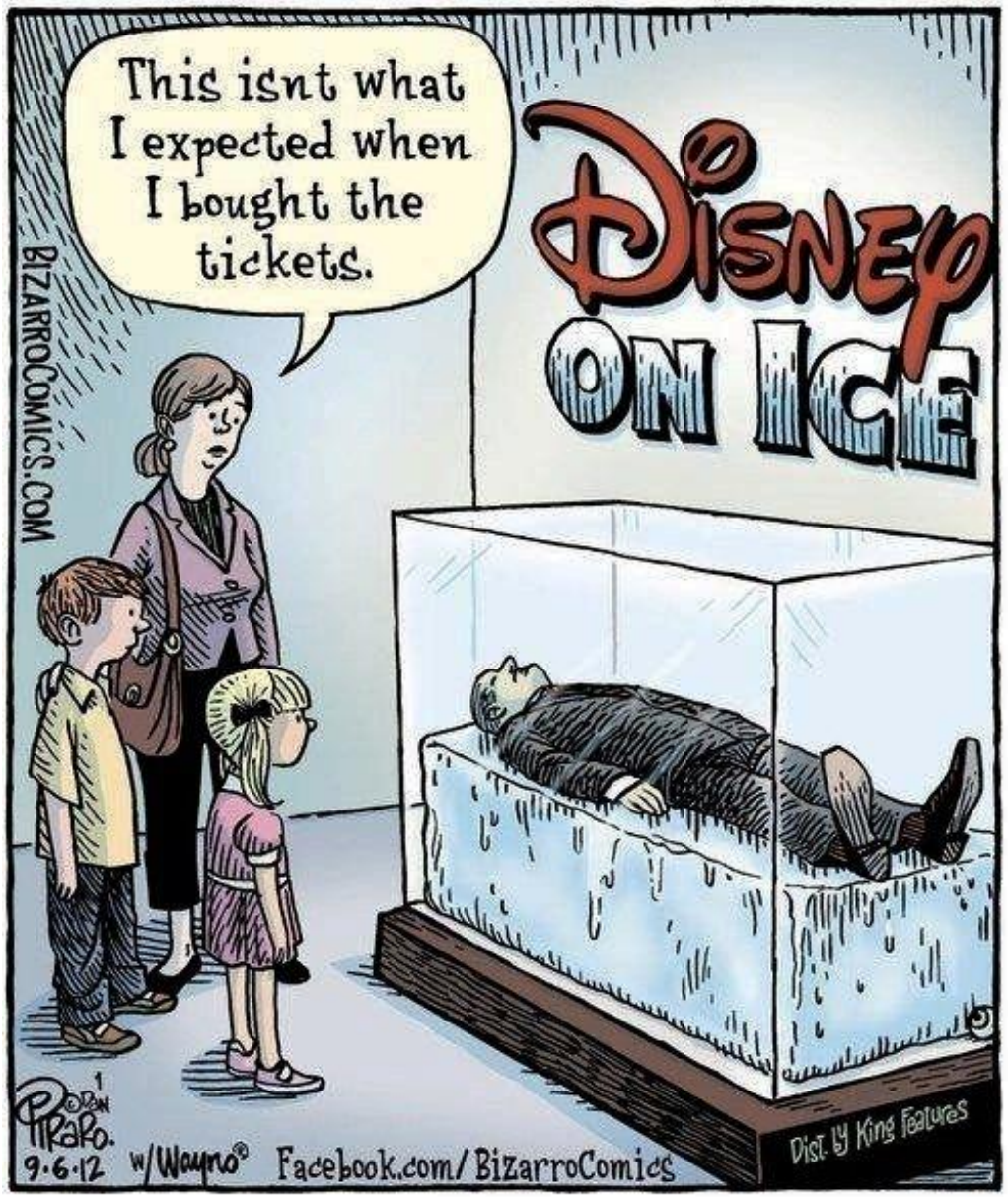
Denise M Hutton MSN, APRN-CNP

Cryosurgery Objectives

- Describe indications for cryosurgery
- Describe contraindications for cyrosurgery
- Describe possible complications of cryosurgery
- Describe cryo equipment and procedural steps
- Describe and review aftercare instructions
- Describe and review documentation and coding

ntroduction to
Cryosurgery

aka: Cryotherapy
Cryogenic Surgery



Cryosurgery Introduction

- Mainstay of dermatology Treatment
- Useful in the outpatient setting
  - Quick
  - Predictable
  - Cost-effective
  - Satisfactory cosmetic results

Introduction

- Mechanism of action
  - Controlled destruction by freezing
  - First tissue ischemia due to capillary damage
  - Second formation of ice crystals around and inside the cells
  - Lastly, thawing ice crystals outside the cell induce further cell wall damage

