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Seroma Reduction with a Novel internal Negative Pressure System in Prepectoral Breast Reconstruction

Robert Paul, MD

Purpose

The objective of this study is to evaluate the safety and effectiveness of the Interi System in an expanded group of prepectoral breast reconstruction patients compared to standard drain patients. This is an update to our original study of Interi patients (*Plastic & Reconstruction Surgery Journal - Global Open*, January 2022).

Methods and materials

Consecutive patients undergoing immediate, prepectoral, implant-based, ADM-assisted breast reconstruction who received the Interi System from September 2020 to February 2022 were included in this study.

Patient records were reviewed, and data on demographics, comorbidities, neoadjuvant therapy use, type of mastectomy, mastectomy specimen weight, type of reconstruction, postoperative complications and manifold duration were retrieved and tabulated. Results for Interi patients were compared to the cohort of standard drain patients in the original study.

The Interi System is an internal negative pressure delivery system. Interi's internal manifold, with four "peel-apart" channel branches, is connected to an external therapy unit to simultaneously deliver continuous negative pressure of 125mm Hg to tissue planes and remove excess fluid, producing immediate, sustained apposition of tissues in this interface. Based on this mechanism of action, it is expected that Interi has the potential to more effectively close internal tissue planes, resulting in reduced seroma, edema, and other complications.

Reconstructive details: After introduction of the prosthesis and ADM, the branches of the Interi manifold were placed in the subcutaneous space to achieve maximal coverage within the breast pocket. The manifold tubing exited the inferior lateral portion of the breast and was attached to a therapy unit. Patients were discharged with replacement therapy units and taught to monitor fluid level and exchange therapy units when full.

Experience

This study includes an additional 36 prepectoral breast reconstruction patients treated with the Interi System, for a total of 59 patients (101 breasts). Interi patients and the cohort of 23 drain patients (39

breasts) were well matched in all demographic, reconstructive and mastectomy variables. The average length of follow-up for all Interi patients is 251 days.

Results

Interi patients had a mean age of 51.8 years with a mean BMI of 27.9kg/m. Diabetes and smoking was uncommon, 20.3% had hypertension, and 32.2% were obese.

Three seromas occurred in the Interi patients representing a significant reduction compared to the drain patients (3.0% vs. 20.5%, $P = 0.002$). The three Interi patients with seroma were high risk having underwent prior partial mastectomies and radiation treatments. There were no significant differences in complications other than seroma between the two groups, although flap revision was lower in the Interi group (5.9%) versus the drain group (15.4%). Complications occurred in 17 breasts (16.8%) in the Interi group, and 14 breasts (35.9%) in the standard drain group, a statistically significant difference ($P = 0.022$). Interi duration was significantly shorter than drains (17.0 versus 19.7 days; $P = 0.004$).

Conclusion

Interi System provides a safe and effective therapy that may offer significant improvement over current standards of care for seroma prevention in prepectoral breast reconstruction. These results confirm the findings from the original study.