BeneHold™ TASA™: a wound dressing for the management of skin tears

KEY WORDS
- Dressings
- Skin tears
- BeneHold TASA
- Wound healing

This series of 20 case studies focuses on patients with superficial skin tears treated with BeneHold™ TASA™ Thin Absorbent Wound Dressings in a primary care setting. This dressing incorporates a new technology combining the absorbency of hydrocolloid adhesives with the holding power, transparency, and thinness of acrylics. The efficacy of the dressing was evaluated in terms of wound healing, wear time achieved, ease of application and removal, pain on dressing change and patient and clinician satisfaction. BeneHold TASA dressings were found to be effective in the management of superficial skin tears. The dressing was well received by both clinicians and patients. BeneHold TASA dressings could potentially offer improved clinical benefits and time and cost savings.

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A skin tear is a wound caused by shear, friction, and/or blunt force resulting in the separation of skin layers. A skin tear can be partial-thickness – separation of the epidermis from the dermis – or full-thickness – separation of both the epidermis and dermis from underlying structures (LeBlanc et al, 2011). Patients who are very young with immature skin, or older with fragile skin, are at higher risk of sustaining an injury. In either case, the skin can be so delicate that even the simplest bump or knock can cause damage (Stephen-Haynes, 2012). As part of the normal ageing process, visible with the appearance of wrinkles and folds, skin vulnerability increases, making it more fragile and susceptible to tears. The epidermis thins and flattens; there is loss of collagen and elastin, as well as atrophy and contraction of the dermis. Furthermore, the decreased activity of sweat and sebaceous glands leads to drier skin, and thinning of blood vessel walls reduces blood supply to the extremities (Stephen-Haynes et al, 2011). Skin tears are most common on the extremities, including the lower limbs, arms, and the dorsal aspect of the hands.

In a recent systematic review, Strazzieri-Pulido and colleagues found skin tear prevalence reported in the literature ranging from 3.3% to 22% across a variety of patient populations and care settings (Strazzieri-Pulido et al, 2015). Many skin tears occur during routine patient care activities, with an estimated 1.5 million wounds occurring annually among older residents of institutions in the United States (Baranoski, 2003). Patients with skin tears are prone to infection and chronic wounds, which have been associated with reduced quality of life together with increased healthcare costs (Rayner et al, 2015). Therefore, appropriate management and maintenance of skin integrity have become important issues.

Although skin tears are common, they may be under-reported, poorly assessed, and inadequately managed (LeBlanc et al, 2011). Identifying the risk factors and developing a detailed understanding of a skin tear pathway will support the delivery of evidence-based care. The engagement of caregivers and healthcare professionals, as well as ancillary healthcare personnel, is important to improving patient outcomes. With the size of the at-risk older population increasing, the incidence of skin tears has the potential to increase proportionally in the coming years, and without a focus on prevention they may become a significant challenge in wound care.

While there is no universally accepted classification system for the assessment of skin tears, three tools have been developed:

- Payne and Martin established the first classification tool in 1990, which was updated in 1993 (Payne and Martin, 1993)
- The Skin Tear Audit Research (STAR) Classification System (Carville et al, 2007)
- The International Skin Tear Advisory Panel Skin Tear Classification consensus (LeBlanc et al, 2013).

There is currently no validated risk assessment tool available for skin tears, as there is for pressure ulcers; however, a patient's general health, mobility, skin condition and skin tear history are factors that are indicative of risk (Ratliff and Fletcher, 2007; Stephen-Haynes, 2012; LeBlanc et al, 2013).

Risk assessment, prevention and wound care are primary elements of a skin tear management strategy. To care for skin tears, most standard protocols call for the wound to be cleansed and the skin flap to be approximated to the edges, if possible, then protected with a dressing that supports moist wound healing. Ideal wound dressings provide an environment that suits the local wound environment, protect the wound and periwound skin, control and manage exudate and/or infection, optimise healthcare personnel time, maintain optimal moisture balance, and provide for atraumatic removal (Okan et al, 2007).

