38th Annual FM Update

Choosing the Right Biopsy

10 Tips to Prevent Errors in Skin Biopsy

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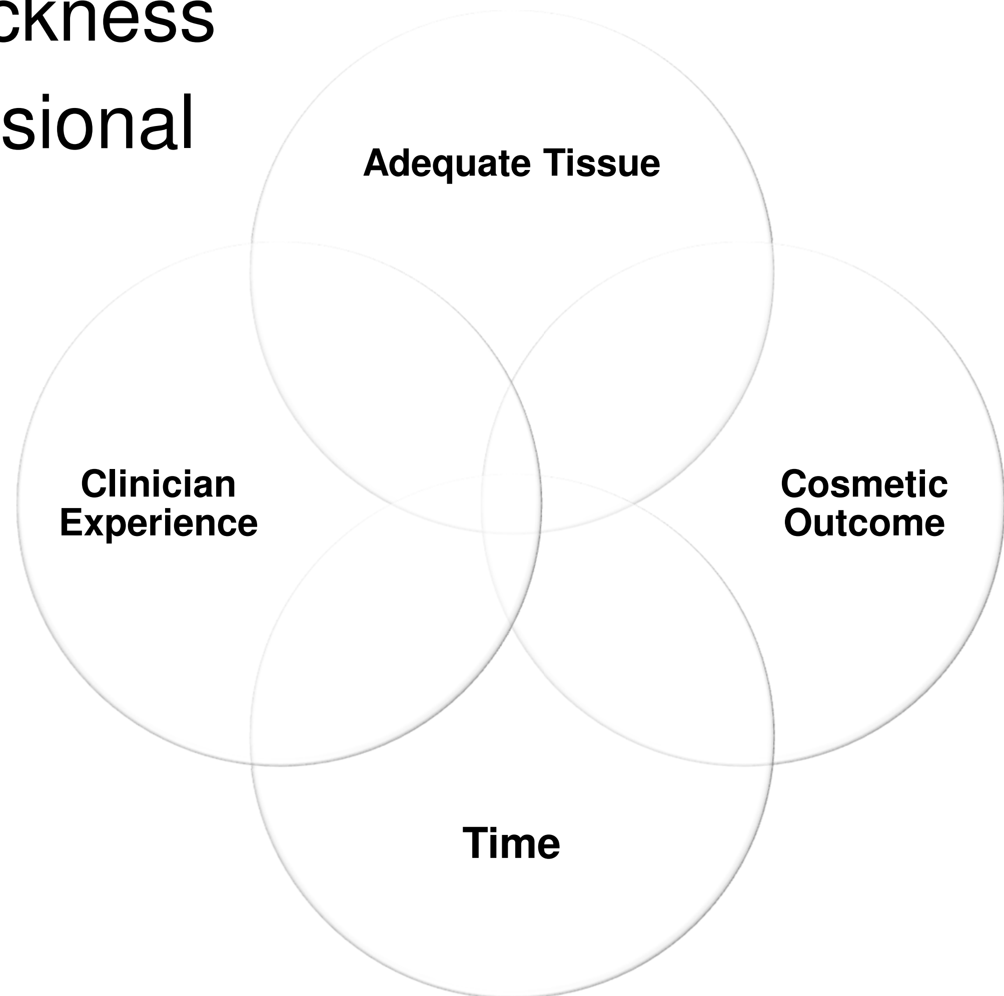
Objectives

