Lt Colonel Steve Jeffery, Burns and Plastics Surgeon, The Royal Centre for Defence Medicine, University Hospitals Birmingham Foundation Trust, Selly Oak, Birmingham B29 6JD, email: sjeffery@nhs.net
Major John Clark, Senior Military Nurse for Burns and Plastics, The Royal Centre for Defence Medicine, University Hospitals Birmingham Foundation Trust, Selly Oak, Birmingham B29 6JD, email: johnclark@blackberry.orange.co.uk

The use of gauze-based Negative Pressure Wound Therapy in military injuries

Introduction

The recent conflicts in the Middle East have resulted in high numbers (n =199 injured from Jan - July 2009)[1] of service men and women being transferred back to the UK with severe blast injuries and subsequent open wounds (See images 1, 2 and 3). The challenges in management of these wounds is threefold: initial assessment of the injuries, resuscitation and stabilisation, secondly minimising wound infection and thirdly achieving rapid cosmetically-acceptable closure to facilitate early rehabilitation and positive outcomes.

Method

All phases of any planned care are critical to recovery of these patients. Interestingly with this group of patients it has been observed that micro-organisms detected in these wounds are often rare species that are not indigenous to the UK. This has necessitated the use of repeated aggressive surgical debridement, administration of intravenous antibiotics and the use of advanced wound care products such as nanocrystalline silver† and NPWT. NPWT has emerged over the last decade as one of the tools used by most plastic surgeons to either prepare a wound bed for grafting and, or maximise graft take. In these patients the wounds are vast and often irregular in shape with large volumes of exudate. The ability to keep a dressing in place between surgical procedures is vital to the ongoing progress of the wound bed, and also to minimise the risks of surgical site infection which is commonly associated with wound extension graft loss and complications including sepsis and death. Gauze-based NPWT has emerged over the past 2 years as an alternative to the more commonly used foam-based system for these irregular extensive wounds. Gauze offers benefits over foam in terms of ease and speed of application and apposition to the tissues. The ability to keep the wounds sealed between dressing changes and manage the exudate reduces the risk of surgical site infection within the care setting for the patient treated and others in close proximity.

Results

All injured military personnel returning to the UK are treated at The Royal Centre for Defence Medicine in Selly Oak. The majority of these patients have had nanocrystaline silver and, or NPWT (either gauze or foam based) applied as part of the treatment regime. What has become clear is that in difficult wound shapes and extensive wounds at limb junctions gauze is easier to apply and has proved to be comparable to foam in terms of clinical effectiveness. It has emerged as the treatment of choice for certain wounds in the unit.

Discussion

As with any clinical situation, priorities arise as a result of the clinical demands associated with the care of the patient group and from the circumstances in which the injury occurred. Resources are often dictated by geography, access and funding. In this group patient care is directly influenced by the type of injuries sustained and the need for urgent stabilisation and transfer back to the UK from the Middle East. Currently the use of nanocrystaline silver and NPWT is restricted to use in the UK. Over the subsequent weeks nanocrystaline silver is to be introduced into the field hospitals to see if this further improves the outcomes of this patient group. If this is successful, the next stage will be to introduce NPWT to field hospitals to see if this has an impact on the number of surgical debridements required and also the time to closure.

Conclusion

A multidisciplinary approach to the care of these critically injured service personnel is critical to their survival. The cornerstones of care include radical surgical debridement of all visible devitalised tissue and the use of advanced wound care products to facilitate early surgical closure. As clinician experiences with NPWT fillers continue it is clear that thoughts are emerging on which to base decisions. It is hoped that future research in this area in the form of comparative studies will provide definitive answers over time.

Clinical examples

Image 1: STSG *in situ* on extensive trauma pre NPWT

Image 2: 100% graft take post NPWT - Sacral area needs rotational flap to cover visible deep structures

Image 3: Gauze-based NPWT *in situ* on bilateral limb wounds - illustrating conformability and flexibility of use

Illustrations

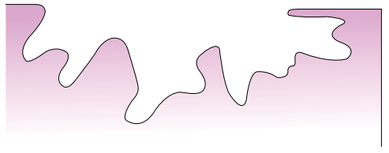

Figure 1: Shape of wound bed common to military trauma

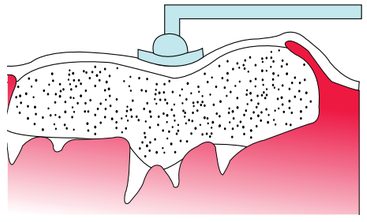

Figure 2: Problems encountered when contouring foam

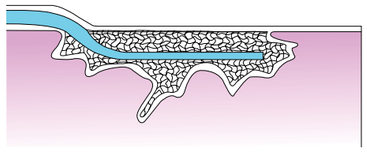

Figure 3: Gauze *in situ* - easily contours to wound shape allowing even application of NPWT to the wound bed

Reference

1. Norton-Taylor R, Topping A (2009) July sees surge in soldiers killed or wounded in action in Afghanistan. Guardian. co .uk. Thursday 30 July 2009.

†Nanocrystalline Silver is a patented technology of NUCRYST Pharmaceuticals Corp. SILCRYST is a trademark of NUCRYST Pharmaceuticals Corp., used under licence.

This poster was presented at Wounds UK, Harrogate Nov 2009
This poster was supported by an unrestricted grant from Smith & Nephew.

19801