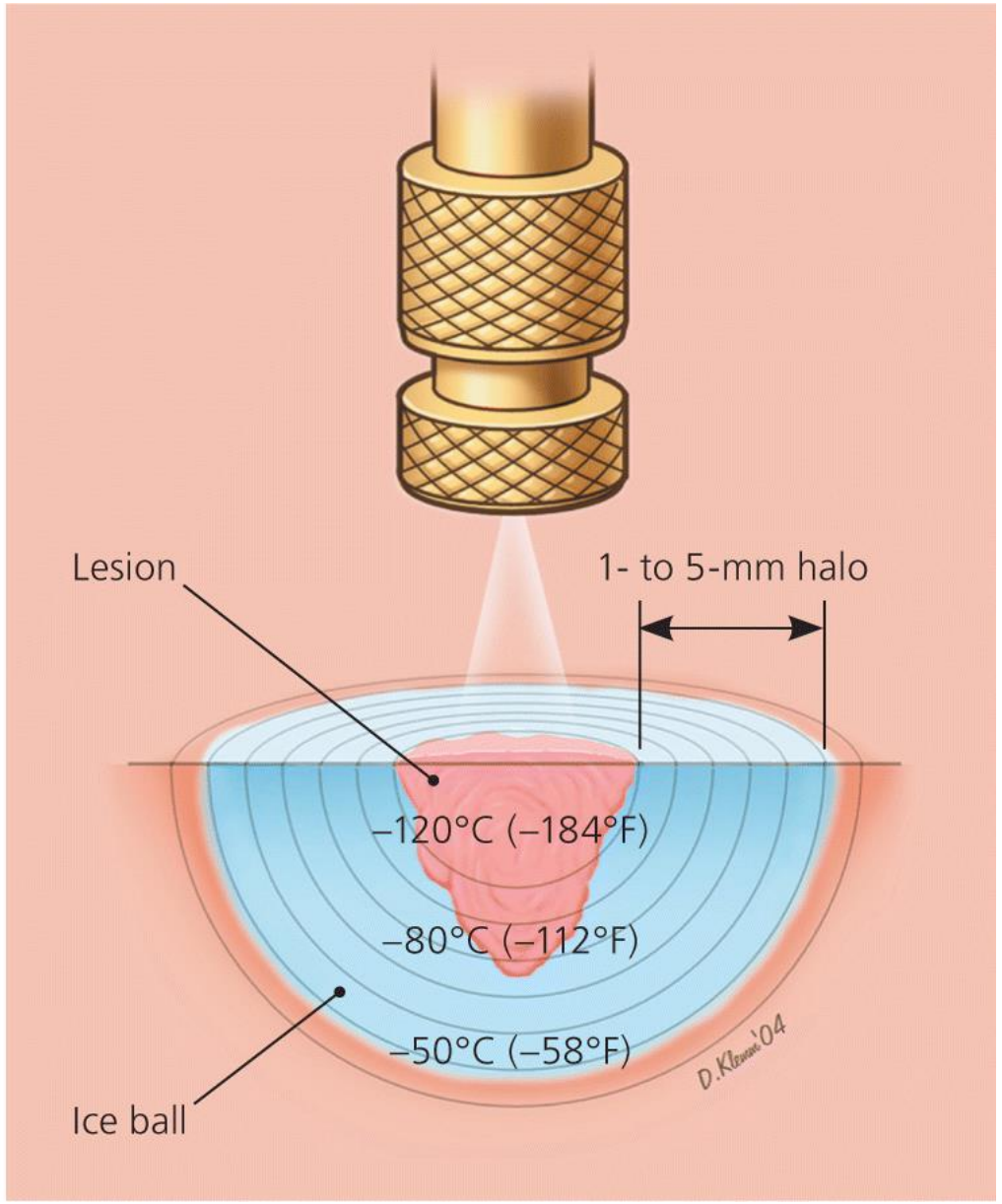


ILLUSTRATION BY DAVID KLEMM

Mechanism of Action

- Boiling point of Liquid nitrogen is –196 C.
- Temperatures for cell destruction
  - Melanocytes –5 C
  - Benign lesions –20 C
  - Premalignant and Malignant lesions –50 C

Indications for Cryosurgery

- Benign Cutaneous Lesion
  - Verrucous lesions
  - Skin tags
  - Mulluscom contagiosa
  - Seborrheic keratosis
  - Spider angiomata
  - Condylomata
  - Dermatofibroma
  - Keloids
  - Acne cysts
  - Benign nevi
- Pre-Malignant and Malignant
  - Actinic keratosis
  - Basal cell carcinoma
  - Non invasive SCC
  - Lentigo maligna

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Contraindications

- Neoplasm of uncertain behavior
- Conditions exacerbated by cold
  - Raynaud's disease
  - Cold urticaria
  - History of cold injury
  - Multiple myeloma
  - Impaired vascularity
- History of radiation therapy

- Not recommended in these areas
  - Periocular
  - Between nose and lip
  - Around nostrils
  - Over bony prominences
  - Below the knee in diabetics and elderly
  - Skin where there is sensory loss
  - Hairy areas like the scalp

Possible Complications

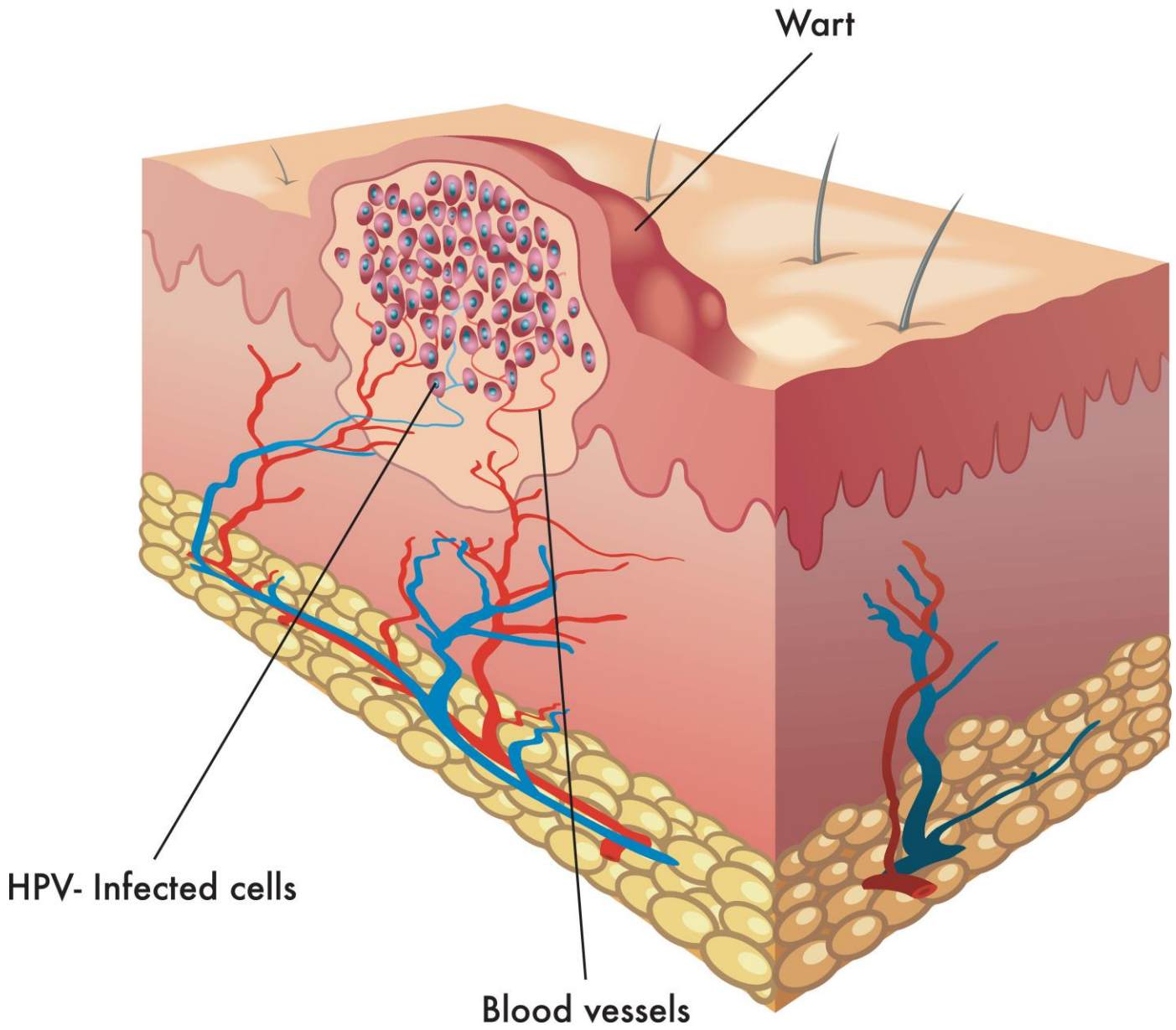
- Common
  - Pain
  - Edema
  - Blister
  - Hypopigmentation
  - Hair loss

