ESSENTIAL DERMATOLOGIC PROCEDURES FOR GENERAL INTERNISTS

SGIM NATIONAL MEETING

May 5th, 2011
CROSS SECTION OF SKIN

[Diagram showing the layers of skin with labels for Epidermis, Dermis, Subcutaneous Layer, Stratum Corneum, New Skin Layer, Sweat Gland, Erector Muscle, Hair Folicle, Sebaceous Gland, and Fat Cells.]
# Primary Skin Lesions

<table>
<thead>
<tr>
<th>Primary Skin Lesions</th>
<th>Image</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macule &lt; 1 CM</td>
<td><img src="image1.png" alt="Image" /></td>
<td>A small flat area of discoloration on the skin.</td>
</tr>
<tr>
<td>Patch &gt; 1 CM</td>
<td><img src="image2.png" alt="Image" /></td>
<td>A larger flat area of discolored skin.</td>
</tr>
<tr>
<td>Papule &lt; 1 CM</td>
<td><img src="image3.png" alt="Image" /></td>
<td>A small hard lump on the skin.</td>
</tr>
<tr>
<td>Plaque &gt; 1 CM</td>
<td><img src="image4.png" alt="Image" /></td>
<td>A larger flat area of discolored skin.</td>
</tr>
<tr>
<td>Nodule 1-2 CM</td>
<td><img src="image5.png" alt="Image" /></td>
<td>A small raised lump on the skin.</td>
</tr>
<tr>
<td>Vesicle</td>
<td><img src="image6.png" alt="Image" /></td>
<td>A fluid-filled blister on the skin.</td>
</tr>
<tr>
<td>Tumor &gt; 2 CM</td>
<td><img src="image7.png" alt="Image" /></td>
<td>A larger raised lump on the skin.</td>
</tr>
<tr>
<td>Bulla &gt; 1 CM</td>
<td><img src="image8.png" alt="Image" /></td>
<td>A large fluid-filled blister on the skin.</td>
</tr>
</tbody>
</table>
DERMATOLOGIC EXAMINATION

1. Perform complete cutaneous exam, including scalp, nails, etc.
2. Identify primary lesion.
3. Identify any secondary lesions.
4. Identify the pattern of cutaneous involvement.
   - Trunk vs. Extremities
   - Involvement of mucous membranes
   - Involvement of palms/soles
DERMATOLOGIC PROCEDURES

- KOH or Scabies Prep
- Shave Biopsy
- Punch Biopsy
- Cryosurgery
- Incision and Drainage (I&)

KOH PREPARATION

- **Indications**
  - Skin conditions that produce scale

- **Tools/Materials Needed**
  - 10% Potassium Hydroxide Solution
  - Cleanser (alcohol wipe/soap and water)
  - #15 Blade
  - Glass microscope slide
  - Coverslip
  - Microscope
KOH PREPARATION

- Procedure: Cleanse skin and allow to dry.

#15 BLADE — SCRAPING ONTO SLIDE — SWEEP INTO PILE

3-5 MINS. BEFORE VIEWING

FROM: LIPPINCOTT’S PRIMARY CARE DERMATOLOGY
SCABIES PREPARATION

• Indications
  • Persistent, itchy rash; findings may be subtle

• Tools/Materials Needed
  • Mineral oil
  • Small scalpel or curette
  • Glass microscope slide
  • Coverslip
  • Microscope
SCABIES PREPARATION

- Procedure: Choose lesion appropriately

1. Scalpel/Curette
2. Scraping onto slide
3. Add mineral oil
4. Examine under low power

FROM: LIPPINCOTT’S PRIMARY CARE DERMATOLOGY
SKIN BIOPSY: CONSIDERATIONS

- “Biopsy cannot substitute for good clinical skills.”*
- However, more errors are made from failing to biopsy promptly than from performing unnecessary biopsies.
- Consent usually required – check with your institution.
- Risks: vary by patient, location
  - Bleeding
  - Infection
  - Nerve damage
  - Scar formation
  - Damage to underlying structures
  - Failure to make diagnosis
  - Lesion recurrence
  - Pain

