Cavity wounds: a juicy topic

KEY WORDS
- Cavity wound
- Exudate
- Exufiber®
- Filling

Cavity wounds are deep, highly exuding wounds that can occur in most wound aetiologies and locations. They can present a challenge in clinical practice due to high exudate levels that can increase the risk of infection and maceration. Cavity wounds should be 'loosely filled' with a highly absorbent dressing. Exufiber® and Exufiber® Ag+ have properties that are well-suited to managing cavity wounds. At the Wounds UK Annual Conference 2021, delegates attended an interactive Made Easy session with the opportunity to use Exufiber in a simulated cavity wound and reflect on how they teach the management of cavity wound.

Cavities can present in wounds of most aetiologies including leg ulcers, diabetic-related lower limb ulcers, pressure ulcers (PUs) and in patients with surgical wound dehiscence (Tickle, 2019). The definition of a cavity wound described in the literature is varied, but all include elements such as the tissue type and depth (Timmons and Cooper, 2008; Vowden, 2016). Full thickness skin loss and a depth of ≥2cm are often cited as characteristics of a cavity wound; however, the severity of the cavity wound depends on the location. For example, a 2cm wound on the foot is proportionally more significant than a 2cm deep sacral wound. *Figure 1a* shows a penile wound that is less than 2cm deep, but it would be considered a cavity wound. *Figure 1b* on the sacral area is a more 'classic' cavity wound.

CHALLENGES OF CAVITY WOUNDS

Cavity wounds are challenging to manage as they are often highly exuding. High exudate levels increase the risk of exudate pooling at the base

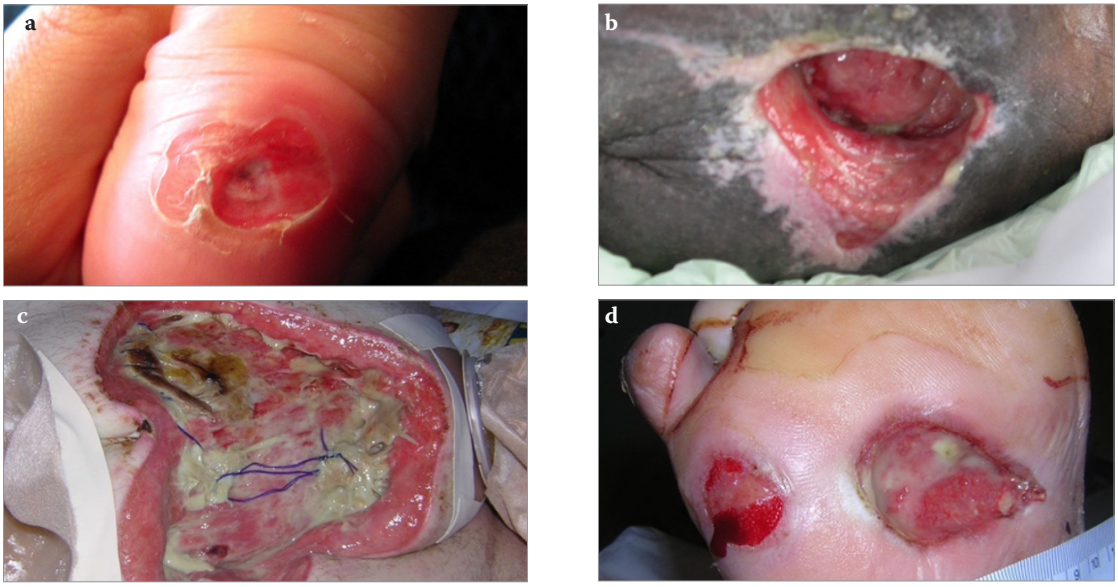

Figure 1. Examples of cavity wounds. a) penis; b) Category IV pressure ulcer; c) Dehisced surgical wound; d) Diabetes-related foot ulcer [photos used with permission from Jacqui Fletcher]

JOHN TIMMONS
Global Medical Director, Molnlycke Health Care

DEBRA JOHNSTONE
TVN, Bradford District Care Foundation Trust, Bradford

of the wound, potentially leading to bacterial proliferation and infection. The anatomical location of the cavity wound can also make dressing application challenging. The presence of sinus(s) or a fistula(s), as well as undermining and bridging also complicate wound healing (Timmons and Cooper, 2008).

