

A research roundup of recent papers relevant to wound care

This section brings together information found online and published in other journals about wound healing research. The aim is to provide an overview, rather than a detailed critique, of the papers selected.

A SURVEY OF PATIENTS WITH WOUNDS HEALING BY SECONDARY INTENTION; AN ASSESSMENT OF PREVALENCE, AETIOLOGY, DURATION AND MANAGEMENT

Chetter IC, Oswald AV, Fletcher M, Dumville JC, Cullum NA (2017) *Journal of Tissue Viability*: article in press.
Available at: [http://www.journaloftissueviability.com/article/S0965-206X\(16\)30089-4/pdf](http://www.journaloftissueviability.com/article/S0965-206X(16)30089-4/pdf) (accessed 8/02.16)

This study collected data using a cross-sectional survey to ascertain how many patients were receiving treatment for surgical wounds healing by secondary intention (SWISHI) over a two-week period in Hull and East Riding. The definition used covered wounds left open purposely at the time of surgery, this included wounds that underwent surgical debridement and those closed at the time of operation that subsequently broke down and were left to heal by secondary intention following dehiscence. 187 patients were identified with SWHSI — estimated to be 0.41% per 1,000 population — the mean age was 58, 62% of these were male. Approximately half of the wounds reported dehisced postoperatively. For dehisced wounds, the median time between surgery and wound breakdown was 9 days.

Most patients were treated by district nursing teams who applied dressings to treat the wounds, only 6% received negative pressure wound therapy (NPWT) and one patient received larval therapy. The survey provided a previously unknown insight into the occurrence, duration, treatment and types of surgery that lead to SWHSI, which will be of value to patients, healthcare professionals and researchers. The information gathered is important in itself and may facilitate the planning of further detailed SWHSI research regarding treatments, outcomes, costs and quality of life of patients. The data may form a basis for future

studies, although these should have higher numbers of participants or follow patients for longer to enable in-depth analysis in order to determine specific risk factors in patients and to develop targeted interventions to prevent dehiscence. Further research may compare different therapies/dressings to ascertain both effectiveness and cost of the outcomes.

Implications for Practice

This survey provides a previously unknown insight into the occurrence, duration, treatment and types of surgery that lead to SWHSI. Although there are currently no practical clinical implications for the data collected, the information will be of great value for future research and more in-depth analysis in this area. **WUK**

A SYSTEMATIC REVIEW AND META-ANALYSIS INCLUDING GRADE QUALIFICATION OF THE RISK OF SURGICAL SITE INFECTIONS AFTER PROPHYLACTIC NEGATIVE PRESSURE WOUND THERAPY COMPARED WITH CONVENTIONAL DRESSINGS IN CLEAN AND CONTAMINATED SURGERY

De Vries FEE, Wallert ED, Solomkin J et al (2016) *Medicine (Baltimore)* 95(36): e4673

This systematic review examined the evidence for prophylactic negative pressure wound therapy (pNPWT) to prevent surgical site infections (SSIs). pNPWT has been suggested as new method to prevent wound complications, specifically SSIs, by applying it on closed incisional wounds. The review was conducted as part of the development of the global guidelines for prevention of SSIs commissioned by World Health Organization in Geneva. The team searched medical databases between January 1, 1990 and October 7, 2015, using an inclusion criteria of randomized controlled trials and observational studies comparing pNPWT with conventional wound dressings and reporting

on the incidence of SSI and then performed a meta-analysis using a random effect model. The grading of recommendations assessment, development, and evaluation (GRADE) system was then used to qualify the evidence. The review found 19 articles describing 21 studies (6 randomized controlled trials and 15 observational). The review concludes that low-quality evidence indicates that pNPWT significantly reduces the risk of SSIs. Results suggest a significant benefit of pNPWT over conventional wound dressings in reducing SSIs in both randomized controlled trials and observational studies, odds ratio of 0.56 (95% confidence interval, 0.32–0.96; $p=0.04$) and odds ratio of 0.30 (95% confidence interval, 0.22–0.42; $p<0.00001$), respectively. The study suggests that use potentially lowers the SSI rate from 140 to 83 (49–135) per 1,000 patients and from 106 to 34 (25–47) per 1,000 patients, respectively. In stratified analyses, these results were consistent in both clean and clean-contaminated procedures and in different types of surgery, however, results were less conclusive for orthopaedic/trauma surgery. Future studies should focus on consolidating current findings should address methodological flaws pointed out by the authors such as sample size, comparison of the settings of pNPWT and treatment duration. In addition, the authors suggest that all prospective studies use health economic data to determine both the cost of treatment in order that efficacy and cost effectiveness of the treatment can be determined.

Implications for Practice

NPWT is frequently used for the treatment of open wounds but there has been increasing interest for use as prophylaxis in high-risk surgical incisions to prevent infections. Although the review concluded that only low-quality evidence indicated that pNPWT significantly reduces the risk of SSIs, healthcare professionals can be confident about the benefits of pNPWT over conventional wound dressings in reducing SSIs. **WUK**

SKIN WOUND HEALING: AN UPDATE ON THE CURRENT KNOWLEDGE AND CONCEPTS

Sorg H, Tilkorn DJ, Hager S, Hauser J, Mirastschijski U (2016) Skin wound healing: an update on the current knowledge and concepts *Eur Surg Res* 58: 81–94

This article reviews the literature on skin wound healing purposes focusing on the main phases of wound healing, i.e. inflammation, proliferation, epithelialization, angiogenesis, remodeling and scarring. It seeks to update the reader on new insights and up-to-date concepts in skin wound healing. Macrophages are highlighted as key to the inflammatory phase of healing. It describes how the essential component of neovascularization in wound healing from skin injury until the end of the wound remodeling they describe the distinct pattern of the process and the special new functions of the pericyte (contractile cells that wrap around the endothelial cells of capillaries and venules throughout the body) are discussed. It also highlights the different concepts of the epithelialisation process, e.g. leapfrogging, lamellipodial crawling, shuffling and the stem cell niche. To conclude the authors present three topics of interest in skin wound healing: scarring, tissue engineering, and plasma application, highlighting the main phases of wound healing, i.e. inflammation, proliferation, epithelialization, angiogenesis, remodeling, and scarring.

Implications for Practice

The skin is the largest organ of the body, as such its integrity and health plays a crucial role in the equilibrium of the body and in wound healing. Wound care professionals need to have a good understanding of the complex pathophysiological processes that are dependent on many cell types and mediators interacting in a highly sophisticated temporal sequence. In order to plan the most appropriate and cost-effective wound care treatments, tissue viability nurses and allied healthcare professionals need to be up to speed with current knowledge and insights. **WUK**