



Pathology Services

Cutaneous Biopsy Techniques in the Management of Chronic Wounds

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Many clinicians rely exclusively on clinical acumen when determining how to manage chronic wounds. Though an ulcer's clinical features may be fairly indicative of its etiology, in some instances, such is not the case. Even among the most characteristic-appearing ulcerations, masqueraders do exist. Ruling out the possibility of an unsuspected neoplastic or inflammatory condition could be necessary for the successful management of chronic wounds. In this context, cutaneous biopsy techniques may be invaluable; however, their utility does not necessarily end here.

There are three common clinical settings in which a biopsy may be used in the management of a chronic wound. Clinicians may use histopathology to 1) confirm a clinically suspected diagnosis at the outset of care, to 2) rule out a mimic in cases where a wound is showing recalcitrance or unusual progression, to 3) assess for an underlying predisposing condition independent of the ulceration, or to 4) assess for compounding feature, such as an excessive bacterial burden. Because the clinical

presentation of cutaneous ulcerations may be virtually pathognomonic of a particular etiology, the first of these scenarios should not always give rise to a biopsy; however, in some instances, confirmation is warranted. In a minority of cases, the clinical

manifestations that surround an ulceration are entirely nonspecific and a biopsy is indicated prior to the initiation of medical care.

For wounds that appear characteristic of a particular etiology, biopsies are usually not initially necessary; however, as a rule of thumb, biopsies should be considered for all ulcers that cannot be readily explained or fail to show improvement after 2 months of treatment. In instances such as this, biopsies are being used to verify that the implemented therapeutic regimen is appropriate. Delays in the diagnosis of some mimics may be medicolegally treacherous. For instance, malignant melanoma, particularly amelanotic variants, may create ulcers that are virtually identical to non-neoplastic ulcers. Delays in this diagnosis may have serious implications with regard to the affected patient's outcome. Simply stated, the failure to reassess one's differential diagnosis in cases where ulcerations show unusual clinical behavior, or recalcitrance, may be a direct cause of increased morbidity.

An additional clinical setting where a biopsy might prove useful in the management of chronic wounds, involves patients with suspected neuropathy as a predisposing condition. With a 3mm punch biopsy of skin, taken for 10 cm above the lateral malleolus, physicians may qualify and quantify the presence of small fiber

neuropathy. Degenerative changes among the intra-epidermal nerves, further may be predictive of the future onset of small fiber neuropathy. Though this examination uses a simple 3mm punch of skin, there are differences in the handling of biopsies taken for this purpose. Most important among these differences are that punches taken for epidermal nerve fiber density testing require a specialized fixative that must be requested from the lab, and care must be taken to avoid crushing the surface epithelium when removing the tissue from the biopsy site. Formalin fixative renders the biopsies useless for small fiber analysis.

In most instances, the biopsy technique of choice for verifying the cause of an ulceration, assessing for neoplastic and non-neoplastic mimics, and characterizing predisposing conditions, is a punch biopsy. In the initial two settings, a central and peripheral 3mm punch is usually sufficient; however, the identification of vasculitis may require additional random punches in hopes of sampling an effected vessel. As aforementioned, epidermal nerve fiber density analysis requires the same 3mm punch taken at 10cm above the lateral malleolus. To document length dependence, (as would be expected in bona-fide cases of small fiber neuropathy), clinicians may also perform a punch biopsy on the ipsilateral side, 10cm distal to the greater trochanter of the femur.

Biopsies are not a silver bullet in the management of ulcerations; however, clinicians should keep them in mind when the indications present themselves. Not uncommonly, these techniques make all the difference!

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