There is little to no evidence on the impact of the COVID-19 pandemic on the prevalence of cavity wounds, but anecdotally, it is suspected that the prevalence of infected, deeper cavity wounds has increased, especially for PUs and diabetes-related lower limb ulcers. The potential reasons for this anecdotal observation include:

- Late presentation due to patient anxiety accessing healthcare in hospital or in the community
- An increase in virtual assessments where it is not always appropriate for the patient to share a visual of the wound on screen in sensitive or hard-to-reach area, such as the buttocks
- A reliance of the patient's own subjective assessments without being able to touch or see the patient in person.

ASSESSMENT AND MANAGEMENT

The impact of the COVID-19 pandemic highlights the importance of a thorough patient and wound assessment where possible. Assessment of a cavity wound and patient should include accurate assessment of the wound length, width and depth, including undermining; determination of the underlying aetiology; appreciation of the size and shape of cavity in different anatomical locations; identification of sinus(s) and fistula(s).

An holistic assessment will identify the challenges specific to the cavity wound and patient, and what management strategies to prioritise. Once the management strategies are identified, it will help to inform dressing and treatment selection. Tickle (2019) proposed these strategies may include:

- Fill dead space of the cavity wounds
- Create an intimate and continuous contact of the primary dressing with the wound bed to avoid dead space and exudate pooling without overpacking
- Absorption of fluid
- Optimise the wound bed and remove devitalised tissue by cleansing and debridement
- Manage the bioburden and use antimicrobial dressings were necessary
- Minimise dressing-related issues, e.g. too absorbent or not absorbent enough causing maceration to the surrounding skin
- Application of a suitable secondary dressing to avoid leakage.

In treatment regimens where primary and secondary dressings are used, effective transfer of exudate from the wound bed to the primary dressing and from the primary to the secondary dressing is a must (Lustig and Gefen, 2022). Fibre dressings are typically used in the management of cavity wounds; these dressings should effectively transfer exudate away from the wound bed to a suitable absorbent secondary dressing.

PACKING – LOOSELY FILLING THE CAVITY WOUND

Historically, the aim of cavity wound management was to pack as much as possible into a cavity wound with ribbon gauze with metal forceps. Now we understand that this is detrimental to the wound. The aim now is to 'loosely fill' the wound, but what does this

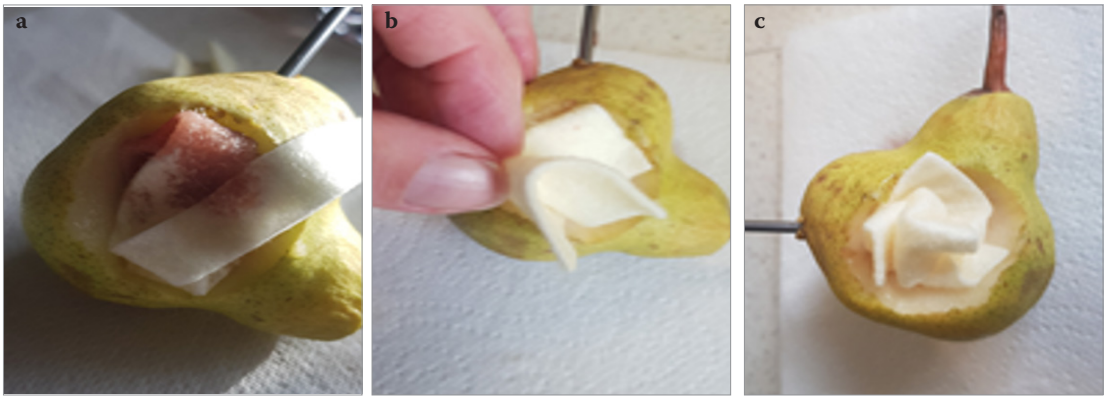

Figure 2. Filling techniques with pears: a) zig zag; b) fold; c) scrunch

Box 1. Top tips for packing a cavity wound (Tickle, 2019)

