Introduction

This supplement presents several articles from the "Addressing the Pain" series that has appeared in Ostomy Wound Management from 2002 through 2005. Mölnlycke Health Care is to be commended for supporting this and other international pain initiatives that have been fundamental to our understanding of wound pain relative to dressing change and trauma. Kudos also go to the contributors who have shared their experience, wisdom, and compassion in relieving their patients’ discomfort.

Whether the topic of wound pain is a new consideration for you or you are re-reading these articles as a refresher course, you are certain to gain new insights as you review this outstanding collection of columns. Among the diversity of wounds and settings presented you will discover common themes threaded throughout the articles, including:

• the importance of listening to the patient
• the need for careful pain assessment
• the ability to enhance quality of life by addressing the total pain experience
• the benefits of educating and empowering patients to have more control over the pain they experience
• the need to supplement pain guidelines and evidence base for care with current best practices and new emerging information.

The World Union of Wound Healing Societies best practices document on pain, presented in Paris 2004, requests that clinicians address pain at all dressing changes. Pain management has been mandated in protocols across the healthcare continuum. The references and resources cited in this collection of articles have been carefully chosen by their authors to direct you to relevant literature on pain that has been published over the last 10 years. The upcoming decade holds the promise of new challenges from emerging guidelines and standards, precedent-setting court cases, and innovations in practice. You likely will be directed by regulatory agencies and payors to take a more proactive pain-prevention approach to care. The need for more research in this area — descriptive, qualitative, and quantitative — has never been greater.

As you read these articles, please remember the words of an ancient Greek healer:

To cure — occasionally.
To relieve — often.
To comfort — always.

Dr. Diane L. Krasner
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We all must die. But if I can save him from days of torture, that is what I feel is my great and ever privilege. Pain is a more terrible lord of mankind than even death itself. — Albert Schweitzer (1875-1965)

Pain is a highly individualized experience. Because physicians must depend on their patients’ subjective and, therefore, varied responses to the sensation, pain is one of the more difficult symptoms, if not to observe and document, then to quantify. In short, pain is challenging to assess and treat.

Clinical approach to pain, however, is changing. In its 2001 mandate, “Taking the Ouch Out of Pain,” the Joint Commission of Accreditation of Health Care Organizations (JCAHO) set forth standards for long-term care, requiring that pain not be ignored. According to JCAHO, long-term care residents have certain pain-related rights, including but not limited to appropriate pain assessment and documentation, referral for management, and education on management beyond the caregiving facility.

Pain has become a major factor when considering quality-of-life issues. In some healthcare circles, clinicians accept the reality of wound treatment as opposed to wound healing – that similar to certain conditions and diseases (diabetes, for example), complete healing is not yet possible. Wound care providers, front-line champions of restoring quality of life in the face of chronic situations, have turned their attention to pain and its impact during treatment. They know that pain must be addressed in wound care.

To this end, Ostomy/Wound Management, with the support of Mölnlycke Health Care, has created the column “Addressing the Pain” to focus on the pain experience as it relates to wound care. Each month, various clinicians renowned for their progressive wound care ideas and practices will lend their expertise to present theory and practical advice on relieving and removing the pain of wound care. Among the potential topics: pain assessment (eg, methods, tools); pain as it relates to different types of wounds, different types of treatment, and age; traditional pain management (eg, dressings and topical and systemic analgesics); alternative and emerging treatments; and patient education and care beyond the healthcare facility.

OWM and Mölnlycke hope to become a resource for wound pain information, linking readers to a network of vital, ever-evolving pain information.

One critical piece of information comes from the European Wound Management Association (EWMA). In response to increasing acknowledgment that pain is a factor in many different types of wounds, EWMA developed a position document to provide direction for assessing and managing wound pain. This document is specific to dressing changes in chronic wounds.

In the course of creating the document, EWMA confirmed the paucity of evidence-based practice and literature available. This was underscored by the diversity in approach to care as determined by a multinational survey of wound care professionals. Such diversity may be due to the variations among healthcare delivery systems, along with inconsistent access to and knowledge of products. Indeed, even the JCAHO document notes that the response to patient pain is based on the services the healthcare facility provides.

A lack of research and protocol did not prevent EWMA from making its case. Its position document presents results of an international collaboration that assessed practitioner views on pain and trauma. Despite perception that studies on the subject are based on soft data, participants validated belief that pain and trauma are vital considerations, especially during dressing changes.

Findings include which types of dressings and products are the most likely (dried out dressings and products that...
adhere, such as gauze) and least likely (hydrogels, hydrofibers, alginates, and soft silicones) to cause pain and trauma. The survey results also demonstrate that practitioners place low value on pain assessment tools, preferring to rely on body language and non-verbal communication to ascertain extent of pain.

The position document includes an article by Wulf and Baron4 on the theory of pain. Clinicians’ understanding of this theory helps ensure that they comprehend the mechanisms of acute and chronic pain to better grasp their patients’ pain experience. Altered pain transmission pathways, tissue damage and inflammation, heightened sensitivity to a repeated stimulus, and peripheral nerve injury are integral parts of perception of and response to pain in the wound and the surrounding periwound area.

Human compassion (as well as JCAHO) dictates that once pain is identified, it should be addressed. Briggs and Torra i Bou5 demonstrate the multidimensional nature of wound pain and its affect on care management. They stress the importance of a broad holistic approach and utilizing a combination of techniques is emphasized.

The EWMA position document confirms that pain is an important aspect of wound care and that future research is needed to define the type and nature of wound care pain. It also alerts us that clinicians should consider alternative outcomes in wound healing. Wientjes6 explores pain in terms of the mind-body connection in wound healing. She cites Myss,7 who says that one of the myths associated with recalcitrant wound healing stems from the concept that feeling pain means being destroyed by pain. As part of treatment, it is important to recognize that pain should be reoriented to become an indication of disease rather than a punishment. Many wound care clinicians agree, referring to pain as “the fifth indicator” or vital sign.

Confronting the problem of wound pain offers a glimmer of hope for frustrated clinicians and patients, especially those who deal with the pain associated with dressing changes. Research and its subsequent knowledge cannot come soon enough. Ask anyone who has faced the trepidation of simply having a cut and removing an adherent bandage. Wounds hurt. Most dressings cannot be quickly ripped off to avoid prolonging the painful sensation. Acknowledging that pain has a physiological basis helps dispel the skepticism in clinicians’ ability to treat what cannot be observed and provides a basis for creating effective therapies. To keep readers abreast of developments in the area of wound pain, future columns will elaborate on the EWMA document and other research findings. Meanwhile, OWM encourages clinicians to take what they already know about the benefits of particular dressings and wound care strategies to help their patients through assessment, treatment, and prevention as pain-free as possible. - OWM

References
2. Alvarez OM, Meehan M, Ennis W, et al. Chronic wounds: palliative management for the frail popula-

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1. Joint Commission of Accreditation of Health Care Organization. Joint Commission focuses on pain manage
Plain Talk About Wound Pain

- Evonne Fowler, RN, CNS, CWOCN

To some degree, almost every person with an open wound experiences pain. The pain may occur during wound cleansing or debridement (noncyclic pain), during repeated treatments such as daily dressing changes or repositioning (cyclic wound pain), or during quiet time without manipulation (persistent pain). The pain experience might even be one of anticipation; the anxiety of a painful event potentially is as disabling and as real as physical pain.

