All About the Biopsy, Pigmented Lesions and More

Karen Minzer-Conzetti MD
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Contact Information

• karenm@knottstreetdermatology.com
• 503-253-3910 (Office Number)
• www.knottstreetdermatology.com
My Goals for this talk

• Educate
• Help you in your day to day practice
• Provide insight into what we as dermatologist do
• Perhaps stimulate interest in adding new treatments/techniques to your practice
• Encourage referrals
Objectives

• What are the “not to miss” lesions? 🟥
• What is the correct way to do a biopsy?
• What are the pitfalls and errors providers make with biopsies?
• When should we do a punch vs a shave?
• Does the punch need to remove the entire lesion?
• What biopsies should we send to derm and not do in the clinic?
References

• When statistics are mentioned
• ‘Wow, I didn’t know that’ moments
• Generally I provide no references for
  – Topics representing my expert opinion (i.e. no references available)
• An * is placed when I provide a reference
  (listed on next slide or end of section)
All About Skin Biopsies

- Selected Cases Presented
- Biopsy methods: Choices and Goals
- Anesthesia of choice
- Ways to minimize scar
- What to do (& not do) with specimens
- Interpreting biopsy results
- Application of above to Selected Cases
Selected Cases
• You would probably biopsy all of these situations, but in different ways....

• Punch vs shave
Biopsy Method: Choices & Goals

• Punch (1.5-10 mm)
• Shave
  – diagnosis only (partial sampling)
  – tangential (removal at cutaneous surface)
  – saucerization (full sampling)
• Excision (full removal to SQ with a margin)
• Incisional (partial removal to SQ)
Rather than correct vs incorrect methods; think ideal vs non ideal

(My opinions)
Goal of Biopsy?

• Diagnostic vs Cosmetic
• Diagnostic (+) full removal:
  – i.e. patient wants it gone regardless of path assessment
  – (or) full removal for diagnosis desired to avoid having to do second procedure for a benign diagnosis
  – full removal (ASAP) of potentially dangerous cancer
Other Considerations:

• Are you comfortable performing the biopsy with the ideal method (if not refer)

• Is the lesion potentially dangerous?
  – ‘don’t let the sun set on an obvious invasive melanoma’
  – excise obvious melanomas or same day refer

• Risk assessment
  – likelihood that full removal will be necessary
  – likelihood that other diagnostic tests will be necessary
Cosmetic Considerations (How will it look once healed)

• Proximal arms, upper chest and upper back tend to heal with hypertrophic scars

• Concave areas (hollow of temples, alar groove, anterior ear and face in general) heal well by secondary intent (shave biopsies)

• Hyper-convex areas (nasal tip, nasal bridge) may do better with punches or shallower shave biopsies
It is never wrong to do a punch biopsy
I rarely punch pigmented lesions unless I can remove the entire lesion
Partial punches leave melanocytes behind!
There are exceptions
Punch biopsy: materials needed

- Alcohol Pad
- Anesthetic of choice
- Biopsy kit
  - Punch tool
  - Forceps
  - Suture scissors
  - Iris scissors
  - Needle driver
8 mm punch for a 6 mm benign-appearing nevus
Use a twisting motion (not downward pressure)
Gently pick up specimen with forceps
Cut with iris scissors
Scar orientation will be parallel to pressure placed on skin
Which suture to use?

