Assessment of adherent silicone foam dressing with technology lipidocolloid: a case series from China

Key words:

- *Acute wounds*
- *Chronic wounds*
- *Silver antimicrobial*
- *UrgoTul Ag*
- *Wound infection*

Abstract: Wound healing is a complex process that may be affected by various factors. An appropriate microenvironment is necessary to attain accelerated healing. Modern dressings are designed to facilitate healing by providing the moist wound environment needed, but also to provide an atraumatic experience for the patients. This article discusses three cases where a silicone border adhesive foam dressing containing technology lipidocolloid (TLC) healing matrix technology was applied. The case results emulate those achieved in previous, in mostly European studies, demonstrating that the evaluated dressing is effective in promotion of wound healing while also being acceptable to both health professionals and patients in China.

Wang Chunli, *RN. Wound and Ostomy Centre, Shenzhen Hospital of Nanfang Medical University, Shenzhen (China);* ***Liu Zeyun****, RN. Head of Pressure Injury Clinic, Aerospace Central Hospital, Beijing (China);* ***Liu Yang,*** *RN, Head Nurse of wound Care Clinic, the First Affiliated Hospital of Harbin Medical University, Harbin (China);* ***Emilio Galea****, International Medical Director, Urgo Education & Training Alliance, Singapore;* ***Helen Wang****, Medical Manager, URGO Medical, Shanghai (China)*

Modern wound dressings are chosen to facilitate the body's natural healing mechanisms and provide an optimal healing environment (Bennett-Marsden, 2010). Wound management dressings are considered as essential in healthcare, chosen according to the types and stage of a wound, to promote healing (Shi et al, 2020). However, upon removal adherence of the dressing to the wound bed can cause trauma to the tissue and pain for the patient (Shi et al, 2020). Traditional dressings or passive dressings such as gauze, cotton pads, and bandages, are still widely used due to their low cost (Broughton et al, 2006). However, several deficiencies of these types of dressings can be noted, such as, difficulty to maintain a moist wound environment and frequent adhesion to granulation tissue (Moore and Webster, 2018). Modern, advanced wound care dressings are based on the principles of the healing theory of moist environment and have shown numerous advantages compared with more traditional dressings (Skorkowska-Telichowska et al, 2013; Vowden and Vowden, 2017). These dressings are designed to avoid disruption of new granulation tissue, promote cell proliferation, differentiation, and epithelial cell migration, while also avoiding wound contact with external bacteria (Horn, 2012). Modern dressings, compared with traditional dressings, provide better biocompatibility, degradability, and moisture retention (Shi et al, 2020). Furthermore, dressing choice needs to accommodate tissue type, exudate level, odour management as well as protecting the periwound area from moisture. The dressing choice made by the clinician has to take into account pain at change as well as the area to be dressed (Guthrie and Potter, 2016).

Silicone border adhesive foam dressing containing technology lipidocolloid (TLC) healing matrix technology

Soft silicone dressings are designed to prevent trauma to the wound bed and periwound skin (Guthrie and Potter, 2016). Silicone has been referred to as a skin friendly adhesive solution, which causes less discomfort to the patient during dressing removal (Percival, 2013). Skin trauma can be significantly reduced with silicone dressings when compared with acrylic adhesive dressings (Percival, 2013). While most foam dressings contain a soft silicone layer that covers the border as well as the surface of the dressing. Silicone border adhesive foam dressing (SBAF; Urgotul Absorb Border, URGO Medical, France), comprises a soft silicone border, a polyurethane foam pad with an absorbent

layer covered with a non-adherent, technology lipidocolloid (TLC) healing matrix (Guthrie and Potter, 2016).

Fibroblast proliferation plays a vital role in helping a wound to progress along a healing trajectory in a normal and timely fashion (Schultz et al, 2005). Fibroblasts enable collagen and extracellular matrix (ECM) synthesis, resulting in the formation of new granulation tissue. A reduction in the number of fibroblasts in the wound would therefore impair healing (Bernard et al, 2005; Bernard et al, 2007; Bernard et al, 2009).