The manner of dealing with the pain and the condition varies with the individual, the circumstances, and the level of the tissue injury. Healthcare professionals are responsible for recognizing the person in pain, assessing the type of pain, and determining appropriate interventions for relieving/easing the pain.

Pain is the reaction to signals transmitted throughout the body but more importantly, pain is what the person says it is. It is an experience that cannot be separated from the patient’s mental state, environment, and cultural background. These factors can cause the brain to trigger or abolish the experience of pain, independent of what is occurring elsewhere in the body. When assessing pain, investigating relevant mental and environmental factors is critical.

The pain experience is dynamic and variable and has been categorized in different ways. Acute pain is described as an identified event that resolves in minutes, hours, days or weeks. Acute pain is usually nociceptive — nociceptive (from the word noxious meaning harmful) pain is caused by an injury or disease outside the nervous system. Nociceptors are specialized nerve endings in skin and deeper tissue. The pain may originate from direct nerve stimulation of the intact fibers. The pain is often an ongoing dull ache or pressure, rather than the sharper pain characteristic of neuropathic pain. The severity of pain usually correlates with the level of tissue damage. Nociceptive pain triggers a protective reflex (eg, to move your hand immediately if you touch a hot object). The pain is a symptom of injured or diseased tissue — when the underlying problem is cured, the pain usually goes away. Nociceptive pain is usually finite and responds well to treatment with opioids.

With persistent (chronic) pain, the cause is not usually identified or may be multifactorial and often is of undetermined duration. The pain can be nociceptive and/or neuropathic. The nerves continue to send pain messages to the brain even though tissue damage has ceased.

Neuropathic pain is a form of chronic pain. Neuropathy is any functional and/or pathological change in the peripheral nervous system. The three types of neuropathy are sensory, motor, and autonomic. They may occur individually or in combination. Neuropathic pain is caused by damage to nerve tissues/fibers and is often felt as a burning or stabbing pain (eg, the pain experienced with a pinched nerve). The pain is often chronic and does not respond well to opioids. Neuropathic pain may respond to antiseizure and antidepressant medications. Nerve irritation (burning and/or stinging pain) may respond to tricyclics (amitriptyline or nortriptyline). The shooting/stabbing pain of nerve damage responds well to anti-epileptic medication (eg, gabapentin).

Figure 1. The chronic wound pain experience. Used with permission.
The Chronic Wound Pain Experience

According to Krasner's description of the chronic wound pain experience (see Figure 1), cyclic pain may be experienced when turning the patient or during routine dressing change, and non-cyclic pain may occur with wound debridement or suture removal. The healthcare professional should minimize procedural pain — the best intervention is a combination of pharmacological and non-pharmaceutical techniques. The clinician should medicate the patient before the procedure, use non-pharmaceutical interventions (see Table 1), use local anesthesia, and select atraumatic dressings such as soft silicone. These dressings have a non-adherent wound contact layer but adhere readily to intact skin with a gentle adhesion capacity that decreases skin stripping. Absorbent silicone dressings help prevent skin maceration.

Asking the Right Questions

Understanding the patient's pain experience begins with involving the patient and significant others in the physical and social assessment. Their description of the pain situation will give clues as to how to manage the problem. Because many patients find it difficult to describe the pain, giving them descriptive words to choose from and using a pain measuring tool help them articulate their experience. Asking the patient to complete a pain assessment profile and document their pain experience for 3 to 5 days in a 24-hour diary (see Figure 2) will help provide a complete picture of the experience and allow the clinician to implement specific pain strategies to diminish or relieve the pain.
Assessing pain in patients with mental confusion or cognitive impairment often is difficult. Signs of pain in a non-responsive person may include change in function or activity, alteration in mood, facial grimacing, moaning, groaning, crying, or fidgeting. Direct observations by care providers augment the patient’s description of the pain experience. When diseases associated with significant pain (eg, arthritis, cancer, or ischemia) are present, the clinician should suspect pain, even if the patient is non-verbal.

**Treating the Patient with Pain**

When persistent pain is experienced, long-acting drugs are preferable. If the pain is not relieved, breakthrough dosing may be necessary. Whenever possible, clinicians should avoid medications that have adverse effects or if their use is necessary, anticipate and address side effects. One of the most common problems with pain medication is constipation. Increasing the fiber in the diet may resolve the problem.

Helping the patient learn non-pharmacologic techniques for relieving pain is encouraged (see Table 1). For those experiencing incident pain (cyclic or non-cyclic), many strategies can be employed: warming solutions before use, using lubricious cleansers, wetting dressings before removal, allowing the patient to remove the dressing, using time outs to allow the patient to regain composure, and using a gentler hand. When the patient is aware of the possibility of pain, offering pain medications before the procedure is helpful. Local analgescs given before sharp debridement will relieve the pain (eg, lidocaine soak, see Table 2 and Figure 3). Even though evidence supporting use of topical analgesics is limited, clinician expertise teaches the importance of relieving pain associated with sharp debridement.

**Odor**

Some wounds have an odor that can add to the psychological discomfort of the pain experience. The odor may originate from infection or the presence of necrotic tissue. The first step is to remove the causative factors — treat the infection and, when possible, debride the necrotic tissue. Odor may be alleviated through wound cleansing, wound irrigation, topical antimicrobial agents, using topical metronidazole, applying dressings with activated charcoal, burning candles, and using kitty litter near the patient area. Advanced wound dressings may need to be changed sooner due to the odor from excessive drainage.

**Table 2**

<table>
<thead>
<tr>
<th>LIDOCAINE SOAK PROCEDURE</th>
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</thead>
<tbody>
<tr>
<td>• Ask about allergies</td>
</tr>
<tr>
<td>• Lidocaine 2%: Insert needle, express 5-10 cc</td>
</tr>
<tr>
<td>• Cleanse wound with water, saline, or wound cleanser</td>
</tr>
<tr>
<td>• Place gauze over the wound</td>
</tr>
<tr>
<td>• Saturate the wound and edges with lidocaine</td>
</tr>
<tr>
<td>• Allow to sit on the wound for 3-5 minutes</td>
</tr>
<tr>
<td>• Begin debridement</td>
</tr>
</tbody>
</table>

**Conclusion**

When feasible, clinicians should empower and educate patients and their families to take control of the pain experience. A basic educational booklet on the pain experience should be provided to the patient. Usually, when people understand what triggers pain and what can be done to relieve it, they will have more control over the situation and it will be less painful for everyone involved. - OWM

**References**


**Additional Resources**

According to the American Pain Society, American businesses lose $50 billion a year in replacement labor costs for the 20 million people who miss up to 20 days of work each year due to untreated pain.1 Pain is an even greater problem in the elderly. In a study evaluating the pain of nursing home residents with cancer, approximately 38% of those between the ages of 65 and 74 years reported daily pain, and more than a quarter of residents who reported daily pain did not receive any pain medication.2

Physicians have numerous ways to help patients deal with pain. It has been noted that 1) opioid analgesics reduce pain and improve cancer patients’ quality of life, 2) under-prescribing of pain medications means that cancer patients suffer needlessly, and 3) pain guidelines are available to help physicians manage cancer pain.3 Giving pain medications improves patients’ lives — improper prescribing may be what leads to dependence. A recent review notes that opiates should be dosed in a continuous, level manner and that doses should not be increased if lower doses are ineffective.4

Despite the continuing apparent undertreatment of pain, little legal action has been taken to promote the adequate and proper dosing of pain medication. One of the few well-publicized actions against a physician for not properly dosing involved Dr. Paul Bilder, 57-year-old pulmonologist in Roseburg, Oregon, who was disciplined in 1999 and 2002. This case presents a variety of interesting issues regarding the treatment of pain.5

The complaint against Bilder involved six patients.6 One, an 82-year-old man hospitalized with congestive cardiac failure,7 told a nurse, “I can’t breathe, and I’m getting tired.” The patient became increasingly agitated and his breathing and heart rates increased. Dr. Bilder ordered furosemide. Despite intense pain, the physician refused to provide opioid analgesics. Another doctor treated and stabilized the patient, who was discharged several days later. In another case, Bilder prescribed Tylenol to treat pain suffered by a terminally ill elderly cancer patient. In a third case, Bilder declined to resume pain medication for a woman on a mechanical ventilator.

