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Acupuncture for Non-Healing Wounds: A Case Report

By Erin Stewart, DAOM, LAc, LMT

Abstract
Chronic non-healing wounds have both economic and psychological impacts on quality of life. This case report chronicles the use of a specific acupuncture technique, known as Surround the Dragon (SD), to treat a chronic non-healing wound still open after two years of therapy at a medical wound care facility. This treatment used only Traditional Chinese Medicine (TCM) acupuncture with no additional techniques or treatments. Although a small amount of data in the current body of literature shows the efficacy of acupuncture for wound healing, more extensive studies are needed to demonstrate robust efficacy and precise mechanisms of action. The purpose of this case report is to begin a discussion that may lead to further study on this critical, costly, and painful condition.
Key Words: case report, non-healing wounds, diabetic wounds, acupuncture, surround the dragon, acupuncture therapy

Introduction

Non-healing wounds are excruciating and require ongoing specialized management. This type of care results in extremely high healthcare costs. As of 2019, an estimated 6.5 million wound patients cost the United States healthcare system approximately $25 billion US (Olsson et al., 2019).

One common wound type is a complication of diabetes. These non-healing wounds occur as a result of diabetic neuropathy and the subsequent breakdown of tissue. Tissues with no blood supply are referred to as non-viable or devitalized. When a wound is determined to have non-viable tissue on or around the wound bed, it must be removed to prevent further infection and promote healing. Wounds with devitalized tissue are painful, but the treatments can be even more painful. Removing the non-viable tissue is called debridement, which involves removing or scraping off the non-viable tissues. The many methods of debridement include autolytic, larval, mechanical, sharp, surgical, and hydrosurgical (Atkin, 2014, p. S12). In some cases, as with peripheral artery disease, the non-viable tissue may be left and

allowed to die and fall off naturally, known as auto-amputation. Whether the patient is experiencing debridement or auto-amputation, these processes are excruciating (Atkin, 2014). Multiple visits to a specialized wound care site can be disruptive to the patient's life, requiring time off work for visits and follow-ups. In addition, the pain that comes from these wounds is life-altering and often requires high doses of potentially addictive pain medication (Paschou et al., 2018). Non-healing wounds may lead to systemic infections, amputations, and even death if left untreated.

Multiple studies of acupuncture over the past ten years have focused on finding its mechanism(s) of action. While much remains unknown, the data suggest that acupuncture may provide hope for patients suffering from non-healing wounds. There is evidence that needle insertion causes a localized increase in the release of cytokines, neurotransmitters, and growth factors. These increase localized inflammatory and immune responses (van den Berg-Wolf & Burgoon, 2017). An increase in the immune response will increase blood flow to the area, a vitally important response for patients with non-healing wounds.

One key element to increasing blood flow to the tissue is the presence of nitric oxide (NO). This widespread signaling neurotransmitter is found in higher quantities in skin tissues associated with acupoints as compared to brain tissue or vascular tissue (Ma, 2003, Tsuchiya et al., 2007).

In 2012, Park et al. conducted an animal study looking at burn-related wounds and found that wound size significantly decreased in the acupuncture group compared to the control group. The researchers attributed the changes in wound size to the increased blood flow to the associated tissues and reduced inflammatory cytokines produced at the site. Park et al. (2012) used a technique known as Surround the Dragon (SD).

The SD technique involves inserting multiple acupuncture needles obliquely around the margins of a wound with the tips pointing toward the center. SD was the technique applied to the non-healing wound in this case report. (See Figure 7.)

Patient Information

GM is a married, 53-year-old male who presented with the chief concern of lower back pain due to a recent injury while working at his cabin. The pain was 3/10 (10 being the worst) and described as aching. At the time of GM's first visit, he was under the care of a chiropractor who had been addressing his back pain for two weeks. As a result, the pain of the injury was mainly resolved

in the first two acupuncture visits and only occasionally “flared up” due to his heavy workload. He believed his back pain resulted from spinal calcification due to previously uncontrolled diabetes.

GM was also concerned with severe pain, numbness, and muscle cramping in both lower legs that worsened at night. The pain in his right lower leg was worse than the left. It interrupted his sleep most nights. He believed his leg pain was caused by varicose veins which in turn also resulted from uncontrolled diabetes. The pain and cramping were intermittent, and he said the episodes of cramping correlated to his carbohydrate and sugar intake. He reported pain and itching around the wound on the lower leg and noted that the skin was hard and easily opened when bumped. The varicosities around the knee and above the wound site were tender to the touch.

GM was seen at a hospital wound care facility for two years prior to coming in for acupuncture. He had success at the wound care facility with a significant part of the wound healing, but a small part of the affected region would periodically open. As a result, the wound never completely healed. A large part of the problem was a warehouse job requiring GM to stand on cement floors and walk several miles per day. In addition, he had a welding business and was remodeling his cabin. He worked 16 or more hours per day in work boots rubbing on the affected area. He wore double layers of socks and bandages to prevent the sore from opening, but it did not always help.

GM was diagnosed with diabetes 20 years ago. A couple of years later, he was diagnosed with spinal calcification, vision reduction, and non-healing wounds. Ten years ago, GM was placed on the diabetes medication metformin. After being on metformin for several months, GM’s eyesight deteriorated, and he described feeling blind. When he reported this to his doctor and asked to stop taking the medication, his doctor explained that he would need to drastically change his diet, and increase his level of exercise. Determined to get off the medication, GM significantly reduced his sugar and carbohydrate intake. He said as soon as he stopped taking the metformin, his eyesight returned to normal.

GM said he could manage diabetes with diet and exercise alone. He did not test his blood sugar levels during the acupuncture treatments covered in this case report, and there were no laboratory tests to show that it had been controlled or remained controlled. GM said he noticed his vision becoming poor again if he ate too much sugar.

Diagnostic Data

Vitals were taken during the initial visit and were as follows: blood pressure 119/78 mm Hg; pulse 87 bpm; body weight 190 lbs; height 72"; temperature 98.3 C; body mass index 26; SpO2: 95%. GM appeared to be strong and healthy.

GM's pulse diagnosis was wide, soft, slippery, and deep bilaterally at all three positions. His tongue was not observed due to Covid-19 precautions. The patient wore a mask during the entire appointment. He was also wearing compression stockings and reported that this helped keep the swelling and pain down. Stockings were removed prior to examination. There was no bandage over the wound during the exam, but the patient described the layers of bandaging needed to keep the wound protected.

Both lower legs were visually examined and palpated. Black and dark blue varicose veins were prominent on the medial aspect of the right lower leg from the knee to the ankle, mainly along the Spleen and Kidney channels. A wound with a thin scab and no signs of infection showed on the right shin above the medial malleolus. The wound measured approximately 0.5 inches wide and 1.5 inches long. The scab was thin, smooth, and pale yellow. In addition, there was an area of brown and black hemosiderin staining approximately four inches wide and eight inches long. Edema was visible around the right medial malleolus and the distal margins of the hemosiderin staining (see Figure 1). The left lower leg was clear of lesions.

TCM Review of Systems

Temperature: The patient was feeling neither hot nor cold.
Sweat: Presentation was normal.
Eyes: Sclera quality was bloodshot. Type 2 diabetes caused vision changes depending on his blood sugar level
Ears: Hearing had gradually declined, initial intake severity was 2/10. Ears were bright red.
Throat: Sometimes had phlegm that he had to spit.
Urine: The amount was average. The color was dark yellow.
Stool: Regular bowel movement, four times daily. Stool appearance was formed and brown colored.
Thirst: The patient's thirst was low. He preferred cold drinks and had about two 8 oz glasses of water per day.
Appetite: The patient's appetite was normal.
Eating habits: The patient's preference was for hot food, three meals per day, and sweet food. He tended to overeat.
Gastrointestinal: Halitosis with a sweet odor.

Sleep: 7 hrs. Average per night. He often woke between 3-5 a.m. with leg cramps. Bedtime was between 9-11 p.m. He was unable to recall any dreams.
Lifestyle: Diet was self-reported as healthy. Diet type was low carbohydrate and high in both animal and vegetable fats.
Recreational Drug Use: He used one joint of cannabis per day, two beers once or twice a week, and about two glasses of wine per week.
Psycho Emotional: The patient frequently felt normal and balanced. He felt optimistic, with low levels of stress.
Energy Level: The patient's energy level was 6/10 (10 being the best). Lower energy levels were accompanied by lethargy and heaviness. He felt most lethargic and heavy after sitting down.
Sexual health: The patient's libido was normal, with safe sexual activity practiced three times per week on average. Symptoms included erectile dysfunction. He'd had his prostate checked within the last three years, stating that the "numbers were ok."

TCM Diagnosis
Xiao Ke syndrome, underlying severe Spleen qi, and Heart qi/yin deficiency leading to prolapsed vessels, damp phlegm accumulation, and qi/blood stasis leading to pain. Following is the rationale for the TCM diagnosis.

Xiao Ke Syndrome. The patient's TCM diagnosis of Xiao Ke Syndrome was directly related to his biomedical diagnosis of Type II diabetes.

Spleen qi deficiency:
A diagnosis of Spleen qi deficiency was indicated by his prolapsed blood vessels. He preferred sweet foods and tended to overeat, which overtaxed this digestive capacity and led to deficiency of Spleen qi, which in turn led to dampness.

Heart qi/yin deficiency:
In TCM theory, the Heart's function is to govern the blood and blood vessels; when there is qi deficiency, the vessels can become weak, leading to varicosities. Heart yin deficiency can lead to heat. GM presents with signs of heat in his bloodshot eyes, bright red ears, and dark yellow urine. He uses alcohol and marijuana, which both increase heat in the body. Additionally, when he does drink water, he prefers cold drinks, which also indicates heat.

Damp phlegm accumulation:
The patient reports a lack of thirst which suggests damp accumulation. He produces a great deal of morning phlegm which he has to cough up to clear. The heaviness and fatigue he feels are another sign of dampness. While he

reports a healthy diet, he likes fatty foods, which contribute to a damp phlegm presentation.

Qi and blood stasis:
This describes the situation within the non-healing wound. When qi cannot flow through an area due to tissue damage, it stagnates, leading to blood stasis. Pain from combined qi and blood stasis can be severe.

Treatment

Acupuncture Rationale

The treatment approach was SD with microbleeding. Needle placements for body points were chosen based on pulse diagnosis. As a result of the patient's pulse changing from visit to visit, body points varied from visit to visit as well. The SD technique was applied at each appointment, but the number of needles used varied depending on the shifting size and shape of the wound area. Additionally, when needles were removed, points were allowed to bleed until it naturally stopped. This technique is known as microbleeding and typically results in one to three droplets of blood. Researchers have defined microbleeding as "bleeding that ceased within 30 seconds" (Kwon et al., 2018, p. 1). These techniques were applied due to their known mechanisms of action to increase blood flow, increase immune response, and decrease inflammatory responses.

Details of Needling

DBC Spring Ten needles length 30 mm, gauge .20 mm were used. Body Point combinations included: LR3 (*Tai Chong*) and LI4 (*He Gu*), SI3 (*Hou Xi*) and BL62 (*Shen Mai*), PC6 (*Nei Guan*), and SP4 (*Gong Sun*). Choice of body points varied based on pulse assessment and pain levels. The SD technique required between 10 and 30 needles per session. (See Table 1.)

Treatment Regimen

The patient was seen every other week. From the initial visit to successful, lasting wound closure there were 16 treatments.

