Punch and Shave Biopsy of the Skin
A BRIEF INTRODUCTION

Disclosures

- NONE
Squamous Cell

Purpose
- Important diagnostic test
- Rule out cancer
- Primary technique to obtain skin specimen, punch biopsy results full-thickness specimen

Melanoma

Purpose
- Important diagnostic test
- Rule out cancer
- Primary technique to obtain skin specimen, punch biopsy results full-thickness specimen
What is a skin biopsy?

- A skin biopsy is a diagnostic procedure in which a portion of skin (and/or subcutis) is submitted to a pathology lab.
- This specimen is fixed, sectioned and placed on slides for histologic analysis.
- Special stains can be used to detect fungus, bacteria, immune complexes, lymphocytes, inflammatory mediators, arthropods, etc.
- The hope is that the pathologist can provide more information to aid in diagnosing the disease.

Skin Biopsy

- A good skin biopsy is one that provides an adequate specimen for the pathologist to review.
- Also involves post-biopsy wound care, knowledge of anatomical danger zones, patient education.
Why do a skin biopsy?

- Skin biopsies usually provide diagnostic information that adds to the clinical picture already at hand.
- Many skin diseases have characteristic findings on routine histology that are highly diagnostic.
- Biopsy results will either support the clinical diagnosis or cast it into doubt.

Why do a skin biopsy?

- Ascertain benign vs. malignant, infectious vs. autoimmune, exogenous vs. endogenous process, etc.
- Quick, simple, cost-effective
- If entire lesion can be removed may also serve as treatment (curative or cosmetic)
- Rapid feedback

Keep in mind, skin biopsy not necessary if….

- The clinical picture is entirely diagnostic.
- If patient history and physical exam findings strongly point to a specific diagnosis.
- If the disease does not respond to treatment or does not follow the expected clinical course, then biopsy may be helpful or necessary.
Contraindications for Bx

- Significant coagulopathy (ASA, warfarin and clopidogrel do not need to be stopped)
- History of allergy to anesthetic (dental history)
- Partial-thickness biopsy discouraged if melanoma is suspected; if you biopsy for depth biopsy does NOT spread disease or compromise future care
- Atypical nevi can be shaved. It is impractical to remove every nevus with full-thickness excision.

Punch Biopsy: Overview of technique

- Circular blade rotated through skin
- Yields cylindrical core of tissue
- Must be carefully handled to be useful
- Large punch biopsy, 3 mm or greater, sites closed with single stitch
- Stretching perpendicular to Langer lines, tension lines, converts to ellipse along Langer lines (less scarring)
Punch biopsy: Overview of Technique

Langer's Lines

Langer's Lines
**Punch Biopsy Materials**

- Nonsterile tray for anesthesia
- Non sterile gloves
- 1 inch of 4x4s
- 3 ml syringe filled with anesthetic
- 30 guage needle
- Labeled formalin container 1/box site

**Punch Biopsy Materials**

- Sterile Tray for Procedure
- Sterile gloves
- Punch (usually 3 or 4 mm)
- Antiseptic
- Needle holder
- Suture
- 21 guage needle for raising biopsy
- Iris scissors
- Appropriate drapes/towels etc.
Anesthesia

- 1 or 2% Lidocaine (Xylocaine) – WITHOUT epi takes effect faster so is the standard for punch or shave.
- Very safe! Allergy to this very rare.
- Lid 1% = 10mg/ml; maximum dose is about 5mg/kg; so a 70kg patient could tolerate up to 350mg.
- In kids or very sensitive –
  - You can buffer the acidic “tinge” by adding 1:9 parts sterile sodium chloride 0.9%.
  - You can apply a topical e.g. EMLA, a 5% lidocaine + 5% prilocaine emulsion which penetrates skin particularly under occlusion for 60 minutes.

Choosing Biopsy Site

- Select a site that is well developed and representative of the lesion.
- Avoid areas of crusting or signs of secondary infection.
- Be mindful of patients with keloid tendency.
- Areas of poor circulation (i.e., pretibial) may suffer from delayed healing.
- There are no actual limitations on what cutaneous or mucosal part of body you bx, but being a little selective can improve outcome.

Punch biopsy Site selection
Procedure

- Select site
  - Full removal if possible (small lesion)
  - Most abnormal appearing site within a lesion
  - Edge of an actively growing lesion
  - Clean skin and administer anesthesia
  - Stretch skin with thumb and index finger of non-dominant hand (perpendicular to langger’s lines)

Procedure (cont.)

- Hold punch vertically over skin and rotate downward until through skin (generally can “feel” a give)
- Elevate specimen with 20 guage needle and cut specimen free from subcutaneous tissue (well below dermis level)
- Choose punch with single appropriate size suture
- Dress wound

Follow up

- Melanoma – refer to appropriate surgeon, dermatologist
- Other skin malignancy
  - Excise with 4 to 6 mm margin of normal appearing skin. Refer high risk areas
  - Benign growths treat appropriately
- Inflammatory Lesions
- Chronic Skin Disorders
Shave Biopsy: technique

- Removal of representative piece of skin by tangential incision with a blade.
- Can use scalpel or Dermablade, scaple, or single edge razor blade.
- Idea is to sample both lesional and normal-appearing perilesional skin.
- Depth needs to get down to at least superficial upper dermis.
- Some skin diseases require sampling of mid to deep dermis for diagnosis.

Can use ...

- Single-edge Razor Blade
- Flexible Dermablade
- Scalpel

SHAVE BIOPSY
When to do a shave

- In sensitive anatomic locations where the depth of a punch biopsy puts nerves/blood vessels at risk (anatomic danger zones.)
- The highly active patient: Shave biopsy wounds have no limitation on activity.
- The patient who cannot/does not want to come back for suture removal from punch biopsy.

Shave biopsy Materials

- Nonsterile tray for anesthesia
  - Non sterile gloves
  - 1 inch of 4x4s
  - 3 ml syringe filled with anesthetic
  - 30 gauge needle
  - Labeled formalin container 1/box site

Shave biopsy Materials

- Sterile Tray for Procedure
  - Sterile gloves
  - Antiseptic
  - Dermablade
  - Pick ups
  - Appropriate drapes/towels etc.
How to do a shave

- Anesthetize the area for biopsy
- Map in your mind or with a surgical pen the specimen you are trying to collect beforehand
- Create skin tension with hands

Grasp blade between thumb and index finger, place edge against skin and rotate hand in a gentle back-and-forth motion which allows the blade to saw through the tissue.
- Point the blade slightly downwards until you are under the middle of your planned specimen, then point slightly upwards until finished
- Goal is for a saucer-shaped specimen providing adequate representation of the skin lesion.

Shave biopsy – Wound Care

- Resulting defect is usually a circular to oval extending down into papillary to mid-reticular dermis.
- Hemostasis with aluminum chloride/Monsel’s solution for minimal bleeding/Electrocautery for moderate bleeding.
- After hemostasis achieved, ointment and occlusive dressing are applied.
- Important that patient educated on keeping wound moist and occluded until healed.
- Wound bed is populated by granulation tissue and fibroblasts 24-48 hours post procedure
Pitfalls
- Uncomfortable patient – inadequate anesthesia
- Nerve injury – over-vigorous pressure on punch
- Infection – inadequate skin preparation
- Unusable specimen – poor tissue handling

Learning Curve
- Identification of Lesions of High Importance
- Avoid thin skin areas unless proficient
  - Tibia, Eyelids
- Know underlying anatomy
- Be prepared to deal with complications

In Summary
References


References