Based on these three cases and three others, the Oregon Board of Medical Examiners disciplined Bilder for “grossly undertreating” pain. The board, comprised of nine doctors and two public members appointed by the governor of the state of Oregon to oversee the practice of medicine,7 stated that Bilder engaged in “unprofessional or dishonorable conduct” and “gross negligence or repeated negligence.”

Dr. Bilder did not lose his medical license but was forced to enroll in a peer evaluation and education program. He had to complete a course on communicating with patients and receive care from a psychiatrist who had to report to the Board for at least a year. Bilder signed a stipulated order approved by the Board, acknowledging that his treatment of six patients showed unprofessional or dishonorable conduct and gross or repeated acts of negligence. These charges were not the final word on Dr. Bilder and pain. On August 12, 2002, the Oregon Board of Medical Examiners charged the physician with failing to properly treat the pain of two dying patients in 1999 and 2000.

Other relevant cases also have been tried. On June 13, 2001, a jury in Alameda (California) County Superior Court awarded $1.5 million in damages to the family of patient William Bergman for Dr. Wing Chin’s failure to prescribe adequate pain medication as Bergman battled lung cancer. The lawsuit claimed that Dr. Chin violated California’s Elder Abuse and Dependent Adult Civil Protection Act. Two months later, Alameda County Judge David Hunter found that the California cap on medical malpractice awards applied to elder abuse cases and reduced the jury’s award to $250,000. The trial judge later denied defense motions for a new trial and ordered Dr. Chin to pay 150% of the attorney fees incurred by the Bergman family, saying that the fee enhancement “is to encourage attorneys to take up the cause of abused elderly persons.”

A number of states have passed legislation shielding physicians from disciplinary action if they prescribe...
necessary pain medications. Ultimately, the standard of care will determine how medical boards and courts evaluate the treatment of pain. Most likely, only when it appears that a physician is dispensing quantities of pain medications that are wholly inappropriate will a medical board or court act to discipline a physician. Moreover, physicians who do not provide appropriate care for pain will be open to legal suit and discipline.

As more and more information on pain related to wound care becomes available, clinicians will need to shift their thinking from “Pain is an inevitable part of the wound treatment process” to a more proactive pain-prevention approach, particularly in our litigious society. Naturally, all pain cannot be avoided, but blatant disregard for treatment options that strive to lessen or alleviate pain is unacceptable and may, indeed, be deemed illegal.

The Hippocratic oath states that, above all, a physician must do not harm. This includes allowing pain to go untreated. - OWM

References
Patients with malignant wounds experience distressing complications including pain, odor, exudate, bleeding, edema, emotional distress, social concerns, functional compromise, and complications (i.e., infection and fistulas). Life expectancy after developing a cutaneous metastasis is variable but has been shown to be 21.7 months on average. A reproducible assessment of patients with malignant wounds is the cornerstone of treatment that when obtained in order to implement wound symptom management measures can improve quality of life throughout that time period.

Malignant Wound Complications

Approximately 5% to 10% of patients with internal malignancies develop metastatic cancer that spreads to the skin (cutaneous metastasis). These wounds can progress despite aggressive oncology care because some patients neglect to seek medical assistance until the wound is advanced. Curative treatment is often not an option, although a range of palliative oncology treatments may be tried, including systemic therapy, radiation therapy, phototherapy, and surgery. Referrals to oncologists for palliative oncology care can be beneficial. Patients typically have variable responses to treatment, requiring simultaneous and subsequent wound management and various approaches according to assessment (see Table 1). Following the suggested paradigm brings a focus to the objectives of any proposed wound care plan.

**Treat the cause.** The ability to treat the cause revolves around the correct diagnosis of the wound pain and its potential sources. The pain history begins with active listening to the patient’s story, followed by specific questioning to enhance the information gathered. The patient is examined specifically for potential reasons for pain—e.g., the tumor pressing on nerve endings and adjacent visceral organs, chemical agents released by tumor cells that irritates nerve endings, ischemia, inflammation, or increased swelling. Chemotherapy, pharmacotherapy, radiation, and surgery may eradicate or reduce the size of the tumor to relieve pain.

**Patient-centered concerns.** The clinician needs to focus on the patient's perspective of pain and its route cause. Because pain is a complex and highly subjective construct comprising multiple dimensions and modulated by the

### TABLE 1

<table>
<thead>
<tr>
<th>Pain Characteristics</th>
<th>Assessment of patient report</th>
<th>Common findings on exam</th>
<th>Treatment goals</th>
<th>Potential treatment options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Pain in and/or around wound</td>
<td>Excoriation, infection in wound and/or around wound</td>
<td>Identify location and cause</td>
<td>Non-adherent dressings, avoid gauze, avoid tape, use mesh to secure dressings</td>
</tr>
<tr>
<td>Timing including onset and duration</td>
<td>Initial onset, course, intermittent or continuous, daily variation, during and/or between dressing changes</td>
<td>Patient in pain during provocative maneuver, constant pain</td>
<td>Timing will help identify the cause: cancer pain, dressings, exposure to air</td>
<td>Treat cancer pain, alter the dressing procedure and dressings, protect periwound skin</td>
</tr>
<tr>
<td>Intensity</td>
<td>Rate on scale 1-10</td>
<td>Subjective</td>
<td>Reduce intensity</td>
<td>After dressings, treat cancer pain</td>
</tr>
<tr>
<td>Quality</td>
<td>Descriptors: burning, stabbing, pressure, aching (+/- itching)</td>
<td>Subjective</td>
<td>Helps identify the cause of pain</td>
<td>After dressings, treat cancer pain</td>
</tr>
<tr>
<td>Aggravating factors</td>
<td>Dressing changes, movement, exposure to air</td>
<td>Periwound excoriation from dressing, exudates, infection, Altered mobility</td>
<td>Remove aggravating factors, increase mobility</td>
<td>After dressings: add moisture, use alginates, hydrofibers, provide periwound care</td>
</tr>
<tr>
<td>Relieving factors</td>
<td>Medication, different dressings, positioning</td>
<td>+/- patients most comfortable dressing, Abnormal posturing</td>
<td>Identify successful management from the patients perspective</td>
<td>Incorporate and expand the use of relieving management</td>
</tr>
<tr>
<td>Impact on quality of life</td>
<td>Change in quality of life: physical, social, psychological, spiritual, role, attitude</td>
<td>Patient appear depressed, anxious, frustrated</td>
<td>Ask the patient their quality-of-life goals</td>
<td>Clearly address patients primary concerns in treatment plan</td>
</tr>
</tbody>
</table>

**Dr. Queen (corresponding author) is an independent wound care consultant based in Toronto, Ontario, Canada.**
context and meaning in which pain emerges, its management must incorporate the impact of body disfigurement, family burden, guilt, and patient shame. In particular, any assessment of patients with fungating wounds should address the immense psychological distress they can cause and highlight key factors critical to managing these complex wounds. Many fungating wounds are heavily exuding, malodorous, and bleed easily. Strategies that focus on managing these symptoms must be explored and recommendations for clinical practice determined accordingly (see Table 2).

