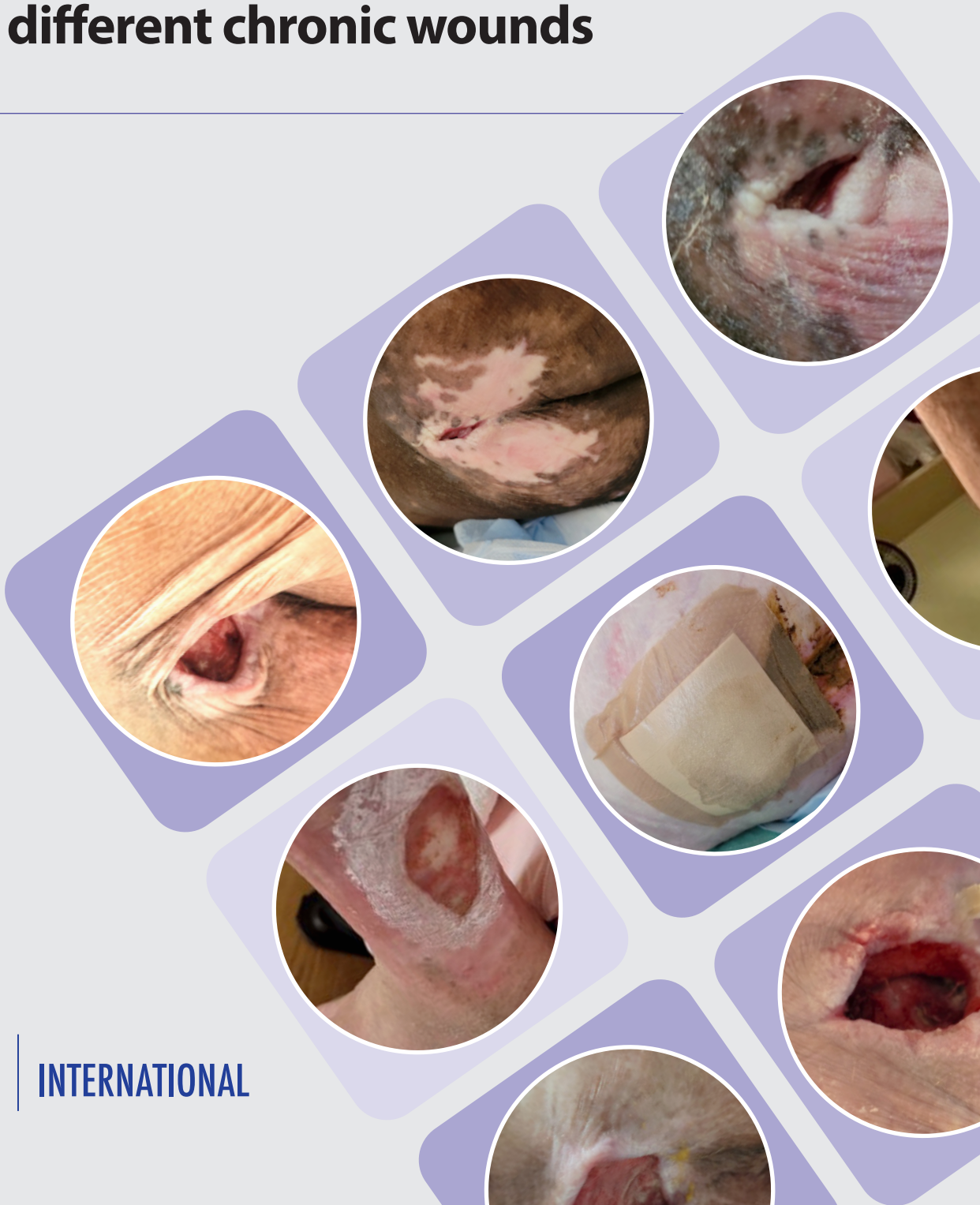
Use of 3M™ Kerramax Care™ Gentle Border Super-Absorbent Dressing and 3M™ Kerramax Care™ Super-Absorbent Dressing for the management of four patients in the US with different chronic wounds



WOUNDS | INTERNATIONAL

Use of 3M™ Kerramax Care™ Gentle Border Super-Absorbent Dressing and 3M™ Kerramax Care™ Super-Absorbent Dressing for the management of four patients in the US with different chronic wounds

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Chronic wounds, such as pressure injuries, diabetic foot ulcers, venous leg ulcers and other lower limb ulcers, are generally defined as "wounds that fail to proceed through the normal phases of wound healing in an orderly and timely manner" (Frykberg and Banks, 2015). In wounds that are not healing, heightened and ongoing inflammation is likely a contributing factor to increased exudate production (World Union of Wound Healing Societies, 2019). 3M™ Kerramax Care™ Super-Absorbent Dressings are designed to absorb and retain high amounts of wound exudate to help achieve an optimal moisture balance. This case series evaluated the effect of 3M™ Kerramax Care™ Gentle Border Dressing and 3M™ Kerramax Care™ Super-Absorbent Dressing on four patients in the US with different chronic wounds. Progression toward healing, improved patient quality of life, and reduced dressing change frequency was observed.

Chronic wounds, such as pressure injuries, diabetic foot ulcers, venous leg ulcers and other lower limb ulcers, impact an estimated 1–2% of people during their lifetime (Järbrink et al, 2016). Complications associated with wound chronicity [see Box 1; Järbrink et al, 2016] increase both the personal and financial cost of wounds in terms of impact on quality of life and burden on the healthcare system.

Kerramax Care Dressings are suitable for use on exuding wounds, including pressure injuries, diabetic foot ulcers and venous leg ulcers and under all forms of compression; see Box 2 for further dressing properties.