Atraumatic removal is particularly important for skin tear management to avoid further damage to the fragile skin at dressing change. Hydrogel sheets, low-trauma silicone gel adhesives, lipidocolloid mesh and absorbent acrylic dressings are examples of dressings that are recommended for treating skin tears (LeBlanc et al, 2016). Transparent film dressings and hydrocolloids have traditionally been contraindicated because of their potential to damage vulnerable and fragile skin (LeBlanc et al, 2016). Regardless of the chosen dressing, it is commonly recommended to minimise dressing changes so as to avoid disturbing the skin flap (Stephen-Haynes et al, 2011).

BENEHOLD TASA

BeneHold TASA Thin Absorbent Wound Dressing has the structure and appearance of a semi-permeable film dressing, yet it can also absorb and retain wound exudate because it incorporates TASA (Thin Absorbent Skin Adhesive). Ordinarily, the fluid-handling capabilities of film dressings are limited exclusively to moisture-vapour transmission, without any capacity to absorb, and when they are used to dress skin tears, pooling of wound exudate can result (Ratliff and Fletcher, 2007).

TASA is a new adhesive technology that offers a combination of moisture transmission and absorbance in a similar format: the dressing is thin (0.12 mm), breathable and flexible, so it is able to move with and conform to the body. Its smooth backing film can reduce friction on the underlying wound, and in prior evaluations the rounded edges have resulted in little edge lift during wear (Stephen-Haynes et al, 2014). The dressing is also transparent, which allows for unhindered inspection of the wound without removing the dressing, a particularly important advantage for treating skin tears. TASA has been found to be a promising new technology that could offer significant advantages in improving the quality, cost and convenience of wound care (Stephen-Haynes et al, 2014).

This article presents the results from an evaluation of BeneHold TASA Thin Absorbent Wound Dressings for the treatment of superficial skin tears across a community Trust in a large UK primary care organisation.

METHODS

This case series evaluated the use of BeneHold TASA Thin Absorbent Wound Dressing as a primary dressing for managing skin tears in a single-centre, non-comparative clinical evaluation with the primary objective of determining its clinical effectiveness. The evaluation was undertaken within care homes and minor injury units. An evaluation tool was developed and clinical governance approval was gained. The product is a CE-marked medical device and was used as intended by qualified medical personnel, within the bounds of normal clinical practice.

In order to be included in the evaluation, patients were required to be at least 18 years of age and willing to provide consent. Outpatients presenting with a skin tear, irrespective of their primary medical diagnosis, were eligible for inclusion. Patients receiving palliative, end-of-life care were not eligible to participate.

Declaration

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Patients who were unable to give consent and those who could not read/speak English were also excluded. After obtaining informed consent, each participant underwent an initial assessment during which a medical history, including diagnosis and prognosis, was recorded and a Waterlow risk assessment performed. The Waterlow assessment is designed to identify patients at risk of pressure ulcers, and the tool identifies three 'at risk' categories: a score of 10–14 indicates 'at risk'; 15–19 indicates 'high risk'; and a score of 20 and above indicates 'very high risk' (Waterlow, 2005).

In this evaluation, skin tears were classified using the STAR system (Carville et al, 2007), as this is currently used across the authors' NHS Trust. Briefly, the categories in this classification system are:

- **1a:** A skin tear where the edges can be re-aligned to the normal anatomical position without undue stretching. The skin or flap colour is not pale, dusky or darkened.
- **1b:** A skin tear where the edges can be re-aligned to the normal anatomical position without undue stretching. The skin or flap colour is pale, dusky or darkened.
- **2a:** A skin tear where the edges cannot be re-aligned to the normal anatomical position without undue stretching. The skin or flap colour is not pale, dusky or darkened.
- **2b:** A skin tear where the edges cannot be realigned to the normal anatomical position without undue stretching. The skin or flap colour is pale, dusky or darkened.
- **3:** A skin tear where the skin flap is completely absent.

The Trust lists BeneHold TASA as a formulary item. The evaluations were conducted over a maximum period of 4 weeks from the time when the BeneHold TASA dressing was first applied. BeneHold TASA was discontinued earlier than 4 weeks in cases where wound healing was complete or wound status changed such that it was no longer appropriate for continued use. Throughout the evaluation period, dressings were changed as often as clinically necessary. At each dressing change, an assessment was documented in a standard case report form consisting of three main sections: relevant patient history, wound assessment, and patient/evaluator feedback.