**Local wound care.** Wound care needs to revolve around debridement, bacterial balance/prolonged inflammation, and moisture balance; it should not necessarily focus on healing. Fungating wounds rarely heal, so the ability to manage their unpleasant symptoms on an ongoing basis is increasingly important. One of the most distressing is malodor; the use of metronidazole preparations in the management of malodorous wounds is becoming more routine. Other local anaesthetics can be used to alleviate wound pain and promote comfort.

**Discussion and Suggestions**
Fungating cutaneous metastasis may occur with breast, lung, sarcoma, and head and neck tumors potentially associated with underlying tumor mass invading the skin. Patients may report minimal pain despite the presence of large fungating wounds, provided the dressings are suitable and cancer pain management in general is provided. On the contrary, the most painful malignant lesions tend to be shallow ulcerating malignant wounds that potentially spread through the lymphatics, denuding the overlying epithelium. These can be devastatingly painful lesions, spreading over body surfaces that are awkward to dress. They are commonly found in head and neck squamous cell carcinomas on the scalp. Melanomas tend to metastasize in the extremities and can present with painful ulcers.

By far, the most common cause of episodic physical pain in patients with malignant wounds occurs during wound
dressing changes. It is important to determine if the pain is in the wound, in the periwound skin, or both. Pre-procedural pain medication may be necessary, as well as meticulous attention paid to patient-specific dressing changes.

**Dressing selection.** Pain located in the wound bed can be caused by exposure to air and adherent dressings. If exposure to air is painful, the wound should be covered with moist dressing (water, saline soaks) during dressing changes. The clinician should ensure the dressing does not adhere to the wound bed. Appropriate non-adherent dressings vary depending on other wound factors. A silicone mesh contact layer, gels, and skin protectant pastes are effective in reducing pain and bleeding from adherent dressings, particularly in shallow, relatively dry wounds. Alginate and hydrofibers can do the same in moist wounds and conform to the typically uneven wound bed in difficult-to-dress areas. Foams are a better second layer in these wound dressings because of the reduced conformity. The pain assessment should be repeated on a regular basis to determine the cause of any discomfort and to select appropriate dressings as the wound changes.

**Periwound skin.** Periwound skin requires special attention because it is often compromised. Oncology treatments include surgery and radiation, which can alter blood flow, and cancer progression can occur subcutaneously in the periwound skin. Preventing wound development in the periwound skin is the easiest way to manage pain. Although dressings must be changed regularly, this should be minimized as much as possible. Prevention and management of pain in the periwound skin includes skin sealants (eg, alcohol-free, film-forming acrylate barrier), monitored use of tape, and using elastic mesh or bandaging to hold dressings or tape onto thin hydrocolloids (only use hydrocolloids on periwound skin). Foams are a better second layer in these wound dressings because of the reduced conformity. The pain assessment should be repeated on a regular basis to determine the cause of any discomfort and to select appropriate dressings as the wound changes.

**Infection.** Wound infection should be considered if the pain changes, especially in association with increased erythema, heat, odor, exudate, bleeding, and wound bed friability. Wound infections often have significant odor; however, cellulites may not have an odor. Wound cultures and antibiotics are important, particularly for patients receiving chemotherapy.

**Conclusion**

The total pain experience involves social and emotional contributions to pain and the impact of the pain phenomenon on quality of life. Emotional responses such as depression, anger, and frustration are related to the degree of acceptance of the situation and the potential for tumor reduction through oncology. Patient withdrawal from society and social rejection by family, friends, and healthcare providers may occur. Social acceptance is heavily dependent on appearance and symptom control. Cosmetically acceptable dressings that control odor, exudate, and bleeding are fundamental in forestalling social isolation.

The wound and the patient’s response to it must be part of a thorough assessment. The most important principle in pain management is to listen to the patient and provide care accordingly, including dressing changes, oncology care, and pain medication.

As part of the assessment, the clinician should ask the patient, What bothers you most about this wound? The answer will provide a starting point for improving quality of life.

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Painful skin reactions can be a source of significant distress to a patient undergoing radiation therapy. Although technological developments have reduced the frequency and severity of skin reactions, they continue to cause pain and inconvenience for patients. Severe reactions cause interruptions in the patient’s treatment schedule, possibly compromising the effectiveness of radiation treatment. In some cases, patients choose to discontinue treatment because of the discomfort.

In the first week of radiation, a very faint erythema may appear due to capillary dilatation. After 2 to 3 weeks, endothelial swelling and proliferation occurs, causing obstruction. Obstruction also occurs in the arterioles from endothelial disruption and intimal thickening. Cell production in the germinal layer of the epithelium decreases and dry desquamation, or scaling begins. After 3 to 4 weeks of daily radiation, moist desquamation may develop as a result of skin peeling, vascular dilatation, edema, and oozing of serum from the denuded areas.1

Pain perception due to skin changes varies widely among patients during radiation therapy. Some will report discomfort with the onset of erythema. Others will not complain of discomfort until moist desquamation occurs. In the authors’ clinic, patients are evaluated weekly by their physician and nurse during treatment and daily by the radiation therapists with immediate referral to the clinic as needed. Skin pain is evaluated using the Numeric Pain Rating Scale (NPRS).

Although certain skin care principles are commonly used, physicians and institutions often employ a combination of guidelines and products they feel are most effective for patients. Patients are cautioned against using any skin care products not approved by their physician. Antimicrobials such as hydrogen peroxide, hypochlorite, acetic acid, and povidone iodine are not used because they interfere with new skin cell proliferation.1 Gentle cleansing with mild soap and avoiding friction to the affected area are recommended.2 Various dressings can be used to absorb exudate and prevent friction, although occlusive dressings should not be used. The choice of dressing can be a challenge; using tape on the irradiated skin is discouraged.

A new dressing, Mepilex Transfer (Mölnlycke Health Care, Newtown, Pa.), has proven beneficial to the authors’ patients’ symptom management and quality of life. The dressing — an absorbent foam layer with a silicone coating on the side applied to the patient’s skin — is useful on a variety of irradiated sites. It does not adhere to a moist wound area, does not require tape, does not tear skin when removed, and can be lifted and readjusted without losing its adherence. It was primarily designed to transfer exudate from a wound to an absorbent dressing. However, for radiation patients, it also has proven effective in reducing distress from painful skin irritation caused by friction and pressure (see Figure 1).

The dressing is used most frequently on breast cancer patients who report a pleasing cool sensation when it is applied. One patient found clothing so painful that she spent a great deal of time at home with the shades drawn in order to avoid wearing any clothing on her chest. The product brought immediate relief and clothing was no longer a problem. Breast cancer patients find the infra-mammary fold to be a common area of desquamation and irritation. Applying dressings that remain in place in this location is difficult. The adherent, flexible, conforming nature of this product allows it to stay in place and prevent the skin-on-skin friction that normally occurs in this area, particularly when

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wearing a bra is no longer comfortable. Some patients find that applying the product to their affected skin at night reduces discomfort from pressure and bed sheets. Other patients have applied it to a small pillow they place under their arm when the axilla is affected.