Highly exuding wounds are demanding for both the clinician and patient and can lead to difficulties in achieving an optimal moisture balance. Additionally, they can cause issues such as leakage, which is uncomfortable and malodorous, as well as maceration of wound edges and surrounding skin (Wounds International, 2021). The constituents of wound fluid, including bacteria and matrix metalloproteinases, can be an impediment to wound healing (Wounds International, 2021).

Kerramax Care Dressings with advanced 3M™ Exu-Safe Technology have a unique, horizontal

Box 1. Common complications of chronic wounds (Järbrink et al, 2016)

- Infection
- Osteomyelitis
- Cellulitis
- Necrosis
- Dehiscence
- Gangrene
- Maceration
- Hematomas
- Edema
- Periwound dermatitis.

Box 2. Kerramax Care Dressing properties (Wounds International, 2021)

- Used as either a primary or secondary dressing
- Folded or shaped to assist patient comfort (only available in Kerramax Care Super-Absorbent Dressing)
- Used on either side for easy application (only available in Kerramax Care Super-Absorbent Dressing)
- Available in a wide range of sizes
- May be left in place for up to 7 days.

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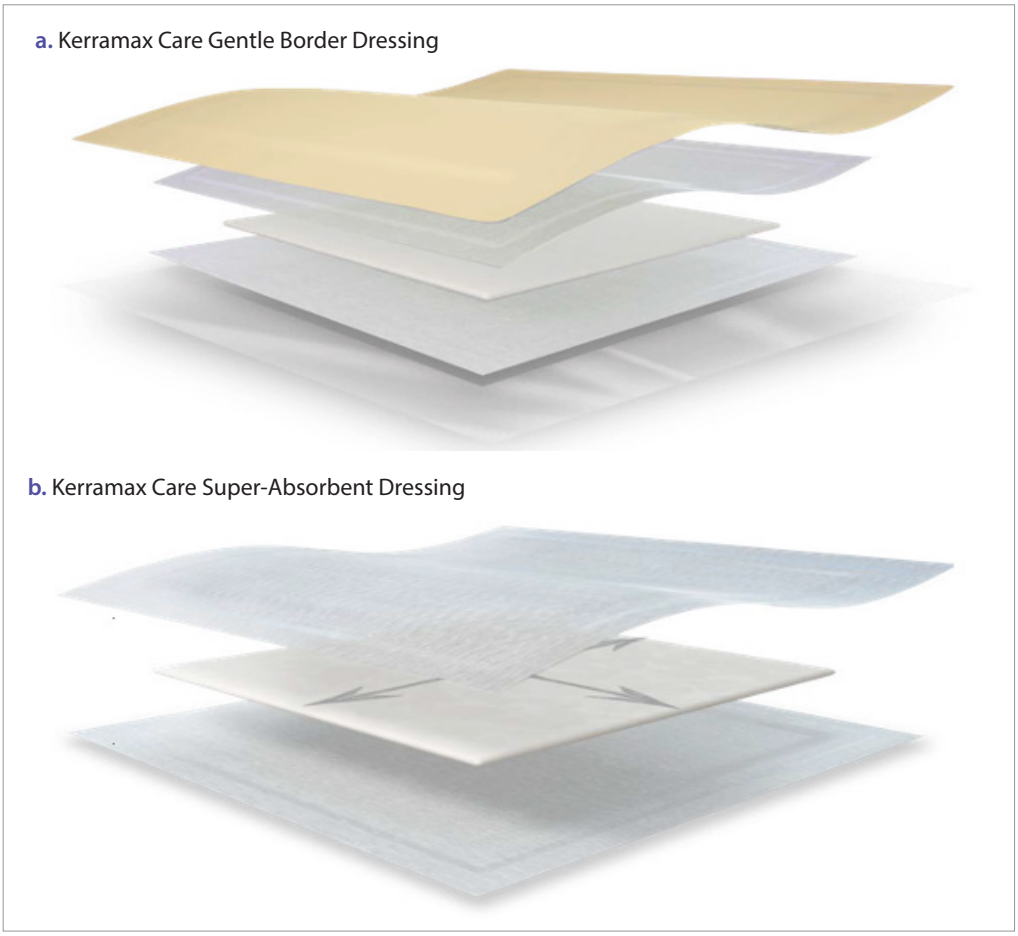
Figure 1. Kerramax Care Dressings (a) Kerramax Care Gentle Border Dressing; (b) Kerramax Care Super-Absorbent Dressing



wicking layer and the ability to absorb and retain high levels of exudate and potentially harmful bacteria (e.g. methicillin-resistant *Staphylococcus aureus* (MRSA) and *Pseudomonas aeruginosa*) and matrix metalloproteinases inside the dressing.

Kerramax Care Dressings are available with a silicone border — 3M™ Kerramax Care™ Gentle Border Dressing [Figure 1a] is a primary or secondary dressing with a soft silicone border that ensures gentle adhesion and non-traumatic removal. The dressing can be secured in position without the need for a secondary dressing or retention bandage, and the heat-sealed border prevents exudate leakage from the dressing, thereby reducing the risk of maceration.

When choosing between a bordered or non-bordered dressing, it is necessary to consider factors such as wound type, location, patient condition and exudate level.

Kerramax Care Gentle Border Dressing can be particularly effective in areas where a dressing with no adhesive is more challenging to apply and where self-adhesive properties are needed (e.g. the torso and sacral area). The adhesive property can also help to provide good adhesion in areas with skin folds or uneven topography (e.g. ischial areas, breasts, pannus folds and gluteal cleft) while effectively managing wounds exposed to biomechanical stress or moisture. This type of dressing may allow patients to continue wearing their own clothes while ensuring the dressing remains in place, enabling them to carry on with their daily activities.

