Choosing the Right Biopsy

10 Tips to Prevent Errors in Skin Biopsy

Brian Z. Rayala, MD
Assistant Professor, UNC Family Medicine
Director of Procedural Training, UNC FM Residency
Staff Physician, UNC Wound Center
Objectives

• At the end of lecture, learner will be able to:
  » Enumerate types of skin biopsy, their advantages & disadvantages
  » Select appropriate biopsy site in reference to actual lesion and in relation to body location
  » Select appropriate type of biopsy based on clinical context
Tip #1: Know your biopsy well

- Partial vs. Full-thickness
- Incisional vs. Excisional
- Shave
- Punch
- Excisional
  » Saucerization
- Curettage
Tip #2: Avoid very superficial shaves

- Shave biopsy
  » Advantages: quick, good cosmetic outcome
  » Disadvantage: *prone to inadequate sampling*

- Cause of errors:
  » Thickening of superficial skin due to anatomy (e.g., acral skin), or
  » Due to disease process (hyperkeratinization, hyperkeratosis, etc.)
Tip #2: Avoid very superficial shaves

FIGURE 1
Sufficient tissue sampling makes all the difference

A superficial biopsy (A) reveals little diagnostic material. A deeper biopsy of the same lesion (B) reveals findings that are characteristic of a wart.

Shave Biopsy Videos

• Shave bx using flexible blade (i.e., *Dermablade*)

• Shave bx using #15 blade

• Shave bx using #10 blade
Tip #3: Use punch biopsy for rashes

- Punch biopsy
  » Advantages: quick, full-thickness, good cosmetic outcome
  » Disadvantage: can only sample a small area (1-4mm)

- Inflammatory skin conditions:\(^1\)
  » Sampling of deep dermis is important (e.g., lichen planus vs cutaneous lupus)
  » Use 4mm punch for rashes
  » For 1-4mm punch, scar is same w/ or w/o suturing\(^2\)

Tip #3: Use punch biopsy for rashes

FIGURE 2
Choose punch biopsy for rashes

For inflammatory skin conditions, a punch biopsy (A) can demonstrate superficial (arrow) and deep dermis (arrowhead) features of the skin, which can help establish a diagnosis, compared to a more superficial biopsy of the same lesion (B), which is more difficult to interpret. In this case, the presence of deep inflammation as seen in A is helpful in making the diagnosis of lupus.

Punch Biopsy Steps

A

B

C

D
Tip #4: Use excisional biopsy for melanocytic lesions

- Excision = actual lesion + margins
  - Advantage: adequate tissue
  - Disadvantages: *time, expertise, bigger scar*

- Excise melanocytic lesions using 1-3mm margins:4,5

- Elliptical excision vs. Saucerization (deep scoop)
  - Partial biopsies lead to more residual disease at WLE and errors in staging.6,7
  - However, partial biopsies do NOT affect melanoma-specific morbidity or mortality.3,8,9

Excisional Biopsy Videos

- Elliptical excision
- Saucerization (deep scoop shave)
Tip #5: Avoid curettage for melanocytic lesions

- **Curettage**
  - Advantages: quick, good cosmetic outcome
  - Disadvantage: **distorts tissue architecture**
- **Recommendations:**
  - *Only use as primary biopsy/procedure if diagnosis is certain!*
  - For the most part, curettage is an adjunctive procedure.
    - Curettage and electrodesiccation for BCC or Bowen’s disease
    - Curettage after shave excision of seborrheic keratosis
Curettage Video

- Curettage after shave excision of seborrheic keratosis
## Tip #6: Know where to biopsy

<table>
<thead>
<tr>
<th>Lesion suspected</th>
<th>Where to biopsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basal cell carcinoma</td>
<td>raised, non-ulcerated area</td>
</tr>
<tr>
<td>Squamous cell carcinoma</td>
<td>central, thickened area</td>
</tr>
<tr>
<td>Melanoma</td>
<td><em>if excision not possible,</em> biopsy darkest, raised portion</td>
</tr>
<tr>
<td>Vesicular-bullous</td>
<td>fresh lesion at margin; include normal tissue</td>
</tr>
<tr>
<td>Rashes</td>
<td>primary lesion</td>
</tr>
</tbody>
</table>
Tip #6: Know where to biopsy

- **Avoid** these areas if multiple lesions can be biopsied:
  - Face
  - Upper chest, deltoids – hypertrophic scars
  - Fingers, toes, areas overlying joints
  - Areas prone to infection – groin, feet, axilla
  - Areas that heal poorly – pretibial region, edematous legs, ischemic limbs
  - Neurovascular structures – neck, groin
  - Lesions with secondary changes – excoriation, lichenification, etc.
  - Ulcerated areas – instead, biopsy edges/perilesional area
Tip #7: Be gentle w/ specimen; fix right away

- Aggressive handling can cause “**crush artifact**”
- Prolonged “**cold time**” (i.e., time out of formalin) may destroy specimen

Tip #8: Photograph and document biopsy site

- Some biopsies heal so well they may difficult to find.
  » Problematic if patient is returning for re-excision
- Document lesion
  » By photography: in reference to anatomic landmarks
  » In medical record: using bi- or triangulation
Tip #9: Give pathologist pertinent info

- Demographics
  » Age of patient, location, distribution
- Diameter
  » mm or cm
- Description of primary & secondary lesions
  » 1º: papule, vesicle, etc.
  » 2º: crust, excoriation, hyperkeratosis, telangiectasia, etc.
- Duration
  » days, weeks, months
- Diseases
  » Prior skin cancer, diabetes, rheumatologic d/o, etc.
- Drugs
  » Topical, systemic
- DDx
  » Broad vs specific
Tip #10: Know when to refer

- Refer:
  - Melanocytic lesions that are difficult to biopsy
  - When biopsy may compromise adjacent critical structures
  - When wound closure may be an issue post-biopsy
  - If uncontrolled bleeding is likely
  - Lesions with non-specific histopathology that are not responding to therapy
Summary

• Biopsy types:
  » Incisional vs excisional; Partial vs full-thickness
  » Choice of biopsy type balances need for tissue, cosmesis, time, and skill.

• Choice of biopsy site is determined by:
  » Working diagnosis – SCC (center), BCC (avoid ulcerated area), bulla (edge), rashes (primary lesion) - [SOR C]
  » Likelihood of healing, infection, damage to adjacent structures, and yield of sampling. [SOR C]
Summary

• Choice of biopsy type:
  » Avoid very superficial shave biopsies. [SOR C]
  » Use punch biopsy for rashes. [SOR C]
  » Excise melanocytic lesions using 1-3mm margins. [SOR C]
  » Avoid curettage for melanocytic lesions and for lesions with uncertain diagnosis. [SOR C]

• Other pearls:
  » Handle specimen gently to avoid crush artifacts. Minimize “cold time” by promptly fixing tissue in appropriate media. [SOR C]
  » Photograph and carefully document biopsy site. [SOR C]
  » Provide your pathologist a pertinent history. [SOR C]
  » Refer when appropriate. [SOR C]
References