*Alguire, Skin Biopsy Techniques for the Internist.
SKIN BIOPSY: INDICATIONS

- **Diagnosis**
  - All suspected neoplastic lesions
  - All bullous disorders
  - To clarify a diagnosis when a limited number of entities are under consideration

- **Therapy**
  - Removal of irritating, benign lesion
  - Removal of precancerous or cancerous lesion
SKIN BIOPSY: CONTRAINDICATIONS

- Relative
  - Lesions of face (especially eyelids, nose)
  - Use of anticoagulants (shave biopsy probably OK)
  - Bleeding disorder
  - Infection at the site

- Absolute
  - Pigmented lesion should never be shaved.
SKIN BIOPSY: SITE SELECTION

- Non-bullous lesions
  - Choose lesions with the most advanced inflammatory change.
  - 1-4 mm lesions: biopsy center
  - > 4mm biopsy edge, thickest part, or most discolored

- Bullous lesions
  - Choose lesions 24-48 hours old (more specific histopathology).
  - Avoid lesions with secondary changes.
  - Biopsy bullae at their edge.
  - Attempt to remove entire vesicles.
SKIN BIOPSY: SITE SELECTION

- Areas to avoid if possible
  - Cosmetically important areas
  - Deltoid and chest (hypertrophic scarring area)
  - Skin over tibia (delayed healing, especially in diabetics)
  - Areas where incidence of secondary infection is high
    - Groin
    - Axilla
PREPARATION FOR PROCEDURE

- Shave and punch biopsies are CLEAN, not sterile
  - Use gloves and eye guards
  - Mask recommended if operator is a carrier of infection (staph, strep).
- Prepare area with alcohol
- Gather necessary instruments/materials
  - List of recommended supplies included
  - Consider method for maintaining
PREPARATION OF SITE

- Clean with alcohol, chlorhexidine, povidone-iodine.
- Mark lesion with a surgical marker.
- Round wounds tend to be pulled open in the direction of skin tension lines known as Langer's lines.

Anesthesia

- Lidocaine 1-2%
- Consider using epinephrine unless contraindicated as lidocaine is a vasodilator.
- Consider mixing NaHCO₃ with lidocaine (1:9) to reduce sting.
CHOICE OF PROCEDURE

**SHAVE**
- Pathology confined to epidermis.
- NOT for pigmented lesions.
- Very useful for elevated or pedunculated lesions.
- Most common procedure.
- Examples of lesions:
  - Basal cell
  - Actinic keratosis
  - Squamous cell
  - Keratoacanthoma

**PUNCH**
- Suspicion that lesion lies in dermis or deeper.
- Inflammatory conditions.
- Avoid when important structures (blood vessels, tendons) lie relatively close to skin surface.
- Examples
  - Nevus
  - Benign neoplasm
    - Deep nodular
    - Lipomas
SHAVE BIOPSY

- Scalpel: use a swiping motion, not sawing motion.
- Razor: side to side motion
- Use toothed forceps to avoid crush artifact.
SKIN TAG REMOVAL

CONSIDER USING LOCAL ANESTHESIA IF BASE IS > 2MM WIDE.
PUNCH BIOPSY

- Size: 2-8 mm (< 3 mm: may not yield useful information).
- Punch > 3 mm should be sutured.
- Stretch skin perpendicular to natural tension lines.
- Grasp specimen at lowest point and cut with scissors.
PUNCH BIOPSY
HEMOSTASIS

• ALUMINUM CHLORIDE (DRYSOL)

• MONSEL’S SOLUTION (FERROUS SUBSULFATE)*

• SILVER NITRATE*

*CAN RESULT IN SKIN HYPERPIGMENTATION
SUTURING: MATERIALS

- Suture types (epidermal closure)
  - Size: designation by zeros – the more zeros, the smaller the size.
    - 4-0 and 5-0 for body and scalp
    - 6-0 for face
  - Nonabsorbable sutures
    - Nylon (Ethilon): can be braided
    - Polypropylene (Prolene): always monofilament, comes in blue so good for scalp closure.