On the other hand, Kerramax Care Super-Absorbent Dressing [Figure 1b] can be effective when used under compression, helping clinicians determine when to change the compression wrap. Additionally, it may be a suitable option for patients with a history of repeated skin tears and medical adhesive-related skin injuries.

Cases

Four patients in the United States with different chronic wounds were treated with Kerramax Care Dressings for four weeks. Cases 1–3 used Kerramax Care Gentle Border Dressing, while Case 4 used Kerramax Care Super-Absorbent Dressing. Patients involved had previously received various treatment options, but lack of dressing adherence, frequent dressing changes and strikethrough/leakage remained a concern.

Cases courtesy of Catherine Milne.

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Case 1.

Stage 4 sacral pressure injury and incontinence-associated dermatitis

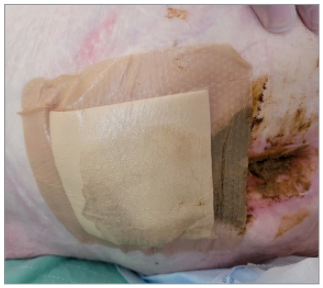


Figure 2. The sacral pressure injury had a heavy bioburden and previous dressings had failed to adhere due to fecal incontinence

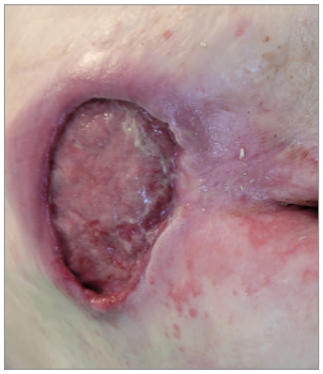


Figure 3. On assessment (day 0), the stage 4 sacral pressure injury was pale and poorly granulating

A 78-year-old man presented with a chronic sacral pressure injury and an intracranial abscess that had developed during his admission to the hospital for an acute illness. The patient was taking several medications to manage the pain associated with his wound. The pressure injury had developed more than three months prior to presentation; following this, the patient had undergone treatment for osteomyelitis and had been given intravenous vancomycin to treat the infection. Negative pressure wound therapy (NPWT) had been used; however, treatment was stopped after 60 days because his private medical insurance policy would no longer cover the cost. Over the next 30 days, the pressure injury was treated using calcium alginate with silver, covered by a foam dressing. This treatment had failed due to a lack of dressing adherence and frequent dressing changes due to fecal contamination [Figure 2].

The patient had developed fecal incontinence and incontinence-associated dermatitis (IAD) following radiation therapy for colon cancer. The dermatitis was being treated with the application of nystatin powder to the peri-anal area twice a day and with a lidocaine 5% transdermal patch to reduce local pain and itching. He was prescribed oral potassium chloride 40 mEq/20 mL, four times daily, to replace electrolytes lost due to incontinence, along with two 500 mg ascorbic acid tablets to prevent vitamin C deficiency.

The patient had several comorbidities he was managing with medication. He was taking two magnesium 400 mg tablets (as magnesium oxide) four times daily and metoprolol 25 mg twice daily for hypertension. He had a history of deep vein thrombosis, for which he took oral apixaban 2.5 mg twice daily. He also had type 2 diabetes, gout, gastroesophageal reflux disease, and a history of pneumonia, anemia, urinary tract infection and urinary retention; in addition, he had been infected with COVID-19 three times; he had recovered in each instance.

Wound presentation

At the time of presentation, the sacral wound was categorized as stage 4, according to the National Pressure Injury Advisory Panel (NPIAP) pressure injury stages. The wound was pale, poorly granulating, covered in 5% slough, and had a high bioburden due to frequent stool contamination [Figure 3]. The skin surrounding the wound was inflamed and showed signs of IAD from exposure to fecal matter. The pressure injury area measured 4.5cm (length) x 6.2cm (width) x 0.5cm (depth) and was producing a high volume of moderately viscous exudate. There had been regular instances of exudate strikethrough and leakage due to the previously used foam dressings poorly adhering to the sacral area. As a result, the patient's dressings were typically changed three times a day.

The patient reported the level of pain associated with the sacral pressure injury to be distressing (6 out of 10, where 10 is the worst pain imaginable). He was taking gabapentin 600 mg three times a day to manage his pain.

The patient was on bed rest with side-to-side turning. He frequently needed to be pulled up toward the head of the bed, as he would shear toward the foot end every time the head of the bed was raised.

Treatment was selected with the initial aim of reducing the number of dressing changes by:

- Better adhering to the sacral area
- Managing shear strain
- Absorbing exudate and preventing strikethrough
- Protecting the periwound area from fecal contamination.

Dressing application

The pressure injury was cleansed and mechanically debrided in preparation for treatment and dressing. 3M™ Cavilon™ Advanced Skin Protectant was applied to the skin surrounding the wound to address IAD. A silver gelling fiber dressing was used to conform to the wound bed and reduce bioburden within the pressure injury. Kerramax Care Gentle Border Dressing was selected because it is highly absorbent and maintains integrity once applied. It is also easy to apply and adheres without the need for additional adhesives.

The first dressing change was planned for 24 hours after initial application. In addition to this wound treatment regimen, the patient continued to receive incontinence care and nutritional supplements, and he was frequently turned and repositioned by nursing staff.

Review 1 (Day 7)

At the initial dressing review, Kerramax Care Gentle Border Dressing was working very well.

