

# The VEU

## The Vascular & Endovascular Update

Spring 2022

### Prevent Amputation with Prompt Wound Care



Push a domino, and the one behind it falls...and the next...and the next...and the next, until there are none left standing.

Untreated wounds can act in a similar way. A patient sees a small wound on their leg, or a wet spot on a sock or on their pants and they dismiss it as nothing, or something so small, it will undoubtedly heal. After all, they always do. Until they don't.

The problem with small wounds is

that they often only appear small. A person with diabetes might see just a small wound on their ankle, or a small wet spot on the sock, and simply put a Band-aid on it. However, as many doctors have witnessed, a wound that might be the size of a penny on the skin might actually be larger than a quarter under the skin.

When no improvement appears, the patient goes to the drugstore and purchases an antibiotic cream that has always worked in the past. Dab some on the wound, put on a bandage, and the patient thinks it should be gone in a few days.

But by then, several "dominos" may have already been pushed. The skin is broken, the wound shows

signs of drainage, redness starts to develop, the area feels warm to the touch, the wound has a foul odor - and no over-the-counter antiseptic or antibacterial cream will heal it. Finally, after what may be weeks or even months, the patient decides to see their doctor.

Chronic ulcers in diabetic patients account for 68.8% of all amputations in the U.S. Whereas, a venous stasis ulcer, typically found around the ankle area may also progress to wrap around the entire lower leg, ultimately resulting in an amputation.

The key to stopping these dominos from falling is being proactive in seeking professional treatment to help heal the wounds.

#### Who is most likely to get venous stasis ulcers?



The common denominators of patients who experience skin ulcers include some of the following:

- Poor circulation in the lower limbs
- Diabetics

- High blood pressure and/or high cholesterol
- Overweight or obese
- Sedentary lifestyle
- History of varicose veins
- Smokers or other tobacco users
- Venous reflux

Venous stasis ulcers are more likely to occur in women than men, and generally happens in the patient's mid-40s.

#### How an ulcer evolves from a minor wound to a major medical issue

At first, a skin ulcer may start out

as a blister or even a scratch. In a patient with venous insufficiency/reflux/incompetence, these simple wounds turn into large, weeping ulcers. They drain clear fluid or blood, have foul odor and severely compromise the patient's quality of life.

Other symptoms depend on the type and severity of the ulcer but will include:

- swelling
- redness
- tenderness
- itchiness

- pain
- skin discoloration
- yellow or green pus due to infection
- drainage of clear fluid that continues to increase in volume

### **What causes skin ulcers?**

Skin ulcers may be caused by one or a combination of several health challenges:

#### • **Venous insufficiency**

Veins, unlike arteries, have valves that allow blood to travel in one direction, towards the heart. However, the presence of blood clots in the veins may cause these valves to be incompetent. It is this incompetence, or insufficiency, that may ultimately result in swelling, discoloration, varicose veins and ulcers.

#### • **Atherosclerosis**

When arteries narrow due to the build up of cholesteron on the walls of the artery (plaque), this compromises the amount of oxygenated blood to the skin and all the organs of the body. Lack of blood flow leads to breakdown in tissue, also known as an ulcer or wound.

#### • **Diabetes**

When blood sugar levels are not properly maintained and controlled, this may lead to peripheral neuropathy (loss of sensation), gangrene and ultimately amputation.

#### • **Pressure**

Pressure wounds (ulcer) are usually found in bony prominences such as the heel of the foot, the sacrum or hip. They are very commonly seen in conjunction with diabetes, bed bound individuals who cannot turn themselves and in those with poor arterial flow.

### **Types of skin ulcers**

There are two primary types of skin ulcers:

#### • **Venous Ulcers**

The most common type of skin ulcers, venous ulcers are open wounds that usually form on the leg below the knee. They can take months to heal, and in some cases, without wound care, may never heal. Primary treatment aims to restore blood circulation to the affected area and surgery may be recommended to increase blood flow. In severe circumstances, when wound care has been delayed or ignored, the result may be amputation.



#### • **Arterial Ulcers**

Because of damage to the arteries, these ulcers develop due to a lack of blood flow to the tissue. They are generally found around ankles, feet, toes and heels.

### **Treatment**

The primary goal in treating wounds is to heal the affected area. We also want to prevent the wound from devolving into a major health crisis such as the amputation of a limb, the spread of an infection throughout the body, or death.

The first step in treatment is education. Patients need to clearly understand how serious a chronic wound is and what the complications could be.

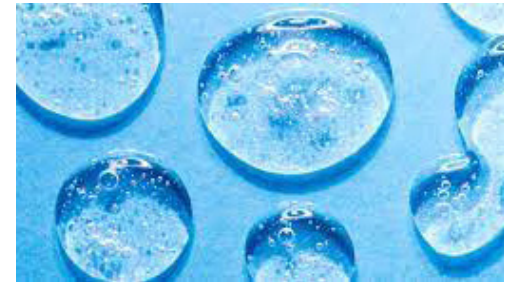
A vascular surgeon should be consulted promptly to address blood flow complications, venous or arterial insufficiency and to begin wound care.