The following variables were recorded at the time of patient enrolment: patient age, primary diagnosis, wound location and classification, wound duration before treatment (i.e. how long ago the wound occurred), wound size, exudate level, and general skin condition. The main outcomes of interest were wound healing status and wound healing time, ease of dressing application, ease of dressing removal, pain on dressing change and maximum wear time achieved. Information relating to these outcomes was collected at each dressing change, including assessments of wound infection status, periwound skin condition, wound exudate volume and consistency, and dressing wear time. The evaluator also documented wound size and visually assessed the wound bed tissue composition (epithelialised, granulated, sloughed or necrotic).

Throughout the evaluation period, wound progression/regression status was directly assessed by the evaluator and recorded. Dressing performance was evaluated from both the patient's and clinician's point of view. Patients were asked 'yes' or 'no' questions to evaluate whether or not the dressing was painful to change and comfortable to wear, and whether or not it stayed in place throughout the wear time. At the end of the evaluation period, clinicians asked patients to rate their overall satisfaction with a score of 1 to 5 (1 = unacceptable; 2 = dissatisfied; 3 = satisfactory; 4 = very good; 5 = excellent), and any additional comments were documented. The evaluating clinicians recorded at each dressing change whether or not the dressing remained intact throughout the wear time and removal, and whether or not dressing removal was traumatic to the wound or periwound. Any cases with redness or skin stripping occurring upon dressing removal were recorded. Furthermore, clinicians rated the ease of dressing application and ease of dressing removal on a scale of 1 to 5 (1 = very difficult; 2 = difficult; 3 = satisfactory; 4 = easy; 5 = very easy).

At the end of the evaluation period, overall clinician satisfaction was rated with a score of 1 to 5 (1 = unacceptable; 2 = dissatisfied; 3 =

Table 1. Baseline characteristics of participants

Patient	Age (yrs)	Gender	Primary diagnosis	General skin condition	Waterlow score	Wound location	Wound duration before treatment	Wound size	Exudate level	STAR classification
A	82	M	COPD; hip fracture	Dry, fragile	26	Right arm	<1 day	1 × 1 cm	Minimal	1a
						Leg	1 day	2 × 1 cm	None	1a
B	92	F	Atrial fibrillation; arthritis	Fragile	27	Arm	1 day	2 × 1 cm	None	1a
C	90	F	Arthritis	Dry, fragile	24	Right arm	4 hours	1 × 0.5 cm	None	1a
D	63	M	Hypertension	Dry	9	Arm	1 day	5 × 3 cm	Minimal	1a
E	78	F	Parkinson's disease; breast cancer	Dry, fragile	21	Neck	4 hours	2 × 0.5 cm	None	1a
						Right arm	<1 day	6 × 3 cm	Minimal	2b
F	82	F	Renal failure	Normal	28	Leg	Immediate	2 × 1.5 cm	Moderate	1b
G	94	F	Hip fracture	Dry	27	Right arm	Immediate	12 × 5 cm	Minimal	1b
H	84	F	Atrial fibrillation	Fragile	23	Leg	Immediate	1.5 × 2 cm	Minimal	1b
I	76	F	Diabetes; CVA	Normal	19	Left shin	2 hours	2 × 2 cm	None	1b
J	84	F	Heart failure	Fragile	24	Upper arm	1 day	1 × 0.5 cm	Minimal	2a
K	78	F	COPD; falls	Fragile	27	Knee	1 day	3 × 2 cm	Minimal	2a
L	94	F	CVA	Fragile	32	Hand	<1 day	3 × 4 cm	Minimal	2b
M	58	F	Venous hypertension	Fragile	9	Lower leg	14 days	1 × 1 cm	Minimal	1a
N	92	F	Asthma	Fragile	27	Leg	17 days	1.5 × 1 cm	None	1a
P	85	F	CVA	Fragile	35	Leg	21 days	1.5 × 1 cm	Minimal	1a
Q	72	M	Multiple sclerosis	Fragile	27	Lower leg	7 days	2 × 2 cm	None	2b
R	76	F	Dementia; anaemia	Dry	22	Left leg	30 days	2 × 1.5 cm	Moderate	3
S	87	F	Diabetes	Very fragile	23	Left lower leg	30 days	0.5 × 0.5 cm	Minimal	3