The TLC Healing Matrix contains hydrocolloid and lipophilic elements that stimulate fibroblast proliferation and in turn promote the proliferation of granulation tissue, thus assisting wound healing (Bernard et al, 2005; Bernard et al, 2009). *In vitro* studies showed the TLC Healing Matrix enhanced human dermal fibroblast proliferation (Bernard et al, 2005) and increased the production of hyaluronic acid and collagen, thereby helping to regenerate the extracellular matrix (Bernard et al, 2007). This effect improves the structure, flexibility and strength of the dermis, thereby contributing to optimal healing (Meaume et al, 2011). It is designed to promote moist wound healing: when the hydrocolloid and lipophilic particles contained within the TLC layer come into contact with exudate, they create a lipido-colloid gel that promotes a moist wound environment (White et al, 2015), as well as reduces adhesion to the wound surface (Meaume et al, 2002). The atraumatic properties of the healing matrix were demonstrated in an observational study involving 5850 patients (2914 with acute wounds, 2396 with chronic wounds) who were being treated with traditional dressings, such as gauze, paraffin-impregnated gauze, as well as foam and hydrocolloids. When the patients switched to TLC, pain reduction was reported in 88% of patients with chronic wound and in 95% of patients with acute wounds (Meaume et al, 2011).

A multicentre, noncomparative, clinical evaluation of the SBAF dressing investigated whether use of the dressing promoted granulation tissue formation and the management of wound exudate (Stephen-Haynes, et al 2015). Other parameters evaluated included: pain-free dressing changes, protection and improvement of surrounding tissue, ease of application, conformability, ability to remain in place, wear time, effect on periwound skin, durability, ease of removal, and patient comfort. At week one, half of the wounds (n=21, 50%) had improved, with only five (12%) showing no change and one deteriorating. A similar number (n=22; 52%) further improved over the next week, and at the final dressing change, eight wounds (19%) had fully epithelialised and 34 (81%) improved. All clinicians rated the dressing as excellent, very good or good, with a large majority (n=37; 88%) describing it as excellent. The condition of the periwound skin improved in 36 patients (86%) and remained unchanged in the remaining patients. At the baseline assessment, only a quarter of the sample (n=11; 26%) reported that their periwound skin was healthy, whereas at the end of evaluation, 37 (88%) stated that it was excellent. Guthrie and Potter (2016) reported an evaluation of the SBAF dressing to establish the effectiveness of the silicone border dressing for managing exudate, ease of use, patient comfort and acceptability of the clinician for the dressing to meet with treatment objectives. A total of 100 patients with wounds considered suitable for the application of the dressing were selected to take part in the study. In less than a four week period, 38 patients achieved wound healing with a further 36 patients demonstrating wound improvements within the same time period. The dressing was found to have met both the clinicians and patients aims when used as either a primary or secondary dressing and was considered suitable for use in both acute and chronic wounds of varying duration.

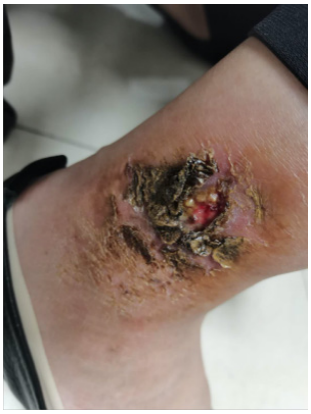
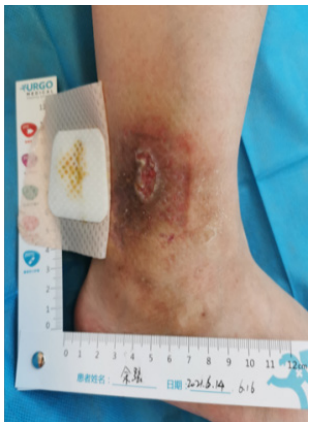
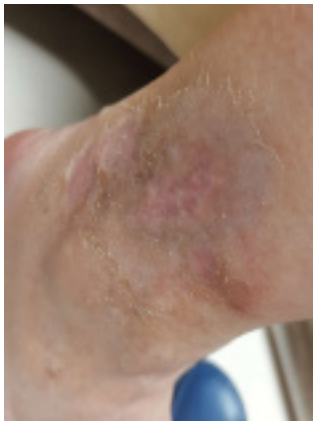
The silicone border adhesive foam dressing dressing was also evaluated in a multicentre trial including 1722 patients (Dietlein et al, 2016). Three wound types observed were dermabrasions (24%), post-surgical wounds (17%) and acute wounds of other aetiology (31%). Within four weeks 66.9% of wounds healed after a mean time of 21.4 ± 14.5 days (n=1.083). Median/mean wound surface at inclusion visit was 4.0cm^2/10.1cm^2 reducing to 0cm^2/1.5 cm^2 at final visit. Dressing application at the inclusion visit was evaluated as very easy or easy in 98.0% (n=1.697). The physicians judged the use of the tested dressing as extremely useful (80.7%) and useful (17.3%) In view of the above mentioned evidence, the authors opted to evaluate the dressing on patients from their locality to evaluate if similar results can be achieved.

