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ORIGINAL ARTICLE

Decreased pain in split-thickness skin graft donor sites with the use of a non-adherent polyurethane dressing

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Abstract
Introduction: Donor sites of split-thickness skin grafts (STSGs) are painful and limit patient rehabilitation. We conducted this study to assess the efficacy of a non-adherent polyurethane dressing in reducing pain and its effect on the epithelialization rate of donor sites of STSGs.
Methods: Fifteen patients requiring an STSG were included. In 10 patients the donor sites were randomly divided into two halves and covered with either a non-adherent polyurethane dressing or a standard non-adherent gauze. In five patients with bilateral donor sites, one side was covered with the non-adherent polyurethane dressing and the other with non-adherent gauze. The pain was assessed with a visual analog scale and epithelialization was also assessed, calculating non-epithelialized areas with image software by a blinded surgeon. Epithelialization of the wounds covered with the non-adherent polyurethane dressing was assessed at day 8 and 10 and those with non-adherent gauze at day 10.
Results: Postoperative pain significantly decreased with the non-adherent polyurethane dressing during the length of the study (6.07 ± 1.46 vs. 1.72 ± 1.6) and at each time point ($p < 0.001$). Epithelialization was not affected with the polyurethane dressing, compared to the standard method.
Conclusions: Non-adherent polyurethane dressing achieves a significant reduction of pain in the skin-grafted donor sites without affecting epithelialization.

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Introduction

Split thickness skin grafts (STSGs) are routinely used to cover a variety of wounds caused by burns, trauma or tumor excisions, etc. Due to their reliability and the relatively high availability of donor sites, STSGs represent one of the first options in reconstruction.[1–3] However, harvesting STSGs invariably produces a new open wound in the donor site, which can be painful and requires fast and effective re-epithelialization.

Typically, the donor site is covered with non-adherent fine-meshed gauze impregnated with different ointments.[4,5] Unfortunately, this technique is usually painful and is one of its main drawbacks.[6] In fact, pain related to donor sites is the most important patient complaint within the first ten days after graft harvest.[7] This is particularly important in those cases where prompt rehabilitation is required, e.g., severely burned patients.

Recent technological advances have made the creation of new dressings designed to cause less discomfort in donor site wounds possible.[8,9] As newer options are seen on an almost daily basis, the current trend in donor-site management is oriented to reduce pain as well as promote rapid and effective re-epithelialization.[10,11]

Among the dressings that have been used in donor site wounds are hydrocolloids (Duoderm®) that typically forms a scab over the wound and an exudate with an unpleasant odor macerating the surrounding skin, and Biobrane®, a biocomposite porcine type I collagen attached to a flexible synthetic membrane that has been effective in reducing pain.[12] One of the main issues with Biobrane® is that fluid accumulates underneath if not properly used, making the area prone to infection.[12]

Mepilex® (Mölnlycke Health Care, US, LLC, Norcross, GA) is a non-adherent polyurethane dressing consisting of a polyurethane absorbing sponge, adaptable with Safetac Technology®. According to the manufacturers, this technology permits the dressing to adhere to the surrounding skin, but not to the moist wound bed, potentially reducing pain, preventing maceration and minimizing the drag of epithelial cells at removal.[13,14] Furthermore, it seals the wound to prevent leakage of exudate and isolates the wound from the environment, minimizing skin infections.[14]

Due to these characteristics, it is potentially beneficial for STSGs. We conducted a prospective and randomized study to assess the efficacy of Mepilex® in reducing pain of STSG donor sites and on epithelialization compared with our traditional management (non-adherent dressing).

Patients and methods

We conducted a prospective, comparative and randomized clinical trial between January and August, 2012. The Ethics Committee of our hospital approved the study protocol. All patients enrolled in the study signed an informed consent. Inclusion criteria included patients requiring split-thickness skin grafts secondary to any etiology. The patients were assigned to two groups. The first group included ten patients with a donor site of at least 20 cm × 10 cm on one thigh. The second group included five patients who required bilateral harvest of STSGs of at least 10 cm × 10 cm on each thigh. Exclusion criteria included pregnant women, immunosuppressed patients, a known allergy to any component of the dressings, dermatological diseases, and anticoagulant or corticosteroid treatment.

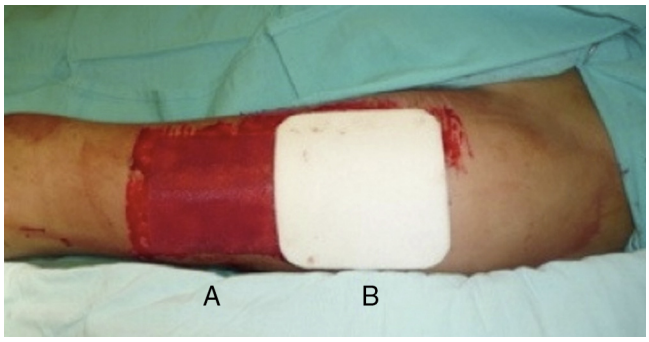

Figure 1 Donor site assessment: (a) control area covered with non adherent gauze, (b) Mepilex®-covered area.

Donor site management

All skin grafts were harvested from the proximal-anterolateral thigh by the same surgeon. The grafts were harvested with a dermatome to produce a homogeneous thickness of 0.4 mm. In patients with a unilateral donor site, the wound was divided into proximal and distal halves and randomly assigned to be covered with either a non-adherent dressing (Adaptic®, Johnson & Johnson, Inc., New Brunswick, NJ), our standard method, or Mepilex®. The area covered with non-adherent gauze was managed in a semi-open fashion, with no secondary dressing. The Mepilex® patch was secured with an adhesive bandage (Hypafix®, BSN medical, Inc., Charlotte, NC) and left on site until the 8th day (Fig. 1). In the patients with bilateral donor sites, one side was covered with Mepilex® and the other with Adaptic®

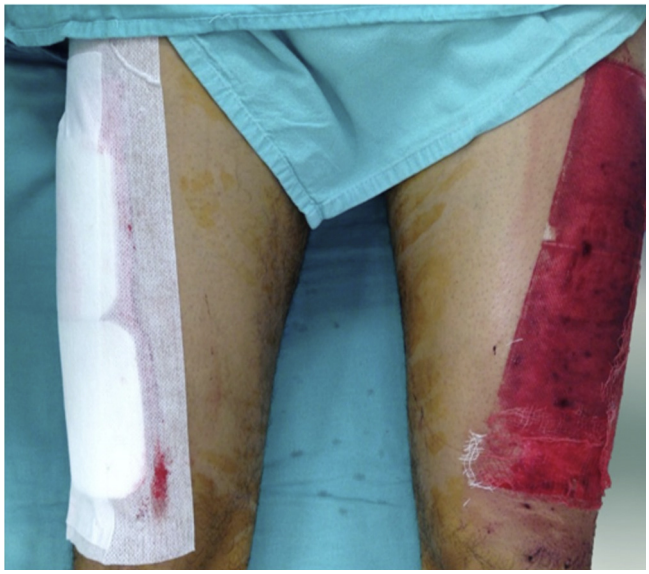

Figure 2 Patient with bilateral donor site: one side was covered with Mepilex (right) and the contralateral side (left) with non-adherent gauze.