Possible Complications

- Less Common
  - Hemorrhage
  - Infection
  - Sensory changes
  - Scarring
  - Extensive tissue destruction
  - Tendon rupture
  - Systemic reactions
- Rare
  - Nitrogen emphysema

Procedure

- Viral warts
  - Most common use of cryosurgery in Primary Care


Wart
HPV- Infected cells
Blood vessels

Procedure

- Informed Consent
  - Explain procedure to the patient, including risks and benefits
  - Explain expected side effects
    - pain that will be short lived but moderately intense during freeze and thaw
    - erythema and swelling that might last several hours
    - blistering
  - Possible adverse effects
  - Obtain consent to continue

Procedure

- Equipment
  - Scalpel
  - Cryogen
  - Attachments
  - Alcohol swabs
  - Cotton Swabs
  - Guide cone

Cryogen

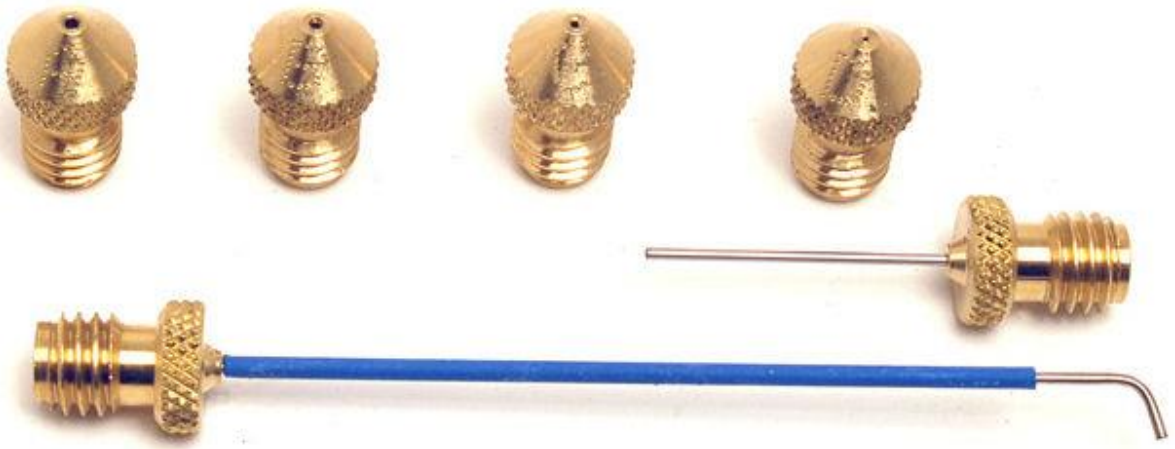