Methodology

A case series indicates a descriptive study that follows a small cohort of patients with similar diagnosis and/or who are undergoing the same procedure over a certain period of time (Kooistra

Case 1: allergic skin vasculitis. Wang Chunli, Shenzhen Hospital of Nanfang Medical University

- A 23-year-old female with a recurrent leg ulcer, which had been present for 6 month and was now deteriorating
- The final diagnosis was allergic skin vasculitis
- Treatment chlorhexidine gluconate (10 minutes), followed by topical povidone iodine cream and hydrocolloid to protect the periwound skin, Urgotul Absorb Border was used as a secondary dressing. Ultraviolet and Red Light was used for 4 days (10 June to the 14 June)
- The wound was healed by 23 June

1a. Ulcer on presentation (1 June) 8 × 6cm	1b. After 14 days (14 June) 6 x 4cm	1c. After 23 days (23 June) healed
		

et al, 2009). There is no experimental protocol or control for allocation of patients to treatment and the clinical sample is representative of the common clinical population. Results of such case series can generate hypotheses that are useful in designing further studies or as part of an evaluation process for protocol implementation (Kooistra et al, 2009). In view of the above mentioned evidence regarding the use of the silicone border adhesive foam dressing, the authors opted to evaluate the dressing on patients from their locality to evaluate if similar results can be achieved. The standard of best practices used by the facilities was still implemented with the added intervention of the evaluated dressing.

Case 1: allergic skin vasculitis

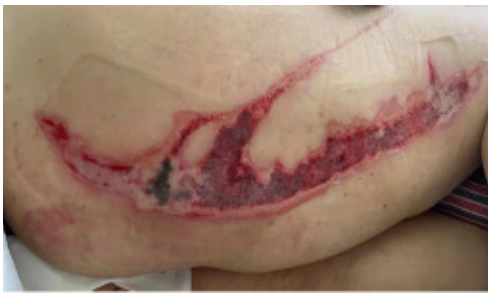
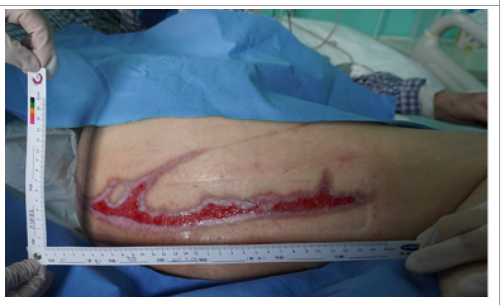
A 24-year-old female presented, with a recurrent ulcer on her lower right malleolus region that had been present since high school. On presentation, 1 June, this ulcer had been present for six months and had deteriorated in the past two weeks. The condition was managed with anti-inflammatory and analgesic treatments and various wound dressings. She also complained of a tingling sensation in the wound and periwound region. The preliminary diagnosis was chronic skin ulcer with infection and the final pathological diagnosis was allergic skin vasculitis.

On presentation, the wound size was 8 × 6cm, almost entirely covered with eschar and highly exuding (*Figure 1a*). Previously, a four-layer gauze dressing was being changed daily, however this was still saturated with wound exudate. Apart from the high levels of exudate, the signs and symptoms of local infection included periwound erythema, swelling, heat and pain. Periwound eczema, keratosis and exfoliation of epidermis and dryness were also present.

We initially managed the wound with application of chlorhexidine gluconate for 10 minutes, followed by application of topical povidone iodine cream and hydrocolloid to protect the periwound skin, as well as and Urgotul Absorb Border as a secondary dressing. The dressing was changed on alternate days. This treatment continued till 10 June (9 days) and the wound size started to decrease (6 x 4cm). Ultraviolet and Red Light was also used for 4 days (10 June to the 14 June) as an anti-inflammatory, pain relief and for wound healing promotion. At this point the only dressing applied was the UrgoTul Absorb Border (*Figure 1b*) that was changed alternate days. From June 16, the dressing (UrgoTul Absorb Border) was change twice weekly and the wound was healed by 23 June (*Figure 1c*).

