



Assessment of Adjacent Tissues

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Clinical Practice and Knowledge Translation Learning Collaborative



Learning Objectives

1. Recognize the importance of assessing tissue surrounding and adjacent to a closed or open wound
2. Develop an understanding of how to assess tissues surrounding and adjacent to wounds
3. Identify normal and abnormal characteristics of the following tissue attributes:
 - Skin texture
 - Scar tissue
 - Maceration
 - Edema
 - Color
 - Sensation
 - Temperature
 - Hair distribution
 - Toenails
 - Blisters

Photographs and Illustrations

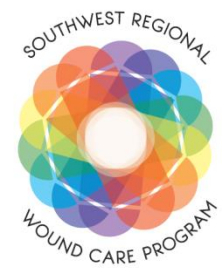


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ADJACENT TISSUE ASSESSMENT



Adjacent Tissue Assessment¹

- Characteristics of periwound and adjacent tissues provide clues about the:
 - Health of the skin;
 - Phase of wound healing, and;
 - Overall health status of the person with the wound.
- Periwound skin = tissue immediately surrounding the wound
- Adjacent skin = tissues at a further distance from the wound that are predictive of healing

Adjacent Tissues

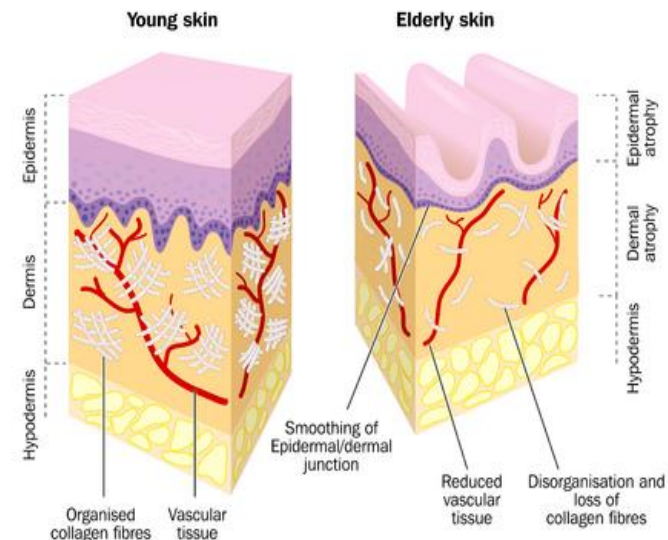
- Adjacent tissues¹:
 - Skin texture
 - Scar tissue
 - Callus
 - Maceration
 - Edema
 - Color
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 - Hair distribution
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Skin Texture¹



- Observe for:
 - Dryness, i.e. flaking or scaling skin:
 - In elderly, due to atrophy/thinning of epithelial and fatty layers of dermis, reduction in sebaceous glands and their secretions, and/or impaired circulation
 - Signs of early melanoma
- Palpate for:
 - Skin turgor (sternum or forehead)

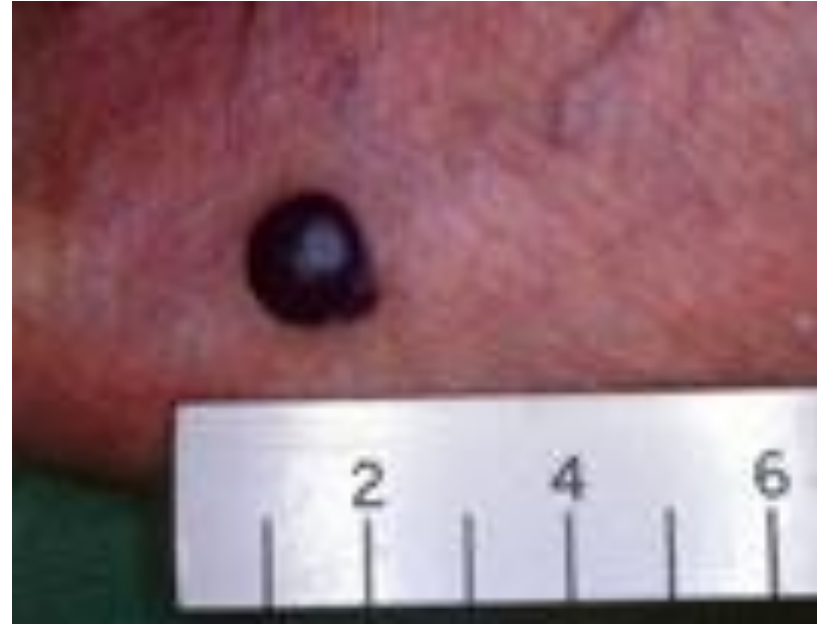


Signs of Early Melanoma

- The ABCDE rule is “a valid screening tool for early melanoma”^{1, 2}
 - A: Asymmetry – uneven edges, lopsided in shape
 - B: Borders – irregular (scalloped, poorly defined)
 - C: Color – black or shades of brown, red, white, occasionally blue
 - D: Diameter – greater than 5mm
 - E: Evolution