- Liquid Nitrogen
  - -196 C

Other Cryogens

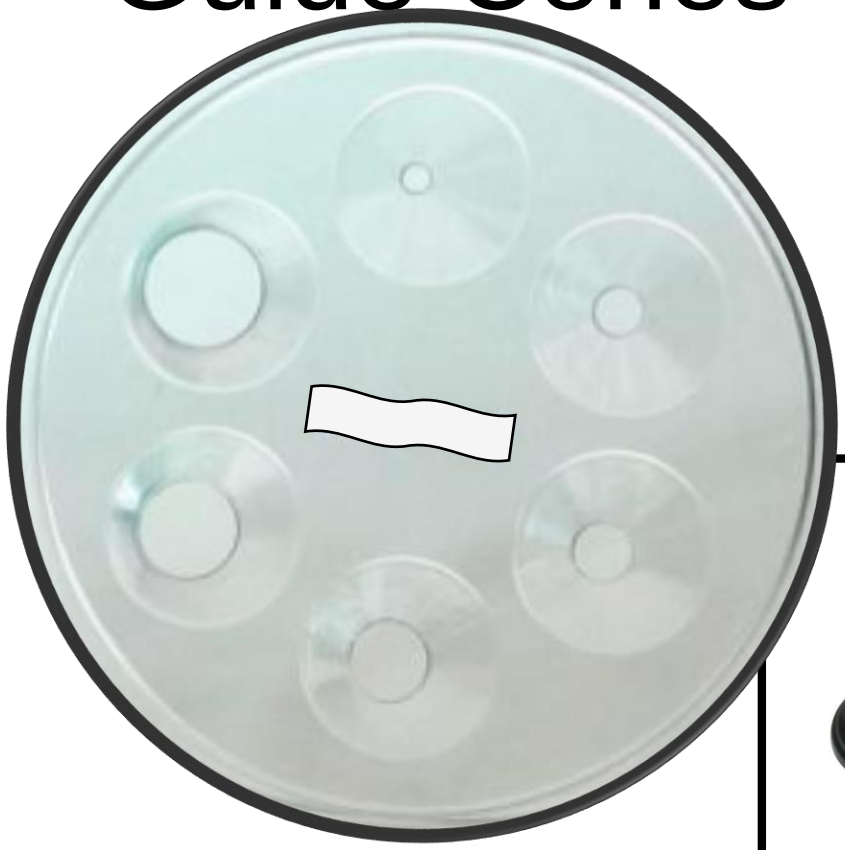
Temps of –50 C to –70 C

- CryoDose
- Histofreezer
- Verruca Freeze

Attachments



Guide Cones



Procedure

- Universal Precautions

Procedure

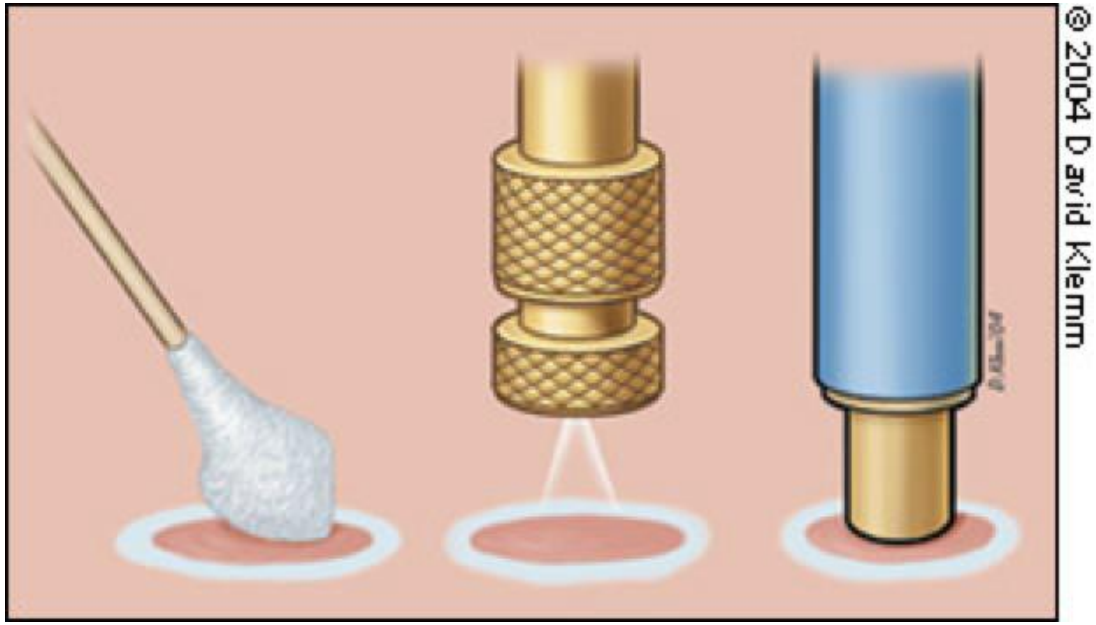
- Prep Treatment area
  - Remove rings
  - Mark area to be treated

Procedure

- Prep treatment area cont'd
  - Paring of Lesion
    - Especially important for plantar warts
    - Clean site with alcohol prior to paring
    - At home by pt with pumice stone or nail file
    - In office by provider with scalpel
  - Topical anesthetic?
  - ~~Injection local anesthetic~~

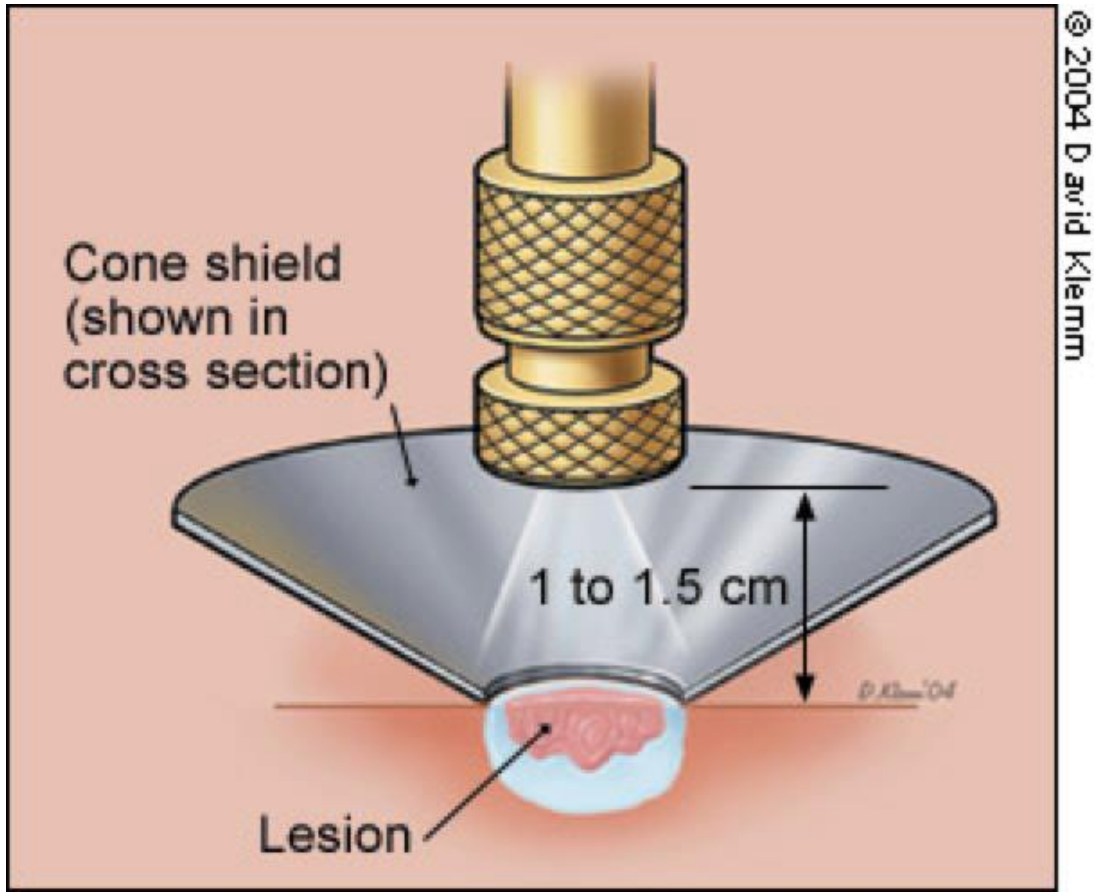
Procedure

- Application of Cryogen:
  - Cotton tip applicator dipped in liquid nitrogen
  - Open spray method
  - Cryoprobe tip