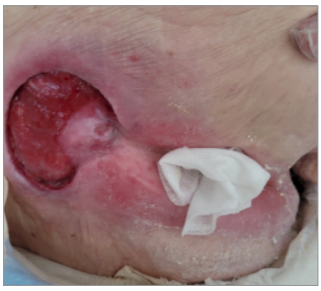


Figure 4. The sacral pressure injury was granulating and filling in by day 28 of treatment with the use of a skin protectant and Kerramax Care Gentle Border Dressing

It had withstood shear stress from the patient sliding and repositioning, and the dressing absorbed the high volume of exudate produced by the pressure injury without strikethrough or leakage. It also maintained contact with the skin during incontinence episodes. There was no loss of dressing integrity in the area close to the anus, suggesting that the dressing was conforming closely to the wound.

The frequency of dressing changes was reduced from three times a day to once daily. When asked, the patient said that he "didn't feel it" when the Kerramax Care Gentle Border Dressing was being applied and removed. His pain score had decreased from 6 out of 10 to 3 out of 10 during dressing changes. The nurses reported that, due to the time saved with the use of Kerramax Care Gentle Border Dressing, they were able to focus on other aspects of care.

Although the pressure injury had not reduced in size and was still producing a high volume of exudate, the wound bed was a better color, appeared to have a reduced bioburden and was covered in granulating tissue. His IAD was showing signs of improvement as a result of the dressings remaining intact.

The decision was made to continue with treatment: the wound was mechanically debrided, cleansed, and then dressed as before. Dressing changes were reduced to every other day, with the first dressing change planned two days after review.

Review 2 (Day 14)

At the second review, the dressings had been changed every other day and had continued to manage exudate and protect the periwound area from exposure to fecal matter. The nurses reported that the patient had experienced a high level of incontinence over the previous week, but the dermatitis had not worsened. Kerramax Care Gentle Border Dressing had remained in place, and the patient found it comfortable, reporting only mild discomfort (2 out of 10) during dressing changes. The wound remained unchanged in size but was only 0.25mm and there were signs of early epithelialization. Exudate remained moderately thick and high in volume. Treatment was continued as before, with the next planned dressing change three days later.

Review 3 (Day 21)

Dressing changes were being performed three times a week. Loss of integrity had only occurred once since changing to Kerramax Care Gentle Border Dressing. Incontinence had been less of an issue since the second review, and the dermatitis had markedly improved. Edges of the wound had started to contract and 10% of the wound bed was covered with epithelial tissue, the remainder with granulating tissue. The patient was pleased with the treatment he had been receiving, saying "I don't know it's [Kerramax Care Gentle Border Dressing] there" and reporting only mild discomfort (2 out of 10).

Review 4 (Day 28)

Only one dressing change had been needed since the patient's last review. The diameter of the wound had reduced by 0.2cm, with increasing epithelialization from the lower wound margin and a healthier-looking wound bed [Figure 4]. A moderate volume of exudate was being produced that was well managed by the dressings. The dermatitis had resolved, and post-inflammatory hyperpigmentation was noted.

Conclusion

During the period following the switch to Kerramax Care Gentle Border Dressing, the number of dressing changes required for the management of the patient's sacral pressure injury reduced from three times daily to three times a week. The dressing adhered and conformed well to the wound, absorbing high volumes of exudate from the wound bed while helping to protect the periwound skin from fecal incontinence. There was only one instance during which the dressing lost integrity.

After four weeks, the wound showed progression toward healing and IAD had resolved. The patient said he did not feel the dressings, and his pain levels associated with dressing changes had decreased. The nurses found Kerramax Care Gentle Border Dressing easy to apply and were pleased with the reduction in time required to change the patient's dressings. WINT

Case 2.

Stage 4 sacral pressure injury

An 87-year-old woman presented with a sacral pressure injury of 11 months duration and osteomyelitis. Despite having received a new wheelchair that was supposed to be custom fit, the wound occurred within four hours of her sitting in it. The pressure injury was preventing the patient from participating in all the activities she wanted to, as she was limited to spending two hours out of bed a day. She experienced episodes of urinary and fecal incontinence, with the latter often causing the integrity of previously used sacral dressings to be compromised. This meant she required more frequent dressing changes and would miss planned activities. Her pressure injury was causing her pain, for which she was taking acetaminophen 500 mg twice a day.

The pressure injury had been treated with sharp debridement and offloading, combined with intravenous vancomycin to treat the osteomyelitis. NPWT had failed as the staff were unable to keep a good seal around the pressure injury due to frequent episodes of incontinence. Consequently, NPWT was replaced with a silver gelling fiber and foam dressing, changed daily over a period of two weeks. However, persistent issues arose from recurrent stool contamination and insufficient dressing adherence. Subsequently, 3M™ Promogran Prisma™ Collagen Matrix with oxidized regenerated cellulose (ORC) and silver was used, followed by calcium alginate covered by a foam dressing, changed daily and as required. At each dressing change, both the wound and periwound skin were cleansed using a hypochlorous acid solution.

The patient had been diagnosed with dementia, displayed mild cognitive impairment, and had a history of cardiovascular disease, including transient ischemic attacks, sick sinus syndrome, hypertension and peripheral vascular disease. In addition to the sacral pressure injury, the patient had a stage 2 right heel pressure injury.