Examples of Early Melanoma



Scar Tissue¹



- Observe for:
 - Color
 - Abnormal scarring characteristics, i.e. hypertrophic or keloid scars

	Hypertropic Scar	Keloid Scar
Cause	Excessive collagen deposition	Out of control collagen deposition
Appearance	Thick scar	Thick scar, like a benign tumor growth
Location	In area of original wound	Extend beyond original wound
Symptoms	Itching, pain, impair functional mobility	Itchy, tender, painful
Notes		<ul style="list-style-type: none"> • Found in all races, but more commonly in African American's and Asians (? genetics) • Cutting = more scarring

Examples of Abnormal Scars



Hypertrophic Scar



Keloid Scar





Scar Tissue Continued¹

- Palpate for:
 - Smoothness
 - Flexibility
 - Toughness
 - Thickness

	New Scar	Mature Scar
Smoothness	Less smooth	More smooth
Flexibility	More flexible	Less flexible
Toughness	Less resilient to stress	Greater toughness
Thickness	Thinner	Greater density
Color	Bright pink	Nearly same as surrounding skin

Examples of Scar Tissue



New Scar

Old Scar



[Click on the film strip for a video on treating hypertrophic and keloid scars](#)

Callus¹



- Observe for:
 - Skin that is more yellow than adjacent skin;
 - Scaling, flaking, cracking of affected skin;
 - Location:
 - Plantar foot
 - Along medial hallux
 - Over metatarsal heads
 - Around heel margin
 - Hemorrhage
- Palpate for:
 - Firmness
 - Roughness



Callus Continued¹

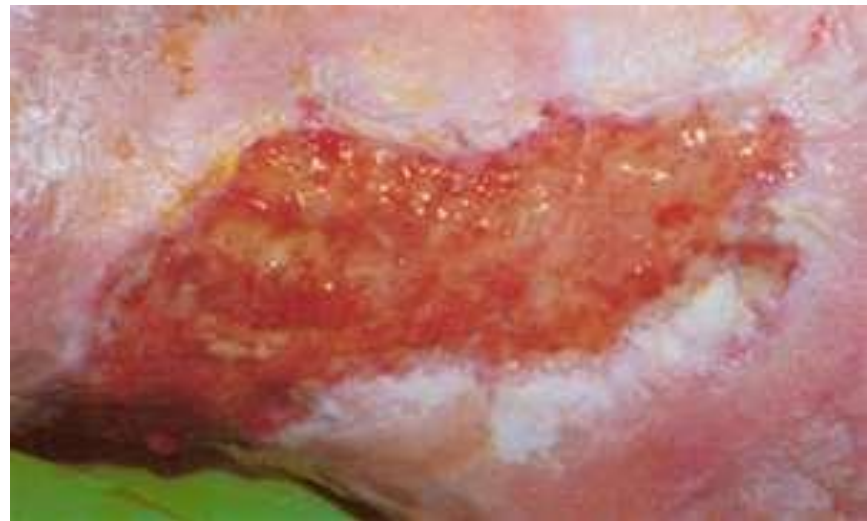


- Development of callus is a protective function of skin
- Untreated callus will build up, create pressure and result in breakdown of interposing soft tissues
- A cracked callus = portal of infection



Maceration¹

- “The softening of a tissue by soaking until the connective tissue fibers are so dissolved that the tissue components can be teased apart”²
- Causes:
 - Perspiration
 - Soaking in a tub
 - Wound exudate
 - Incontinence
 - Dressing products



Maceration Continued

- Observe for:
 - White discoloration
 - Location - usually at periwound or distal to wound
- Palpate for:
 - Texture – soft, spongy
 - Thickness – thinner than adjacent skin



Edema^{1, 3}



- “The presence of abnormally large amounts of fluid in the intercellular tissue spaces of the body”
- Localized:
 - Venous obstruction
 - Lymphatic obstruction
 - Increased vascular permeability
- Systemic:
 - Heart failure
 - Renal disease