- Consider the amount of dressing is going to be used to fill the cavity
- Consider how the dressing is going to be used, i.e. layers, folds, scrunch
- Ensure you understand how the dressing works and absorbs fluid
- Make sure you know what you want to achieve with the treatment regimen for that wound
- Ensure adequate pain control, especially on dressing removal
- Consider the impact of gravity and the patient's position on the primary and secondary dressing
- Document what you did, including how many pieces of dressing go in so that all are removed
- Use the right secondary dressing!

mean and what techniques are available to fill the wound. *Figure 2* shows a variety of filling techniques with pears, and *Box 1* includes some considerations when packing a cavity wound.

In practice the filling of a cavity is rarely described, which can cause anxiety for those less experienced in wound care. There is little in the literature to support any particular technique or describe benefits associated with folding, scrunching or zig zagging. To encourage discussion the delegates were invited to complete a practical activity using fruit to mimic the 3D nature of the human anatomy and consider different filling techniques using Exufiber – either zig zag, scrunch or folding. They discussed their rationale for using each technique and what they observed based on a range of parameters such as fluid absorption, retention, one-piece removal, transfer of fluid and gelling softness (*Figure 3*).

APPROPRIATE DRESSING SELECTION

Accurate assessment of the wound and patient will help to determine the appropriate dressing(s) to manage wound exudate. Primary and secondary dressings may be needed, depending on the wound characteristics, and these dressings should work together to help create the ideal moist wound environment. For wounds with moderate-to-high exudate levels, it may be necessary to use a primary dressing such as a gelling fibre dressing to help manage the exudate effectively, to promote removal of devitalised tissue (e.g. slough) and prevent leakage of exudate onto the surrounding skin. For cavity wounds, a gelling fibre dressing may be used to lightly pack the cavity to promote the development of granulation tissue from the base of the cavity and to help manage undermining (Tickle, 2019). An appropriate secondary dressing should also be used to help further manage exudate.

Exufiber® with Hydrolock® technology

On contact with exudate, a gelling fibre dressing swells and takes the form of a gel, ideally conforming to the wound cavity shape (Lustig and Gefen, 2022). Gelling fibre dressings (used in combination with a secondary dressing) absorb, retain and transfer excess wound exudate thus protecting the periwound skin, while creating a moist environment to support the healing process.

Figure 3. Made Easy session in action

Exufiber® (Molnlycke HealthCare) is a non-woven polyvinyl alcohol (PVA) gelling fibre dressing with Hydrolock® Technology, providing an advanced fluid lock-in property for medium-to-highly exuding and cavity wounds. The dressing has tightly packed fibres that minimise free space and keep exudate locked in (*Figure 4a*) compared with a hydrofibre carboxymethylcellulose (CMC) essing (*Figure 4b*). The Hydrolock technology within the structure increases structural integrity and stays intact for one-piece removal (Chadwick and McCardle, 2016).

A cavity model was used to simulate the fluid transfer capability of Exufiber and a hydrofibre

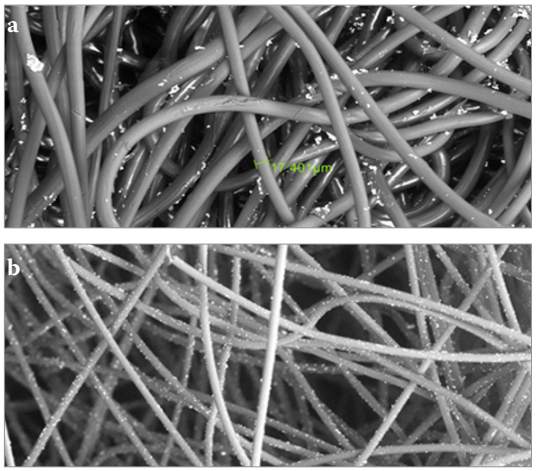

Figure 4. Electron microscope image of a) Exufiber with Hydrolock technology; b) a carboxymethylcellulose (CMC) dressing