- Needle Types
  - Most wounds can be closed with a FS or CE, with P for the face (all 3/8 circle).
SUTURE REMOVAL TIMING

Scalp 6 – 8 days
Face, Eyelid, Eyebrow, Nose, Lip 3 – 5 days, then place steristrips
Ear 10 – 14 days
Chest and abdomen 8 – 10 days
Back 12 – 14 days
Extremities 12 – 14 days
Hand 10 – 14 days
Foot, Sole 12 – 14 days
INCISION AND DRAINAGE

• Background
  • Primary therapy for cutaneous abscess management.
  • Most localized skin abscesses without associated cellulitis can be managed with simple I & D and do not require antibiotic treatment.
  • Appropriate for office setting.
  • Abscesses > 5 mm usually require I & D rather than conservative measures such as warm compresses.
INCISION AND DRAINAGE

- Contraindications
  - Extremely large abscesses which require extensive incision, debridement, or irrigation (best done in OR)
  - Deep abscesses in very sensitive areas
  - Abscesses in the nasolabial folds (may drain to sphenoid sinus, causing a septic phlebitis)
  - Palmar /deep plantar space abscesses.
INCISION AND DRAINAGE: MATERIALS

- 1% or 2% lidocaine WITH epinephrine for local anesthesia, 10 cc syringe and 25 gauge needle for infiltration
- Skin prep solution
- #11 scalpel blade with handle
- Culture swab
- Draping
- Gauze
- Tweezers and scissors (from suture removal kit) packing (plain or iodoform, 1/2”)
- Tape
INCISION AND DRAINAGE: PROCEDURE

- Prepare skin.
- Drape to create a sterile field.
- Infiltrate local anesthetic, allow 2-3 minutes for anesthetic to take effect.
- Incise widely over abscess with the #11 blade, cutting through the skin into the abscess cavity. Follow skin fold lines whenever able while making the incision.
- Allow the pus to drain, using the gauzes to soak up drainage and blood. Use culture swab to take culture of abscess contents, swabbing inside the abscess cavity.
- Use the hemostat to gently explore the abscess cavity to break up any loculations within the abscess.
- Using the packing strip, pack the abscess cavity.
INCISION AND DRAINAGE: COMPLICATIONS

- COMPLICATIONS
  - Transient bacteremia
  - Thrombophlebitis of the cavernous sinus (after incision of central facial abscesses)
  - Neurovascular injury
  - Spread of infection
  - Scar formation
  - Recurrence of infection

http://www.youtube.com/watch?v=JRY_wNdrKr4
CRYOSURGERY

- Used for > 100 years.
- Liquid nitrogen
- Mechanism of action:
  - Heat transfer
  - Cell injury
  - Inflammation
- Treatment modalities:
  - Spray-freeze
  - Applicator
  - Cryoprobe
  - Thermocoupler
- Lesions
  - Seborrheic keratoses
  - Actinic keratoses
  - Basal cell
  - Warts
  - Skin Tags
- Absolute contraindications:
  - Path required
  - Compromised circulation
  - Melanoma
  - Sensitivity
  - Sclerosing BCCa, recurrent BCCa or SCCa, lesion in high risk area.
- Relative contraindications:
  - Cold intolerance /urticaria
  - Immunosuppression
  - Cryoglobulinemia
  - Heavily pigmented skin
  - Lesions located in pretibial areas, eyelid margins, nasolabial fold, ala nasi, and hair-bearing areas
  - Multiple myeloma
  - Pyoderma gangrenosum
  - Raynaud’s disease
CRYOSURGERY

• Spray-Freeze: Preparation
  • Consider debulking keratotic lesion with no. 11 blade.
  • Consider using otoscope speculum, trimmed to size.
  • Determine margins and freeze time.

