

A Plastic Surgeon's Perspective in Multidisciplinary Wound Care

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As a plastic surgeon who performs a wide variety of reconstruction procedures, I work closely with physicians and wound care nurses involved in inpatient and outpatient care of patients with a variety of wound care needs. It is important to have good communication with these colleagues and to help educate them on what reconstruction procedures can be performed in order to assist with their patients' needs and to streamline referrals. In this article, I aim to outline some of the more common wound problems referred to the plastic surgeon.

Patients with chronic wounds of the lower extremity, either from diabetic complications or venous stasis ulcers, are a common clinical problem seen in outpatient wound care centers. They are also a patient population which frequently may require inpatient admissions for complications including soft tissue infections, osteomyelitis, tissue necrosis and / or treatment of their other co-morbidities. When I am asked to evaluate a patient for reconstruction of a wound, a global approach to the patient must be taken. Infectious disease specialists and internal medicine physicians are often involved to treat co-morbidities which may contribute to the non-healing / chronic nature of the wound.

For lower extremity wounds, patient compliance is assessed, as the reconstruction will likely fail if the patient is not able or willing to participate in postoperative care. If the wound is on a weight-bearing area or an area that is near a mobile joint, immobility with non-weight bearing is necessary after reconstruction to achieve success. The condition of the wound bed must also be free of active infection. Skin grafts are the first choice for reconstruction of a wound that has good granulation tissue present. Full thickness grafts are often used on weight-bearing areas.

If bone or tendon is exposed, then either a local muscle flap or local adipofascial flap is performed with skin grafts. The whole array of flaps used is beyond the scope of this article, but I will mention the most common choices I use. For knee wounds, a gastrocnemius muscle flap is the first choice. For middle third leg wounds of the tibia, a hemi-soleus muscle flap is very useful. Ankle and Achilles wounds tend to be more challenging. If the wound is small, an adipofascial flap is versatile. I have also found the reverse sural flap to be useful in coverage of heel / ankle wounds. I have found the blood supply to the flap is more robust if the flap is first delayed 2-3 weeks before flap elevations. Larger wounds may require free tissue transfers.

Wounds located on the foot are most often related to diabetic foot ulcers. These wounds often have a component of osteomyelitis. Aggressive debridement of all involved bone is mandatory before covering the wound with a flap or skin graft. Local foot muscle flaps and skin grafts can work quite well for heel and mid-foot wounds. The muscle adheres well to the wound bed and provides vascularization to deliver antibiotics.

Venous stasis ulcers are often treated in wound care centers with tissue matrices and local wound care. These patients have a chronic disease, and it is important to stress the role of compression therapy and elevation of the affected extremity. A referral to the plastic surgeon is often necessary when the ulcer has stalled in healing or is getting larger. Many of these patients benefit from split thickness skin grafting or using an acellular dermal matrix to obtain closure.

Another group of patients that frequently needs referral for reconstructive surgery are patients with radiation-associated wounds. These wounds may be located on the scalp,

chest, back, pelvis or lower extremity. One of the most difficult wounds to obtain closure is the scalp wound with exposed radiated cranium, most often in a patient who has had a craniotomy and tumor removal. These wounds require debridement of any necrotic / devitalized bone / bone substitutes, removal of cranial hardware and then adequate soft tissue coverage. The soft tissue coverage options are limited in this area of the body, and free tissue transfers are usually required.

Patients with breast cancer often receive post-mastectomy radiation therapy. The radiation can lead to complications of wound dehiscence or rib necrosis. These patients are often seen in a wound care center and receive negative pressure wound therapy and hyperbaric oxygen treatments. The reconstructive surgery options available to achieve closure of these wounds include local muscle flap options. The first goal is to remove any necrotic or avascular bone of the ribs, sternum or scapula. After adequate debridement is performed, then coverage with a latissimus dorsi muscle flap is usually the best way to cover these wounds. This muscle flap provides muscle bulk and robust vascular supply. It can either have a skin paddle included or a split thickness skin graft can be placed over the muscle depending on the size and orientation of the defect.

In summary, the plastic surgeon can be an important part of the multidisciplinary team taking care of complex wound patients by providing grafts and flaps of various types to achieve closure of the wounds. Good communication between team members is necessary to provide referring physicians and nurses the requisite information on what types of reconstruction are available and who appropriate patient candidates might be.