The dressing also provides relief to patients receiving lower pelvic irradiation. It adheres well to the groin area, preventing clothing and skin friction. Patients who have arrived in clinic with an abnormal gait due to pain in the groin area have left feeling better and walking normally after the product was applied. In a patient being treated for rectal cancer, the dressing worked well on a penis that was in the radiation field and causing discomfort due to skin redness and irritation.

The multifaceted nature of the dressing allows room for creativity. One patient complained of skin irritation behind his ears that made his eyeglasses painful to wear. His nurse solved the problem by trimming and wrapping a piece of the dressing around the earpiece of his glasses. Other patients have enhanced the cooling effect of the dressing by storing it in the refrigerator before applying.

The physical and emotional effects of having cancer are often overwhelming. Patients’ quality of life may be limited by pain from their underlying disease, anxiety, loss of ability to perform normal activities, and changes in their physical appearance. The additional burden of unpleasant side effects from their cancer treatment is a concern that healthcare professionals continually seek to alleviate. The goal of radiation therapists is to help patients manage their skin discomfort so they are able to complete an optimal course of treatment. Patients have enthusiastically reported pain relief from this dressing. Both staff and patients find it easy to use and to custom fit for patients’ needs. Reducing friction discomfort, sleeping better at night, and wearing normal clothing are essential to quality of life.

Figure 1.
The new dressing was primarily designed to transfer exudate from the wound to an absorbent dressing but it was found to offer additional benefits, particularly for patients undergoing radiation therapy.

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References
Lymphedema is a complex, unappreciated, and chronically progressive medical condition. Appropriate management requires a correct diagnosis and an understanding of the underlying pathophysiology. Fluid retaining conditions and mechanical problems both can lead to edema. Diuretic therapy may be correct for certain patients but can be harmful to others. Although lymphedema is not curable, it can be controlled and managed. Multiple medical and surgical subspecialties are usually involved in treatment.

Lymphedema is an increasing medical problem in this country. This is partly the result of medical personnel having little or no training or understanding of the condition. Consequently, patients are frequently left untreated or treated incorrectly. Increasing longevity leads to complications that are part of the natural history of lymphedema and aging. These complications never had time to develop to a point of clinical significance in the past. However, now they are seen in greater numbers. Likewise, dermatological problems increase with age. Edema in elderly patients with loss of elasticity, collagen, and vascular supply now result in problems, the frequency of which has not been seen in the past.

Most lymphedema in this country is the result of surgical treatment for a malignant disease. Because malignancy is increasingly curable, the latent potential for developing lymphedema is a growing medical problem.

Skin care always has been an important part of lymphedema treatment. With the skin changes of aging, even basic skin care and standard treatments such as manual lymph drainage, compression wrapping, and the use of stockings and sleeves are becoming difficult or impossible in patients with certain dermatological/medical disorders. Further complicating matters is the fact that skin ulcerations can have multiple causes. What is clear, however, is that skin lesions and ulcerations, regardless of origin, are difficult or impossible to heal in an edematus extremity. Yet therapy to relieve edema in the presence of wounds may not be possible, creating a “catch 22.”

The lymphatic and venous systems are closely related and interact with each other. Problems in one area will inevitably lead to problems in the other. Both lead to a final common pathway. The target organ is the skin. Often, the result is the need for wound care, but hopefully advancement to this stage can be prevented.

The Lymphatic System

Lymphatic “circulation” is a misnomer. Normal circulation involves arteries and veins with the heart the driving force. In true circulation, the arteries deliver nutrients and oxygen to the tissues and capillaries on the venous side return blood back to the heart and lungs to be replenished. Without going into membrane physiology and physics at any length, fluid constantly shifts in and out of the standard circulation to interstitial spaces outside the vascular system. This is the result of physical laws involving pressure gradients, colloidal osmotic pressure, and a concept called ultrafiltration. To oversimplify things, Nature likes to equalize things across a barrier. Approximately 10% of the normal circulatory fluid filters into the interstitial spaces. Our bodies are endowed with additional vessels known as lymphatics. These vessels begin in the tissues. They act like garbage pails, picking up large protein molecules and other materials which, because of their size, are unable to filter back into the normal venous circulation. This is actually a half “circulation” that lies in close conjunction with the venous system; it is quite intricate and complex. The fluid movement in the lymphatic system is not dependent on the pumping of the heart. The smaller lymphatics lead to larger ones that have smooth muscle and neurological connections.
Lymphangions are a segment of the lymphatic system. These vessels have valves and stretch receptors that contract and push fluid toward the heart. In addition, pulsations from nearby arteries and muscle contractions help propel lymphatic fluid back to the heart. On its course, lymphatic fluid passes through a series of lymph nodes, is purified, and ultimately returns to the general circulation.

Normally at rest, flow in the lymphatic system is minimal, but if the lymphatic workload is increased, the lymphatic circulation is capable of increasing its activity; in this manner, it acts as a self-contained pacemaker. Aside from its garbage pail nature, the lymphatic system performs a central immunological function. This is beyond the scope of this article.

Lymphedema, then, can develop for two main reasons: 1) disease, malfunction, or maldevelopment of the lymphatic system that renders it unable to handle a normal lymphatic load (low output); or 2) a normal lymphatic system that is overwhelmed, usually the result of other medical conditions. In either case, the result will be increased protein and fluid in the interstitial spaces and the inability to absorb this fluid. Because this fluid is high in protein and other large molecules, it tends to draw additional fluid into these extra cellular spaces. The end result is edema, and this scenario sets in motion an inflammatory response, leading to fibrosis and disruption of vascular integrity. The ultimate victim of all of this is the skin, not to mention the patient.

Lymphedema. Edema, regardless of origin, ultimately affects the microcirculation. Tissue oxygenation and nutrition are affected. Changes in skin color are well known and common. With lymphedema, increased fibrosis, hardening of the skin, lobulations, and changes typical of elephantiasis occur. Blistering, weeping, and breakdown of the skin also are common and lead to cellulitis, further damaging the lymphatic system and microcirculation. In summary, this becomes a self-perpetuating nightmare. When skin breaks down and ulceration develops, especially in the presence of other diseases, the viability of an extremity can be threatened. Problems do not normally develop to this extent in typical lymphedema (either primary or secondary involving the upper extremities) except in the presence of malignant lymphedema. With venous insults such as axillary vein thrombosis, edema may develop, but the swelling is usually temporary. The same is apparently true for other upper extremity surgery involving the venous system alone, where edema of the upper extremity develops from disruption of the lymphatic system.1

The same is not true for skin disorders and ulcerations involving the lower extremities. The difference between arterial, venous, and stasis pressure ulcers should be relatively easy to diagnose with a proper history and physical examination. As previously noted, it is medically important to determine the underlying reason for edema and ulcerations. Plastic surgical procedures including liposuction also can lead to lymphedema. In older people, especially those with “thin skin,” ulceration of the skin can be difficult to heal. In these cases, even minimum trauma caused by compression stockings can lead to skin damage, making treatment difficult. Both edema therapy and preventive skin care are needed; creating a balance between both therapies can be challenging because, at times, they can be contradictory.