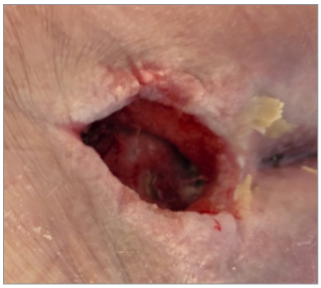


Figure 5. On day 0, the sacral pressure injury was deep, pale and had a high bioburden due to fecal contamination

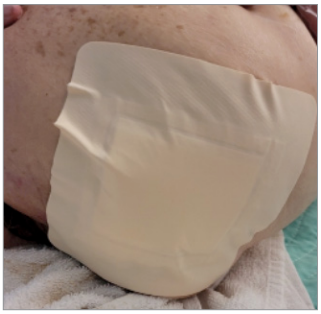


Figure 6. Kerramax Care Gentle Border Dressing was easy to apply and adhered well in this difficult-to-dress area

Wound presentation

The patient's sacral pressure injury was categorized as stage 4, according to the NPIAP pressure injury stages. At the time of presentation, the sacral pressure injury measured 2.7cm (length) x 1.3cm (width) x 1.2cm (depth) and had a boggy wound base [Figure 5]. Bioburden was high due to frequent contamination of the wound bed with stool. The skin was mildly macerated around the wound edge with early epibole present around the 7–10 o'clock edge. A moderate volume of exudate was being produced that was striking through dressings and leaking onto the patient's clothes and bedding due to poor dressing adherence. The patient rated the pain associated with her sacral pressure injury as 4 out of 10.

The aim of the revised treatment regimen was to manage exudate with a dressing that remained in place to reduce the frequency of dressing changes. The dressing selected needed to be absorbent and maintain integrity during episodes of fecal incontinence.

The patient was mildly active, requiring assistance with side-to-side turning and when moving from the bed to her wheelchair, and vice versa. She frequently needed to be repositioned toward the head of the bed as she would slide downward. Therefore, the dressing also needed to be able to withstand shear forces exerted by her independent and assisted movement.

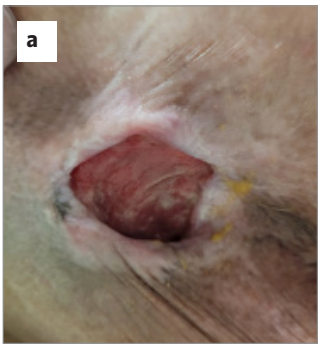
Dressing application

The pressure injury was mechanically debrided using gauze heavily moistened with a hypochlorous acid solution and then cleansed. 3M™ Cavilon™ No Sting Barrier Film was applied to the macerated periwound skin. The wound bed was covered with Promogran Prisma Matrix to address bioburden and promote granulation, while calcium alginate was used to absorb exudate and fill the dead space within the wound bed. A [15cm x 15cm] Kerramax Care Gentle Border Dressing was selected as it could handle the patient's movements and absorb the exudate without leakage. It was easy to apply and adhered well [Figure 6]. The first dressing change was planned for two days' time.

The patient was encouraged to improve her nutritional status, and continue taking nutritional supplements. She was turned and repositioned when needed by nursing staff to relieve pressure and reduce the risk of further pressure damage. Her incontinence care remained unchanged.

Review 1 (Day 7)

Dressing changes had been scheduled for three times a week; however, when the patient returned for her first review, she required two unscheduled changes due to fecal incontinence. This was a significant improvement, as the



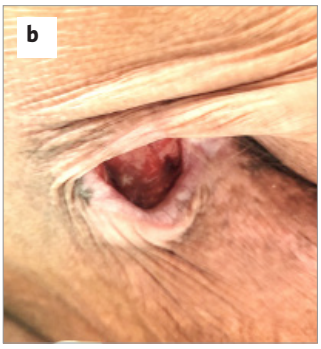


Figure 7a and b. Following four weeks of treatment, the wound edges had contracted, the wound bed was granulating, and the periwound skin was healthy. (a) The wound when stretched and (b) lax

patient had required six to ten unscheduled dressing changes a week when a foam dressing had been used. The wound bed appeared to contain a lighter bioburden and was granulating, suggesting that the Promogran Prisma Matrix was working as planned.

The patient and her caregivers were happy with the new treatment regimen, as fewer dressing changes meant the patient needed less incontinence care, freeing up nursing time and enabling the patient to attend more activities. The patient described Kerramax Care Gentle Border Dressing as "better" than her previous treatment, being only mildly uncomfortable on application and painless on removal.

There were various signs of improvement when the patient's wound was examined, such as:

- Wound area reduced to 2.5cm (length) x 1.0cm (width)
- Exudate was thinner
- Wound bed was red and covered with granulating tissue
- Periwound skin was less macerated.

Therefore, treatment continued as before, with the intention of three planned dressing changes in week two.

Review 2 (Day 14)

The dressings performed well in the second week, with no strikethrough and no visible stool getting into the wound or under the dressing during episodes of incontinence. Kerramax Care Gentle Border Dressing remained in place when the head of the patient's bed was elevated and while she was in her wheelchair. Dressing removal was reported by the patient to be "completely painless." The patient found the dressing comfortable to wear, saying, "I don't feel it." Her wound-associated pain had decreased from 4 out of 10 to 1 out of 10.

The wound bed was a healthy, red color, granulating and had reduced to 1.0cm in depth. The surrounding skin was no longer macerated, although epibole remained along the 7–10 o'clock edge. A moderate amount of thin exudate was being produced that was being well managed by the dressing.

Review 3 (Day 21)

By the end of week three, the patient's dressing change times were predictable. The patient and nurses were pleased that there had been no unscheduled dressing changes since her last review. Wound contraction had continued, and the wound now measured 2.5cm (length) x 0.7cm (width) x 0.7cm (depth). Granulation tissue covering the wound bed was healthy and the amount of exudate had decreased.

Review 4 (Day 28)

Progression toward healing had continued [Figure 7a and b]. The wound bed reduced further in size to 2.0cm (length) x 0.6cm (width) and was shallower at 0.4cm (depth). It was a robust color and produced a small amount of serosanguineous exudate. The periwound skin was mildly hypopigmented, and the epibole remained unchanged.