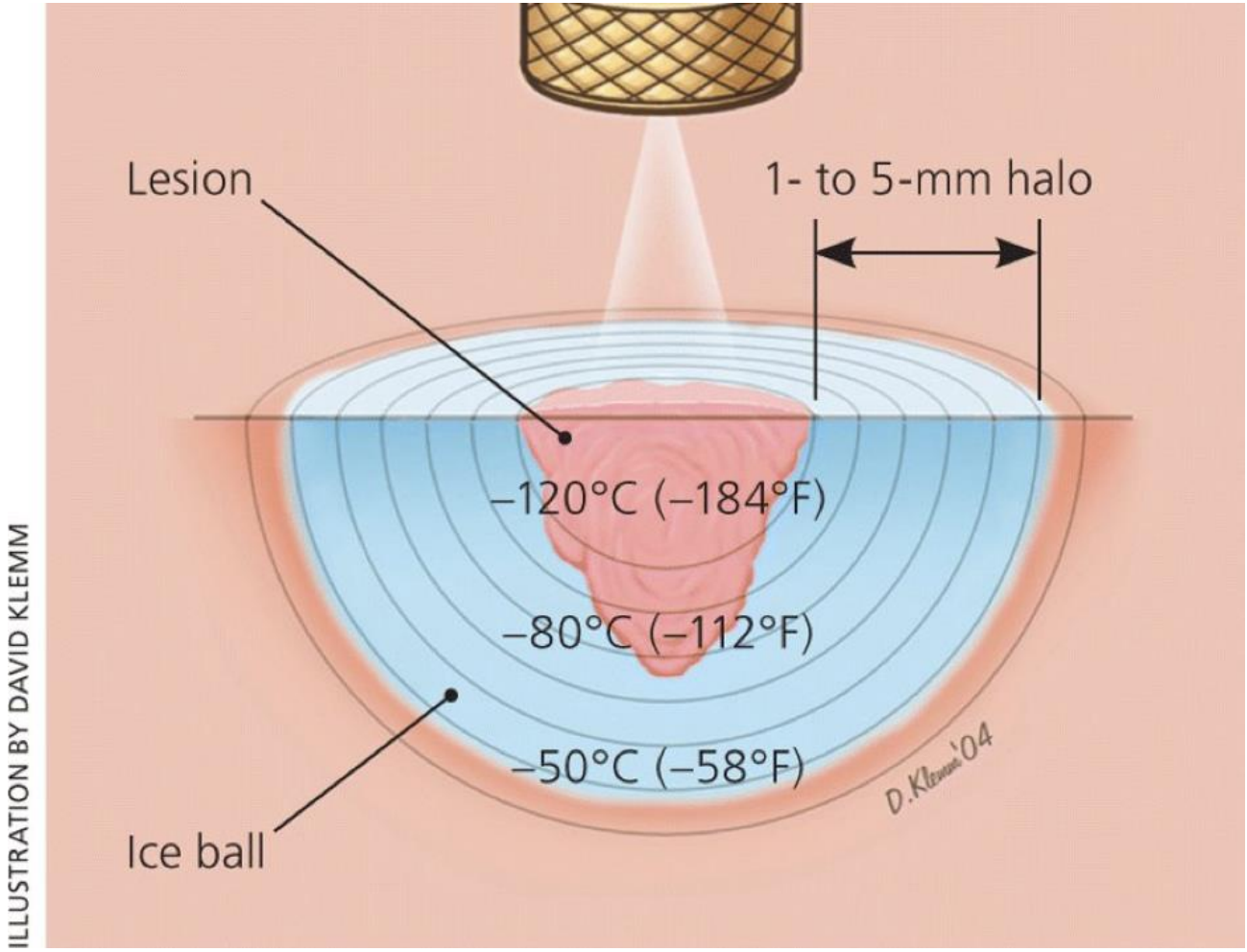


Procedure

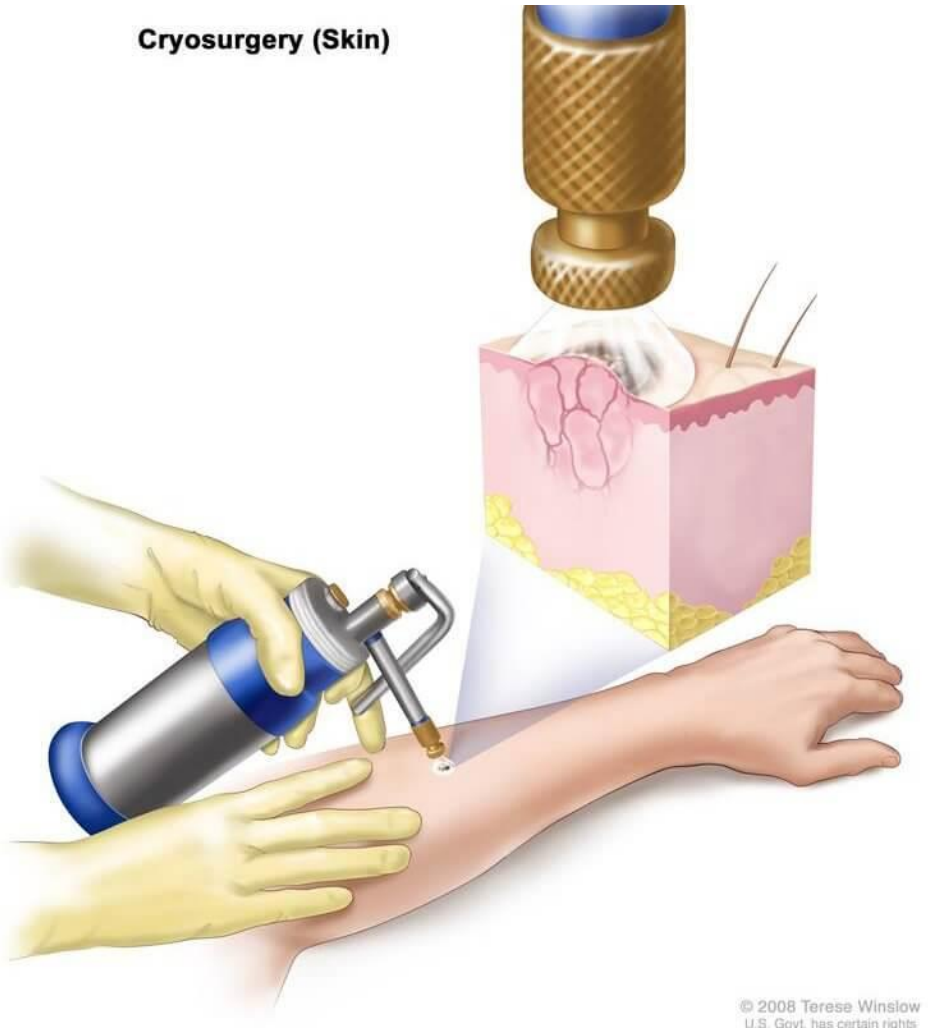
- Application of Cryogen
  - Cone guide to direct the spray
  - Chose a cone 2mm lager than the wart
  - Cone can possibly freeze to the skin