• Complications
  • Pain and blister formation
  • Hypopigmentation and scarring
  • Infection
  • Hair loss
CRYOSURGERY: TIMED SPOT FREEZE TECHNIQUE

- The nozzle of the spray gun is positioned 1 to 1.5 cm from the skin surface and aimed at the center of the target lesion.
- The spray gun trigger is depressed, and liquid nitrogen is sprayed until an ice field (or ice ball) encompasses the lesion and the desired margin.
- The designated ice field may need to be delineated in advance with a skin marker pen, because freezing may blur pretreatment lesion margins.
- Margins:
  - Benign lesions: 1 to 2 mm beyond visible pathologic border.
  - Premalignant lesions: 2-3 mm
  - Malignant lesions: 5 mm
- Adjust the nitrogen spray to keep the field frozen for an appropriate amount of time (“freeze time”). You will likely need to start and stop the flow of liquid nitrogen to accomplish this.
- Freeze-thaw cycles: one is sufficient for most lesions, but if > 1 is required, allow 2-3 mins for thawing between cycles.
# CRYOSURGERY

<table>
<thead>
<tr>
<th>Type</th>
<th>Technique</th>
<th>Freeze time (seconds)*</th>
<th>Number of FTCs</th>
<th>Margin (mm)</th>
<th>Number of treatment sessions</th>
<th>Interval (weeks) †</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinic keratosis</td>
<td>OS</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Cherry angioma</td>
<td>P</td>
<td>10</td>
<td>1</td>
<td>&lt; 1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Common warts</td>
<td>OS</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>Cutaneous horn</td>
<td>OS</td>
<td>10 to 15</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Dermatofibroma</td>
<td>P/OS</td>
<td>20 to 30</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Hypertrophic scar</td>
<td>OS/P</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Ingrown toenail‡</td>
<td>OS</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Keloid</td>
<td>OS/P</td>
<td>20 to 30</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>8</td>
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<tr>
<td>Myxoid cyst</td>
<td>OS/P</td>
<td>20</td>
<td>1</td>
<td>&lt; 1</td>
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<td></td>
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<tr>
<td>Oral mucocele</td>
<td>P</td>
<td>10</td>
<td>1</td>
<td>&lt; 1</td>
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<td></td>
</tr>
<tr>
<td>Pyogenic granuloma</td>
<td>OS</td>
<td>15</td>
<td>1</td>
<td>&lt; 1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sebaceous hyperplasia</td>
<td>P</td>
<td>10</td>
<td>1</td>
<td>&lt; 1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Skin tags</td>
<td>F/OS</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Solar lentigo</td>
<td>OS</td>
<td>5</td>
<td>1</td>
<td>&lt; 1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

SKIN TENSION LINES
Dermatology Tackle Box: Sample Content List

- Alcohol wipes
- 2X2 guaze
- Bandaids
- #15 Blades
- Double-edge razor blade, cut in half
- Scalpels (# 10 or 15)
- Curettes*
- Punch biopsies – 3mm to 8 mm
- Glass microscope slides
- Coverslips
- Gloves – sterile, nonsterile
- Eye guards
- Surgical marker
- Fenestrated drape
- Syringes: 3cc, 5cc, 10cc
- Needles: 25, 27 and 31 guage
- Small tissue forceps (e.g. Adson 4-3/4”)
- Proline 4-0 or 5-0 with CE-3 needle for skin
- Proline 6-0 with PS-3 needle for face
- Toothed Forceps
- 10% buffered formalin
- Sterile container
- Michel’s solution*
- Viral transport media
- KOH 10% Solution
- Mineral oil
- Scissors: curved iris, Gradle 3-3/4”
- Suture removal kit
- Dressing materials
- White petrolatum
- Antibiotic ointment
- Iodoform guaze
- Needle holders (4 1/2 or 5”) or disposable suture kits
PUNCH BIOPSIES

[Image of various biopsy punch tools with different diameters labeled BP20 to BP80]
CURETTES

MK402 2.0mm
MK403 3.0mm
MK404 4.0mm
MK405 5.0mm
MK407 7.0mm
INSTRUMENTS

IRIS SCISSORS

GRADLE SCISSORS

DISPOSABLE SUTURING KITS

ADSON FORCEPS
PATIENT INSTRUCTIONS/INFORMATION

- Cryo:
- Consent form
REFERENCES/RESOURCES

- General Resources
- Cryosurgery
Patient Information: Punch Biopsy

- Information from Your Family Doctor
- Punch Biopsy of the Skin

What is punch biopsy?
- Punch biopsy is a commonly performed diagnostic procedure on abnormal skin growths or skin tumors. It is performed using a local anesthetic (numbing medicine). A pencil-like instrument is used to remove a small, thin cylinder of tissue. The small hole in the skin then may be sutured (stitched) closed.