COPD = chronic obstructive pulmonary disease; CVA = cerebrovascular accident

satisfactory; 4 = very good; 5 = excellent) and any additional comments were documented. At the conclusion of the evaluation, data from all the case report forms were collated and analysed by the authors. Descriptive statistics were computed using Microsoft Excel®. As a basis for these computations, the sample size was considered to be *n*=20 skin tears. Thus, Patients A and E each had the opportunity to rate dressings applied to each of their two wounds separately.

RESULTS

Baseline patient characteristics

Eighteen different patients, three male and 15 female, were included in the evaluation. Two of the patients had multiple wounds, resulting a total of 20 skin tears that were treated with BeneHold TASA Thin Absorbent Wound Dressing (*Table 1*). The participants were between 58 and 94 years old, with a median age of 83 years. Their Waterlow risk assessment scores ranged from nine to 35, with a median score of 25.

Except for one skin tear on a patient's neck, the rest of the wounds were located on the extremities: eight were on patients' arms or hands and 11 were on patients' legs. Thirteen of the skin tears were classified as STAR category I, five were category II, and two were category III. Fourteen of the skin tears were less than 1 day old when BeneHold TASA was first applied. The other seven were between 1 week and 1 month old when first treated using BeneHold TASA; with some previously being managed using other dressings. Except for two wounds associated

with moderate exudate levels, the patients' wounds were not exuding more than minimal amounts of fluid.

Patient outcomes

Wounds were treated with BeneHold TASA for periods ranging between 7 and 21 days, and in 14 cases the wounds were documented to have healed within that time (*Figure 1*). The majority of the wounds in the higher categories (1b through 3) successfully healed in periods ranging from 10 to 21 days, but in two cases BeneHold TASA was discontinued because the wound status deteriorated.

In the first instance (*Table 1*, Patient H), which was a category Ib skin tear, the skin flap was initially dark and was eventually lost. In the first week of treatment, due to concern about possible infection, the clinical staff deviated from the evaluation protocol by using BeneHold TASA to secure a non-adherent povidone iodine dressing to the wound. This was discontinued after 1 week, and thereafter BeneHold TASA was used as a primary dressing.

In the second instance (*Table 1*, Patient S), a 30-day-old category III skin tear, the wound was infected at first presentation, and was initially managed using a silver dressing while the patient received antibiotics. The wound had a good status when the clinical staff began dressing it with BeneHold TASA, but after 9 days of treatment it progressively deteriorated, prompting the dressing's discontinuation.

Another patient (*Table* 1, Patient R) who also presented with a 30-day-old category III skin tear received similar antimicrobial treatment before BeneHold TASA was used, but went on to complete healing after 18 days with BeneHold TASA.