Procedure

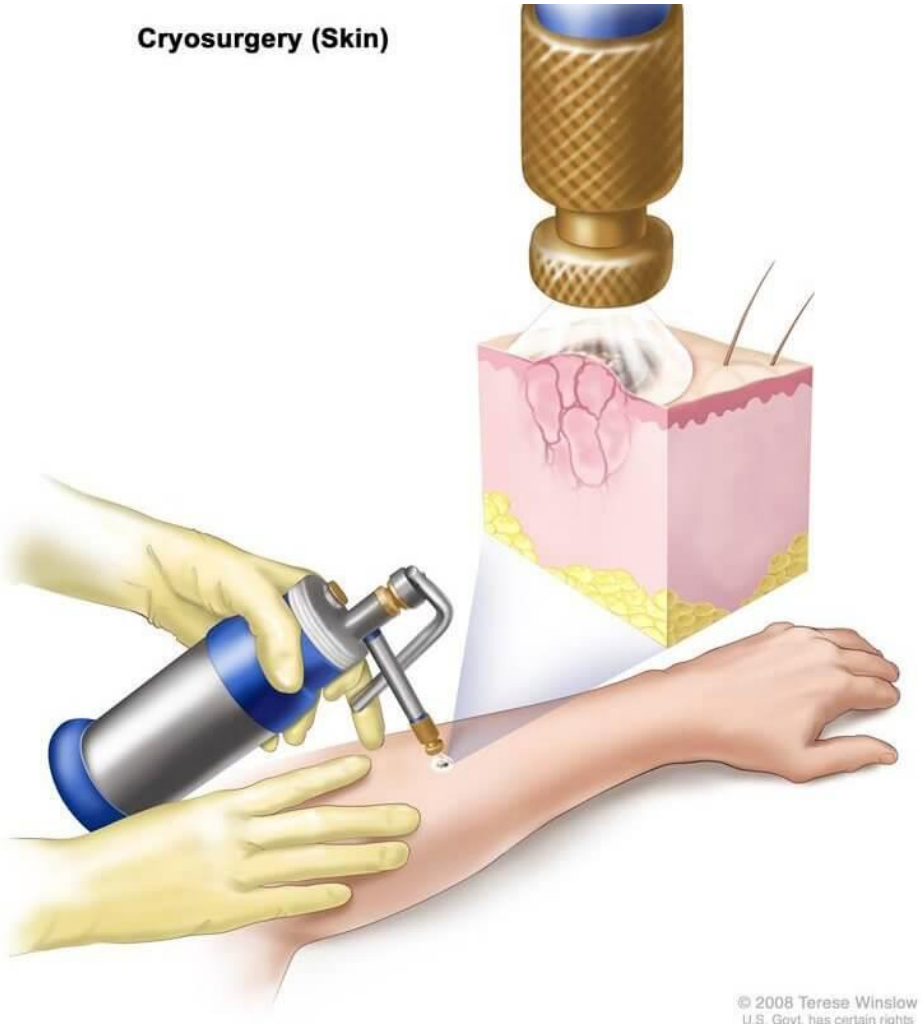

Lesion
1- to 5-mm halo
–120°C (–184°F)
–80°C (–112°F)
–50°C (–58°F)
Ice ball
D.Klemm'04
ILLUSTRATION BY DAVID KLEMM

Procedure



- Liquid Nitrogen
  - Hold nozzle 1-2 cm from skin
  - Aim at center of lesion
  - Freeze time
    - 10-20 sec non plantar
    - 30-60 plantar
  - Freeze extra 2 mm margin to obtain temperature of –20 C at depth of the freeze

Procedure



- Allow to thaw at room temp for 30-60 sec
- Repeat freeze-thaw cycle if needed
  - 1-2 cycles per treatment
  - 1 cycle for hands
  - Plantar wart may benefit from 2 cycles
- Repeat 1-3 times / month

Procedure

- Cotton tip applicator
  - Better control for small lesions
    - Periungual lesions
  - Fluff tip to soak up more liquid nitrogen
  - Styrofoam cup for liquid
    - No double dipping in larger tank

Documentation

- Description of lesion
  - Size
  - Location
  - Pain or tenderness
    - Rationale for removal
- PMH
  - Any contraindications
- Photograph
  - Close-up w/ruler
  - Body location
- Body Diagram
- Informed consent
- Mark Lesion w/patient

Documentation

- Procedure
  - Lesion preparation
  - Type of treatment
    - Cryogen used
    - Cotton tip
    - Direct spray
    - Guide cone
  - Margin of freeze
- Freeze /thaw time
- Repeat treatment
- Outcome
- Any adverse effects?
- Follow up

After Care

- Cover with dry dressing if needed
- Topical steroid optional to reduce swelling
- Written post treatment instructions
    - Prepare patient for expected outcomes
        - pain
        - redness
        - swelling
        - blister (serous or blood-filled)
        - average 10 day healing time
        - possible need for repeat treatment

After Care for Patient

- wash daily with mild soap and water starting day after surgery
  - avoid scented soap, lotion or make-up on the area until healed
- topical ointment like Vaseline or Aquaphor daily for 1-2 wks
  - helps eliminate crusting

After Care for Patient

- If bleeding occurs
  - apply pressure for 15 minutes with dry clean gauze
  - repeat for another 15 minutes if bleeding does not stop
  - seek medical attention if still bleeding after 30 minute with pressure
- Once the area has healed use a broad-spectrum sunscreen of at least 30 SPF

After Care for Patient

- When to seek medical attention
  - infection
  - ulceration
  - bleeding that does not stop

Procedure Coding

- 17110 - Destruction (e/g., laser surgery, electrosurgery, cryosurgery, chemosurgery, surgical curettement), of benign lesions other than skin tags or cutaneous vascular lesions; up to 14 lesions.

- 17111 - 15 or more lesions.

