Clinical Integration of Osteopathic Manipulative Medicine

Surgery / Dermatology- Chronic Wounds

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Introduction: Wound care management costs America over twenty five billion dollars.¹ This magnificent expense is attributable to the technology, the home care, required to manage these wounds, however, it is also in part due to the unrelenting co-morbidities that prevent efficient wound healing, and also for the multidisciplinary approach required for efficient wound care treatment. Chronic wounds have a prevalence of 6.5 million people in the United States. The most common chronic wounds seen in the wound care, primary care, and dermatology settings are: venous stasis ulcers, diabetic ulcers, pressure ulcers. Chronic wounds are wounds that do not follow the traditional pathway of healing, and due to poor perfusion, repetitive trauma, poor diet, or wound supporting co-morbidities, including diabetes and obesity, take over 12 weeks to heal.² Wound care management plays a role in improving quality of life, preventing wound degeneration and infection, and preventing the development of malignancy within wounds.

Clinical Presentations:
- Necrotic ulcers on the lower extremity
- Hyperpigmentation of the lower extremity due to hemosiderin deposition
- Open wounds presenting with exposed underlying muscle and/or bone
- Verrucous plaques on the lower extremity
- Hyperkeratosis, and acanthosis of the peri-wound skin
- Lymphedema

Differential Diagnosis:
- Diabetic Ulcer
- Venous Stasis Ulcer
- Pressure Ulcer
- Lymphedema
- Arterial Ulcer
- Vasculitis

Clinical Pearls and Diagnostic Tools:
- Diagnosis of chronic wounds is essential to identifying the underlying issue, and involves a thorough medical work up.
Ankle-Branchial indexes (ABI) should be assessed in all patients suspected of having ulcers of vascular etiology.

Venous ulcers present as irregularly bordered lesions located on the lower extremity over bony prominences, often in the vicinity of the medial malleolus. Hyperpigmentation and papillomatosis along with lymphedema may be present as well and is often diagnosed clinically, or in combination with venography or copper duplex ultrasound.

Arterial Ulcers are often located on the lateral aspects of the lower extremity, present with delayed or absent pedal pulses, delayed capillary refill, necrosis, sharp borders, and often have per-lesional atrophy.

Pressure ulcers are often in bed-bound, nursing home patients or long term care patients that do not receive adequate turning protocols. Lesions are graded and progress to deep wounds and often are located on the sacrum, lateral malleoli, heels, ischial tuberosities, and greater trochanters.

Diabetic Foot ulcers are located in distal regions of the lower extremity, most often on sole of the foot and/or toes. Wounds often go unrecognized due to peripheral neuropathy and lack of pain sensation, leading to keratinization over the wound, preventing appropriate wound healing.

OMM integration:

Chronic wounds are managed with routine wound debridement so as to convert these chronic wounds to actively bleeding acute wounds to help foster the regeneration and repair process. Increasing the extravasation of inflammatory cells into the surrounding environment allows proper healing of wounds. In addition, nutrition modification, wound vacuums, home care, physical therapy all play a vital role in wound healing. As such, osteopathic manipulative treatment, is a manual form of medicine that can add significant benefit in patients with comorbidities, such as Diabetes Mellitus, and patients that are bed-ridden or nursing home bound and are deemed immobile.

There are many potential targets when using OMT for chronic wounds. In patients with diabetic ulcers, a known nervous system dysfunction is noted, that participates in the pathophysiology of these wounds. Having this knowledge, indicates using techniques such as rib raising, and ribless raising would aid in addressing this nervous system dysfunction, by balancing the autonomic nervous system. Additionally, in patients with co-morbidities such as COPD, and immobility, would benefit from increased rib motion, and improved breathing. Other techniques such as sub-occipital release and sacral rock can also be used in patients with severe immobility to improve autonomic dysfunction in Diabetes Mellitus. On a similar note, arterial ulcers are also compromised with increased sympathetic tone, and performing techniques, such as rib raising, and suboccipital release, so as to decrease or normalize this tone, may improve vascular tone and allow for better flow of blood and circulation of inflammatory mediators.

In comparison, patients with venous ulcers would benefit greatly from lymphatic drainage techniques. Thoracic outlet release, thoracic duct siphon, doming of the diaphragm, popliteal release, and pedal pump are all techniques that should be routinely
applied to patients with venous stasis ulcers because they mechanically induce the appropriate draining response in patients with compromised venous flow. This will decrease the edema that impairs adequate wound healing due to inadequate perfusion but will also allow patients to become more mobile due to the decreased edema. These patients should be assessed with venous Doppler prior to therapy to rule out developing or persistent deep vein thromboses so as to prevent thrombus formation.

Pressure ulcers are more difficult to approach and will require thorough OMT, attacking not just lymphatics but also fascial strains, and muscular imbalances to improve active and passive range motion of the various joints. Sacral pressure ulcers will require myofascial release of the paraspinal muscles, so as to decrease the tone of the back muscles preventing wound healing. In addition, sacral dysfunctions and innominate dysfunctions should be assessed and treated with appropriate muscle energy techniques in capable patients, however, patients unable to do this may benefit from counterstrain techniques focusing on psoas hypertonicity, piriformis hypertonicity, and gluteal hypertonicity.

Osteopathic Structural Exam:

Assessing the following regions in a chronic wound patient is beneficial for gearing treatment in a patient centered manner.
- Thoracic Inlet
- Occipito-atlanto joint
- Diaphragm
- Politeal fossa
- Paraspinal muscles
- Psoas muscle
- Sacrum
- Ribs
- Gluteal muscles
- Piriformis muscle

Possible Treatment Options:
- Thoracic Outlet release
- Pectoral Lift
- Rib raising
- Ribless rib raising
- Paraspinal inhibition
- Popliteal release
- Pedal pump
- Piriformis Counterstrain point
- Gluteus maximus or minimus counterstrain
- Sacral rock
- Articulatory
Citations:


