

Common Skin Biopsy Techniques

Procedural Information

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What doctors need to know about skin biopsy

- Biopsies have limitations, may exclude disease but establish a specific clinical diagnosis
- Type of specimen, area of lesion biopsied, depth of biopsy are crucial to diagnosis, so some understanding of the histology of the disease is important
- Clinical and historical data improves histologic interpretation by pathologist
- Histologic description/diagnosis does not equal a clinical diagnosis, e.g. there is no clinical disease “subacute dermatitis” or “spongiotic dermatitis”
- Dermatopathologists are better trained than general pathologists in reading skin
- “Margins clear” does not equate with surgical margins for malignancies
- Know your limitations: in biopsies, in interpretation, in treatment

What patients need to know about biopsies

- All biopsies leave scars
- Reasons for biopsy
- Alternatives if available
- How and when results of biopsy will be reported
- Wound care instructions
- Follow-up

Indications

- To make or confirm histopathologic diagnoses
- To accomplish definitive treatment of abnormal, malignant, atypical lesions
- To perform elective removal for cosmetic reasons

Contraindications

- Infection at the biopsy site
- Bleeding disorder
- Allergy to local anesthetics

Surgical Safety

- Hepatitis B vaccines are recommended for all medical professionals whose work puts them at potential risk for exposure to Hepatitis B
- Double glove when there is greater potential for needle sticks, cuts (extended procedures)
- Wear eye guards when there is potential for splashing, squirting, spraying
- Masks are worn for elliptical excisions, larger surgeries and if you have a respiratory infection or are a Staph or Strep carrier
- Contaminated material disposal
 - Sharps go in OSHA and State OSHA approved containers which can be provided by your local lab or medical waste provider
 - Blood or other body fluid drainage “soaked” material disposed in red. Contaminated materials plastic bags, but blood stained gauze can go in routine trash. Check into state OSHA rules

Post-procedure Care

Open Wounds

- Covered wounds heal more quickly and avoid scab formation
- Remove dressing in 12-24 hours, gently wash BID with soap and water
- Cover wound with thin film of petrolatum or antibiotic ointment
- Cover with bandaid or nonadherent dressing for at least 5 days or until reepithelialized

Post-procedure Care

Sutured Wounds

- Remove dressing in 12-24 hours, gently wash with soap and water; remove crusts
- Cover with thin film petrolatum or antibiotic ointment; bandaid optional
- Showers and baths safe; avoid prolonged soaking, hot tubs, swimming
- Avoid activities, movements which stress, stretch, pull wound

Post-procedure Care

Suture Removal

- Face: 4-6 days; apply Steri-Strips
- Chest, abdomen, upper extremities, scalp: 7-10 days
- Back, lower extremities: 12-20 days
- Removing sutures early reduces railroad tracking on skin

Possible Complications

Bleeding

- Rarely a problem in small biopsies
- Avoid ASA and NSAIDS 10 days before excisions
- Don't stop Coumadin; use caution; for large excisions may need to switch patients from Coumadin to heparin
- Use pressure dressings (gauze over site then wrap tightly with Kling, Coban or Ace) when patients on NSAIDS, Coumadin, and with wounds and sites prone to bleeding
- Apply cold packs (chopped ice, gel packs, frozen vegetables) frequently in 3-5 minute applications over first 24 hours (usually not necessary for small biopsies)

Possible Complications

Scarring

- All surgery leaves scars; goal is to minimize their appearance
- Biopsy/excise tissue only when necessary
- Recognize your skills; when necessary, refer biopsies in cosmetically important areas.
- Younger people (children and young adults) have less forgiving skin than older folks
- Certain body areas prone to scarring badly include: mandible, chest, neck, shoulders, hands, feet
- Always advise patients there will be a resultant scar; don't minimize

Possible Complications

Infections

- Uncommon with skin biopsies; when present usually Staph aureus, less commonly Strep
- Candida can cause infections in intertriginous areas and toes especially if antibiotics used
- When frankly infected, cellulitic, purulent, and in patients with prosthetic devices use oral antibiotics; for local infections mupiricin (Bactroban) ointment adequate
- Candidal infections in intertriginous areas and feet: topical antifungal
- Antibiotic prophylaxis only for mucosal biopsies and large excisions

Possible Complications

Adverse Reactions

- Most common: allergic contact dermatitis to neomycin (in triple antibiotics, Neosporin), occasionally due to bacitracin, polymixin B
- Red bumpy or vesicular rash, pruritic
- Stop neomycin, may use topical corticosteroid
- Irritant dermatitis
- Polymyxin: red, inflamed, may be itchy or sore; treat by discontinuing drug
- Tape: red, inflamed, itches or sore; stop tape, change type of tape, change direction

Possible Complications

Adverse Reactions (cont.)