Case 2: analysis of a patient with pressure injury related to medical devices on the right lateral thigh

- A 95-year-old female was admitted to the hospital for cerebral infarction. Past medical history hypertension, coronary heart disease, atrial fibrillation, diabetes, chronic renal insufficiency
- The wound was cleaned ((0.9% Saline) and the UrgoTul Absorb Border dressing applied. The dressing was changed twice weekly
- Healthy granulation tissue and wound edge epithelialisation was evident just after two dressing changes

2a. On presentation (15 April)	2b. After 2 dressing changes (22 April)
	

Case 2: analysis of a patient with pressure injury related to medical devices on the right lateral thigh

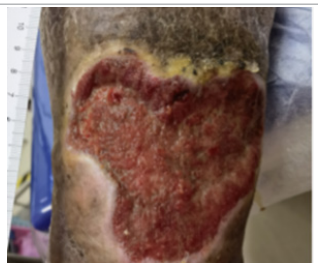
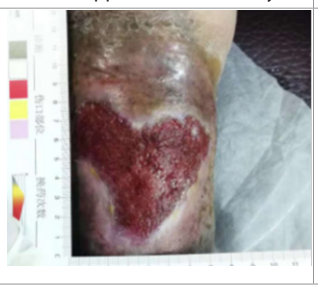
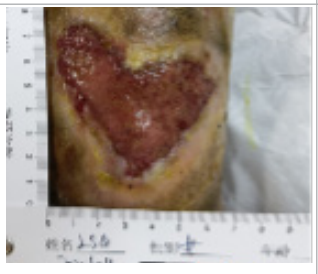
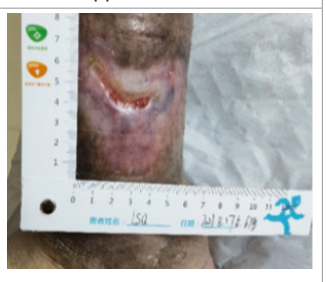
A 95-year-old female was admitted to the hospital for cerebral infarction. Past medical history includes hypertension for more than 20 years, coronary heart disease and atrial fibrillation for more than 10 years, diabetes for more than 10 years and chronic renal insufficiency for 8 years. A device-related pressure ulcer (DRPU) occurred due to improper urinary catheter placement (*Figure 2a*). Wound hygiene was done (0.9% Saline) and the UrgoTul Absorb Border dressing applied. The dressing was changed twice weekly and holistic nursing management of pressure ulcer prevention implemented. Healthy granulation tissue and wound edge epithelialisation was evident just after two dressing changes (*Figure 2b*).

Case 3: venous leg ulcer

A 67-year-old female presented with a venous leg ulcer that had been present for around ten years (*Figure 3a*). Past medical history included chronic venous insufficiency of both lower limbs, surgery for varicose veins in both lower limbs (20 years). Wound hygiene was done and initially an antimicrobial (silver) dressing was applied as a primary dressing and the UTAB dressing was used as a secondary dressing. The dressings were changed on alternate days. By 8 May the wound looked healthier and decreasing in area (*Figure 3b*). Thereafter, UTAB was used as the

Case 3: venous leg ulcer. Liu Yang, First Affiliated Hospital of Harbin Medical University

- A 67-year-old female presented with a venous leg ulcer (VLU) that had been present for around ten years
- The wound was cleaned and initially an antimicrobial (silver) dressing was applied as and the UrgoTul Absorb Border dressing was a secondary dressing. The dressings were changed on alternate days
- By 8 May the wound looked healthier and decreasing in area. After which, UrgoTul Absorb Border dressing was used as the primary dressing, changed alternate day. Four layer compression therapy was applied
- By 4th June the wound area had reduced and was almost closed by 27th June.

1a. On presentation (31 March)	1b. After approx 5 weeks (8 May)	1c. After approx 9 weeks (4 June)	1d. After approx 9 weeks (27 June)
			

Declaration of interest
Emilio Galea is employed by Urgo Medical as the International Medical Director for Australasia, Middle East and South Africa. The silicone border adhesive foam dressing containing technology lipidocolloid (TLC) healing matrix technology discussed in this review is a patented dressing (Laboratoires Urgo, France). All other authors have no conflicts of interest.

primary dressing, changed alternate days. Four layer compression therapy was also applied. By 4th June the wound area had reduced further (*Figure 3c*) and was almost totally closed by 27 June (*Figure 3d*).

Conclusion

When clinicians make dressing choice they should be consider wound healing and exudate management but also patient factors, including comfort and conformability and ease of dressing removal. This clinical evaluation in three patients from different locations in China, has demonstrated positive outcomes for both the wounds and patients. However, the authors recognise that further evaluation of the outcomes and a larger sample size is needed to fully evaluate the dressing in Chinese patients.

The result of this clinical observational evaluation with limited numbers adds to the evidence base on the SBAF dressing, further demonstrating promotion of wound healing while also being acceptable to both clinicians and patients in China. However, further evaluations, with a larger sample size and more objective assessment criteria in Chinese patients, are needed to substantiate further implementation as a standard of care in Chinese hospitals. WAS

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