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PROLOGUE

Breakthrough ideas leading to new futures: prologue

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Abstract

Since commercialisation almost 20 years ago, negative pressure wound therapy (NPWT; V.A.C.® Therapy; KCI USA, Inc., San Antonio, TX) has been used to treat a wide variety of wound types and continues to evolve as research expands understanding of the mechanisms of action that enable this adjunct therapy to facilitate wound closure. In 2010, the educational International Surgical Wound Forum (ISWF) was created to facilitate discussion among experts from all over the world regarding modern wound treatment challenges and techniques. This is the first of two supplements, which are based on the 2012 and 2013 ISWF presentations and demonstrate the evolution of the role of NPWT in wound care. This first supplement provides an overview of current health care challenges and clinical practice and reviews evidence and experience using NPWT with instillation, which combines NPWT with computer-controlled delivery and removal of topical solutions and suspensions to cleanse and/or treat wounds.

Negative pressure wound therapy (NPWT; V.A.C.® Therapy; KCI USA, Inc., San Antonio, TX) was commercialised in the mid-1990s. The literature reports numerous applications of NPWT in both inpatient and outpatient care, and use of this adjunctive therapy has spread widely across the USA and Canada, as well as in Europe, particularly in Germany, Austria, Switzerland, France, the Netherlands and the UK. Use of NPWT is also increasing in Australia and parts of Asia.

The extensive international body of evidence on the subject of vacuum therapy created the need to integrate recent knowledge published in journals or presented at international meetings and to discuss future developments for NPWT and wound care in general. In 2010, the educational International Surgical Wound Forum (ISWF) was created to facilitate discussion among experts from all over the world regarding modern wound treatment challenges and techniques. Almost 20 years after the introduction of NPWT, this is the first of two supplements based on presentations and discussions at ISWFs in 2012 (Sitges, Spain) and 2013 (Istanbul, Turkey). Both supplements incorporate the results of numerous fruitful discussions with colleagues in the areas of clinical care, review of the literature, scientific and clinical research and practical tips from experienced practitioners who use NPWT to treat a wide variety of wound types.

This first supplement reviews the current challenge of health care-associated infections (HAIs) and presents articles that discuss evidence-based interventions, including NPWT and NPWT with instillation of topical wound solutions and suspensions (NPWTi; V.A.C. Instill® Wound Therapy and V.A.C. VeraFlo™ Therapy; KCI USA, Inc., San Antonio, TX). HAIs [including surgical site infections (SSIs)] can be devastating and sometimes even fatal. While over the past several

Key Messages

- this supplement, which is based on presentations at the 2012 and 2013 International Surgical Wound Forum sessions, reviews current wound care challenges and practices and presents both evidence and clinical experience related to use of negative pressure wound therapy with instillation (NPWTi) for cleansing and treatment of contaminated or complex wounds
- hospital-acquired infections (including surgical site infections) continue to be a major problem – especially with the increasing prevalence of antibiotic-resistant bacteria and growing recognition of the role of biofilms in acute and chronic wounds
- NPWTi now combines the functionality of NPWT with computer-controlled delivery and removal of topical wound solutions and suspensions; research is ongoing into the effects of different topical wound solutions that are used with NPWTi to cleanse or treat properly debrided wounds

decades HAI rates have declined, both multidrug-resistant infections and biofilms have emerged as some of the eminent public health concerns of the 21st century. Antibiotic resistance requires development of alternative healing strategies. Thus, in all fields of patient care, adherence to infection prevention guidelines and surgical algorithms on how to treat SSIs or severely contaminated wounds are needed.

Thus, this supplement addresses various aspects of wound infections, including epidemiology, microbiology, biofilms, prevention and treatment. Surgical procedures as well as the role of antiseptics and their application are discussed in detail. For example, the fundamental role of surgical debridement in removing infected tissue and biofilm is illustrated through presentation of debridement techniques effective in different tissue types. Because biofilm is difficult to eradicate, the role of topical antiseptics and emulsifiers and mechanical energy have become critical treatment choices. Thus, the authors elaborate on what is currently known about biofilm and how it can be best addressed by debridement using mechanical energy and by topical application of appropriate antiseptic solutions.

NPWT has been called a new paradigm, revolutionising the approach to complex wounds and enabling a breakthrough in wound management. Development and mechanisms of action of NPWT are presented along with possible new treatment developments using negative pressure to assist with wound closure.

The very recent development of NPWTi with computer-controlled instillation involves the retrograde instillation of topical wound solutions or suspensions into the sealed wound via an additional tube system, while the vacuum therapy pump is paused. This periodic instillation offers the chance to combine cleansing or topical antimicrobial therapy with NPWT to promote healing in grossly contaminated or infected wounds. Preclinical research evaluating NPWTi with topical cleansing and antimicrobial solutions suggests potential advantages to using NPWTi in both infected and non-infected wounds.

An overview of the use of topical antiseptics with NPWTi is presented using an evidence-based approach. Because of many surgical biases, evidence-based data are critical in choosing the best possible antiseptic for a given clinical situation. Nevertheless, some best current practice recommendations based on present evidence for NPWTi are presented along with clinical applications that focus on specific topical antiseptics and their effectiveness. This combination of evidence and experience is presented to explain the indication and application of this innovative treatment.

For the less experienced user, this compilation should serve as the most recent introduction to the subject matter, whereas the seasoned practitioner will find of interest the detailed overview of the scientific and theoretical background knowledge that has been published to date. The clinical/practical user will welcome the collection of interesting case examples, as well as practical advice regarding the application of NPWTi in technically difficult locations or in cases of unfavourable wound geometry.

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