Tx #	Date	Body Points and Actions	# of SD needles
1	05/21/21	Bilateral: LR3 (*Tai Chong*), LI4 (*He Gu*) to move qi and reduce pain	0
2	05/27/21	Bilateral: SI3 (*Hou Xi*), BL62 (*Shen Mai*) to open the Du and Yang Qiao channels to reduce back pain	10
3	06/09/21	Bilateral: PC6 (*Nei Guan*), P4 (*Gong Sun*) to open the Chong and Yin Wei channels to move and tonify the blood	10
4	06/22/21	Bilateral: LR3 (*Tai Chong*), LI4 (*He Gu*), TE5 (*Wai Guan*), Bilateral ST36 (*Zu San Li*), SP9 (*Yin Ling Quan*), LR8 (*Qu Quan*) to move Qi, reduce pain, drain dampness, tonify Liver blood, open the Yang Wei channels, and tonify qi	18
5	07/06/21	Bilateral: SP4 (*Gong Sun*), PC6 (*Nei Guan*), HT6 (*Yin Xi*) Left: SP6 (*San Yin Jiao*), KI6 (*Zhao Hai*) to open the Chong and Yin Wei channels, tonify the yin, to reduce pain and deficiency heat	24
6	07/20/21	Bilateral: LR3 (*Tai Chong*), LI4 (*He Gu*), TE5 (*Wai Guan*), BL62 (*Shen Mai*) to move qi, reduce pain, and open the Yang Wei and Yang Qiao channels	24
7	08/10/21	Bilateral: SI3 (*Hou Xi*), BL62 (*Shen Mai*), Left: KI3 (T*ai Xi*) to open the Du and Yang Qiao channels, tonify the Kidney to reduce back pain	23
8	08/24/21	Right: LU7 (*Lie Que*), KI6 (*Zhao Hai*), SP9 (*Yin Ling Quan*), LR8 (*Qu Quan*), Left: SI3 (*Hou Xi*), BL62 (*Shen Mai*) to open the Ren, Yin Qian, Du, and Yang Qiao channels to reduce pain, drain dampness, and tonify Liver blood	25
9	09/07/21	Bilateral: TE5 (*Wai Guan*), GB41 (*Zu Lin Qi*), LR8 (Qu Quan) to open the Dai and Yang Wei channels to increase the flow of qi and reduce pain, and to tonify Liver blood	29
10	09/28/21	Left: LU7 (*Lie Que*), KI6 (*Zhao Hai*),Right: PC6 (*Nei Guan*), SP4 (*Gong Sun*) to open the Ren, Yin Qiao, Chong, and Yin Wei channels to move and tonify blood, and reduce pain	25
11	10/15/21	Bilateral: LI11 (*Qu Chi*), SP4 (*Gong Sun*), PC6 (Ne*i Guan*), to reduce heat in the channels, open the Cong and Yin Wei channels to move and tonify the bloo d	24
12	10/19/21	Bilateral: TE5 (*Wai Guan*), GB41 (*Zu Lin* Qi), LI4 (He *Gu)*, LR3 (*Tai Chong*) to open the Dai and Yang Wei channels to move qi and reduce pain	30
13	11/04/21	Bilateral: LU9 (*Tai Yuan*), SP4 (*Gong Sun*), PC6 (*Nei Guan)*, the command point for vessels) to open the Ren and Yin Wei channels to tonify and move blood	21
14	11/18/21	Bilateral: LR3 (*Tai Chong*), SP4 (*Gong Sun*), PC6 (*Nei Guan*) to smooth Liver qi, and open the Ren and Yin Wei channels to tonify and move blood	20
15	12/03/21	Bilateral: LR3 (*Tai Chong*), LI4 (*He Gu*), TE5 (*Wai Guan*), GB41 (*Zu Lin Qi*) to move qi and reduce pain, open Chai and Yang Wei channels to increase the flow of qi	28
16	12/17/21	Bilateral: GB41 (*Zu Lin Qi*), TE5 (*Wai Guan*), SP4 (*Gong Sun*), PC6 (*Nei Guan*) to open Dai and Yang Wei channels to increase qi flow, and open the Chong and Yin Wei to tonify and move blood	27

Table 1. *Treatments, acupuncture points, and number of needles used in SD technique.*

Other components of treatment

Treatment areas were cleaned with betadine and alcohol before needle insertion. (See Figure 3.)

Practitioner Background

The practitioner is a licensed acupuncturist practicing for six years, a licensed massage therapist practicing for 18 years, and holds a Doctorate in Acupuncture and Oriental Medicine from Bastyr University.

Discussion

The four types of non-healing wounds are arterial, diabetic, pressure, and venous ulcers. Venous ulcers, which are the most common, tend to be shallow wounds on the medial supra-malleolar region of the lower leg (Bowers & Franco, 2020). The location and presentation of this type of wound closely matched that of the subject of this case report.