- Suture: remove suture as soon as is safe
- Reactions to anesthesia
- Rare allergies to lidocaine, but can occur, often begin as local urticaria
- Epinephrine sensitivity: syncopal episode, palpitations; avoid using epinephrin if known
- Preservatives can cause generalized reactions (very rare)
- No cross reactivity between novocaine and lidocaine

Documentation

Document all procedures in medical record:

- What was done
- How
- Why
- Complications
- Specimen disposition (submission to path lab, discard)
- Patient instructions

Samples of proper documentation

Shave/saucerization biopsies

- **Dx:** Diagnosis of possible BCC and need for path diagnosis discussed. Complications including scar discussed. Consents to shave biopsy left ear.
- **Prep:** Alcohol
- **Anesthesia:** 1% lidocaine/ epi/ NaHCO₃
- **Procedure:** Shave biopsy. AlCl₃ for hemostasis. Bandaid dressing.
- **Specimen disposition:** Specimen to pathology.
- **Patient Education:** Wound care instructions. Return visit in 2 weeks for wound check and pathology results.

Samples of proper documentation

Punch biopsy

- **Dx:** Possible diagnoses and need to confirm lupus discussed. Complications including scar reviewed. Consents to two biopsies left arm.
- **Prep:** Alcohol prep
- **Anesthesia:** 1% lido/ epi/ NaHCO₃
- **Procedure:** Two 3.5mm punch biopsies to depth of subcutis obtained from the left upper outer arm and left upper inner arm. Each closed with one 4-0 nylon suture. Bandaid dressings.
- **Specimen disposition:** One specimen for routine pathological analysis, one in Michel's for DIF.
- **Patient Education:** Wound care instructions. Return visit in 10 days for suture removal and to discuss results.

Samples of proper documentation

Elliptical excision biopsies

- **Dx:** Atypical nevus 1.0 x 0.5cm right upper back
- **Prep:** Betadine and alcohol
- **Anesthesia:** 2% lido/ epi/ NaHCO₃
- **Procedure:** The possible diagnoses, procedure, need for biopsy, potential complications including scarring were discussed and she consents to procedure. Patient was placed prone on the operating table, local anesthesia achieved, skin prepped and draped in usual sterile fashion. The lesion and a 1mm clear-appearing margin excised in elliptical fashion to depth of subcutis. Bleeding points electrodesiccated. Closed with seven 4-0 nylon sutures. Final length 3.0cm. Tolerated procedure well. Polysporin and pressure dressing.
- **Specimen disposition:** Specimen to path
- **Patient Education and Aftercare:** Wound care instructions given. Return visit for suture removal and results in 2-3 weeks.

Cryotherapy - *General principles*

- Application of liquid nitrogen (-170 C) to lesion destroys tissue.
- Outcome is affected by: (1) the length of time of application, (2) the method of application, (3) the type and thickness of the lesion treated and (4) the lesion location (body area).
- Some type of scarring is likely but is usually minimal; the melanocyte is most sensitive cell to cold, so hypo and depigmentation should be expected.
- Freezing is inherently painful.
- Use caution in patients with cold induced migraines, when treating the face, especially the temples and forehead.
- Nerve damage can result, especially when treating distal digits.

Cryotherapy - *Application techniques*

- Cryospray: spray from thermos with specially designed tips and probes
- Probes are applied directly on lesion, spray is done from a few centimeters away
- Probes are brass; must be sterilized between applications (microorganisms are frozen and can be transferred to other patients).
- Spray centrifugally or transversely in paintbrushing fashion.
- Cotton-tipped applicators, 6 inch standard and gynecologic or proctology sizes are ideal for direct lesion application.

