Hemorrhage Control and Resuscitation

Wound Stasis System (WSS)

DARPA funded the WSS program to address the need for an effective battlefield treatment of hemorrhage-inducing wounds to the abdomen that are inaccessible to combat medics for traditional treatments, such as direct compression. DARPA funded researchers to design an injectable polyurethane-based self-expanding foam that hardens inside the body cavity, providing a local tamponade effect and direct pressure at the site of injury. This product, injected as a prehospital treatment, is later removed by a surgeon at advanced levels of care during definitive treatment. Researchers examined the dose dependence of survival using a lethal, closed-cavity, swine liver injury model. When used in this model, WSS improved survival from less than 10 percent in controls (fluid resuscitation only) to greater than 70 percent. To extrapolate this swine dose to a human dose, DARPA funded a novel multi-center translational research study. DARPA has transitioned WSS to USAMRMC where the researcher is under contract to conduct further development and run clinical trials supporting an FDA regulatory decision.