MINI-SYMPOSIUM

Procedural Bootcamp

- Getting Started/Avoiding Trouble
- Skin Biopsy – When, Why & How

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Procedural Bootcamp
“A Whole Lot Of Properly”

• How to properly perform a biopsy
• How to properly administer anesthesia
• How to properly sterilize the surgical field
• How to properly perform other simple dermatologic procedures
• Pearls to avoid pitfalls
ABC’s of Skin Biopsy
“Why, What, When and How”

- Why recommend biopsy or removal
- Present options and rationale to patient
- Record informed consent
- Document location of biopsy
- Clean and anesthetize area
- Obtain specimen
- Discuss aftercare and plan follow-up
- Complete documentation and track biopsy
Why Biopsy?

- **Inflammatory Lesion or Rash**
  - Differentiate multiple processes
  - Guide treatment
Why Biopsy?

• Suspicious for Cancer
  – Plan appropriate treatment
Why Biopsy?

• Suspicious for Infection
  – Identify organism
  – Guide treatment
Why Biopsy?

- **Cosmetic or Symptomatic Removal**
  - Flatten lesion for cosmetic reasons
  - Reduce symptoms
  - **Pearl** – Intradermal nevi may re-pigment after removal
  - **Pearl** – Liquid nitrogen can remove pigment
Present Rationale and Options

• Rationale
  – Obtain diagnosis, plan treatment or improve symptoms

• Options
  – Biopsy lesion or rash
  – Monitor (photograph and measure lesion)
  – Treatment trial prior to biopsy
Informed Consent

- A process, not a signature on a form
- “Informed” is the key
- Discuss treatment options and all risks
- Be specific depending on lesion and site
- Answer all questions
- Document in note
Informed Consent - Pearl

- Bleeding, scarring, discomfort, infection, non-diagnosis and need for further treatment or re-biopsy
- Document informed consent well
- “All questions were answered and patient verbalized understanding of risks”
Special considerations Pearls

• Is the patient leaving town or relocating in the near future?
  – Obtain future address, phone number or refer to dermatologist in new location

• Is the patient allergic/sensitive to Band-Aids/adhesive
  – substitute with paper tape over Telfa non-stick dressing

• Does the patient have any upcoming important social functions, portraits, speaking engagements, medical procedures planned?
  – Delay biopsy
**Special considerations Pearls**

<table>
<thead>
<tr>
<th>PREOPERATIVE HISTORY</th>
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<tbody>
<tr>
<td>Allergies</td>
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<td>Medications, including nutritional supplements and over the counter preparations</td>
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<td>Past reactions to local anesthesia</td>
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<td>Difficulties with hemostasis during previous procedures</td>
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<td>Past problems with wound healing, including infection, keloid formation</td>
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<td>Pacemaker or implantable cardioverter-defibrillator</td>
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<td>Disease or past replacement of the cardiac valves</td>
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<td>Past orthopedic surgery with joint replacement</td>
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<td>Hypertension</td>
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<td>Diabetes</td>
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<td>Immunosuppression</td>
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<td>Infectious or vascular compromise at the biopsy site</td>
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<td>Possible pregnancy</td>
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Document Location of Biopsy

- Photograph
- Three point system with three anatomic references
Location of Biopsy - Pearl

- Label sites for multiple biopsies prior to photograph
Site Preparation For Biopsy

- **Clean procedure**
  - Preoperative antibiotics not necessary
  - Except infected lesion or certain mucosa
  - Must cover *Staphylococcus aureus* and administer approximately 1 hour prior to procedure

- Isopropyl alcohol wipe
- Povidone iodine
- Chlorhexidine scrub
Sterilize The Surgical Field

- Iodophors (betadine)
  - Broad spectrum (G+, G- and fungi)
  - Must allow to dry to be effective and inactivated by blood
  - May cause contact allergy
  - May cross react with radiopaque iodine
  - Obscures surgical field
  - May cause prolonged skin discoloration
Sterilize The Surgical Field

• Chlorhexidine (Hibiclens)
  – Broad spectrum (G+, G-, Fungi and anti-pseudomonal)
  – Stronger activity than iodophors
  – Rapid onset and not inactivated by blood
  – Does not obscure surgical field
  – No absorption or systemic toxicity
  – Persists on the skin with prolonged suppression of bacterial growth
  – Irritating to eyes (keratitis) and middle ear (otitis)
Sterilization Pearl

- Betadine for the face and Hibilens for the body
- Mark the edges of the lesion, scrub with antiseptic and administer anesthesia
Anesthetize All Your Paying Customers

