

Factors Associated with the Ideal Donor Site Dressing for Burn Patients after Split-Thickness Skin Grafting

Rahim Jindani¹, Shiara M. Ortiz-Pujols, MD², Carrie Nielsen², Bruce A. Cairns, MD², Martin W. King^{*1,3}

¹College of Textiles, North Carolina State University, Raleigh, NC, USA

²Department of Surgery, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

³College of Textiles, Donghua University, Shanghai, China. *E-mail: martin_king@ncsu.edu

Introduction: Split-thickness skin grafting (STSG) is a common reconstructive surgical procedure for the management of patients with deep second and third degree burns. STSG requires the creation of a donor site, from which a thin slice of epidermis and dermis are harvested for transplantation to the burned area. Management of the donor site, which is often the most painful area after burn surgery, remains a challenging issue because of the diverse approaches and products available for wound care of this area. A thorough study of materials in accordance with requirements for burn wound patients needs to be done to identify an ideal donor site dressing [1].



Figure 1: Donor site wound after split-thickness skin graft (STSG) is harvested from a patient's thigh.

Dressings of this area include: EZ-Derm[®] (porcine derived xenograft, in which the collagen has been cross-linked with aldehyde), Acticoat[®] (a nano-crystalline silver based formulation used on nonwovens, foams or flexible nylon knit fabrics), Mepilex[®] (a silicon film, with a silver and polyurethane foam backing), and Therabond 3D[®] wraps (a spacer fabric with a silver coating throughout), have been found to have clinical merit. However, none of these dressings address all of the factors associated with the healing of donor site wounds, e.g., hemostasis, antimicrobial activity, reduction of pain, and absorption of exudates, when applied to different anatomical sites [2]. With the ultimate goal of developing the ideal donor site dressing, the main objective of this study was to conduct a survey of burn surgeons, nurse practitioners and other burn personnel so as to identify the key factors related to the treatment of donor site wounds and to utilize their responses to develop an ideal donor site dressing.

Methods: A survey questionnaire was developed asking nine questions about current clinical practices for the management of donor sites. The questionnaire was completed by a total of 79 surgeons, nurse practitioners and burn personnel who attended the Southern Region

Burn Conference in Norfolk, VA, November 16-18 2012. Data obtained from this survey were analyzed to identify the key factors associated with the management and wound dressing requirements of donor sites.

Results: A summary of all 79 responses from one of the questions asking the respondent to prioritize the important factors needed in a donor site dressing is presented in Figure 2. These results highlight: i) the alleviation or

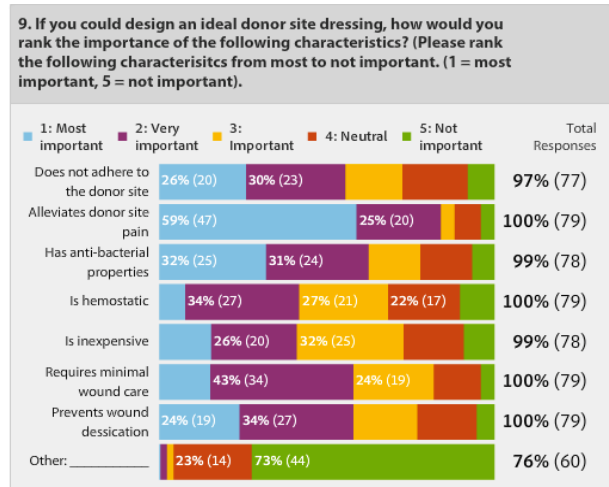


Figure 2: Results obtained from Southern Burn Regional Conference highlighting factors important for healing of donor sites after STSG.

reduction of pain at the donor site, ii) prophylactic antimicrobial activity, iii) non-adherence to the wound bed so as to avoid trauma and removal of epithelialized tissue at the time of dressing changes, and iv) prevention of wound desiccation, as important characteristics of an ideal donor site dressing.

Conclusions: This study has assisted us in identifying the important criteria for the ideal donor site dressing. Donor site pain is a major challenge in the management of these wounds. The survey results of this study will serve as the foundation for hypothesis generating studies that will help identify suitable biomaterials and structures that will ultimately lead to the development of an economic donor site dressing that will provide an optimal healing environment, reduce pain, and be easy to care for.

References:

- [1]. Higgins L, Wasiak J, Spinks A, Cleland H, Split-thickness skin graft donor site management: a randomized controlled trial comparing polyurethane with calcium alginate dressings. *Int Wound J* 2012; 9:126-131.
- [2]. Sibbald RG, Williamson D, Orsted HL, Campbell K, Keast D, Krasner D, Sibbald D. Preparing the wound bed-debridement, bacterial balance & moisture balance. *Ostomy Wound Manage*2000;45(11):14-35.