Conclusion

The management of this patient's sacral pressure injury was complicated by regular episodes of fecal incontinence. Previously, she had needed at least six unplanned dressing changes a week due to poor dressing adherence, exudate strikethrough and fecal contamination. The main aim of the revised regimen was to reduce the number of dressing changes required in order to enable undisturbed wound healing, protect fragile periwound skin, reduce the risk of skin trauma and reduce nursing time. Promogran Prisma Matrix was applied to address bioburden and support granulation, calcium alginate was applied to pack the wound and absorb exudate and Kerramax Care Gentle Border Dressing was used to securely cover the wound, handle exudate and protect against stool exposure.

Over a period of four weeks, the pressure injury decreased in area from 3.5cm^2 to 1.2cm^2, and its bioburden improved. Dressing changes became predictable, with longer wear times and a rare loss of integrity. The patient's quality of life improved as a result, and the nurses were pleased they no longer needed to regularly perform unplanned dressing changes. WINT

Case 3.

Hospital-acquired sacral pressure injury in a patient with dementia

An 89-year-old man with advanced dementia presented with a sacral pressure injury that developed while the patient was receiving hospital treatment for an acute episode of gastrointestinal bleeding. He had been a patient in a skilled nursing facility for seven months and 28 days. The pressure injury prevented him from participating in various activities; he was on bed rest and only able to get out of bed for two hours a day. The patient was incontinent of stool, and dressing integrity was often lost, requiring frequent unplanned dressing changes that interfered with scheduled activities. The wound appeared to cause the patient pain; however, assessment was difficult as the patient was non-verbal.

The pressure injury had been managed with multiple episodes of sharp debridement and offloading, in conjunction with NPWT. It had been treated with a silver gelling fiber dressing, and two weeks prior to presentation, a foam dressing had been applied daily after the wound bed was cleansed with a hypochlorous acid solution. The patient was also given intravenous vancomycin to treat osteomyelitis of the sacrum. The patient tolerated all but the NPWT, often pulling the device off in dementia-related behavior.

The patient had a history of gastrointestinal bleeding, malignancy of the colon, protein-calorie malnutrition, established cardiovascular disease (transient ischemic attacks, hypertension, pericardial effusion, peripheral vascular disease) and metabolic disorder (type 2 diabetes and hyperlipidemia). The patient also had a right heel pressure injury.

Wound presentation

The patient's sacral pressure injury was categorized as stage 4, according to the NPIAP pressure injury stages. At the time of presentation, the sacral pressure injury measured 2.7cm (length) x 1.2cm (width) x 0.5cm (depth). The wound bed was hypergranulating and had a high bioburden due to frequent contamination with fecal matter. The surrounding skin was macerated and hypopigmented [Figure 8]. A medium amount of moderately thick exudate was being produced that was leaking onto the patient's clothes and bedding due to poor dressing adherence. The wound was painful — he grimaced every time the wound was packed.

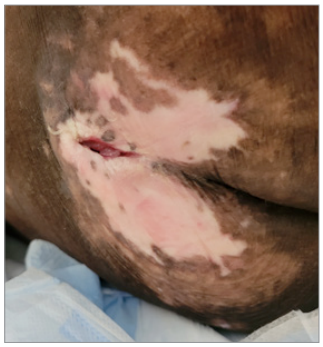


Figure 8. On day 0, the sacral pressure injury was hypergranulated and surrounded by macerated, hypopigmented skin

The dressing selected needed to be absorbent and able to maintain integrity to reduce frequency of dressing changes. Intended outcomes were to manage exudate and for the dressing to remain in place during episodes of incontinence.

Dressing application

The wound bed was mechanically debrided and cleansed with a hypochlorous acid solution. Once a week, a silver nitrate stick was applied following debridement of hypergranulation tissue to form eschar and to cauterize any bleeding post-debridement (Wound Source, 2020). Promogran Prisma Matrix was used to cover the wound bed because its ORC, collagen and silver addressed fecal contamination by reducing bioburden, and addressed hypergranulation by encouraging epithelialization.

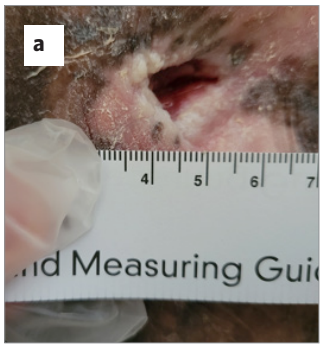
A [15cm x 15cm] Kerramax Care Gentle Border Dressing was applied to absorb and retain exudate while protecting the wound bed and surrounding skin from fecal matter. It adhered well to the sacrum and was able to withstand moderate shear pressure, which was exerted when the patient was repositioned from side-to-side and when the head of the bed was raised. The macerated periwound areas were protected with Cavilon No Sting Barrier Film.

The first dressing change was planned for two days later, and the patient continued to be turned and repositioned by the nursing staff and received incontinence care. His nutritional supplements were continued as before.

Review 1 (Day 7)

The patient's dressings were changed four times in the first week. There was one unscheduled dressing change due to loss of dressing integrity as a result of fecal incontinence. This was a significant improvement compared to the previously used foam dressings, which required one or two changes daily.