• Topical
  – EMLA
  – ELA-Max

• Local
  – Lidocaine
  – Marcaine
Anesthetize All Your Paying Customers

• **Lidocaine**
  - 1% Lidocaine in epinephrine (1:100,000)
  - Max dose
    • 5 mg/kg plain (350 mg for 70 kg person)
    • 7 mg/kg with Epinephrine (500 mg for 70 kg person)
  - Epinephrine constricts vessels, creating a bloodless field, allows larger doses of lidocaine and prolongs the duration of anesthetic
Anesthetize All Your Paying Customers

- **Lidocaine**
  - Pregnancy category B
    - Caution during the first 4 months
  - Caution with severe HTN or CAD
  - Lidocaine with epi is acidic (pH of 3.5-5.5) causes pain
    - 5 ml NaHCO3 to 50 ml bottle of lidocaine with Epi
    - Keep refrigerated, labeled with date and use within one week
Anesthetizing for Biopsy or Surgery

• 1% Lidocaine with 1:100,000 epinephrine
  – Check for history of epinephrine sensitivity; best to use lidocaine without epinephrine if history is positive
  – Check for history of preservative allergy; unpreserved Xylocaine is available (single use vial)
  – True lidocaine allergies are exceedingly rare
  – Questionable patients with good history should be sent for an allergy evaluation
Allergy Pearl

• Local anesthetic allergy
  – Alternatives
    • Use preservative free amide (or ester)
    • Intradermal 1% diphenhydramine
    • Intradermal NS with benzoyl alcohol preservative
Anesthetize All Your Paying Customers

• Bupivacaine (Marcaine)
  – Longer onset but longer duration
  – Used for prolonged or staged procedure
  – Max dose
    • 175 mg for 70 kg person
    • 225 mg for 70 kg person with epinephrine
Anesthetize All Your Paying Customers

• Topical anesthetics
  – EMLA - 2.5% Lidocaine and 2.5% Prilocaine
    • apply thick, occluded paste 1 hour prior to procedure
    • prilocaine can cause methemoglobinemia (caution with large areas, damaged skin or infants)
  – ELA-Max - 4 or 5% Lidocaine
    • doesn’t need to be occluded and equivalent anesthesia in one third the time
  – Not effective for palms or soles
Topical Anesthetics
Anesthetizing For Biopsy

- Mark the lesion first
- Place patient in supine or prone position
- Use anesthesia to “raise” the lesion
- Reduce pain
  - Quick stick and slow injection
  - Create small Intradermal wheal
  - Inject into subQ fat through wheal
  - Use 30-gauge needle
  - Buffer with sodium bicarbonate
  - Consider pinching skin or applying ice or LMX prior
Anesthetizing For Biopsy

- Mark the lesion first
- Use anesthesia to “raise” the lesion
- Protects important structures and helps facilitate excising under the tumor
Anesthesia Pearls

- To Decrease Pain
  - Exude confidence
  - Perfect technique
  - APPLY ICE
  - Topical anesthetic ("so-so")
  - Use verbal reassurance and distracting stimuli
    - Conversation
    - Hand holding
    - Pinch skin
Anesthesia Pearls

• Anesthetizing Digits
  – Using epinephrine is OK
  – Proper technique is the key
  – Do not inject into the neuro-vascular bundle
  – Decreases use of tourniquet and less anesthesia is needed

JAAD 2004; 51:755-9
Properly Position the Patient

- Relaxes the patient
- Improves surgical results
- Saves your back
- Minimizes risk of injury to patient and surgeon
- Avoids Vasovagal Injury
Properly Position the Patient
Shave Biopsy
Shave (Tangential) Biopsy

- Meant to flatten a raised lesion
- Little scarring
- Often for cosmetic removal
- 15 blade
- One side of double edge razor blade
Shave Biopsy Indications

• Any raised lesion
  – Basal cell carcinoma
  – Squamous cell carcinoma/Keratoacanthoma
  – Merkel cell carcinoma
  – Seborrheic keratosis
  – Verruca
  – Intradermal nevi
  – Sebaceous hyperplasia
  – Dermatofibroma
Shave Biopsy
Shave Biopsy
Tools Of The Trade
Biopsy Taco
Scallop Biopsy
Scallop Biopsy

- Deeper than shave biopsy
- Includes deep dermis
- Leaves an indentation in skin
- More scarring
- More diagnostic
- Can remove entire lesion
Scallop Biopsy Indications

• Flat (Macular) lesions
  – Atypical or junctional nevi
  – Squamous cell carcinoma (especially in situ)
  – Superficial basal cell carcinoma
  – Inflammatory disorders
  – Remove entire lesion
Scallop Biopsy
Scallop Biopsy
Scallop Biopsy
Scallop Biopsy - Pearls