- Nylon (Ethilon®, Dermalon®, Surgilon®, Nurolon®, Nylene®) on trunk and extremities (4-0 or 5-0 FS-2 needle)
  - Inexpensive
  - Minimal tissue reactivity
- Polypropylene (Prolene®, Surgilene®, Surgipro®) for the face (5-0 or 6-0, P3 needle)
  - Very minimal tissue reactivity
  - More expensive than Nylon
- Silk for mucosal/genital skin
- Polyglactin 910 (Vicryl®, Polysorb®) deep sutures for punch biopsies 8-10 mm (absorbs in 3 months)
Shave biopsy: materials Needed

- Alcohol Pad
- Anesthetic of choice
- DermaBlade (or razor blade)
- Cue tip
- Aluminum Chloride (or cautery)
Shave tools – use what you feel most comfortable with

- Dermablade
  - More control
  - Face

- Razor blade
  - Trunk and extremities
Anesthetized by assistant: wait 5 minutes
Add a little extra anesthetic in dermis to raise a wheel and check adequate anesthesia
Three points of traction and scoop off with sawing motion
Apply aluminum chloride with cue tip. Note lateral margin of normal tissue submitted.

Equivalent to a 10-11 mm punch laterally.
Saucerization Biopsy Advantages

• Fast!
• No need for follow-up visit (no stitches)
• Skin strength is not compromised (activity restrictions minimal)
• Can fully remove larger nevi
Saucerization Biopsy Advantages

** Can provide pathologist with entire specimen

- Size
- Symmetry
- Circumscription

• A 2 mm punch into a larger lesion cannot provide this information
Anesthesia of choice for biopsy?
Myth

• Don’t use epinephrine on eyelids, ears, nose, penis, fingers and toes
Eyelids are OK (and strongly encouraged)
Ears are OK (and strongly encouraged)
Nose is OK (and strongly encouraged)
Penis is OK
(small volume, distal only; i.e. not for blocks, detailed discussion beyond scope of this talk)
Fingers and toes are OK*
Wing Block

• My preferred method for nail removal (vs digital block)
• Can dilute to lido:epi to 1:200,000
• Position the extremity with the plantar side down
• Insert needle at 45 degree angle, proximal to nail matrix
• Several injection points
• Anesthetize fingertip last
• *max volume 1.5-3 cc in a digit
Lidocaine with epinephrine is preferred, the exceptions are:

- Digital blocks generally safe with epinephrine*
  - epinephrine provides no advantage in my opinion so I use plain lidocaine for digital blocks
  - don’t need more than 2-3 cc
  - augment for 0.3cc or less lido with epinephrine focal/distal to help with bleeding

- Lido with epi on digits and penis should be low volume (0.3cc or less), focal-distal

- No exceptions for eyelids, nose and ears

- Bottom line: do what you are comfortable, refer what you are not
Great Anesthetic for Skin Surgery

• 1:1:1 mix of 1% lidocaine with epi, 1% lido without epi and plain marcaine

• Standard lido:epi mixes have 3-6 times the concentration of epi needed for vasoconstriction*

• This mix virtually eliminates palpitations
Anesthetic Mix proven to reduce post operative infections

- Draw up 0.3 cc clindamycin in 1 cc syringe
- Inject into a **new** bottle of lidocaine with epinephrine. Mix Gently.
- Into a 3 cc syringe pull 1.5 cc of the clinda/lido with epi mix and 1.5 cc of marcaine 0.5%
- Randomized trial of 1,172 patients with skin surgery, 0.68% post operative infection in study group vs 3.9% in control*
- Cost is pennies per patient
- Not for use if clindamycin sensitive
References for epinephrine and dilute clindamycin in anesthetics:

- Effect of local **epinephrine** on **cutaneous** bloodflow in the human neck.  
  O'Malley TP, Postma GN, Holtel M, Girod DA.

- Epinephrine prolongs duration of subcutaneous infiltration of local anesthesia in a dose-related manner. Correlation with magnitude of vasoconstriction.  
  Liu S, Carpenter RL, Chiu AA, McGill TJ, Mantell SA.

- **Clindamycin** for intracisional antibiotic prophylaxis in dermatologic surgery.  
  Huether MJ, Griego RD, Brodland DG, Zitelli JA.
  Arch Dermatol. 2002 Sep;138(9):1145-8

- Surgical myths in dermatology.  
  Bruce AM, Spencer JM.