- 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

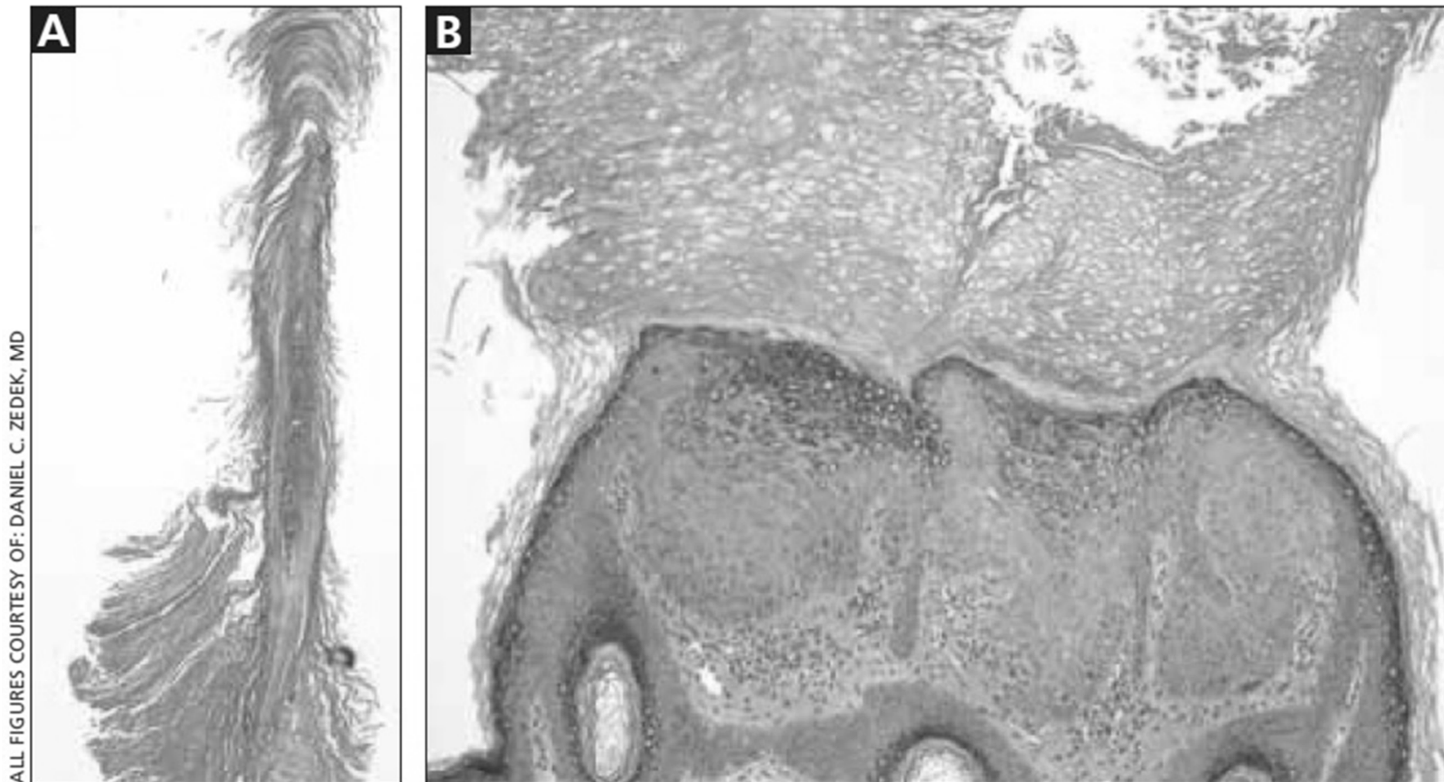
- Shave
- Punch
- Excisional
  - » Saucerization
- Curettage



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



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

1. J Fam Pract. 2014 Oct;63(10):559-64.

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

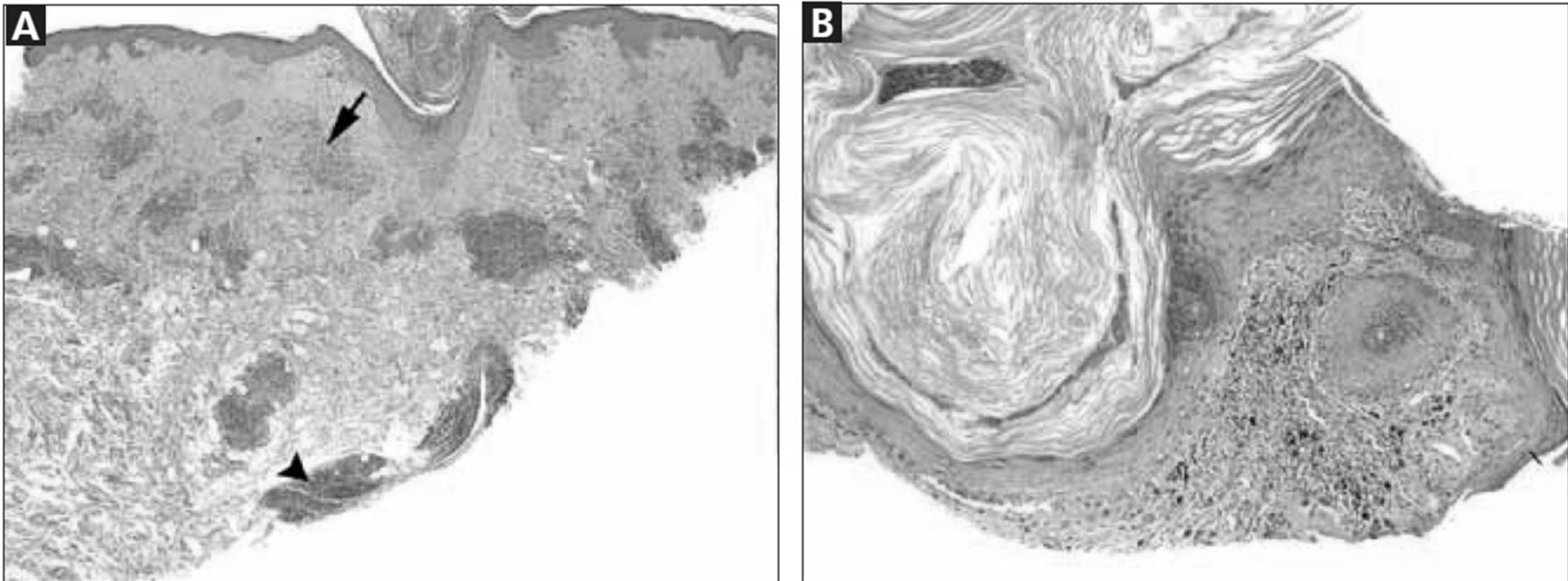
- Punch biopsy
  - Advantages: quick, full-thickness, good cosmetic outcome
  - Disadvantage: ***can only sample a small area (1-4mm)***
- Inflammatory skin conditions:[1]
  - Sampling of deep dermis is important (e.g., lichen planus vs cutaneous lupus)
  - Use **4mm punch** for rashes
  - For 1-4mm punch, scar is same w/ or w/o suturing[2]