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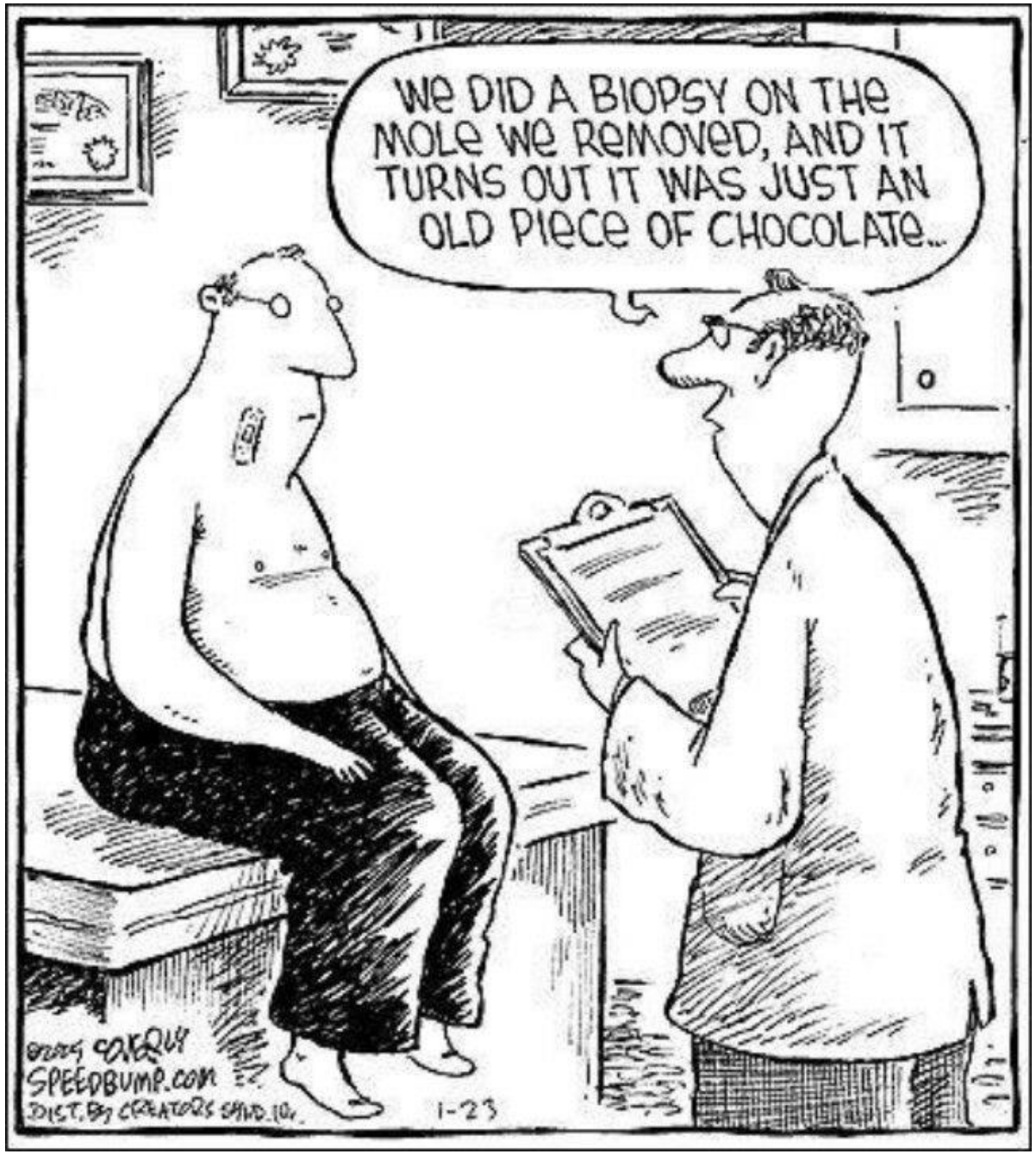

WE DID A BIOPSY ON THE MOLE WE REMOVED, AND IT TURNS OUT IT WAS JUST AN OLD PIECE OF CHOCOLATE...
SPEEDBUMP.COM
DIST. BY CREATORS SYND. INC.
1-23

Objective for Skin Biopsy

- Describe and review indications for Skin and Soft tissue biopsies
- Describe and review contraindications to Skin and Soft tissue biopsies
- Discuss and review possible complications of skin/soft tissue biopsy
- Describe and review equipment and procedural steps for types of biopsies
  - Shave biopsy
  - Punch biopsy/Incisional biopsy
  - Excisional biopsy
- Discuss and review aftercare instructions for biopsies
- Discuss and review documentation and coding

Indications for Skin Biopsy

- A skin biopsy is a routine dermatologic procedure used to obtain cutaneous tissue to ascertain pathology of the skin.
  - Confirm a clinical diagnosis
  - Help guide appropriate treatment
- Performed in the office setting by advance practice clinicians

Contraindications for Skin Biopsy

- Active infection at biopsy site
- Allergy to local anesthetic
- History of bleeding disorder
- Anticoagulation Meds
- Foot or lower leg of pt with diabetes or vascular insufficiency

