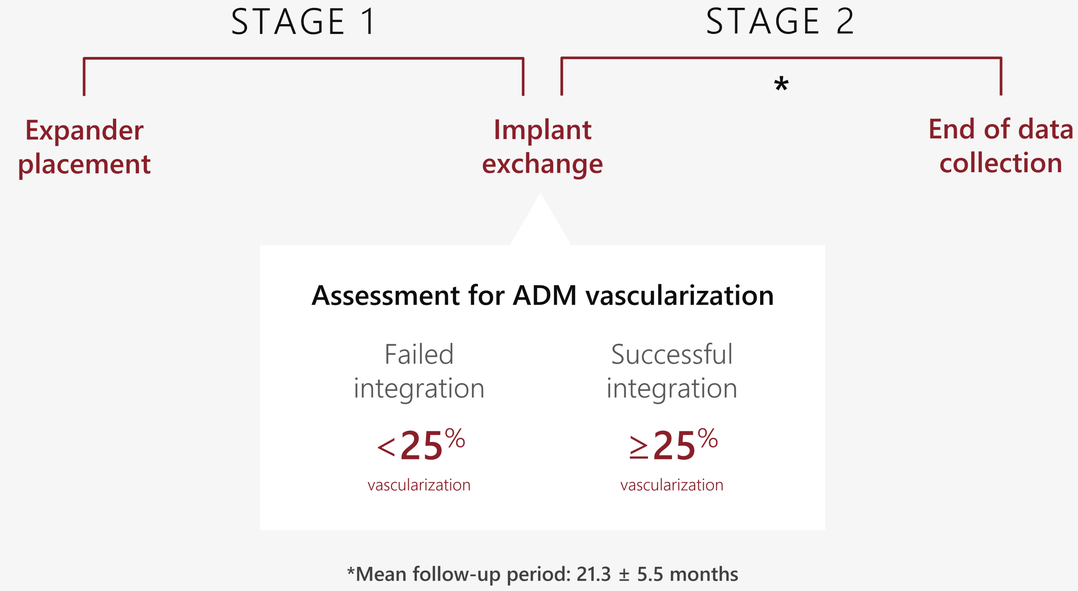


FIGURE 4: DATA COLLECTION



RESULTS

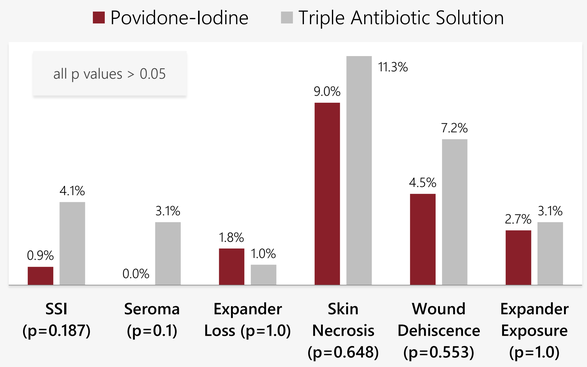
ADM integration was noted in 97% of breasts in each group (Figure 5). Integrated matrices appeared healthy, had no signs of foreign body reaction, and demonstrated punctate bleeding.

Complications did not differ significantly between the groups, including the rate of infections, seroma, and expander loss (Figures 3, 5).

CONCLUSIONS

Irrigation of the breast pocket and presoaking of the prosthesis and ADM with povidone-iodine appear to have **no adverse consequences on clinical outcomes** and **did not impede matrix integration.**

FIGURE 5: COMPLICATIONS BY TYPE



DISCUSSION

This retrospective clinical study has shown that presoaking of the ADMs in full-strength povidone-iodine did not affect the incorporation of the matrices into host tissue. Based on the integration of over 97% of grafts in this study, we can conclude that **povidone-iodine was neither cytotoxic nor adversely affected matrix integration**.

This study also demonstrated that triple-antibiotic rinse is an effective alternative to povidone-iodine for mitigating surgical site infection and associated complications of seroma and prosthesis loss.

LIMITATIONS

There are several limitations to this study; the most significant of which is the **lack of histologic evidence of graft integration**. Although grossly and clinically, povidone-iodine did not appear to have any effect on graft integration, from an academic standpoint it would have been interesting to see the effect, if any, on fibroblast repopulation of the matrices.

Other limitations include the retrospective nature of the study and the lack of objective quantification of matrix integration.

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