Materials and Methods

Two patients with non-healing venous leg ulcers for over 30 days were identified and consented to participate in a small cohort study (Western IRB #20101569). Each patient was subjected to evaluation at each visit (weeks 0, 1, 2, 3, and 4) for a total of 5 visits over a 4-week period. At each visit, the patient had all wound metrics and included 5 mm punch biopsies and comprehensive molecular evaluation (PCR and sequencing) evaluation. The molecular diagnostics were conducted by PathoGeniuses laboratories. The biopsies were sent for scanning electron microscopy evaluation at the Center for Biofilm Engineering.

Results

Table 1 demonstrates a significant reduction in wound volume for 9 of the 10 patients in the study. Two patients actually went onto full wound healing within the 4 weeks of the study.

Discussion

Drawtex dressings possess the physical property of a very strong and, therefore, rapid capillary force upon fluids. This property can be utilized in wound care to decrease dwell time of nutrient-rich plasma exudate within the wound bed, which seems reasonable to assume that decreasing the contact of plasma exudate with wound biofilm may suppress biofilm activity and improve wound healing as a result. The data shows that, for 9 of the 10 study subjects, Drawtex had a positive effect on wound healing by reducing wound volumes. Yet only 4 of the 10 patients also showed reduction in bacteria present (Table 1) and only 4 of 6 wounds showed reduction in diversity of organisms (Figure 1).

The data clearly shows an improvement in wound healing for 90% of the study subjects with 2 completely healed in the 4 weeks. Yet, the dependence of this healing is not 1:1 correlation with reduction of wound biofilm. This may mean Drawtex also impacts wound healing by mechanisms other than biocidal. Confounding factors may include increasing the delivery of the wound biofilm through the dehydration caused by the dressing itself. By drying out the wound biofilm, this may spuriously yield smaller cycle thresholds, which suggest more bacteria. A second caveat is that regardless of the quantity of bacteria present, the rapid removal of nutrient sources may suppress the activity of the remaining biofilm, thus the positive healing effect may not depend on reduction of bacterial numbers but rather on suppressing their activity. Further studies to assess the activities and interactions of individual bacteria will be necessary.

References


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