- A comprehensive review of epinephrine in the finger: to do or not to do.  
  Denkler K.  
Ways to Minimize Scar

• Orientation of incision/excision
• Wound Care
• Suture technique (beyond scope of talk)
Relaxed Skin Tension Lines (RSTLs)

- Natural lines of tension exist all ages
- Crossing these lines with surgery (oblique or perpendicular) lead to hypertrophic scars
- Orient your excision/incisions and punch biopsy closures along these lines (i.e. parallel) for better cosmesis
RSTL Assessment

• Observation (with and without gravity)
• Dynamic movement (frown, smile, rotate arm...)
• Passive movement (manually push the skin together from different angles)
• Could consult a chart but faster and more accurate to determine yourself
RSTLs visible with no emotion
More obvious with smile
“Smile like you mean it!”
Obvious RSTLs

Not so obvious
Active Movement helps
RSTLs are less obvious on some areas even with arm raised (active movement)
Manually press tissues in all directions to see which way the RSTLs bunch up.
No bunching occurs perpendicular to these RSTLs
When Less Obvious Press Tissue Together
Wound Care: Grease And Cover

• Crust prevention is key
  – wounds heal much faster without crust
  – crusts promote healing typically below (fish mouth scar) or above (hypertrophic) skin surface
• Less pain (nerve endings fire with air exposure)
• Antibiotic ointment not necessary*
• No risk of contact allergy with petrolatum
Reference for white petrolatum as good as antibiotic ointment

- 100% petrolatum
  - Decreased risk of allergic contact dermatitis
  - Faster healing time

Infection and allergy incidence in ambulatory surgery patients using white petrolatum vs bacitracin ointment. A randomized controlled trial.
JAMA. 1996 Sep 25;276(12):972-7
Dressing Duration (shave biopsies)

- 7-10 days on face
- 30 days (or longer) on lower legs
- 10-14 days (or longer) elsewhere
- OK to get sites wet in shower daily

- Continue until yellow center is eclipsed by erythema for shave biopsies
Adequate For Most Patients
Hard to reach areas, non compliant patients etc. waterproof and can last over two weeks
• Pediatric patients

Punch biopsies, excisions:

• Keep covered for 7-10 until suture removal
• Limit activity
Ointment Alternatives

• White petrolatum
• Vaseline Petroleum Jelly
• Aquaphor (available at dollar store)
• Aquaphor lip therapy (smaller tube)
Disadvantages of Antibiotic Ointment

• Neosporin: 7-13 % are patch test (+)
  – (occlusion for 7-14 days increases risk for contact allergy so % may be higher)
• Polysporin: $, 2-3% allergy rate
• Mupirocin ointment: Rx and $$
• Double Antibiotic ointment: polymyxin B/bacitracin
• Triple Antibiotic ointment: polymyxin [PL] B sulfate, bacitracin, and neomycin
Normal shave biopsy healing

Yellow at the base with some surrounding erythema
Not normal – what is going on?
Contact dermatitis

- Irritant or allergic contact dermatitis
- Reaction to adhesives
What to do (and not do) with the specimen I

• Do not discard specimen to save the patient money, you will get burned, eventually...
Never Discard Tissue Removed from a patient

- Sarcomas and squamous cell carcinomas can appear very cyst like
- SCC and BCC can arise from the lining of a cyst (Cysts can arise within SCC and BCC)
- ‘Collision Tumors’ (2 entities occupying same space)
- Liposarcomas present like lipomas
- Melanoma can simulate a seborrheic keratosis
- 0.1% incidence of metastatic melanoma of unknown primary (what did you remove from that patient in the last 10 years??)
Main Types of Melanoma

– Superficial spreading
– Lentigo maligna
– Nodular
– Acral lentiginous
Superficial Spreading Melanoma (SSM)

- Most common type in US
- Young to older adults with light-skin
- Associated with intermittent sun exposure
- Back of men
- Legs of women
- Clinical:
  - Typical ABCDE features
Lentigo Maligna Melanoma (LMM)

