

Metallic Silver Dressing Applications from the Battlefield to Civilian Mass Casualty Care for Combined Burn & Trauma Injuries

Authors: Randall A. Espinosa MD, FACS

The author of this poster deployed as the commander and orthopedic surgeon of the 274TH Forward Surgical Team (ABN) in Iraq in support of Operation Iraqi Freedom from 14 October 2005 through 3 October 2006. During that period the FST was deployed to Tall Alar in support of 3d Armored Cavalry Regiment and counterinsurgency operations and also as an augmentation element for the 47th Combat Support Hospital in Mosul Iraq. At the request of the United States Army Medical Command the unit was supplied with and had extensive opportunity to utilize a broad spectrum metallic-based silver trauma and burn dressing products in the combat environment for the treatment of battle related injuries. The purpose of this report is to summarize some of the applications and the authors experience with these products within the battlefield environment.

Metallic Silver Burn and Trauma Dressing Product Experience:

The 274th FST (ABN) was provided with a generous sample quantity of metallic silver trauma and burn dressing products for field trial during its deployment to Iraq from October 2005 to October 2006. Initially, the Silverlon products were used almost exclusively by the FST Surgeons. The largest initial utilization was for the drains and packing material and initial utilization by some CSH surgeons was met with skepticism. When it became clear that the outcomes of operative cases in which the Silverlon dressings were used appeared more favorable, most of the surgeons also began to use the Silverlon dressings.

Surgeons who utilized the Silverlon dressings, witnessed fewer complications, fewer returns to surgery for infections, less edema, less scarring, and higher rates of graft success that those of surgeons not using the products.

Inpatient nursing care demands were greatly reduced and simplified because of the elimination of having to change dressings frequently. This was especially important in the case of management of burn and major wounds management. The silver dressings were kept moist and subsequently required dressing changes every 3-7 days and the product completely replaced the traditional practice of applying, removing and reapplying silver ointment twice a day in the management of burns. This also eliminated the tremendous pain and narcotic medication requirements associated with the traditional treatment.

By the end of the first 6 months, the majority of CSH surgeons were using the dressings, experimenting with creative and unique applications. Combat Support Hospital had to begin ordering additional dressings and acquisition was approved through USAMSWA. Overall product results demonstrated no complications with the benefit of simplistic and time saving dressing application and maintenance.

This poster exhibit displays but a few of the applications and cases that reflect the applications and success of the silver dressing products. These are all cases performed by the author of this document. The situation, resources and operational tempo of the combat medical treatment facility were not conducive to meticulous record or data collection. Frequently, patients had to be evacuated to other facilities, which made long term follow-up frequently impossible. Hence, no claims are made here of scientific or statistical significance.

Silverlon Burn and Trauma Dressings have been proven effective for the management of all types of soft tissue injuries in austere and civilian environments for open fractures, blast and burn injuries and traumatic amputations. These dressings are effective, easy to use, store, and transport, and are not affected by environmental extremes. Because of these attributes and its use for multiple indications, Silverlon Dressings can be considered a true force multiplier.

References

- Brandt, MM, Tait, MJ, Taddomio, TT & Wahl, WL: Silverlon use in Afghanistan, 2003. Poster session.
- Barillo, DJ: Military applications of silver-nylon wound dressings. European Wound Management Assn. Journal 2011; 11(2):p 131

Case One



This 32 year old Iraqi Soldier sustained second degree burns to his right upper extremity, face, neck and right chest wall and inhalation injuries when the bus in which he and 42 other Iraqi Soldiers were riding back to their base near Que West Iraq was hit by an IED. The fuel tanks on the bus were ignited by the blast and 18 Soldiers were killed. He underwent debridement of his burns and his right upper extremity burns were dressed with Silverlon burn dressings and over-wrapped with Kerlix moistened with sterile water and covered with IC wrap. His dressings were changed daily. His upper extremity burns healed faster and with less scarring even though more severe, than his chest wall burns, which were treated Silverlon. Once stabilized, he was referred to Baghdad where he is reported to have subsequently recovered.

Silverlon burn dressing applied to right upper extremity second degree fuel burns.

Case Two

This heroic 35-year-old Iraqi Policeman sustained penetrating and blast trauma to his chest, pelvis, abdomen, scrotum and shrapnel wounds to all four extremities during a suicide vest bomber attack on his checkpoint in Mosul, Iraq. His injuries were further complicated by second degree burns to 55 percent of his body, including his face and predominantly anterior body surfaces. Unfortunately, his heroism nearly cost him his life. After twelve different surgical procedures and nearly four weeks in intensive care, he ultimately recovered; after losing his left eye, right testicle, a finger and portions of both ears and his nose.



Upper extremities with deep partial thickness burns dressed with Silverlon by author. The Silverlon dressed burns healed 30% faster and all STSG grafts were 100% successful. Donor sites that were covered with Silverlon were less painful than those that were not.

Lower extremities with superficial to deep partial thickness burns dressed with SSD by another surgeon. The SSD dressed burns healed slower and 70% of the STSG failed due to infection and sepsis.

Extensive penetrating, blast and burn injuries inflicted by a suicide vest bomber's attack.

Bilateral hand blast and burn injuries; the left middle finger required amputation.



Silverlon burn gloves and wraps worked superbly without any complications or graft failures on the upper extremities with 100% graft success. Unfortunately, the General Surgeons did not use the Silverlon on his other skin grafts. He subsequently lost 70% of those skin grafts to infection and sepsis, requiring subsequent repeat grafting.

Appearance of hands 48 hours after initial debridement. Note the dramatic reduction in edema following the Silverlon applications.



Case Three

This 24-year-old Iraqi Army Soldier sustained bilateral lower extremity penetrating trauma from a vehicle born improvised explosive device (VBIED) near Sinjar Iraq. He sustained a grade 3 open right tibia fracture with penetrating trauma and complex fractures to both feet. He had a left foot injury that was originally left to require amputation; however the author of this paper argued for preservation of the extremity due to intact sensation and the presence of the complex fracture of the contralateral extremity.



Primary reduction and stabilization of the comminuted right tibia fracture was achieved with external fixation and vessel loop closure over a Silverlon drain.



Right foot after delayed primary closure of all wounds.

Complex left foot wound with loss of the 5th metacarpal and portions of the cuboid and lateral calcaneus.



Silverlon fabric dressing material was laid into the wound and covered with a Wound-VAC sponge.

Early in our experience we used the Silverlon fabric dressings under wound vacuum dressings and subsequently began using the webbed digital dressings that were split and permitted exudate drainage under suction. The CSH subsequently ordered the Silverlon Wound VAC dressings, but they arrived just prior to my departure from theater in October 2006 and I did not have opportunity to use them. The patient recovered remarkably and was well on his way to a solid tibial union at follow-up twelve weeks after his initial injury (no pictures of wounds were taken).

