Case Study: The use of 3M™ Promogran Prisma™ Collagen Matrix with ORC and Silver with 3M™ ActiV.A.C.™ Therapy System in Abdominal Wound Dehiscence

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CASE REPORT:

A 47-year-old female with a medical history of perforated sigmoid viscus underwent an exploratory laparotomy, which resulted in bowel resection and anastomosis. Unfortunately, the patient developed abscesses with left sided peritonitis and returned to the operating room for an anastomotic leak. During this second surgery, the patient had another exploratory laparotomy, resection of the sigmoid anastomosis, and the formation of a diverting end colostomy. The patient was discharged to home with a three-day course of cefdinir, metronidazole, and fluconazole. Approximately 1 week after discharge, the surgical incision dehisced. The patient then sought care at a hospital-based outpatient wound center in Southeastern Wisconsin for the abdominal wound. Prior to presentation the patient had been treated with iodine gauze.

Upon arrival at the wound center the wound dimensions were 0.9 cm x 0.7 cm x 1.4 cm with circumferential undermining. Significant undermining was noted beneath the epithelialized portion of the surgical incision (**Figure 1**), with the deepest portion of undermining measuring 6 cm at the 6 o'clock position. The small opening limited direct visualization of the wound base, thorough cleansing of the wound, and application of advanced therapies to the wound base. A 3M™ Promogran Prisma™ Collagen Matrix with ORC and Silver dressing was applied, and the wound was covered with a silicone-bordered adhesive foam dressing until the patient could return the following day for a surgical sharp debridement and negative pressure wound therapy. The following day, the wound was surgically debrided along the epithelialized portion of the incision in both caudal and pedal directions to the extent of the undermining (**Figure 2**).

The wound treatment plan was adjusted to address and prevent common barriers to healing. The wound and peri-wound were cleansed with mild soap and water. Hypochlorous acid was applied to the wound and periwound tissues and allowed to soak (ensuring a consistent wet surface where applied) for a minimum of 3 minutes per treatment. The periwound skin was protected with a no-sting barrier wipe. During visits with the wound specialist, the patient underwent sharp debridement to remove necrotic tissue and bioburden, address biofilm, refashion the wound edges to allow for centripetal epithelium migration, and expose the endothelium of blood vessels to reinitiate the healing cascade. The patient then began a combination of Promogran Prisma Matrix, fenestrated by hand, applied to the wound bed along with 3M™ ActiV.A.C.™ Therapy System. The periwound was further protected by window framing the wound with a transparent drape as needed. Promogran Prisma Matrix was applied in a single layer to the wound base including undermining. 3M™ V.A.C.® Granufoam™ Dressing was placed over the wound and was covered with a transparent drape. The negative pressure wound therapy was set to -125 mmHg. The wound was assessed and treated 3 times per week (every 48-72 hours), with the cannister being changed weekly or as needed.

At the 2-week follow-up, (**Figure 3**), the wound showed reduced undermining and depth with increased granulation across the exposed abdominal fascia. The combined use of Promogran Prisma Matrix and the ActiV.A.C. Therapy System was continued for an additional 2 weeks. At the subsequent follow-up, the wound was flush, and granulation tissue covered the wound base (**Figure 4**). Promogran Prisma Matrix and the ActiV.A.C. Therapy System use was discontinued. The patient was transitioned to a silicone-bordered super absorbent polymer dressing, which was changed weekly until the wound epithelialized 2 weeks later (**Figure 5**).

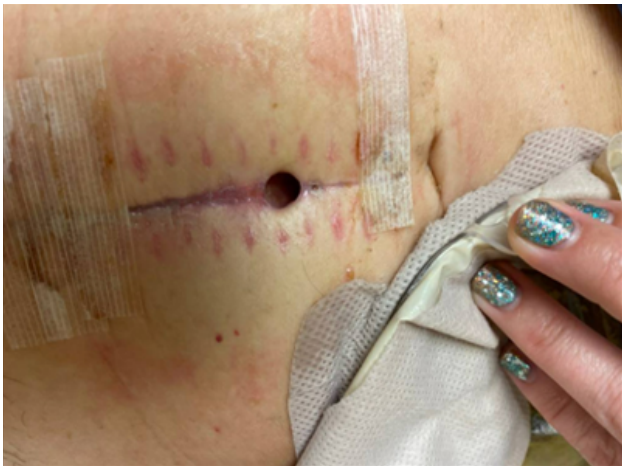

Figure 1. Dehisced abdominal incisions status post exploratory laparotomy and proctosigmoidectomy. Wound measurement (0.9 cm x 0.7 cm x 1.4 cm) at presentation with circumferential undermining, with the deepest portion of undermining measured at 6 cm at the 6 o'clock position. Patient data an images courtesy of Laura Swoboda, DNP, APNP, FNP-BC, CWOCN-AP.

