# Innovative Use of Bordered Silicone Foam Dressing for Post-Graft Management in Complex Foot Wounds:

## *A Comparative Case Series*

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## INTRODUCTION

Postoperative graft success in the foot and ankle is often limited by challenges in dressing performance, particularly in high-motion, high-exudate environments. Traditional dry sterile dressings frequently require frequent changes, risk maceration, and struggle to maintain stable wound contact, which may compromise graft adherence and healing.

Rural patients face additional barriers when complex, multilayer dressings demand frequent home-health support. This case series was designed to evaluate whether bordered silicone foam dressing could address these limitations by providing more consistent moisture control, dressing stability, and graft protection than conventional dressings.

## METHODS

This comparative case series included eight patients with complex foot wounds requiring biologic grafting. All underwent operative debridement, placement of antibiotic-loaded calcium sulfate cement, and application of placental allograft and acellular dermal matrix grafts secured with staples.

A silver-containing antimicrobial contact layer was applied before postoperative dressing assignment. Four patients received standard dry sterile dressings, and four received bordered silicone foam dressing. All patients were uniformly offloaded and followed weekly for six weeks. Outcomes included dressing-change frequency, periwound maceration, dressing stability, graft integrity, and signs of infection.

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An Interview with the Lead Study Author


## RESULTS

Eight patients completed the six-week follow-up. The bordered silicone foam group required fewer dressing changes (0.63 vs. 1.54 per week), reflecting improved stability and reduced strike-through. Periwound maceration occurred once in the bordered silicone foam group compared with four instances in the SOC group. One bordered silicone foam patient experienced partial graft-edge lift requiring staple reinforcement. Localized infections occurred in one bordered silicone foam patient and two SOC patients, all resolving with oral antibiotics. No graft failures, systemic complications, or amputations occurred.

## KEY FINDINGS

**59%* FEWER DRESSING CHANGES**

**75%** REDUCTION IN MACERATION EVENTS**

**ZERO AMPUTATION OR GRAFT FAILURES**

*In patient group treated with BSF. **In both treatment groups.

**Table I: Patient Demographics and Wound Outcomes**

| PATIENT | AGE/SEX | KEY COMORBIDITIES | AGE OF WOUND AT INITIAL VISIT | WOUND LOCATION | INITIAL WOUND SIZE (CM) | FINAL WOUND SIZE (CM) |
|---|---|---|---|---|---|---|
| BSF1 | 62, M | DMII, PN | 12 MONTHS | Right Hallux | 1.5 x 0.8 x 0.4 | Healed |
| BSF2 | 73, F | DMII, PN | 8 WEEKS | Right Hallux | 1.5 x 0.8 x 0.4 | 0.2 x 0.2 x 0.2 |
| BSF3 | 80, F | DMII, PN | 13 MONTHS | Left Heel | 2.3 x 2.4 x 0.4 | 1.4 x 0.9 x 0.1 |
| BSF4 | 74, F | DMII, PN | 3 MONTHS | Left Hallux | 1.8 x 0.5 x 0.5 | Healed |
| SOC1 | 62, F | DMII, PN, Charcot Arthropathy | 8 MONTHS | Right Hallux | 1.4 x 0.9 x 0.5 | 0.9 x 0.4 x 0.2 |
| SOC2 | 79, M | DMII, PN, PVD | 9 MONTHS | Right Hallux | 1.5 x 0.7 x 0.2 | 0.6 x 0.3 x 0.2 |
| SOC3 | 79, M | DMII, PN, BKA | 37 MONTHS | Left Hallux | 2.2 x 1.7 x 0.3 | 0.8 x 0.2 x 0.1 |
| SOC4 | 59, F | DMII, PN | 25 MONTHS | Left 1st MTPJ | 1.5 x 1.1 x 0.2 | Healed |

**BSF:** Bordered Silicone Foam; **SOC:** Standard of Care; **DMII:** Diabetes Mellitus Type II; **PN:** Peripheral Neuropathy with Loss of Protective Sensation; **PVD:** Peripheral Vascular Disease; **BKA:** Below Knee Amputation; **AKA:** Above Knee Amputation

**Table II: Postoperative Events and Dressing-Change Frequency**

| PATIENT | INFECTION | MACERATION (EVENTS) | GRAFT VIABILITY | WEEK 1 | WEEK 2 | WEEK 3 | WEEK 4 | WEEK 5 | WEEK 6 | AVERAGE WEEKLY DRESSING CHANGES* |
|---|---|---|---|---|---|---|---|---|---|---|
| BSF1 | NO | 0 | NO | 1 | 0 | 1 | 0 | 1 | 0 | 0.50 |
| BSF2 | NO | 0 | NO | 1 | 1 | 0 | 1 | 0 | 1 | 0.67 |
| BSF3 | YES | 0 | YES | 1 | 1 | 0 | 0 | 1 | 0 | 0.50 |
| BSF4 | NO | 1 | NO | 1 | 1 | 1 | 1 | 0 | 1 | 0.83 |
| SOC1 | NO | 0 | NO | 1 | 1 | 1 | 1 | 1 | 0 | 0.83 |
| SOC2 | YES | 1 | NO | 2 | 2 | 2 | 2 | 2 | 1 | 1.83 |
| SOC3 | YES | 2 | NO | 3 | 2 | 2 | 2 | 2 | 2 | 2.17 |
| SOC4 | NO | 1 | NO | 2 | 2 | 2 | 1 | 1 | 0 | 1.33 |
| **MEAN WEEKLY DRESSING CHANGES —>** | | | | | | | | BORDERED SILICONE FOAM (N=4) | | **0.63** |
| | | | | | | | | STANDARD OF CARE (N=4) | | **1.54** |

*Weekly values represent the number of dressing changes performed between scheduled weekly clinic visits. The per-patient average reflects the mean number of dressing changes per week over the six-week postoperative period. Group-level means reflect the average weekly dressing-change frequency across all patients within each treatment cohort.

## DISCUSSION

Bordered silicone foam dressing demonstrated postoperative advantages over traditional dry sterile dressings, including fewer dressing changes, reduced maceration, and improved moisture control. These factors likely contributed to greater dressing stability, which is essential for protecting biologic grafts in high-motion foot environments. Although one bordered silicone foam case experienced graft-edge lift, this appeared patient-specific rather than dressing-related. Infection rates were low in both groups but occurred twice as often in the SOC cohort. While limited by small sample size, these trends suggest bordered silicone foam dressing performs at least as well as—and may outperform—traditional dressings in graft management.

## CONCLUSIONS

Bordered silicone foam dressing demonstrated superior moisture control and dressing stability in complex foot wounds. These findings support the need for larger, controlled studies to further evaluate the advantages of advanced silicone foam dressings in postoperative graft management.

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**Product Notation**
Bordered silicone foam dressing refers to Biatain® Silicone Fit, Coloplast Corp., Minneapolis,MN

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Dressings provided by Coloplast Corp.

**Conflict of Interest Statement:**
The author declares no financial conflicts of interest related to this work. Biatain Silicone Fit dressings used in the study were provided by Coloplast; however, the company had no involvement in study design, data collection, data interpretation, or manuscript preparation. The author received no financial compensation, incentives, or direction from Coloplast or any other manufacturer, and all clinical decisions and conclusions were made independently based on patient care considerations.

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