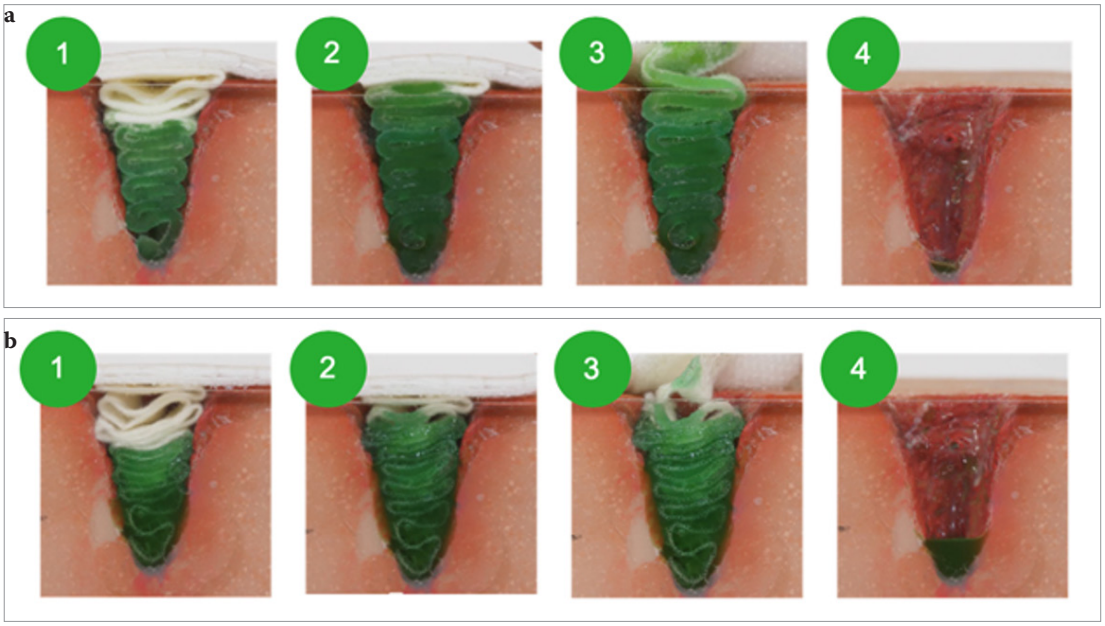

Figure 5. Moisture transfer experiment of a) Exufiber; b) a carboxymethylcellulose (CMC) dressing

CMC dressings (*Figure 5a and b*). Exufiber demonstrated a better capability to transfer fluid to the secondary dressing than the hydrofibre CMC dressing, and when the dressings were removed, less fluid was left in the cavity wound using Exufiber (Data on file 2014, 2018, 2020; Surgical Materials Testing Laboratory, 2014). In the clinic, this reduces the risk of leaks and maceration to the surrounding skin (Smet et al, 2015; Chadwick and McCardle, 2016; Davies and McCarty, 2017).

Exufiber and Exufiber Ag+ can be left in place for up to 7 days, depending on wound condition and clinical practice, allowing undisturbed healing (Surgical Materials Testing Laboratory, 2014; data on file, 2014). Exufiber can be left in place for up to 14 days for donor sites.

The delegates broadly agreed that the filling technique for cavity wounds should ensure that the dressing is in contact with the wound bed. No one technique (zig zag, scrunch or fold) is better when using Exufiber due to its efficient transfer of fluid, as long as the patient and wound needs are met. Delegates eludicated some clear reasons for why they would cut or fold in a particular way and found it fascinating to discuss the widely differing techniques used across the tables.