Chronic venous insufficiency (CVI) is a common cause of edema and ulceration of the skin. Lymphatic abnormalities exist in patients with CVI.6,7 Lymphedema is always present in advanced stages of CVI, and theories regarding the pathogenesis of skin ulceration in patients with this disorder are numerous.6,7 Skin grafts are unlikely to work on an edematous area. MLD, a gentle manual treatment that improves the activity of the lymph vessels and re-routes the lymph flow around the blocked areas into more centrally located lymph vessels that drain into the venous system, can reduce the pain, fibrosis, and postoperative morbidity in postsurgical cases.8 The bottom line is that ulcerations of the skin are not likely to heal in the presence of edema for whatever reason. Again, skin care, wound care, and edema must be addressed at the same time. While the authors’ emphasis is on lymphedema, skin care always has been an important part of lymphedema treatment.

Treatment

Over the years, the authors have tried to emphasize the need for skin care in their patients. With the aging population, low pH moisturizing lotions and standard wound care methods are proving to be inadequate in patients whose skin has broken down or has that potential; hence, preventing the use of standard lymphedema treatment in many patients.

Recently, soft silicone technology products (eg, Tendra, Mölnlycke Health Care, Newtown, Pa.) have been used according to patients’ needs, type of wound, and amount of skin drainage. Wound adherence has not been a problem and these products are easy to use. They have enabled clinicians to perform CDT, a comprehensive form of treatment for lymphedema involving physical.
techniques, compression wrapping, and patient education, as well as MLD, wrapping over the skin dressings. This has enabled lymphedema treatment; thereby, promoting wound healing while treating skin ulcerations. Silicone-based products also have been used in jeopardized skin as a preventive measure in conjunction with the usual wrappings and treatment for lymphedema. Thus far, this appears to be an effective approach.

**Conclusion**

Although patient numbers are small at the authors’ facility and their experience may be somewhat anecdotal, lymphedema treatment in conjunction with soft silicone technology appears to be a workable combination and merits further investigation. - OWM

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The primary goal for burn wound management is to excise the devitalized tissue and close the wound as soon as possible. Secondary goals of wound care are to promote healing and to maintain function of the affected body part. These goals are accomplished by excising devitalized tissue, preventing wound infection and graft loss, and maintaining correct positioning and splinting throughout hospitalization.

In children, scald burns are common and in young children are best managed with conservative treatment for 2 to 3 weeks, which allows the wound either to heal or to present as a third-degree wound in need of surgical intervention. Once surgical intervention is determined to be necessary, special consideration must be made regarding children to prevent graft loss. Most graft loss is from friction or shearing. Preventing graft loss can be challenging in the adult population — it is almost impossible in the pediatric population.

Historically, graft fixation has been achieved by sutting (which is time-consuming) or stapling (which is painful when removed). Removing staples in children requires large amounts of analgesics and, at times, conscious sedation or general anesthesia. Usually, the patient returns from the operating room in a position that is maintained for 3 or 4 days. Any interaction with the patient during this time of graft immobilization requires creativity and care in order to prevent shearing of the graft. Children, who are usually active, cannot comprehend what is happening or why part of their body is immobilized, and become easily frustrated with the situation. Obtaining their cooperation for graft fixation and to prevent graft loss is next to impossible. They frequently react by pulling and tugging on their dressings. The graft also may be displaced during dressing changes for obvious reasons.

Studies have shown that graft fixation and dressing materials for split-thickness skin grafts must be porous to allow drainage of serosanguineous wound exudates and remain non-adherent to the graft. Ideally, the dressing material also should allow a care provider to view enough of the surgical wound to assess for infection. One particular dressing material (Mepitel, Mölnlycke Health Care, Newtown, Pa.), which consists of a polyamide net impregnated with silicone gel, has proven to be an effective wound covering.

Case Report

Miss L is a 14-month-old African American child who received a 3% scald burn to her right lower extremity on October 25, 2003. She received a split-thickness skin graft to this area on November 24, 2003. The graft was meshed 2:1 and fixated in the OR without staples or sutures. The new silicone polyamide dressing material was placed over the graft and donor site and covered with an antimicrobial dressing (Acticoat, Smith and Nephew, Largo, Fla.). Burn compress dressings then were applied and Robnel catheters (red rubber catheters with small holes placed all along the catheter to allow solution to flow through) were placed medial and lateral to the lower extremity and on top of the current dressing. The entire leg then was wrapped with Kerlix gauze (Tyco Health Care/Kendall, Mansfield, Mass.) and a posterior splint was made and secured with an ace wrap. The wound then was soaked with approximately 20 mL of 5% sulfamylon solution every 4 to 6 hours utilizing a Toomey syringe. The first dressing change was performed at 48 hours.

The dressing was removed down to the silicone dressing layer November 26, 2003, and the wound was...
assessed as healing normally without infection. The wound was redressed using the antimicrobial dressing (per manufacturer recommendations) over the silicone dressing and wrapped again with Kerlix gauze, posterior splint, and ace wrap. The sulfamylon soak was not utilized at this dressing change.

The next dressing change was performed 48 hours later. The silicone dressing was easily removed and replaced, covered with the antimicrobial dressing per manufacturer recommendations, and covered with a Kerlix dressing and ace wrap. The wound was healing and the patient was allowed to go home without the splint. The mother changed the outer dressing at home daily and inspected the wound for infection as directed. The patient returned to the outpatient burn clinic 2 days after dismissal or 6 days postop and was healed.

**Discussion**

The split-thickness skin graft was 100% adherent to the wound 48 hours post-op and continued to heal. No wound infection or graft displacement occurred. Removal of the outer dressing was achieved with little analgesia and no type of anesthetic. Removal of the silicone dressing required no analgesia and the wound was healed completely on postop day 5.

The silicone dressing was easy to change and dressing change was relatively painless, even after healing occurred, and was accomplished without disturbing the wound bed. Fixation of the graft was effective and easier than other methods; OR time was reduced as well.

Because the application of a silicone dressing for fixation of split-thickness skin grafts requires a margin of healthy skin around the wound, use is limited to smaller surgical areas. Also, the area grafted in this case report was convex. Further study is needed to evaluate the feasibility of use in concave areas such as the neck, axilla, and groin.

**Conclusion**

The silicone dressing proved to be an ideal wound covering in this case, providing the advantage of relatively painless removal, easy effective graft fixation, and reducing operative time because no staples were needed for graft placement. This case report of successful fixation of split-thickness skin graft using silicone dressing underscores the need for further study of this product in the burn care arena.
Venous insufficiency ulcers in the lower extremities arise as a late manifestation of venous system incompetence. These ulcers are the most common vascular disorder and account for 80% to 90% of all lower extremity ulcers. Often, patients also have edema of the lower legs that further compromises oxygen and nutrition to the skin. The patient commonly presents with a long history of recurring problems such as lower leg edema, heaviness, blister formation, and slower healing from minor injuries that become worse with each episode. Traditional treatment has centered on reducing edema with limb elevation, compression wraps, stockings, or Unna boots. Understanding the nature of venous ulcers and the way in which wounds heal has enabled clinicians to tailor treatment specifically to each patient rather than to take a cookie-cutter approach. Most often, treatment now involves both compression and local wound care designed to reduce inflammation, resolve infection, and heal the ulcer.