According to Bowers and Franco, there are four stages of wound healing. Stage one is called the hemostasis or coagulation stage, where vasoconstriction and clotting occur, causing the wound to stop bleeding. The second stage is the inflammation stage, in which the release of cytokines and

growth factor leads to vasodilation. In turn, this allows for an immune response and phagocytosis at the wound site. As a result, the area becomes red, swollen, warm, and painful—all classic signs of inflammation. This stage can be seen in Figure 1. Stage three is the proliferation stage, in which granulation and epithelialization allow the wound to close. This is when new blood vessels proliferate and enable blood flow to the area. Figure 2 may show this stage of wound healing in the patient. The final stage is called the maturation or remodeling stage. Collagen creates a scar at the site of the wound. Over time, scar strength will increase up to 80% of the original tissue strength (Bowers & Franco, 2020). Achieving this final stage enabled GM to wear his work boots for extended periods without tissue breakdown.

Using the location, depth, and appearance of the wound, specifically the signs of edema and hemosiderin staining on GM's leg, he was diagnosed as having a venous wound type. This mandated increased precautions for safe acupuncture practice. The hemosiderin staining is seen clearly in Figures 1 and 2. Figure 4 shows the texture of the compression sock due to localized edema. Figure 4 shows the reduction of inflammation and hemosiderin staining since the first treatment.

This patient initially presented with low back pain due to spinal calcification brought on by uncontrolled diabetes. The low back pain was alleviated within two treatments, and he then wanted to focus on his leg pain and cramping. When he realized acupuncture could help his back pain so quickly, he felt it might help his chronic leg pain too. The SD technique and treatment plan were explained. The patient understood and was compliant with scheduled appointments.

As the patient also understood, his leg pain was related to his diabetes. In TCM, Xiao Ke syndrome is an umbrella term for diseases that cause increased thirst, drinking, and urination. Texts commonly include Type I and Type II diabetes mellitus under this umbrella (Guo et al., 2014). However, Type II diabetes does not present the same way as Type I diabetes; case in point, the concept of the wasting and thirsting disease does not fit this patient.

Guo et al. (2014) proposed seven syndrome differentiations covering both Type I and Type II diabetes. These are qi stagnation due to Liver depression, Liver and Stomach heat stagnation, phlegm and heat stasis, excess heat in the Stomach and Intestine, Intestinal damp and heat Syndromes, deficiency of body fluids due to excessive heat syndromes, and deficiencies of qi and yin. Phlegm and heat stasis is typically seen in early and middle stages of Type II diabetes. These patients generally smoke, consume alcohol, and often are obese around the abdomen. They present with chest suppression and

abdominal distension, have a bitter taste in their mouths, prefer cold drinks, and drink more fluid than they urinate. Their urine tends to be dark yellow. The pulse is described as both smooth and stringy, and the tongue as red and fat with a yellow, greasy coat (Guo et al., 2014).

GM presented with many of these symptoms, and damp phlegm with heat was a large part of his diagnosis. While his Type II diabetes may have been controlled, he still tended to overeat, leading to abdominal distension. However, losing about 40 pounds since his original diabetes diagnosis relieved much of the abdominal distension and chest oppression he had been experiencing.

Patient Perspective

GM reported the skin of the wound area had healed completely; it no longer opened up. He said the tissue was softer and more moveable. Additionally, he had fewer leg cramps at night and felt that the circulation had improved. Although this case report describes a period of time leading up to complete wound closure, the patient continues to include acupuncture as part of his health care.

Statement of Safety

Betadine was applied to all points, and needles were not directly inserted into the wound; clean needle technique was strictly adhered to at all times. An example of this technique is shown in Figure 3. As a result, there were no adverse or unanticipated events.

Figures

Figure 1. May 27, 2021. Medial aspect of the lower leg before the 2nd treatment. Redness and swelling show inflammation. The margin of the wound is indicated by the interior dashed line; the margin of the hemosiderin staining is indicated by the exterior dashed line.

Figure 2. September 9, 2021. Yellow layers of skin result from the wound closing.

Figure 3. October 19, 2021. SD technique, with betadine visible at the margins of the wound.

Figure 4. November 19, 2021. Results after 16 treatments including dramatic reduction in hemosiderin staining. The line indicated is due to sock compression. No lesion is visible.

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