Figure 3. Wound (4.2 cm x 1.9 cm x 0.6 cm) after 14 days of 3M™ Promogran Prisma™ Collagen Matrix with ORC and Silver and 3M™ ActiV.A.C.™ Therapy System (Day 15). Patient data an images courtesy of Laura Swoboda, DNP, APNP, FNP-BC, CWOCN-AP.

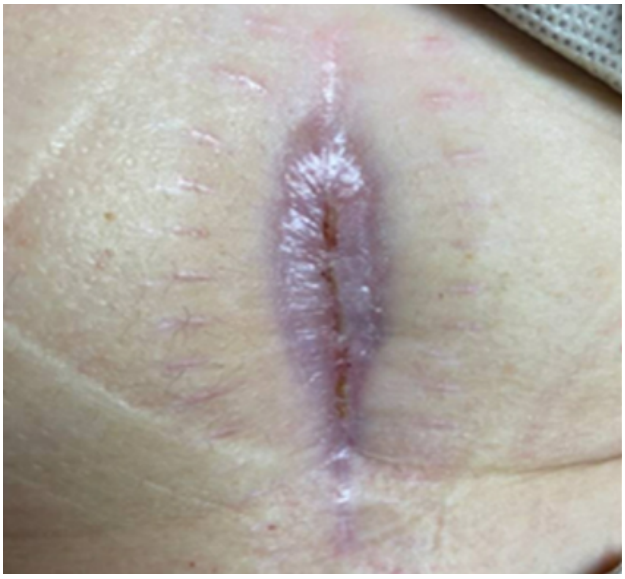

Figure 5. Fully epithelialized wound at Day 43. Patient data an images courtesy of Laura Swoboda, DNP, APNP, FNP-BC, CWOCN-AP.

Figure 2. Wound after debridement (6.5 cm x 1.8 cm x 1.4 cm) at Day 1. Patient data an images courtesy of Laura Swoboda, DNP, APNP, FNP-BC, CWOCN-AP.

Figure 4. Wound (3 cm x 1 cm x 0.3 cm) after 28 days of 3M™ Promogran Prisma™ Collagen Matrix with ORC and Silver and 3M™ ActiV.A.C.™ Therapy System (Day 29). Patient data an images courtesy of Laura Swoboda, DNP, APNP, FNP-BC, CWOCN-AP.

DISCUSSION:

This case illustrates the combined use of Promogran Prisma Matrix and ActiV.A.C. Therapy System over a 4-week period to manage a complex dehisced abdominal incision with circumferential undermining following multiple surgical revisions. After 40 days, the wound was completely epithelialized.

In this patient, the strategy of combined use of Promogran Prisma Matrix and the ActiV.A.C. Therapy System was effective for wound management. Bacteria and pro-inflammatory factors can prolong the inflammatory phase and preempt wound healing. The Promogran Prisma Matrix can optimize the moist wound environment for healing,[1,2] while the ActiV.A.C. Therapy System provides a closed, moist wound healing environment and promotes granulation tissue development.[3,4]

This case exemplifies the positive outcomes achieved through the use of wound bed preparation and best practices in the real-world challenges of wound management. To minimize wound healing impairment, providers must be cognizant of potential wound healing complications and plan for mitigation strategies.

The Promogran Prisma Matrix was chosen for its ability to promote a moist wound environment which is conducive to the development of granulation tissue, re-epithelialization, and optimal wound healing. Negative pressure wound therapy offers complementary benefits, including supporting wound edges, providing microstrain, removing inflammatory exudates, stimulating granulation tissue, and protecting wound tissues. In this case of a complex dehisced abdominal incision, the combined use of Promogran Prisma matrix and ActiV.A.C. Therapy System was both effective and safe.

SUMMARY:

This case highlights the successful combined use of Promogran Prisma Matrix and the ActiV.A.C. Therapy System to achieve durable wound healing. This approach provides healthcare providers with versatile tools to address complex wound management, ultimately benefiting patients.

References

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As with any case study, the results should not be interpreted as a guarantee or warranty of similar results. Individual results may vary depending on the patient's circumstances and condition.

Patient data and images courtesy of Laura Swoboda, DNP, APNP, FNP-BC, CWOCN-AP.