Edema Types¹

- Non-pitting
 - Skin that is stretched and shiny
 - Hardness of the underlying tissue

- Pitting
 - Indentation of tissue with pressure
 - Observed with dependence of a limb and with tissue congestion associated with CHF, lymphedema, and venous insufficiency
 - Measured from 0 → 4+



Edema Location¹



Unilateral	Bilateral
Acute DVT	Congestive Heart Failure
Venous insufficiency	Cirrhosis
Lymphedema	Malnutrition
Cellulitis	Obesity
Abscess	Limb dependence
Charcot's joint	Drugs, i.e. hormones, NSAIDS, antihypertensives
Popliteal aneurysm	
Dependence	
Revascularization	



Edema Continued¹

- Observe for:
 - Location
 - Symmetry
 - Signs of cellulitis, , abscess, DVT, Charcot's joint
- Palpate for:
 - Pitting or non-pitting
 - Edema measurement

If the etiology is uncertain, consult with a physician for further testing before implementing compression!

Tissue Color¹



- Adjacent tissue color abnormalities can indicate:
 - Circulatory issues, i.e.:
 - Dependent rubor, elevation pallor
 - Cyanotic toes
 - Hemosiderin staining
 - Underlying tissue damage, i.e.:
 - SDTI
 - Stage I pressure ulcer
 - Inflammation or infection



Erythema¹



- Transient or blanchable erythema: Blanching of the skin that returns to normal after pressure released (microcirculation is intact)
- Unblanchable erythema: Color does not return even after 20-30 minutes after removal of pressure (sign of pressure ulcer)

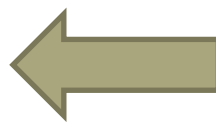
Erythema Examples



Blanchable erythema



Non-blanchable erythema





Hair Distribution¹

- “The diminished presence of hair is seen in aging skin and in individuals with impaired circulation”
- “As circulation in a leg decreases, hair is lost distally”
- Hair follicles are important to wound healing as they are a source of epidermal cells for re-epithelialization



Google images

Hair Continued



- Observe for:
 - Point at which hair distribution stops
 - Skin color in areas where hair is absent (? Circulation issue)
- Palpate for:
 - Skin temperature
 - Pulses

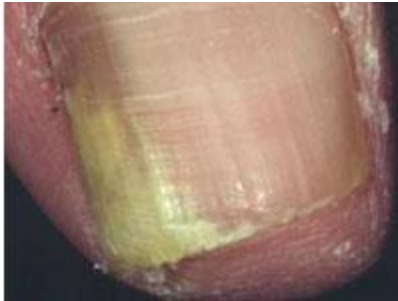


Toenails¹

- Observe for:
 - Color
 - Shape
 - Irregularities
- Palpate for:
 - Thickness



Common Toenail Issues



Fungal Nail



Ingrown Nail



Infected Nail



Overgrown Nails



Loose Nail



Nail Psoriasis

Blisters¹



- Trauma to the epidermis, possibly dermis
- Observe for:
 - Location
 - Size
 - Intactness
 - Color of fluid within
- Palpate for:
 - Resiliency



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To Break or Not to Break

- Natures Band-Aid
- Leave intact if blister is:
 - Small
 - Filled with clear fluid
 - Not compromising joint function
- De-roof if blister is:
 - Large
 - Filled with unclear or blood fluid
 - Compromising joint function
 - Undoubtedly going to break due to it's location

Leave or De-Roof?



Sensation¹



- Observe for:
 - Pain – may be due to infection, deep tissue injury, ischemia
- Palpate for:
 - Temperature – may be elevated due to inflammation, infection or lower due to ischemia
 - Protective sensation, i.e. monofilament testing
 - Thermal sensation
 - Vibratory perception threshold – measure of progressive peripheral neuropathy

Review



1. The importance of assessing tissue surrounding and adjacent to a closed or open wound
2. How to assess tissues surrounding and adjacent to wounds
3. Normal and abnormal characteristics of the following tissue attributes:
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Thank You!

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For more information visit: swrwoundcareprogram.ca



References

1. Sussman C. Assessment of the skin and wound. In: Sussman C, Bates-Jensen B., eds. Wound care: A collaborative practice manual for health professionals. Third Ed. Baltimore: Lippincott Williams & Wilkins, 2007:85-122.
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