1. J Fam Pract. 2014 Oct;63(10):559-64.
2. Arch Dermatol. 2005 Sep;141(9):1093-9.

Tip #3: Use punch biopsy for rashes

FIGURE 2

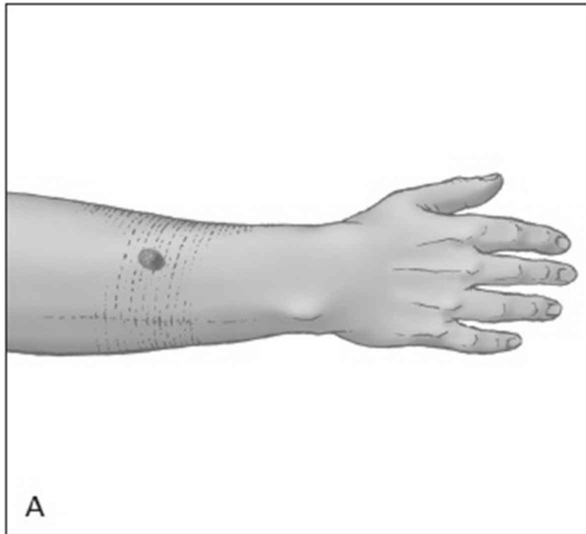
Choose punch biopsy for rashes

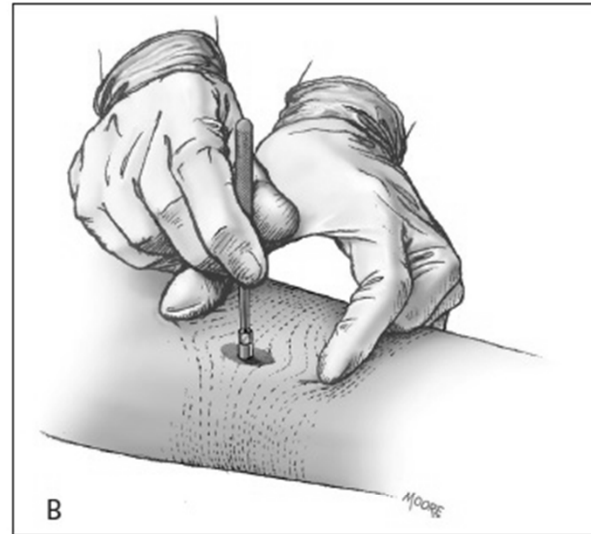


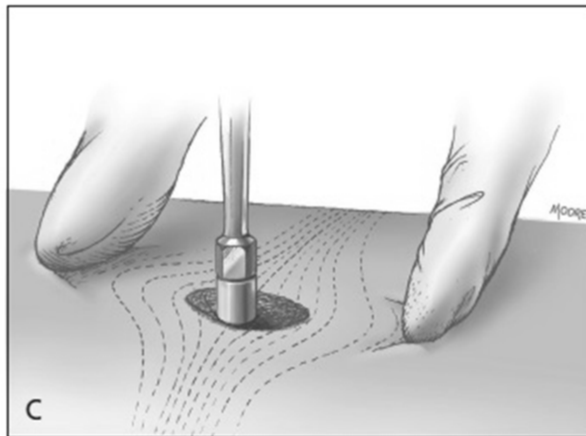
For inflammatory skin conditions, a punch biopsy (**A**) can demonstrate superficial (arrow) and deep dermis (arrowhead) features of the skin, which can help establish a diagnosis, compared to a more superficial biopsy of the same lesion (**B**), which is more difficult to interpret. In this case, the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