What happens to the biopsy specimen once it is removed?
- After removal, the biopsy specimen is sent to the laboratory for further evaluation. The specimen is examined under a microscope by a subspecialist doctor known as a pathologist. The pathologist is trained to correctly identify the cells of various skin growths, which will assist your doctor in selecting the proper treatment.

Are there any complications after punch biopsy?
- Complications are uncommon following this simple procedure but can occur with any surgical procedure. Some of the complications associated with punch biopsy include local bleeding and bruising, pain, infection, allergic reaction to the numbing medicine used in the procedure, or damage to the structures beneath the skin site (such as an artery or a nerve). Your doctor will take care to reduce the likelihood of these rare problems.

What happens to the site where the piece of skin was removed?
- The biopsy site may be sutured (stitched) closed, depending on the size of the skin defect. The area often heals with a small scar. Your doctor may ask you to return in 5 to 14 days for removal of the stitches. You will be given instructions on how to help the biopsy site heal. The results of the biopsy evaluation will determine if further treatment of the skin site will be needed.

How long before I will receive the results of the biopsy evaluation?
- The biopsy results usually are available in one to two weeks. Your doctor’s office will notify you of the results. You do not need to call the office in the first two weeks after the procedure. Sometimes the doctor will review the results with you at the follow-up (stitch removal) visit. If 1 month goes by and you have not heard from your doctor, call the office for the results of the biopsy.

Following Punch Biopsy of the Skin
- Immediately after removal of the skin biopsy specimen and closure of the biopsy site, your doctor will apply antibiotic ointment and a bandage to the site. Continue to apply antibiotic ointment to the wound until it is completely healed. The antibiotic ointment Mycitracin Plus is recommended because it contains numbing medicine in addition to the antibiotic.
- You can remove the bandage at any time, but you may prefer to keep the wound covered. Keeping the site covered with a bandage may prevent rubbing at the site and will also keep the antibiotic ointment off your clothing.
- If the biopsy site begins to bleed, apply direct pressure for 10 minutes. If it continues to bleed, call your doctor.
- If you experience discomfort at the biopsy site, you can take ibuprofen (brand names: Advil, Motrin, Nuprin), three 200-mg tablets 3 times a day with food, or acetaminophen (brand name: Tylenol), two 325-mg tablets every 6 hours.
- Skin infection can follow any surgical procedure. If you develop increased pain, redness, pus or swelling at the biopsy site, call your doctor.
- Your doctor will notify you of the time for suture (stitch) removal, usually about 5 to 14 days following the procedure. Sometimes your doctor may have used only one stitch to close a punch biopsy site. If the stitch falls out and the wound is not gaping open, you can call and cancel your follow-up visit.
- Most doctors use the suture removal visit to discuss with you the pathology results of the biopsy, if they are available. It usually takes 1 to 2 weeks for your doctor to receive the results of your biopsy. The doctor’s office will contact you with the results. If 1 month goes by and you have not heard from your doctor’s office, call to check on the biopsy results.
# CRYO: COMPLICATIONS

<table>
<thead>
<tr>
<th>ACUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding at the freeze site</td>
</tr>
<tr>
<td>Blister formation</td>
</tr>
<tr>
<td>Edema</td>
</tr>
<tr>
<td>Headache (after treatment of facial lesions)</td>
</tr>
<tr>
<td>Pain</td>
</tr>
<tr>
<td>Syncope (vasovagal; rare)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>DELAYED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding</td>
</tr>
<tr>
<td>Excess granulation tissue formation (rare)</td>
</tr>
<tr>
<td>Infection (rare)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>PROTRACTED OR PERMANENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrophy (rare)</td>
</tr>
<tr>
<td>Hair and hair follicle loss</td>
</tr>
<tr>
<td>Hypopigmentation</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PROTRACTED BUT TEMPORARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alteration of sensation</td>
</tr>
<tr>
<td>Hyperpigmentation</td>
</tr>
<tr>
<td>Hypertrophic scarring</td>
</tr>
<tr>
<td>Milia</td>
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</table>