Cryotherapy - *Application techniques (cont.)*

- Cotton tips can be “fluffed” or “wisped” for even freezing.
- Liquid nitrogen (LN₂) is poured from thermos into styrofoam cups, cotton-tipped applicators are placed in cups for several seconds. Apply tip of applicator to lesion. Dispose of LN₂, applicators and cup after treatment is complete; do not reuse applicator, cup or previously used LN₂ to avoid transmission of organisms. (Two cups keep LN₂ liquid longer; bottom cup can be reused)
- Pressure of application effects freeze: Use light application for skin tags, flatwarts, molluscum and firm pressure for actinic keratoses, seborrheic keratoses and warts.

Cryotherapy - *Lesion Specific Procedures*

Warts

- Soften wart by soaking a few minutes in water, then paring the thickened callous and wart with a #15 blade until callous is removed or until site is too painful to further pare.
- Apply LN₂ with cotton-tipped applicator firmly on the wart long enough to whiten the wart and a 2 mm. ring of tissue around wart; use fresh applicators every 5-10 sec.
- Or, spray wart with LN₂ until wart and 2mm. ring around wart
- Freezing should continue for 30 seconds for periungual, plantar, thick and recurrent warts, and for 15-20 seconds for thinner warts; 5-10 seconds is adequate for flatwarts, molluscum contagiosum and small skin tags.

Cryotherapy - *Lesion Specific Procedures (cont)*

Seborrheic keratoses

- Apply LN₂ with cotton-tipped applicator or spray lesion for 3-8 seconds
- Shorter freeze time for thin lesions, longer freeze time for thicker lesions
- No surrounding tissue need be frozen

Actinic keratoses

- Spray lesion and 1-2 mm. border until lesion is white, continue for 15 seconds
- Direct spray centrifugally or transversely in paintbrush pattern covering entire area
- Or apply cotton-tipped applicator firmly to entire lesion and 1-2 mm border, whiten for 15 seconds

Cryotherapy - *Post treatment*

- Site is initially red, discomfort lasts few minutes
- Microscopic (and sometimes grossly) bulla forms - clinical bullae more apparent with warts
- Painful bullae associated with warts should be incised and drained, leaving roof
- Crust forms, then should be left to fall off on its own
- Erythema at treatment site after crust is gone which gradually fades
- Scar and hypopigmentation may be permanent sequelae

Supplies and Instruments

- **Prep solutions:**
 - isopropyl alcohol
 - povidone-iodine,
 - chlorhexidine
- **Gauze:** 3x3 or 4x4, cotton-tipped applicators; sterile for excisions
- **Drapes:** plastic, cloth or paper (fenestrated) for elliptical excisions
- **Syringes:** one and three cc
- **Needles:** 22gauge to draw up solutions, 30gauge for injections

Supplies and Instruments

- **Lidocaine:** (0.5, 1, or 2%) with or without epinephrine 1:100,000 buffered with sodium bicarbonate (1 part NaHCO₃:9 parts lidocaine) -premix in bottle, can be kept 30 days
- **15 or 15C sterile surgical blades on handles or placed on #3 knife handle**
- **Scalpel blade remover**
- **Small tissue forceps** (e.g. Adson 4 3/4in, 1x2 teeth, 1 mm tip)
- **Small tissue scissors:** straight or curved 3 1/2-4in (e.g.. Gradle or tenotomy 3 3/4in)

Supplies and Instruments

- **Needle holders:** 4 1/2-5 in., smooth jawed, small tip (e.g. Webster 4 1/2 in.)
- **Punches:** disposable, 2-8mm (3, 3.5, and 4 mm punches are used most commonly)
- **Hemostatic agents:**
 - aluminum chloride (AlCl₃)
 - silver nitrate (stains brown)
 - electrocautery device or battery operated cautery
- **Suture and Needles:**
 - nylon most useful
 - use 4-0 or 5-0 on C-17
 - P-3 or FS-3 needle
 - on face use 6-0 on C-17 or P-3 needle only
 - prolene is used on scalp; it is blue and easily distinguished from hair

Supplies and Instruments

- Alcohol swab or gauze for cleaning surgical site at biopsy completion
- Petrolatum or antibiotic ointment (polymixin/bacitracin, mupirocin)
- Band-aids or telfa or gauze wrap