1. J Fam Pract. 2014 Oct;63(10):559-64.

Punch Biopsy Steps







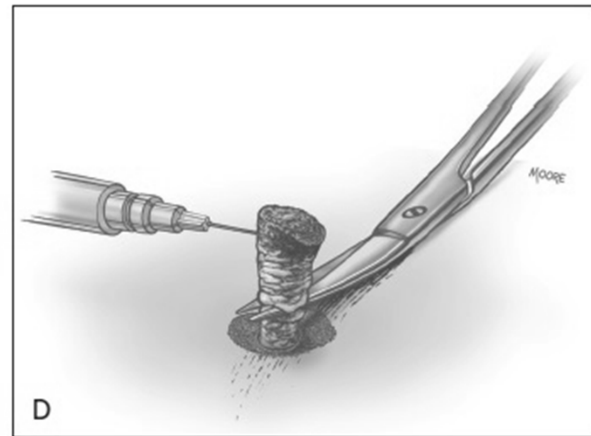


ILLUSTRATION BY MARK MOORE

3. Am Fam Physician. 2011 Nov 1;84(9):995-1002.

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]

3. Am Fam Physician. 2011 Nov 1;84(9):995-1002.
4. J Natl Compr Canc Netw. 2006;4(7):666-684.
5. J Am Acad Dermatol. 2001; 45(4): 579-586.
6. Ann Surg Oncol. 2007;14:893-898.
7. Am J Surg. 2011;202:771-778.
8. Dermatol Surg. 2014 Oct;40(10):1077-83.
9. Am J Surg. 2013 May;205(5):585-90.

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 <u>certain</u>!*
  - » 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

Lesion suspected	Where to biopsy
Basal cell carcinoma	raised, non-ulcerated area
Squamous cell carcinoma	central, thickened area
Melanoma	*if excision not possible*, biopsy darkest, raised portion
Vesicular-bullous	fresh lesion at margin; include normal tissue
Rashes	primary lesion

10. Procedures Consult. 2012.

Tip #6: Know where to biopsy

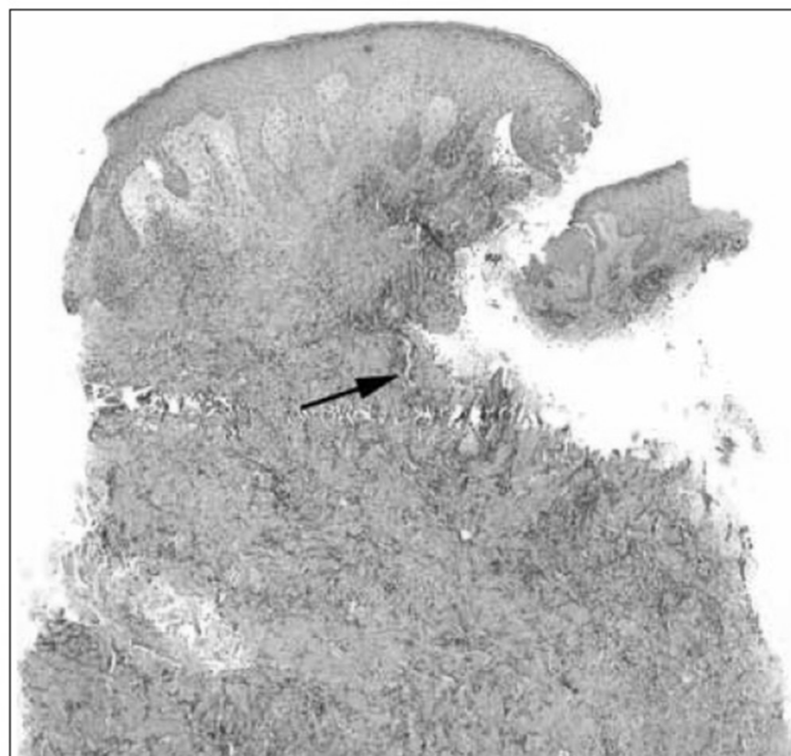
- ***Avoid*** these areas if multiple lesions can be biopsied:
  - » Face
  - » Upper chest, deltoids – hypertrophic scars
  - » Fingers, toes, areas overlying joints
  - » Areas prone to infection – groin, feet, axilla
  - » Areas that heal poorly – pretibial region, edematous legs, ischemic limbs
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

10. Procedures Consult. 2012.

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

FIGURE 5
Handle samples with care...



Aggressive manipulation of a biopsy sample while extracting it or transferring it to formalin can cause "crush" artifact (arrow), which can limit its interpretability.

1. J Fam Pract. 2014 Oct;63(10):559-64.

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
  - » 1°: papule, vesicle, etc.
  - » 2°: 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

10. Procedures Consult. 2012.

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

1. J Fam Pract. 2014 Oct;63(10):559-64.
2. Arch Dermatol. 2005 Sep;141(9):1093-9.
3. Am Fam Physician. 2011 Nov 1;84(9):995-1002.
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10. Procedures Consult. 2012, accessed 1/13/15.