As Kerramax Care Gentle Border Dressing remained in place and handled the exudate well, dressing wear time considerably improved. The patient did not wince when his dressings were changed, suggesting he did not find the procedure painful, but he still grimaced when the wound was packed. The nursing staff were satisfied with the revised treatment regimen. When asked, a nurse said, "I am assuming more



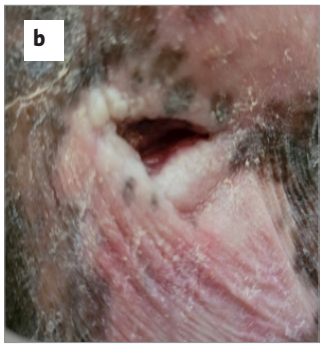


Figure 9a and b. (a) On day 28, the pressure injury had significantly decreased in size and had minimal hypergranulation. (b) The surrounding skin had negligible maceration and post-inflammatory hypopigmentation

comfort as the patient did not pull it [Kerramax Care Gentle Border Dressing] off."

When the wound was assessed, there appeared to be less hypergranulation, the wound bed was a healthier color and the bioburden had decreased. The length of the pressure injury had reduced from 2.7cm to 2.2cm, and the exudate was thinner, though slightly greater in volume. Maceration of the periwound skin had decreased due to reduced exposure to fecal matter. The treatment regimen remained unchanged as it was working well. Dressing changes were planned for every other day in week two.

Review 2 (Day 14)

No unplanned dressing changes were required between the first and second reviews. Kerramax Care Gentle Border Dressing remained in place when the patient was moved up the bed and during episodes of fecal incontinence. There was no visible stool in the wound or on the dressings when they were removed and there was no exudate strikethrough, suggesting excellent absorption and retention of discharge during patient movement and when under loading pressure. Removal of the dressing did not make the patient grimace, and on the day of the review, the wound itself did not appear to be causing pain. The nurses were pleased they did not have to change the patient's dressings as often as they had previously.

There was a flat, red wound base containing less hypergranulation tissue, and the periwound skin was only mildly macerated on day 14. The wound had reduced in area to 2.1cm (length) x 0.5cm (width) x 0.6cm (depth) following debridement. The volume of exudate had decreased and had a watery consistency. Kerramax Care Gentle Border Dressing use was continued to help keep stool out of the wound, reduce dressing change frequency and manage exudate. The additional aim in week three was improving wound healing.

Review 3 (Day 21)

Dressing changes were scheduled for three times a week. There were no unplanned changes as the dressings remained in place without strikethrough. There was no leakage of exudate on the dressing or visible stool contamination under the dressing, as it had conformed and adhered well to the sacrum. The nurses were pleased that the patient had not attempted to remove his dressings and that the wound was showing signs of healing. Additionally, there was increasing wound contraction, reduced exudate and minimal hypergranulation at this time. The wound bed was a healthy red color, and the surrounding maceration was markedly reduced.

Review 4 (Day 28)

Dressing changes were performed as planned; the patient had been prescribed gabapentin to manage any ongoing pain. He had been able to attend all his scheduled activities in the facility over the previous week. The nurses were pleased with his improved quality of life and the reduction in nursing time needed for wound care.

The wound had reduced in size to 1.3cm (length) x 0.9cm (width) x 0.3cm (depth) on day 28 [Figure 9a]. The wound bed had improved in color and was producing a low volume of serosanguinous discharge. The surrounding skin was markedly improved, with minimal maceration and some post-inflammatory hypopigmentation [Figure 9b].

Conclusion

This patient's stage 4 sacral pressure injury was hypergranulating, producing a moderate volume of exudate and being exacerbated by fecal contamination. His dementia complicated his management: he was non-verbal and had removed dressings in the past. Dressings selected had to adhere well, absorb and retain moderate to high volumes of exudate, help protect against fecal contamination, and be comfortable if treatment was to be successful. The initial aim — to reduce dressing change frequency by applying Kerramax Care Gentle Border Dressing to absorb exudate and help protect against fecal contamination — was achieved within the first two weeks. Promotion of wound healing was added as a secondary aim, as the hypergranulation, bioburden and exudate had decreased, and the wound had started to contract. Nursing staff were pleased with the patient's progress, and the patient was able to resume planned activities, improving his quality of life. WINT

Case 4.

Chronic venous leg ulcer

An 86-year-old woman sought treatment for her chronic venous leg ulcer. She had been hospitalized with cellulitis of her left lower extremity a year prior, and said that the problem had started with her leg swelling and then "one day a wound appeared." She had received intravenous vancomycin for the cellulitis. Her leg ulcer was treated with a silver gelling fiber dressing to manage local infection, a sterile abdominal pad held in place with a gauze roll, and compression with an offloading boot. Ankle-brachial index and venous duplex ultrasound with reflux confirmed that the patient had venous insufficiency. She had been offered ablation, which she refused.

The patient was concerned about needing frequent dressing changes, as healthcare providers would only come to her house three times a week and she regularly had strikethrough drainage. Her leg ulcer had reduced her mobility and placed a burden on her son, who had to leave work to change her dressings when strikethrough occurred if no home health care visit was scheduled. In addition to a history of cellulitis, the patient had lymphedema, which affected her leg. She was taking 100 mg gabapentin three times a day to manage the pain associated with her leg ulcer.