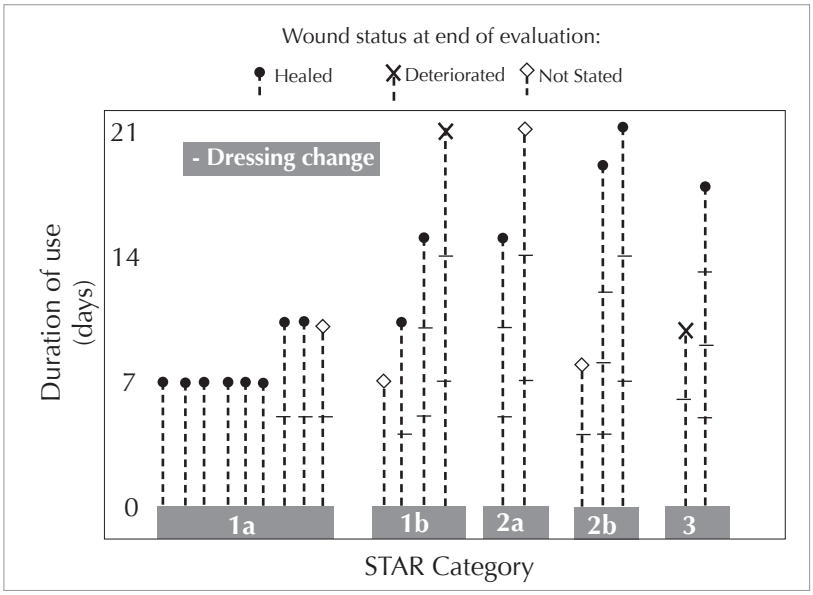

Figure 1. The duration of BeneHold TASA use for each skin tear, stratified by STAR classification. Each skin tear is represented by a vertical line beginning at day 0, when BeneHold TASA was first applied: a horizontal black line indicates the subsequent points in time when dressing changes occurred. The outcome at the end of the evaluation is indicated by one of three symbols: ● = the wound healed, X = the wound deteriorated, or ◊ = the outcome is unknown because healing status was not stated

There were four cases where the reason for discontinuing BeneHold TASA was not stated; the case reports and comments gave no indications that those patients' wounds deteriorated. *Figure 2* shows representative images of skin tear healing with BeneHold TASA over time.

Evaluation of dressing performance

Dressings were changed every 5–7 days, with an average wear time of 5.9 days per dressing. Patients reported that BeneHold TASA stayed in place during the wear time in all but one instance

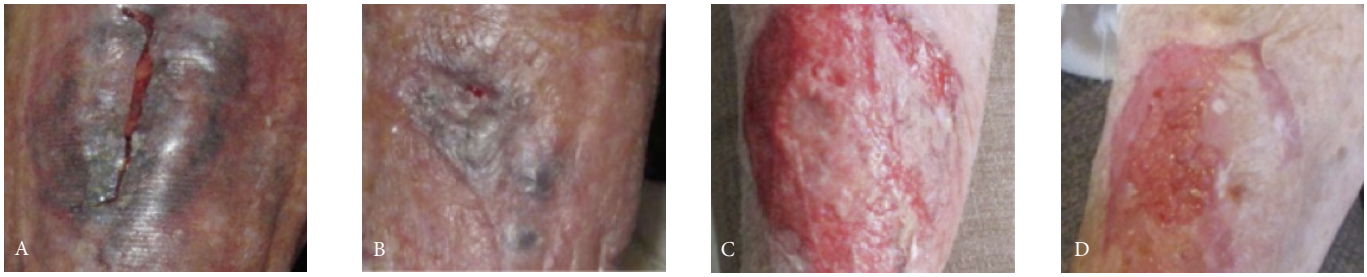

Figure 2. Representative images of skin tear healing with BeneHold TASA. A category 1b skin tear at presentation (A) and the same tear at 1 week (B) (Patient I see *Table 1*). (C) A category 2b skin tear at presentation and (D) at 1 week (Patient E see *Table 1*).

Figure 3. Clinician satisfaction scores. Results are derived from clinicians' assessments of the performance of BeneHold TASA on each wound at the end of the evaluation period (i.e. performance on 20 different skin tears)

(*Table 1*, Patient S): in that case wound exudate was reported to have increased from minimal to moderate over a 3-day period, partially due to bleeding, and this rapid change may have affected the wear time.

None of the 18 patients reported pain during the final dressing removal and all but one found BeneHold TASA comfortable to wear throughout the study period. It is worth noting that the patient who found it uncomfortable was also wearing Class I hosiery over the dressing due to chronic venous hypertension. Overall, patients were highly satisfied with BeneHold TASA, rating the dressing an average of 4.5 out of 5 (min. = 3; max. = 5).

The clinicians noted no instances of trauma associated with dressing removal and found that the dressings remained intact in all patients throughout the study period. The clinical evaluators found BeneHold TASA easy to apply and easy to remove, giving it average scores of 4.7 out of 5 (min. = 4; max. = 5) and 4.6 out of 5 (min. = 3; max. = 5), respectively. Overall, the clinical staff were very satisfied with BeneHold TASA, giving it an average rating of 4.4 out of 5 (min. = 1; max. = 5) (*Figure 3*).