- Biopsy while edematous wheal present
- Stretch skin
- Gentle sawing motion
- Maintain curved blade
Punch Biopsy
Punch Biopsy

- Used to obtain cylinder of skin
- Includes epidermis to fat
- More time consuming and expensive
- Longer healing?
- More scarring?
- Can also remove entire lesion
- Generally a 4 mm punch is adequate
Punch Biopsy Indications

- Macular and deeper lesions
  - Inflammatory dermatoses
  - Disorders of hair
  - Tumors
  - Removing entire lesion
    - Small dysplastic nevi
    - Blue nevi
    - Dermatofibromas
    - Small Intradermal nevi on face
Punch Biopsy
Punch Biopsy

- Press firmly with punch, using a rotating motion, alternating clockwise and counterclockwise.
- Upon penetrating the dermis, there will be a “give” sensation and a decrease in resistance to the twisting motion.
- Stretch skin to create oval in “opposite” direction.
Punch Biopsy

- Don’t crush specimen!
  - Use the needle to elevate the specimen and then the specimen should be cut free below any visible fat

- Hemostasis is achieved via direct pressure, packing with Gelfoam or interrupted superficial suturing (nylon)
  - Patient to return for suture removal at the time of results disclosure in 5-7 days for facial sutures or approximately 10-14 days for other anatomic locations
Punch Biopsy Video
Punch Biopsy Pearl

• 4-mm punch usually adequate
• 2° intention healing cosmetically acceptable
• Hemostasis
  – Pressure dressing (“poor man’s pressure dressing”)
  – QR Powder or Gel Foam
  – “Figure of 8” stitch
Incisional Biopsy

- Used to obtain a wedge of tissue
- Provides a large amount of tissue
- Takes part of a large or deep seated lesion
- Extends deep into fat
- More expensive
- Higher morbidity
Incisional Biopsy Indications

- Vasculitis
- Panniculitis
- Large/deep tumors
- Adequate tissue for culture
Incisional Biopsy

- 3 to 4 mm wide
- Ellipse down to desired level
- Incision angled toward center
- Non-ulcerated area including edge
Excisional Biopsy

- Used to remove entire lesion
- Extends to fat
- Higher cost and morbidity
- 1–2 mm outside of clinically obvious border
Excisional Biopsy Indications

- Melanoma
- Atypical nevi
Biopsy Site Selection - Pearl

- For inflammatory lesions
  - Newest lesions yield the most specific findings
  - New lesions are more pink (rather than red, purple or brown) and edematous
  - Avoid excoriated, blistered or crusted lesions
  - Consider multiple biopsies
Biopsy Site Selection
Inflammatory Lesion
Why Biopsy? - Pearl

- Beware the recurring buttock/flank rash
- CTCL (Mycosis Fungoides)
Biopsy Site Selection - Pearl

- For tumors
  - Avoid crusted and necrotic tissue
  - Biopsy the thickest part
  - Include edge toward center of lesion
Biopsy Site Selection - Pearl

- For infectious etiologies
  - Caution with bacteriostatic normal saline
  - DO NOT use “rinsed” formalin specimen bottle
  - CALL pathology lab prior to biopsy!
  - Sterile urine cup with gauze and ? moisture
Biopsy Site Selection - Pearl

- For suspected blistering disorders
  - Edge of lesion including normal skin and blister
  - Michel’s medium for direct immunofluorescence
  - May split biopsy for H&E and DIF
Collecting Specimen

• Label bottle
  – Patient’s name, date, site

• Normal H&E staining
  – 10% neutral buffered formalin

• Culture for suspected infection
  – Avoid bacteriostatic saline
  – Ask lab about preferred medium

• Special medium
  – Michel’s medium for direct immunofluorescence
“Aftercare” For Skin Biopsy

• **Hemostasis**
  – Aluminum chloride hexahydrate (Drysol) and pressure
  – Light electrodessication
  – QR Powder

• **Dressing**
  – Apply antibiotic ointment (or Aquaphor) and Band-Aid
  – Pressure bandage (Telfa, 2 x 2 gauze and Band-Aid or tape)
  – “Poor man’s pressure bandage”
“Poor Man’s Pressure Bandage”
“Aftercare” For Skin Biopsy

- Keep dry for 24 hours
- Cleanse daily thereafter with soapy water
- Discourage use of hydrogen peroxide
- Apply Vaseline petroleum jelly or other ointment (Neosporin, Bacitracin, etc.) and cover with Band-Aid or equivalent daily
- Don’t let the wound to dry out or a hard scab to form
- Give written instructions
- Give follow-up instructions
Documentation And Biopsy Tracking

