CONFLICTS

• No conflicts with the content of this lecture
SKIN BIOPSY

- Helps in cases of dilemma
- Opportunity to find something extraordinary
- Document diagnosis and justify treatment
CHOOSING THE LESION

- Classical, well-formed lesion
- Exceptions (early lesions in vasculitis and BP)
- Avoid lesions that are modified
CHOOSING THE SKIN BIOPSY TECHNIQUE

- Size of Lesion
- Anatomic location
- Disease category or clinical diagnosis
- Proficiency or preference of clinician
SKIN BIOPSY TECHNIQUES

- Punch biopsy
- Shave biopsy
- Saucerization biopsy
- Wedge biopsy
- Incisional biopsy
- Excisional biopsy
SPECIAL CIRCUMSTANCES

• Urticaria pigmentosa
• Scalp biopsy trichoglyphics
• Immunofluorescence
• Lupus erythematosus
LOCAL ANESTHESIA

- Lidocaine: Infiltration, ring, or field block
- Topical: EMLA with 2 hours occlusion = 5 mm
- Lidocaine with epinephrine:
  - Use with caution in digital block
  - Use with caution in pregnancy
COMPLICATIONS

- Hypersensitivity to local anesthetic
- Discomfort associated with local anesthetic
- Bleeding
- Scarring
- Infection
PRACTICAL CONSIDERATIONS

- Optimal strength (10%) and volume of formalin solution (10X)
- Minimal handling of tissue to avoid crush artifact from forceps
- Place tissue in bottle (not in the cap)
- Infiltrate with optimal local anesthetic to avoid “artificial edema”
- Avoid electrocautery or cryotherapy artifact
- Avoid secondary or treated lesions
PRACTICAL CONSIDERATIONS

- Non-specific findings or misdiagnosis can result from improper:
  - Biopsy site selection
  - Lesion selection
  - Technique (superficial specimen)
  - Choice of transport media
- Examples include:
  - False-negative DIF and sampling error in NMSC or large pigmented lesions
  - Multiple biopsies in polymorphic lesions and large pigmented lesions
SKIN BIOPSY IN SPECIFIC DISEASES

- Bullous diseases
- Lupus erythematosus
- Vasculitis
- Panniculitis
- Hair disorders
- Epithelial neoplasms
- Malignant melanoma
- Dermatofibrosarcoma Protuberans
- T and B cell lymphomas
SKIN BIOPSY IN SPECIFIC DISEASES
Bullous Diseases

- Early non bullous lesional or perilesional skin within 1 cm of a bulla from the trunk is preferred for pemphigoid (DIF)

- Brief immersion in formalin produces false negative DIF results in only pemphigus

- Punch biopsy (small vesicle) or scooped shave biopsy

- Light microscopy (H&E) specimen in formalin

- DIF specimen in Michel or Zeus media (or normal saline)
SKIN BIOPSY IN SPECIFIC DISEASES
Bullous Diseases

- Normal saline is superior to Michel or Zeus for DIF specimens delivered to the lab within 48 hours
- Mucosal surfaces: Perilesional within 5 mm from erosion
- Epidermolysis bullosa (EB): Fresh blister (< 12 hours)
- Inducing a blister: Firm downward pressure with traction for 1-2 minutes and biopsy at least 5 minutes after inducing erythema
SKIN BIOPSY IN SPECIFIC DISEASES
Bullous Diseases (DIF)

- BP: Lesional and/or perilesional
- PV/PF: Lesional and/or perilesional
- DH: Non lesional
- Bullous Lupus Erythematosus: Lesional and non lesional
SKIN BIOPSY IN SPECIFIC DISEASES
Lupus Erythematosus

- 4 mm punch biopsy minimum
- Lesional skin only for cutaneous LE and tumid LE
- Chronic cutaneous LE and tumid LE: established lesion (> 6 months) highest yield for H&E and DIF
SKIN BIOPSY IN SPECIFIC DISEASES
Lupus Erythematosus (DIF)

- Chronic and subacute cutaneous LE: Lesional
- SLE: Lesional and non lesional
- Drug-induced LE: Lesional and/or non lesional
- Dermatomyositis: Established lesion for H&E and DIF
SKIN BIOPSY IN SPECIFIC DISEASES
Vasculitis

- Deep punch: Post capillary venule and deep plexus
- Highest yield H&E: Established lesions (>72 hours)
- Highest yield DIF: Acute lesion (< 24 hours)
- IgA vasculitis retains positive DIF in established lesions
SKIN BIOPSY IN SPECIFIC DISEASES
Panniculitis

- Deep incisional biopsy (not shave biopsy)
- Double punch technique or electric rotary power punch
- 6 mm punch minimum size divided for culture and H&E
SKIN BIOPSY IN SPECIFIC DISEASES
Hair Disorders

• More than 1 biopsy is helpful

• Established lesion

• 4 mm punch is ideal:
  • Remember trichoglyphics
  • Remember to obtain adequate depth (4-5 mm)

• Normal scalp biopsy is not essential

• Transverse sections, vertical sections, or both
SKIN BIOPSY IN SPECIFIC DISEASES

Hair Disorders

- Tyler Technique - 3 pieces, vertical and transverse
- HoVert Technique - 4 pieces, vertical and transverse
SKIN BIOPSY IN SPECIFIC DISEASES
Epithelial Neoplasms

- Shave biopsy: Epidermal lesions
- Punch or wedge biopsy: Dermal lesions
- Curettage: Potential interpretation limitations
- Special considerations: Microcystic adnexal carcinoma
SKIN BIOPSY IN SPECIFIC DISEASES
Malignant Melanoma

- Complete excision
- Saucerization: Macular lesions
- Orientation: Score or suture
- Partial biopsy specimens are associated lower yield
- Lentigo Maligna: Broad shave or shaves (not punch)
- Multicolor lesions: Multiple shaves
SKIN BIOPSY IN SPECIFIC DISEASES
Dermatofibrosarcoma Protuberans

- DFSP requires a deep biopsy to show the characteristic honeycomb pattern involving the subcutis
- Deep incisional biopsy is recommended
- Superficial biopsies result in a dilemma:
  - Cellular dermatofibroma vs. DFSP
- Immunostains can be helpful in superficial specimens
SKIN BIOPSY IN SPECIFIC DISEASES
Cutaneous T-cell Lymphoma

- T = T-cell and Top Heavy
- Broad shave biopsies include a wide area of the dermoepidermal junction to help demonstrate epidermotropic lymphoid cells
- Broad shave biopsies are also ideal for immunostains and gene rearrangement studies
- Multiple shave biopsies from different anatomic sites may be needed to establish the diagnosis
SKIN BIOPSY IN SPECIFIC DISEASES
Primary Cutaneous B-cell Lymphoma

• B = B-cell and Bottom Heavy

• B-cell lymphoma requires a deep biopsy showing the infiltrate’s architecture and zonal immunostaining patterns
  • B-cell lymphoid hyperplasia vs. B-cell lymphoma

• Superficial biopsies can result in misinterpretation due to insufficient sampling of the deep dermal infiltrate

• Deep incisional biopsy is recommended
Summary

• Choosing the biopsy site and lesion:
  • Lesional vs. perilesional
  • Early vs. established
  • H&E vs. DIF

• Choosing the skin biopsy technique:
  • Superficial vs. deep

• Practical considerations: Avoid artifacts

• Skin biopsy techniques for specific diseases

• Multiple biopsies especially in polymorphic lesions