EXPERIENCES USING EXUFIBER DRESSINGS IN THE REAL WORLD

At Bradford District Care Foundation Trust, Debra Johnstone works in the community setting, where the patients are mostly elderly individuals with complex comorbidities. The COVID-19 pandemic has made caring for this population more complex through delayed access to care and hospitals encouraging earlier discharge to the community. Debra described the care of one of her patients using Exufiber and Exufiber Ag+.

Case report

An older woman in her 80s who is registered blind sustained an injury to her leg. *Figure 6a* was taken 2 weeks after the initial trauma. There was a large haematoma that was evacuated, but this left a cavity. Exufiber Ag+ was used as there were signs of local infection and the dressing was used for 4 weeks. The Exufiber Ag+ dressings were overlapped over the large surface area of the wound. An ABPI assessment was not possible due to high pain, but the patient was able to tolerate reduced compression as per the National Wound Care Strategy Programme (2020) guidelines.

After 4 weeks (*Figure 6b*), there was a small cavity in the centre of the wound, but the dressing regimen of Exufiber Ag+ supported autolytic debridement and the removal of slough from the wound bed. The wound was still wet but there were no longer signs of wound infection, so treatment was stepped down to Exufiber dressing.

From the first application, the Exufiber Ag+ and Exufiber managed the high level of viscous exudate and transferred it to the secondary dressing. There

Figure 6. Leg ulcer that was treated with Exufiber and Exufiber Ag+ a) April 2021; b) May 2021; c) and June 2021

was no leakage from the dressing, which had been a concern due to the patient's fragile skin and risk of maceration. The wound was very painful initially, but the dressing was always easy to remove. After approximately 8 weeks of treatment, the wound had healed (*Figure 6c*).

CONCLUSION

The burden of chronic wounds continues to grow, and, with this, there is a need to embrace new technologies to improve patient outcomes. The key take-home messages from the Made Easy included the importance of selecting a product such as Exufiber or Exufiber Ag+ that can manage the exudate by absorption with the added capability to transfer to the secondary dressing. This minimises the risk of pooling at the base and potentially enlarging the wound. Exploring the variety of packing techniques made possible in this practical session enabled the clinicians to explore new approaches to managing cavity wounds. They also had the opportunity to appreciate the importance of one piece removal which aids a clean wound bed. WUK

DECLARATION

This article is sponsored by Mölnlycke Health Care. The Made Easy event was developed by Wounds UK and supported by Mölnlycke Health Care.

REFERENCES

Chadwick P, McCardle J (2016) Open, non-comparative, multicenter post clinical study of the performance and safety of a gelling fibre wound dressing on diabetic foot ulcers. *J Wound Care* 25(4):290–300. https://doi.org/10.12968/jowc.2016.25.5.290

Davies P, McCarty S (2017) *An in-use product evaluation of a gelling fibre dressing in wound management*. E-poster presentation at Wounds UK Annual Conference, Harrogate, United Kingdom

Lustig A, Gefen A (2022) Fluid management and strength postsimulated use of primary and secondary dressings for treating diabetic foot ulcers: Robotic phantom studies. *Int Wound J* 19(2):305–15. https://doi.org/10.1111/iwj.13631

Mölnlycke Health Care (2014) Data on file

Mölnlycke Health Care (2018) Data on file

Mölnlycke Health Care (2020) Data on file

Smet S, Beele H, Saine L et al (2015) Open, non-comparative, multi-centre post market clinical follow-up investigation to evaluate performance and safety on pressure ulcers when using a gelling fibre dressing as intended. Poster Presentation at *European Pressure Ulcer Advisory Panel Conference*, Ghent, Belgium

Surgical Materials Testing Laboratory. BS EN 13726-1:2002: Test methods for primary wound dressings

Timmons J, Cooper P (2008) How to systematically assess a patient with a cavity wound. *Wounds UK* 4(2):4–10

Vowden K (2016) Defining, assessing and managing cavity wounds. *Wounds UK* 12(1):18–23