Compression is essential and can be accomplished in various ways as stated above. Staff at the author’s center prefer to utilize three- or four-layer compression wraps such as Profore and Profore Lite (Smith & Nephew, Largo, Fla.). The decision to use three or four layers of compression is dependent upon the ankle/brachial index (ABI). The three-layer wrap is utilized if the ABI is 0.5 to 0.8 and the four-layer wrap is utilized if the ABI is 0.8 to 1.0. Consideration is also taken if the patient has diabetes and small vessel disease. Other compression products include Surepress and Setopress (Convatec, a Bristol-Myers Squibb Company, Princeton, NJ). Unna boots (Gelocast, BSN-Jobst, Charlotte, NC) are used at some centers; however, they have been found to be less effective than layered compression wraps.

Patients with venous ulcers are generally seen one to two times weekly at our clinic. Wound assessment, sharp debridement, and tissue cultures are routinely performed. Local wound care depends on wound presentation.

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If positive cultures are obtained, the patient is placed on appropriate topical and/or oral/IV antibiotics. Topical antibiotics most often used include Silvadene (Medline Industries, Inc., Mundelein, Ill.) and Bactroban (SmithKline Beecham Pharmaceuticals, Philadelphia, Pa.). A silver-coated dressing such as Acticoat, Acticoat 7 (Smith & Nephew), or Silvasorb (Medline Industries) may be applied to the wound bed to reduce bacterial load. Elidel (Novartis Pharmaceuticals Corp., East Hanover, NJ) is often applied to intact periwound tissue to reduce inflammation before compression wraps are placed.

Venous ulcers historically have been thought to be comparatively pain free. A significant number of patients with venous ulcers is now known to have pain (either constant or related to dressing changes) that will impact their quality of life. Frustration and interference with normal daily activities are frequent patient complaints.

Case Study

The author’s center, located in a rural farming area, averages 270 to 285 patient visits per month, 56% of which are for patients older than 65 years, 23% of whom present with venous ulcers. Ms. O, an 82-year-old Caucasian woman, is a typical venous ulcer patient. She presented on November 21, 2003 with a 2- to 3-month history of lower leg edema, weeping, and open wounds (see Figures 1 and 2). Multiple wounds that measured from 3.9 cm x 2.3 cm x 0.1 cm to 0.5 cm x 0.5 cm x 0.1 cm also were noted. Lower leg edema measurements were 35.5 cm (right leg) and 36.5 cm (left leg) on admission. Ms. O also had a history of chronic anemia, chronic renal insufficiency, and chronic obstructive pulmonary disease. Because of her diffuse wounds, she experienced pain with movement and wound dressing changes. She rated her pain level as 5 on a scale of 1 to 10 constantly and as a 10 with dressing changes. Various products had been tried with limited success.

Ms. O’s clinicians became aware that Mepilex Transfer (Mölnlycke Health Care, Newtown, Pa.) had been used successfully in treating patients with Epidermolysis Bullosa. On March 11, the product was applied to Ms. O’s wounds to see if it would reduce her pain level. The dressing was cut into strips and applied vertically to her legs, followed by Profore Lite (Smith & Nephew) compression wraps. Ms. O was pleased with the cooling sensation achieved by the Safetac® silicone foam as well as the fact that the dressing stayed in place without the need for tape or gauze wrapping. Periwound maceration also was reduced. At her next visit, March 15, she begged clinicians to continue with this product. She rated her pain as 0 with movement and minimal with dressing changes.

Ms. O’s dressings were changed twice weekly throughout her treatment protocol. By March 22, the improvement in her wounds was dramatic (see Figure 3). She had no pain and the original wounds were healed. However, as is the nature of venous insufficiency, two new wounds had developed that measured 2.5 cm x 2.0 cm x 0.2 cm and 2.5 cm x 2.4 cm x 0.4 cm. In addition, Ms. O continued to have difficulty with lower leg and foot edema despite compression so a compression pump was added to her plan of care to be utilized 2 hours per day. Lower leg edema varied from 25.5 cm to a high of 35.5 cm. The compression pump did not make a big difference, however, due to her underlying health condition and use was discontinued after about 1 month.

Conclusion

The soft silicone transfer dressing significantly reduced Ms. O’s pain and provided excellent vertical wicking properties that reduced periwound maceration. Time to healing for new wounds was less than noted with other treatment modalities. Because of decreased discomfort with dressing changes, Ms. O was less reluctant to continue follow-up visits. This product has since been utilized when caring for other patients with venous ulcers and similar responses have been noted.

References

The impervious nature of the integumentary system protects vital organs from infection, desiccation, minor trauma, and heat loss. Proper metabolic, protein, and electrolyte balances rely on intact skin to maintain local and systemic hemostasis. Traumatic wounds, therefore, can have a negative if not devastating impact on the exposed underlying structures and their system counterparts. Patients who incur these acute injuries must be accurately and systematically evaluated and managed to optimize wound closure. Complex wounds offer problems that are more challenging as they may include fractures, nerve, tendon and vessel injuries and loss of soft tissue coverage.

Negative pressure wound therapy (NPWT) has been found to be an effective modality in the management of complex orthopedic wounds. Indications for NPWT use include removing excessive drainage and fluid, improving wound healing by promoting granulation, and securing split-thickness skin grafts. The objectives for managing a complex wound due to an open fracture include removal of devitalized tissue, management of edema while maintaining a moist wound environment, and eventual provision of soft tissue coverage of the injury. Use of NPWT before and after definitive surgical soft tissue coverage helps achieve these objectives.

Traumatic wounds are often very painful and can be a source of significant anxiety, which also may lead to a heightened pain response to dressing changes. Depending on the wound type and the patient’s response to the dressing changes, pain management during NPWT dressing changes may need to be addressed. Among the strategies to assist in the reduction of pain is the use of a non-adherent meshed interface between the wound and the foam dressing. An interface that will assist with the reduction of discomfort and allow for optimization of granulation tissue formation should be considered. The soft silicone coated net and open mesh structure of Mepitel (Mölnlycke Health Care, Newtown, Pa.) is an effective interface.

Case Report
Fifty-year-old Mr. C was driving a motorcycle around a curve when he collided with a brick wall on October 12, 2004. He sustained an open tibia/fibula fracture to the right lower extremity, requiring immediate surgical intervention for repair and stabilization. Mr. C required a total of three surgical procedures. The first surgery on October 12, 2004 included removal of devitalized bone and soft tissue and an open reduction and internal fixation of the fracture. The anterior portion of the wound was left open with exposed muscle and bone. Plastic surgery consultation was requested to determine closure options. The second surgery on October 15, 2004 involved a soleus muscle flap to cover the fracture site and placement of a vacuum-assisted closure (V.A.C.® System, KCI USA, San Antonio, Tex.) device over the...
muscle flap and a distal area of exposed bone with intact periosteum. The first NPWT dressing change was performed by a Wound Ostomy Continence Nurse and a plastic surgeon at Mr. C’s bedside. Because of the nature of the injury and his response to the dressing change, the decision was made to utilize a porous soft silicone contact layer against the wound bed under the NPWT dressing at a setting of 75 mm Hg continuous therapy. The dressing changes were scheduled for Monday, Wednesday, and Friday. At subsequent NPWT dressing changes, which included the use of the soft silicone dressing, Mr. C noted a 70% or more reduction in his pain. He received a total of nine NPWT dressing changes with pain at a level of 3 or below (on a scale of 1 to 10). The third and final surgery on November 5, 2004 included reapproximation of the muscle flap, a split-thickness skin graft, and application of NPWT with soft silicone dressing used as an interface between the wound and the foam. The NPWT dressing was removed November 10, 2004. Mr. C was discharged home November 13, 2004.