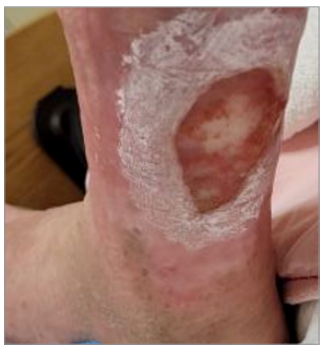


Figure 10. On presentation (day 0), the ulcer was producing a high volume of fluid, and the wound bed was pale and contained fibrin

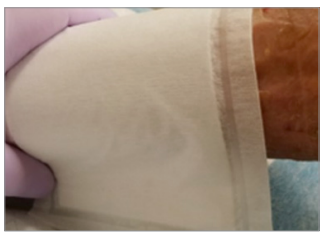


Figure 11. Application of Kerramax Care Super-Absorbent Dressing

Wound presentation

When she presented, her left lower leg ulcer was categorized as stage 6, according to the Clinical, Etiological, Anatomical and Pathophysiological classification of venous disorders. It measured 7.8cm (length) x 5.2cm (width) and was covered by 25% slough and 75% granulating tissue. The center of the wound bed was poorly granulating and contained fibrin, while the periphery was pink, and there was no epithelialization from the margins [Figure 10]. The surrounding skin consisted of epithelialized hypopigmented tissue with scant maceration at the wound edges. A high volume of thin, watery exudate was being produced, which was striking through the current dressings and leaking onto the patient's clothes and bedding. The patient's pain level was 5 out of 10, despite the gabapentin she was taking to manage it.

The patient needed a highly absorbent dressing to reduce the frequency of dressing changes so she would feel less of a burden on her son. She was moderately active, walking around the house and running small errands in town, therefore the dressing selected needed to stay in position and remain intact during light exercise. The intended outcome of the new treatment regimen was to manage exudate and improve the wound over the following four weeks.

Dressing application

Before applying Kerramax Care Super-Absorbent Dressing, the wound was cleaned and debrided using pulse lavage. The patient requested that zinc oxide be used to protect the surrounding skin from maceration.

A [15cm x 15cm] Kerramax Care Super-Absorbent Dressing [Figure 11] was applied to the ulcer, followed by 3M™ Coban™ 2 Lite Two-Layer Compression System to treat the underlying venous insufficiency (Ankle-brachial index 0.67). The intention was that the dressings would remain in place for two days before being changed.

The patient was also provided with education to help her better manage her lymphedema and was advised to elevate her leg and reduce her salt intake.

Review 1 (Day 7)

When the patient was reviewed a week later, there had been no instances of strikethrough. Kerramax Care Super-Absorbent Dressing was absorbing the exudate well and relieved pressure on the posterior calf wound, both when the patient was lying down and when placing her leg on a recliner chair. The lymphedema therapist had changed the patient's dressings three times during the week, with no additional changes required. The dressings remained intact and did not leak exudate on removal. The patient was very happy that her son had not had to change her dressings. She found the dressings comfortable, reporting that she felt "no pain in the leg except when it is exposed to the air and the wound is washed." Her pain level had reduced to 1 out of 10.

The condition of the wound had improved — it was draining less and had reduced in size to 7.2cm (length) x 5.0cm (width). Granulation in the center of the wound was improving, and maceration of the surrounding tissue had resolved. The amount of slough had decreased to 15%, and there were some signs of epithelialization. The patient had been following advice on lymphedema management, and the edema in her left leg was decreasing. Local wound treatment continued as the wound was showing signs of healing — the

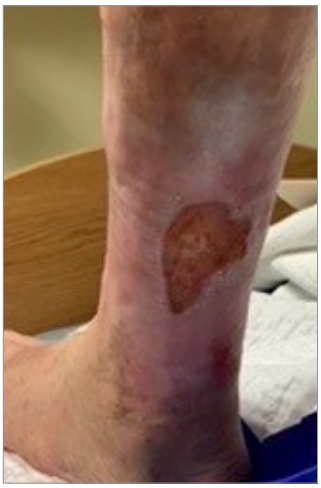


Figure 12. Following the use of Kerramax Care Super-Absorbent Dressing to manage exudate and Coban 2 Lite Compression System to manage edema, the ulcer had significantly reduced in size and started to epithelialize by day 28

periwound skin was healthy, and the edema had decreased. The next dressing change was planned for two days later.

Review 2 (Day 14)

The dressings were changed twice between the patient's first and second reviews. Kerramax Care Super-Absorbent Dressing continued to manage the high volume of exudate without strikethrough and remained in place between dressing changes. The patient was pleased with her treatment, saying, "It's not leaking all over the place." She was also happy that she had not had to rely on her son for assistance, as the dressing changes had been performed by the lymphedema therapist and home healthcare provider. The wound bed measured 6.8cm (length) x 4.8cm (width), was a healthier color, and drainage had decreased to a moderate volume.

Review 3 (Day 21)

At her third review, the patient's wound care was predictable: her dressings were changed 3 times a week at scheduled times, and they remained intact and in place. The wound had reduced further in size, measuring 6.2cm (length) x 4.0cm (width). There was an improvement in epithelialization and a decrease in the amount of slough (3%) in the wound bed. The surrounding tissue remained healthy, and the leg was less edematous.

Review 4 (Day 28)

At her final review, the wound measured 5.4cm (length) x 4.0cm (width), the volume of exudate was low to moderate, and granulation was progressing well [Figure 12]. The patient's quality of life had improved: she reported no wound-associated pain and was very happy with the treatment, as the longer dressing wear time meant dressing changes could be planned.

Conclusion

Ulceration is a serious complication of lymphedema, and the associated fluid retention impairs healing. This patient had previously struggled with strikethrough and leakage, as her dressings had not handled the forces exerted on her leg ulcer and the large volume of fluid being produced. The patient was advised on lymphedema management, and her treatment was changed to better address both the edema (Coban 2 Lite Compression System) and exudate (Kerramax Care Super-Absorbent Dressing). Kerramax Care Super-Absorbent Dressing absorbed and retained exudate without strikethrough or leakage, improving the patient's quality of life as she had felt a burden to her son, who had to change her previous bandages when they failed. As dressing changes became predictable and she no longer needed to rely on her son, the burden was taken off her "worry list." WINT

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