Case Study

Case study of an abdominal wound using Acticoat* silver coated dressing

Background

A wound disrupts the body’s normal anatomic structure and function. Ideally, the healing process restores structure and function with satisfactory cosmetic results. However, wounds healing by secondary intention do not follow the normal sequence of tissue repair, which results in altered tissue restoration and a loss of function that may result in wound recurrence.

Acute wounds undergo an orderly and timely sequence of physiological repair ending in wound closure. This carefully orchestrated process is often referred to as a “cascade of events” starting with tissue injury followed by thrombosis, inflammation, clearing of necrotic tissue, cell migration and proliferation, angiogenesis, contraction and finally wound closure and remodeling of the extracellular matrix.

Chronic wounds fail to proceed through an orderly and timely process and do not achieve permanent wound closure without assistance from health care professionals trained in the care and management of these wounds. Typically these wounds differ from acute wounds, as there appears to be a lack of clot formation and degradation which is the first trigger in the cascade of events for acute wound healing. Chronic wounds often present with a plethora of problems such as increased bioburden, tissue ischemia, increased inflammatory cytokines, elevated protease levels, necrosis and further tissue breakdown.

Acticoat* silver dressings were developed by Westaim Biomedical Corp. in an effort to combat and minimize wound bioburden and subsequent infection. The company developed a novel physical vapor deposition technology for the low temperature application of silver film to a high-density polyethylene mesh. Acticoat* silver dressings are abrasion resistant, adherent to the mesh and flexible. The silver film is colored when deposited onto the polyethylene mesh, therefore if the dressing is exposed to moisture, the color will change allowing contaminated or tampered dressings to be rapidly identified.

Management of Chronic Wounds of Surgical Origin

In the past, few options existed to manage chronic wounds of surgical origin. It was not uncommon to see the use of topical antiseptics and dry wound dressings. Wound research has advanced our understanding of the cellular, molecular and biochemical needs of chronic wounds. Therefore, a scientific base exists for wound care professionals to integrate research and technology in providing care for individuals with chronic wounds of surgical origin.
Case Study
The patient in this case study wishes to remain anonymous however, consent has been obtained to use the information provided in a case study format for distribution by Smith & Nephew, Inc.

A male in his late twenties sustained a traumatic injury to the abdomen requiring repair of several major organs. Postoperatively, wound care consisted of cleansing and packing the wound using sterile normal saline three to four times a day. Although the majority of wound tissues appeared healthy on the day of assessment, with no obvious signs or symptoms of infection, wound management was inhibited, as there was no improvement over the preceding 14 days. Residual suture material was visible in the wound at several locations (photo 1, Rx. Day1). The sutures did not appear to be supportive in nature and were removed along with a small amount of sloughing fibrinolytic tissue. The injured site was comprised of three wounds in close proximity with total surface areas measuring 27.5 cm long by 3.0 cm at the widest width and presented with combined partial thickness and shallow full thickness tissue injury. A moderate amount of serous exudate was evident on the old dressing removed from the wound. The patient reported a moderate amount of pain in the wound especially during dressing changes despite the administration of pre-medication one hour prior to dressing changes. Swab cultures taken prior to Acticoat* dressing management showed a mix of pathogens in the proximal and middle wounds. The proximal wound presented with PMN’s and macrophages and many Gram-negative bacilli (2+) and the middle wound presented with many PMN’s and macrophages, Gram-positive cocci and moderate Gram-negative bacilli (2+). The distal wound presented with moderate PMN’s and macrophages with no bacteria seen.

Acticoat* Dressing Method
The Acticoat* dressing was prepared according to the manufacturer’s guidelines. The intact tissue around the wound was protected with either a barrier creme (applied with each dressing change) or a barrier wafer (changed twice weekly). Sterile water was used to clean the wound and to moisten
the Acticoat* dressing. The wound tissues were covered with Acticoat* dressing followed by a damp, not wet, sterile gauze. Dry gauze is used as the outer dressing and sealed using a transparent film. When the outer dressing became saturated with exudate it was replaced.

The amount and type of exudate that drains from the wound guides the frequency with which Acticoat* dressings are applied to the wound surface. Purulent draining wounds generally require bid Acticoat* dressing applications, whereas serous draining wounds generally require daily applications. Once the amount of exudate decreases the frequency of dressing changes can also be reduced, usually to three times per week. It is important to continue the Acticoat* dressings until there is evidence of re-epithelialization.
Results

The patient was followed for 19 days in our acute care hospital and received daily Acticoat* and secondary dressing applications for the first 7 days. By the second week of Acticoat* application, the amount of exudate was noted to be significantly less and the patient was moved to Acticoat* dressing applications every Monday, Wednesday and Friday with the occasional need for the secondary dressing to be changed between the scheduled changes. The suture material was removed by the physicians after assessment day 9. On assessment day 19, the proximal and distal aspect of the wound was covered with a silicone foam dressing for support of the newly formed re-epithelialized tissue and Acticoat* dressing was continued over the central shallow partial thickness wound. On assessment day 19, the wound was 80% closed and the deepest cavity wound was filled with granulation tissue to the level of the epidermis. The patient reported a reduction in wound pain following the first week of Acticoat* dressing application. The reduction of pain may have been associated with a reduction in the inflammatory process as there was evidence of new granulation tissue throughout the wound.

Conclusion

Acticoat* silver dressings were effective in reducing wound bioburden with a concurrent reduction in the amount and type of exudate. This process was accompanied by a proliferation of healthy tissue in all three wounds. Although we had not anticipated the patient’s report of significant reduction in wound pain following one week of Acticoat* dressing application, this was an added benefit for this patient.