Conclusion

In the process of treating complex wounds, NPWT is an invaluable modality for initial wound stabilization and treatment. In the case of trauma wounds, the NPWT dressing is initially placed in the operating room with subsequent dressing changes conducted at the bedside without sedation. If dressing changes elicit a painful response, clinicians have found that using a porous non-adherent dressing as an interface between the wound and the NPWT dressing can significantly reduce the pain and anxiety as well as minimize the need for analgesics. The porous quality of the non-adherent soft silicone dressing allows the NPWT device to effectively remove wound drainage while allowing for optimal granulation tissue formation.

References

Ulcerations on the lower extremities affect about 2.5 million people in the US. Various common conditions that may cause ulcerations include venous insufficiency, peripheral arterial disease, connective tissue disorders, diabetes, microthrombotic disease, and vasculitis. Whatever the cause of the ulcerations, the road to healing is often long and impacts not only the cost of healthcare but also, more importantly, the quality of life of the person and family involved.

A significant aspect of wound healing is choosing a wound care product that will address the needs of both the wound and the patient. Clinical wound management product choice decisions are based on the amount of drainage, location of the wound, wound bed condition, wound size, and underlying cause of the wound. For the patient, ease of application (often in response to physical limitations from aging and disease processes), availability of the product, and level of comfort are important. Often, ulcerations are painful regardless of the underlying condition.

One foam dressing allowed patients with painful ulcerations to obtain a better level of comfort, was easy to apply, and promoted wound healing.

Case Studies
Case 1. Ms. Z, a 77-year-old Caucasian woman, presented with an ulcer on the lateral aspect of her left heel (see Figure 1). The ulcer was spontaneous with no known trauma. Her medical history included diabetes mellitus type 2 with neurological manifestations, hypertension, hyperlipidemia, rheumatoid arthritis, and coronary artery disease.

Initial ulcer treatment provided by Ms. Z’s primary care physician included Duoderm (ConvaTec, a Bristol-Myers Squibb Company, Princeton, NJ) applied to the ulcer every 1 to 3 days. Ms. Z presented to the dermatology clinic about 2 weeks later with macerated periwound skin. The wound measured 5 mm x 5 mm x 22 mm and the wound bed contained 100% pink tissue with no odor or erythema. The area was tender when Ms. Z walked despite her use of diabetic shoes with inserts that were recently checked. She rated pain in the ulcer as 10 out of 10 mainly when she walked (put weight on the affected area) and noted no nighttime or claudication type pain. A recent ankle/brachial index showed biphasic blood flow to the affected lower extremity but the ratio could not be calculated due to medial calcinosis. The area was difficult for her to reach to change dressings.

Treatment. Clinicians sought to address Ms. Z’s main issues — finding a dressing that not only will keep her comfortable but also one that she was able to apply and maintain. They determined that because the original dressing of choice may have contributed to the increased moisture/maceration around the wound, topical care was changed to Polysporin® powder (Warner-Lambert, Morris Plains, NJ) and gauze daily. On her return visit to clinic, the integrity of the periwound had improved — her skin was intact and no maceration was noted but she was still rating her pain at 10 out of 10. In addition, the daily dressing change involving the powder and gauze was difficult to perform — she often missed the site because she could not physically bend to reach it very well. To address localized pain, her care regimen

Figure 1. Single ulcer, left lateral heel.
was changed to topical lidocaine 2% gel applied one to four times a day and covered with gauze.

At her next visit, Ms. Z reported the lidocaine had provided minimal relief but she still had difficulty doing the frequent dressing changes. Her ulcer size was unchanged and no signs/symptoms of infection were noted. Her pain remained at about 10 out of 10, mainly with weight bearing. The decision was made to stop the lidocaine gel and gauze dressing regimen and try Mepilex® Border Self-Adherent Soft Silicone Foam Dressing (Mölnlycke Health Care, Newtown, Pa.), a waterproof dressing that can stay in place for several days. After the foam dressing was applied in the office, Ms. Z reported an immediate decrease in the pain to 6 out of 10, saying, “It feels better already.” The foam dressing offered additional padding and comfort to her diabetic shoes and did not compromise the fit.

By her next visit, Ms. Z’s pain decreased to 2 out of 10. She reported rare discomfort as compared to “pain all the time when I would walk.” Her periwound skin was intact with no erythema or odor from the ulcer. Her wound bed continued to show 100% pink tissue and her wound size was stable at 5 mm. Ms. Z was able to leave the dressing in place for 3 days, shower, and apply the dressing herself because gauze and tape are not necessary — once the border foam dressing is situated, it stays in place.

With the foam dressing, Ms. Z was able to achieve good pain relief results and the foam provided both pressure relief and a moist environment for healing. Her ulcer healing continued to be monitored. In the patient’s view, the product is excellent.

Case 2. Ms. B, a 68-year-old Caucasian woman, presented to the dermatology department with ulcers on her right foot. The ulcers began spontaneously with no known trauma. Her medical history included chronic renal failure (she was on hemodialysis); thrombotic thrombocytopenic purpura; hypertension; cerebrovas-
cular accident; and seizures. Ms. B’s initial wound treatment included Duoderm (ConvaTec, a Bristol-Myers Squibb Company, Princeton, NJ) and compression hose. She rated the pain in her ulcers as 10 out of 10 — the pain was not related to activity and she experienced no nighttime/ischemic pain and no claudication pain. On her initial visit, only two ulcers were present on her right foot at the medial malleolus and the lateral malleolus. The wound borders had a round, punched-out appearance. The wound beds contained pale white tissue and the ulcers demonstrated atrophie blanche type changes. Ms. B had positive dorsalis pedis pulses. On subsequent visits, additional ulcers were noted on Ms. B’s left foot (see Figure 2).

Treatment. The goal was to find a dressing/wound treatment that would make Ms. B more comfortable and protect the ulcers. The initial product was chosen with the thought that its semi-occlusive nature would provide some comfort, but Ms. B’s pain had not decreased by her return visit. Her clinicians decided to apply lidocaine gel 2% under the dressing.

This new regimen offered no improvement in the condition of ulcers and Ms. B’s pain level was still 10 out of 10. By now, Ms. B had developed ulcers on the left foot. The soft silicone border foam dressing was applied to ulcers on both feet. Ms. B immediately noted increased comfort and decreased pain — “about half of what it had been” — and was given the product to take home.

On Ms. B’s return visit, the ulcers on her right foot had healed but several scattered pinpoint ulcerations remained on the left foot around the lateral malleolus. Her pain decreased to a 2 to 4 out of 10 with foam dressing and she could leave it in place for about 3 days with no trauma to the skin from the product.

Conclusion

Using a soft silicone border foam dressing can decrease a patient’s level of pain as well as protect ulcer sites. This is especially important when wounds may be slow to heal as a result of other conditions and the patient sees no end in sight from the discomfort. A product that relieves the distress from pain and frequent difficult-to-negotiate dressing changes can improve quality of life for everyone involved in the patient’s care. –

Reference