• Old names: Hutchinson’s freckle, precancerous melanosis of Dubreuilh
  – Confusing since some specialties still consider LMM to be a less aggressive variant or even benign
• 2\textsuperscript{nd} most common type in US
• Older light-skin adults
• Associated with high levels of sun exposure
• Men > women
• Sun-exposed areas
  – Head & neck, dorsal forearms
• Clinical:
  – Irregular brown macule
Acréal Lentiginous Melanoma (ALM)

- Relatively uncommon
- Most common type of melanoma in dark skinned patients, especially African-Americans, but in aggregate, more common in Caucasians
- Not associated with sun exposure
- Men = women
- Usually older, but reported in children
- Clinical:
  - Irregular brown to black macule on acral surface including nail
Amelanotic Melanoma
Amelanotic Melanoma

- 2-8% of melanomas
- Pink, erythematous, purple, skin-colored
- Can look like BCC or pyogentic granuloma
- Seen in albinos
- A,B,C,D fail!
- Think E,F,G (Evolving Firm Growth)
Blue Nevus

- Dark grey/blue, almost black
- Seen in 3-5% of Asians, 1-2% of caucasians
Pigmented BCC – What does it resemble?
Sebaceous Hyperplasia

• Speaking of BCC’s these are frequently confused clinically
• Small, cream-colored or yellowish umbilicated papules
• forehead, infraorbital, temples
• Lobules of enlarged, mature sebaceous glands attached to a central hair follicle
Spitz nevus
Spitz nevus

- 70% occur during first 2 decades of life
- Benign
- Controversy over need to fully remove
- Most dermatologists will excise to ensure clear margins
Angiokeratoma

- Dark red to purple raised papule
- Comprised of capillaries (thrombosed)
Application to Selected Cases
What to do (and not do) with the specimen

• Provide a differential diagnosis (DDX)
• ‘Garbage in = Garbage out’
• Cutaneous eruptions often result in reaction pattern not specific diagnosis
  – ‘spongiotic dermatitis’
  – ‘psoriasiform epidermal hyperplasia...’
• Mycosis Fungoides (this case) not likely diagnosed without a clinical suspicion
• Offering a DDX allows pathologist to r/o many of the choices in the clinical DDX list
• Diagnosis is from clinical-path correlation
What to do (and not do) with the specimens

• Interpretation of pigmented lesions and cutaneous eruption is highly specialized
• There are no litmus tests or reliable stains for melanoma
• Experts don’t agree: melanoma vs severely atypical nevus
• Lentigo maligna very challenging and is routinely missed by pathologists unfamiliar
• Know who is reading you skin slides
• Follow the volume (Derm Path)
When clinical suspicion and Path don’t jive, go with your gut

- Case # 1 had been excised twice with negative margins prior to presentation
- My excisional biopsy read by dermpath as ‘junctional nevus’ (not!)
- was excised with LM margins
Points about interpreting biopsies

• Shave biopsy intent is to diagnose, not always remove
• Margins can appear clear in a biopsy but the lesion may not be completely removed
  – Common examples: superficial BCC, squamous cell carcinoma in situ
“Bread loafing”
Biopsy interpretation and management

• What do I do with this biopsy report?
• Common questions
May still need to treat, even if margins are reported as clear

• Skip areas!