DISCUSSION

This clinical evaluation focused on the use of BeneHold TASA Thin Absorbent Wound Dressings for the management of superficial skin tears. These dressings have previously been shown to be effective for treating wounds with heterogeneous underlying aetiology (Stephen-Haynes et al, 2014). In that report, BeneHold TASA was found to have longer wear times in comparison to other dressings used previously. The transparency of the dressing was noted as a benefit by both clinicians and patients, as it allowed for continuous monitoring of wound progression without the need for disrupting the dressing. The results of the present evaluation on skin tears are in congruence with the findings of Stephen-Haynes et al.

Although they were a convenience sample, the patients included in this evaluation were typical of those at risk of skin tears. The sample was comprised of older patients (median age = 83 years), consistent with prior reports that 88% of skin tears occur in people over 65 years old (Ratliff and Fletcher, 2007). Furthermore, nearly all of the patients' Waterlow scores place them at very high risk for pressure ulcers, which may be correlated to an elevated risk of skin tears as the two share some risk factors in common, such as advanced age, impaired mobility, poor nutrition, and comorbidities (Stephen-Haynes, 2012; Rayner et al, 2015). The patients' skin tears were located almost exclusively on the arms and legs, as is typical, and healed within time frames consistent with published expectations: 10 days for category I, and 14–21 days for categories II and III (Holmes et al, 2013).

BeneHold TASA dressings were changed relatively infrequently, with an average wear time of nearly 6 days. Once applied, dressings were often left undisturbed for a week. Combined with its ability to be removed without damaging the wound or periwound, the dressing supported best practice recommendations to protect skin tears with atraumatic, moisture-management dressings and avoid frequent changes. BeneHold TASA's transparency is a distinct advantage in this regard because it enables the clinicians to make visually-guided decisions, and thus they are more confident in leaving the dressing in place for a longer time, preventing unnecessary dressing changes and allowing for undisturbed wound healing.

Wound management with dressings in patients with dementia can be challenging. Wear times are low in such cases from the authors' past experience, as the patients tend to remove the dressings, causing further injury and delayed wound healing. In this evaluation, the authors have noticed that

patients with dementia did not try to remove the dressings and that they were not a cause of irritation to the patient. BeneHold TASA dressings were found to be flush to the skin and their transparency enabled them to remain undetected. From the patient perspective, BeneHold TASA's ultra-thin profile and high conformability made it comfortable to wear. These properties allow for adaptability to complex body contours, and thus the evaluating clinicians perceived BeneHold TASA to be less prone to roll off from the edges as is common with other types of dressings.

This study has a few limitations. It is a non-randomised, non-comparative, single-centre, prospective case series evaluation wherein individual clinical judgment was used to decide which patients received BeneHold TASA dressings. This type of patient selection process may result in selection bias. The authors have attempted to overcome this, in part, by recruiting patients with the same type of wound (superficial skin tears), and the resulting participant pool is consistent with a typical population who are at risk of skin tears. Another source of bias may derive from the fact that patient satisfaction was queried by the treating clinicians, which could perhaps influence the patients to give more favourable responses. While the findings confirm the previous study's results (Stephen-Haynes et al, 2014) and lead the authors to believe they are indicative of likely outcomes, more rigorous studies will be required to definitively prove the advantages of BeneHold TASA as part of a skin tear management regimen and to understand how generalisable these results are to more diverse patient populations. For instance, the presence of oedema should be a factor that is considered in the management of skin tears, but BeneHold TASA is not designed for those with a high amount of exudate. It is, however, suitable for superficial skin tears with minimal exudate. In summary, although clinical evaluations provide valuable insight, especially on novel medical products, larger, controlled/comparative trials in multi-centre settings are needed to confirm and establish the identified benefits.

Despite these limitations, the current findings are a promising demonstration of the effectiveness of BeneHold TASA dressings in managing skin tears. Due to its potential cost-effectiveness and ease of application/removal, reporting of this clinical evaluation may allow BeneHold TASA dressings to gain wider integration into wound management algorithms.

CONCLUSIONS

This case series evaluation demonstrates that BeneHold TASA Thin Absorbent Wound Dressings can achieve treatment goals including wound healing, clinician convenience and patient comfort when used to manage skin tears. The dressing was well-received by both clinicians and patients. On evaluation, BeneHold TASA was found to be a promising new technology that could offer positive clinical benefits in patients with superficial skin tears. WUK

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