• Set strict protocol to track biopsy
  – Label bottle (patient name, site and date)
  – Ensure specimen is in the bottle and confirm site
  – Take to designated staging area
  – Log specimen in pathology book/log
  – Ensure specimen is picked up by pathology laboratory
  – Document the diagnosis and date report received in the log
  – Document notification to patient
  – Document when treatment complete
  – Perform routine QA on log
PROCEDURAL PEARLS

• ALWAYS ENSURE THE SPECIMEN IS IN THE BOTTLE - as it is transferred from the blade into the bottle AND before the bottle is closed and removed from the procedure tray

• Teach your staff, regardless of their work station, to do the same thing

• Ensure a routine chain of command; it helps when specimens are missing, switched, or mislabeled
Follow-up Options

- Call patient only if treatment needed
- Have patient call for biopsy results
- Have all patients follow-up for results
- Automated system that informs patient of results

If patients do not routinely follow-up for results, quality control for tracking biopsies must be strict!
Insurance coding

- 11100 = single biopsy of the skin
- 11101 = subsequent biopsies number of units
- Site specific codes:
  - 40490 = lip
  - 67810 = eyelid
  - 54100 = penis
- D48.5 – ICD-10-CM code for neoplasm of undetermined origin
Insurance Coding: Modifiers

• 25 modifier
  – necessary if an E&M service was provided on the same day as the biopsy

• XS (59) modifier
  – used if there are other, distinct and separate procedures provided the same day
Pitfalls And Complications

• Vasovagal response
  – Place patient in Trendelenburg position

• Excessive bleeding after biopsy
  – Patient to hold firm pressure for 20 minutes

• Infected biopsy
  – Beware antibiotic or adhesive allergy
  – Culture and treat if PAIN is present

• Lost biopsy or insufficient material
  – Re-biopsy
Nail Biopsy
Nail Anatomy

SURGICAL ANATOMY OF THE NAIL UNIT

- Nail plate
- Onychodermal band
- Lateral nail fold
- Lunula
- Proximal nail fold

- Nail bed: longitudinal grooves and troughs
- Bone: distal phalanx
- Nail matrix: the distal portion is seen through the nail plate as the lunula
- Cuticle
- Extensor tendon: inserts on bone of distal phalanx

Proximal nail fold

- Nail plate
- Distal groove hypochium
- Distal subtungal arcade

Proper digital artery

Nail Biopsy

RELATIONSHIP OF NAIL MATRIX AND SURFACE

Matrix

Nail Biopsy

Sites of Biopsies and Excisions in the Nail Unit

- Punch biopsy specimens taken through the nail plate or after avulsion
- Nail bed excisions oriented longitudinally
- Nail matrix excisions oriented horizontally
- All biopsy/excisions taken down to bone (there is no subcutaneous tissue in the nail unit)

Inflamed Epidermal Cyst - Pearl

- Tender, enlarged, red mass
- Fluctuant
- May see punctum
- History of previous cyst
Inflamed Epidermal Cyst - Pearl

• **Treatment**
  – Intralvesional injection of 3.3 mg/cc Kenalog with lidocaine (without epinephrine)
  – Incise with 11-blade (1.0 cm)
  – Express material and explore with scissors
  – Consider curettage
  – Irrigate with sterile NS/H2O
  – Pack with ¼” iodoform gauze
  – Antibiotics optional (if true abscess suspected)
Epidermal Cyst Excision - Pearl

- Do not inject anesthesia into cyst
- Carefully use blunt dissection to remove entire cyst wall
- Multi-layer closure to close the potential space
- Beware of heterotopic CNS tissue on facial/scalp lesions
  - Collar of hair surrounding lesion
  - Often midline and present at birth or early childhood
  - Consider imaging prior to excision
Beware Cyst Imposters
Final Pearls

- Properly inform patient and document well
- Document location well (3-point system or photograph)
- Mark the lesion prior to anesthesia
- Don’t crush the punch biopsy
- Suspect melanoma? - Get the base (scallop, punch or excision)
- Large ill-defined lesion? - Consider multiple biopsies
Final Pearls

• Know where to biopsy
  – Rash – newest lesion
  – Tumor – thickest part
  – Blister or ulcerated/necrotic – edge of lesion

• Patient on anticoagulant medications? Cauterize or pressure bandage

• Get a system in place to track biopsies (“be a creature of habit”)

• “When in doubt, whack it out”