The healing process can take

months or even a year, even with recent advancements in the treatment of skin ulcers.

Today's treatments include dressings that kill bacteria and prevent infection, promote tissue growth, and speed the healing process. Your patient's vascular surgeon may use one or a combinations of these treatments:

#### • **Hydrogels**



When used as a wound dressing, hydrogel not only forms a physical barrier and removes excess exudate but it also provides a moisture environment that promotes the wound healing process. Additionally, hydrogel can perfectly fill irregularly shaped wounds and alleviate deep bleeding efficiently.

#### • **Hydrocolloids**

Hydrocolloid dressings provide a moist environment favorable for wound healing while providing a barrier against exogenous bacteria. Hydrocolloid dressings result in more rapid wound healing, less pain, and fewer needed dressing changes.

Common hydrocolloid dressings include Polymems, Duo Derm, and Restore Wound Care.

#### • **Collagen wound dressings**

Because of their chemotactic properties on wound fibroblasts, collagen dressings encourage the deposition and healthy organization of newly formed collagen, creating an environment that fosters healing. Collagen-based biomaterials stimulate and recruit specific cells, such as macrophages and fibroblasts, and provide a healing cascade

to enhance and influence wound healing. These biomaterials can provide moisture or absorption, depending on the patient needs and the delivery system. Collagen dressings are easy to apply and remove and are conformable.

#### • **Antimicrobial dressings**

These dressings have an antiseptic agent incorporated in their materials. Antimicrobial dressings do not include products or dressings which incorporate antibiotics. Traditionally, the term antiseptic has been used to refer to solutions that will damage healthy tissue.

Because antimicrobials may compromise healthy tissue, their use in ongoing wound management is generally limited to reducing the load of pathogens on intact skin.

When wounds grow to a size and pathology when these types of dressings may not stop the degradation of the area and are not working to promote healing, other methods of care will be considered.

#### • **Debridement**

Patients may be required to make weekly visits to a vascular surgeon and wound care specialist to undergo debridement treatments.

Mechanical debridement is the removal of devitalized tissue, also called necrotic, non-viable, or dead tissue, or any foreign objects from a wound. A non-healing wound can be overburdened with necrotic or dead tissue, which can impede the body's ability to develop new tissue. Devitalized tissue can also be



a source of nutrients for the growth of bacteria.

Because this tissue cannot be salvaged, debridement is necessary to promote healing. Wounds may require a serial approach to debridement, with dead tissue being removed during multiple appointments as needed.

How often a wound undergoes debridement depends upon the amount of devitalized tissue in the wound, the size of the wound, and cause of the wound. In general, wounds can undergo debridement once a week.

#### • **Vacuum-assisted Closure**



In an effort to speed the healing process, especially for larger wounds, a wound vacuum can be used daily.

Vacuum-assisted closure of a wound, also known as wound VAC, help wounds heal by decreasing air pressure around the affected area. It can gently pull fluid from the wound, reduce swelling, and helps clean the wound and remove bacteria.

A wound VAC also helps pull the edges of the wound together and stimulate the growth of new tissue helping the wound close.

### **Patient-controlled healing help**



Within the education of patients, physicians should stress the steps patients can take to assist their own healing.

Patients with diabetes should monitor and control their blood sugar and blood pressure. Because wounds need healthy blood flow, regular exercise, even just a daily walking regimen, will help healing. Stopping the use of tobacco will slow arteriosclerosis while also improving blood flow. Encourage a diet high in protein and low in simple sugars. Recommend the wearing of compression socks when wounds are caused by swelling in the lower extremities.

Explain to patients that small wounds are like letters from the IRS; they make you nervous and when you set it aside, hoping it's no big deal, it can quickly become a very big deal indeed. Encourage your patients to act with a sense of urgency, as if the dominos are falling, and seek a prompt diagnosis. Consult a vascular surgeon and wound care specialist to get proper and aggressive care using appropriate treatments, and substantially decrease the chances that it will become a major issue.



#### **About the author, Dr. Eugene Tanquilut**

Award-winning and recognized as a Vitals Top 10 Doctor and a Patient's Choice Doctor, **Dr. Eugene Tanquilut** is board-certified in both vascular and endovascular surgery. He earned Vascular and Endovascular Fellowships at Cleveland Clinic.

Dr. Tanquilut is the President of Vascular Specialists and has participated in numerous research studies, published papers and is a widely-requested speaker.



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vasculareducationfoundation.org  
8505 - 183rd Street, Suite A  
Tinley Park, IL 60487