Fig. IIF2.a. Superficial “multicentric” basal cell carcinoma, low power. Irregular masses of basophilic cells extend from the epidermis into the dermis.
Many treatment options for sBCC

- Topical treatment (imiquimod)
- Photodynamic therapy
- Electrodessication and curettage
- Excision
Squamous cell carcinoma in situ

• Similar treatment options to sBCC:
  – Topical treatment (imiquimod)
  – Photodynamic therapy
  – Electrodesiccation and curettage
  – Excision
Invasive SCC

- Those from sun lower metastatic rate .5%
- If metastasize they go to nodes first
- Lower lip 16% met. rate with high mortality
- Arise from inflammation 20+% metastatic rate
Invasive SCC

- Excision
- Mohs
- Radiation
  - Stage III tumors (lymph node metastases)
  - Perineural invasion (no randomized clinical trials with proven benefit)
  - Surgery contra-indications
  - Palliation
Mohs indications

• Recurrent tumor
• H-zone of face (periorbital, perinasal, pre-auricular, perioral)
• Additional sites where tissue preservation is imperative (fingers, genitals)
• Aggressive histology – micronodular, morpheaform BCC, high-grade or deeply penetrating SCC
• Large tumors > 2 cm
• Poorly defined clinical borders
• Tumors in irradiated skin or chronic scar
• Tumors in immunosuppressed pts
• Incompletely excised tumors
• Cancer syndromes (Nevoid BCC syndrome, xerodermal pigmentosa)
• Perineural invasion
Keratoacanthoma

• Low grade SCC
• These have been reported to metastasize (just like SCC)
• Treat similar to SCC
Dysplastic nevus

• Source of confusion and controversy
Dysplastic nevus

• Described in the 1970s in families with a high prevalence of nevi and melanoma.
• The term has been problematic, given the uncertainty over whether dysplastic nevus represents a premalignant (melanoma precursor) lesion.
Dysplastic nevus

• “Dysplastic nevus is a distinct histologic entity that may or may not be associated with clinical atypia.
• The presence of dysplastic nevus is a cutaneous marker for increased melanoma risk.
• Whether the rate of dysplastic nevus transformation to melanoma is greater than that of “nondysplastic” or common nevi depends on clinical context and is debatable.”
Now what?

- “junctional dysplastic melanocytic nevus

Note: the lesion extends to the lateral edge of the biopsy”
Dysplastic nevus

• There is significant variation in management of dysplastic nevi by dermatologists
Dysplastic nevus

“The decision to reexcise relates to physician perception of dysplastic nevi and their risk of transformation to melanoma

Lesions with severe atypia should be re-excised

Dysplastic nevi that do not exhibit atypia may be considered variants of melanocytic nevi that can be managed like common nevi”
Review

• What are the “not to miss” lesions?
  – you can’t see too many melanomas (google image search often!)
  – A, B, C, D ‘s help also EFG (evolving firm growth)
  – 🌟 I have shown you many!

• What is the correct way to do a biopsy?
  – think rather: ideal vs non ideal
  – litigation for missing a melanoma is common
  – it’s only incorrect if you fail to biopsy the melanoma
Review

• What are the pitfalls and errors providers make with biopsies?
  – partial sampling of high risk pigmented lesions (refer these ASAP; or excise)
  – discarding specimens to save the patient money
  – relying on general pathology for pigmented lesions and skin eruption interpretation
  – avoiding epinephrine (it’s there for a reason)
Review

• When should we do a punch vs a shave?
  – skin eruptions (rashes) should be punched (when a biopsy is needed)
  – there are advantages for saucerization for small, non raised pigmented lesions
  – shave biopsy ideal for BCC, SCC
Review

• Does the punch need to remove the entire lesion?
  – ideally for pigmented lesions (+) a margin
  – punch should be 3-4 mm larger than maximal diameter of pigmented lesion if you choose this method (reduces need for second procedure)
  – Avoid punching a small area of a larger pigmented lesion
  – consider saucerization (3 mm lateral margin) for small, non raised atypical pigmented lesions
Review

• What biopsies should we send to Dermatology and not do in the clinic?
  – ‘across the room melanomas’ (unless you are prepared to cut these out)
  – ‘I have no clue what this eruption is’ (this happens to me often!)
  – cosmetic removals (facial nevi etc.)
  – anything else you feel uncomfortable about or don’t want to deal with