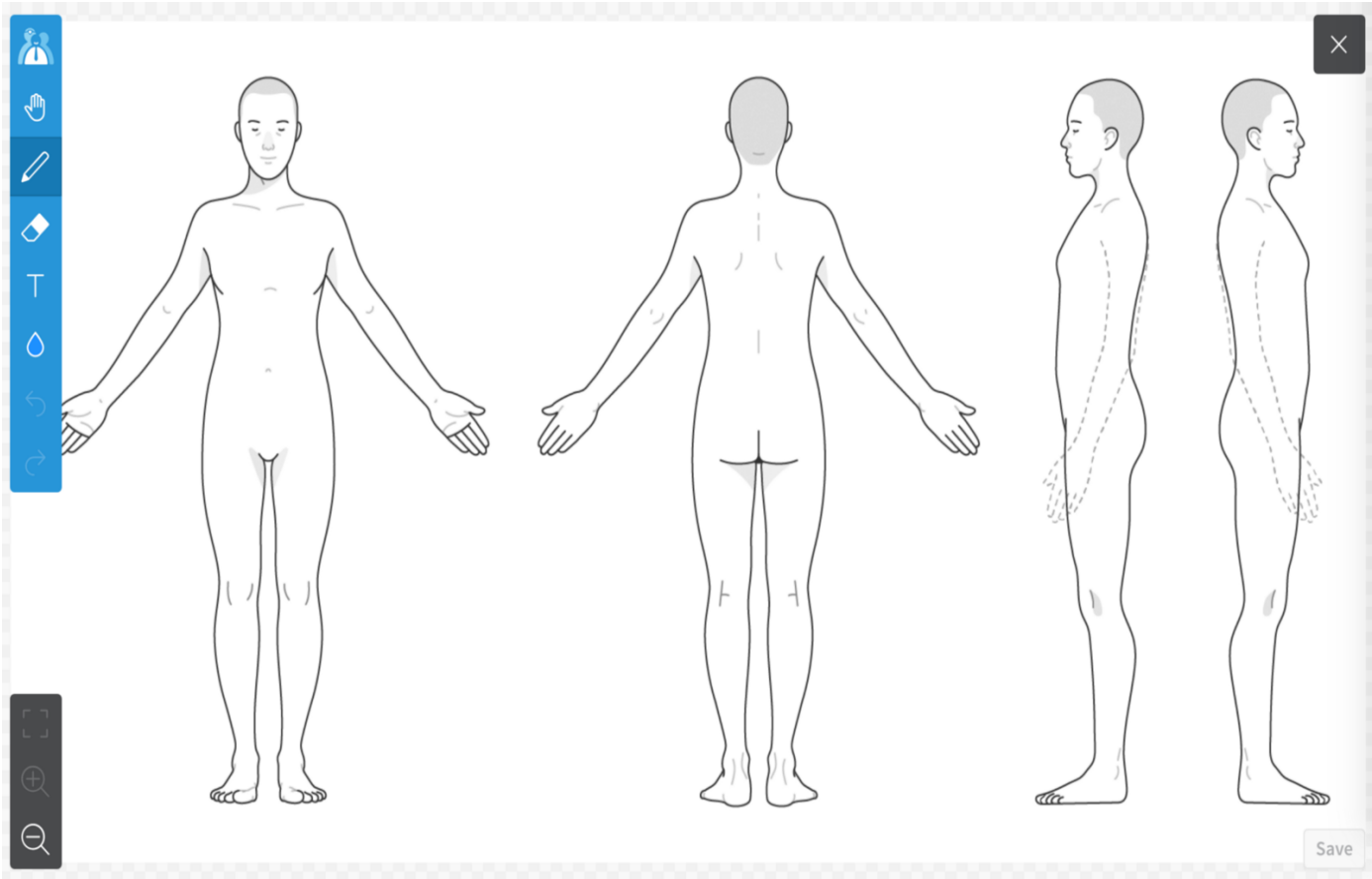
Complications of Skin Biopsy

- Vasal vagal response
- Bleeding at biopsy site
- Hematoma
- Infection
- Scarring
- Inadequate tissue sample for diagnosis

Documentation

- Description of lesion
  - Size
  - Location
  - Pain or tenderness
  - Rationale for biopsy
- PMH
  - Indications
  - Any contraindications
- Photograph
  - Close-up w/ruler
  - Body location
- Body Diagram
- Informed consent
- Mark Lesion w/patient

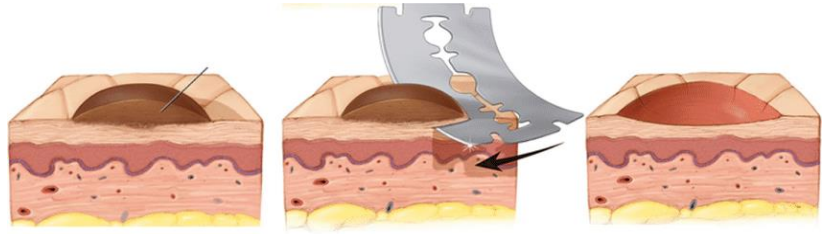
Documentation

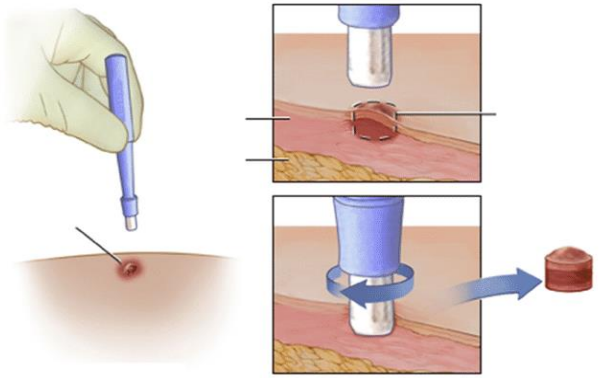


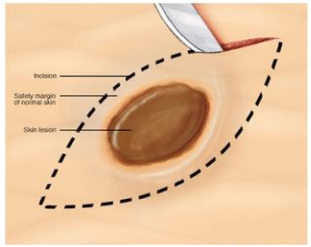
Documentation

Skin Biopsy Types

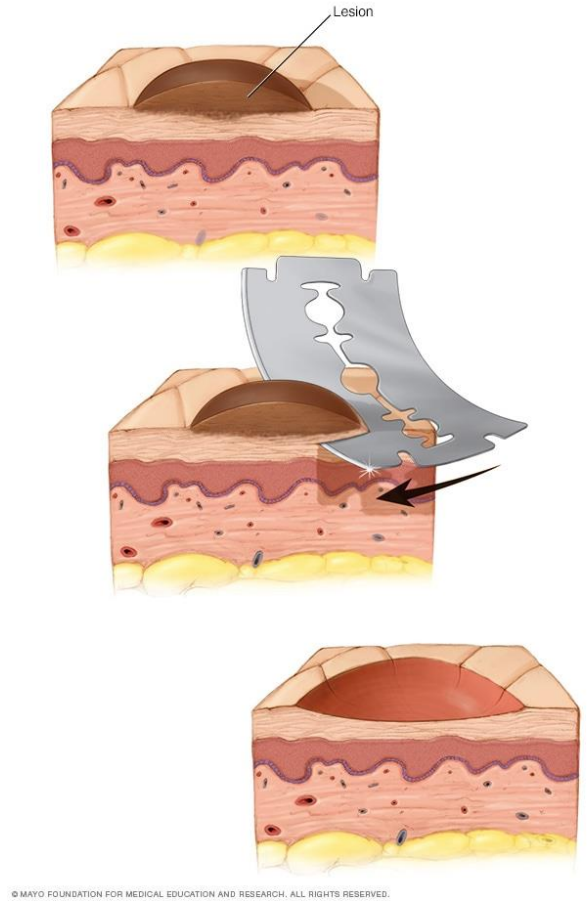
- Shave Biopsy
- Punch Biopsy/Incision Biopsy
- Excisional Biopsy







Shave Biopsy



- Superficial Shave Biopsy: including epidermis and superficial dermis
- Saucerization: deep shave, including epidermis and mid dermis

Shave Biopsy Indications

- Demarcated exophytic lesions < 1.5 cm
- Cosmetic removal benign lesions
  - acrochordons (skin tag)
  - seborrheic keratosis
  - warts
  - benign nevi
- Histologic diagnosis
  - Non melanoma skin cancers
  - Atypically pigmented lesions
  - Superficial melanomas

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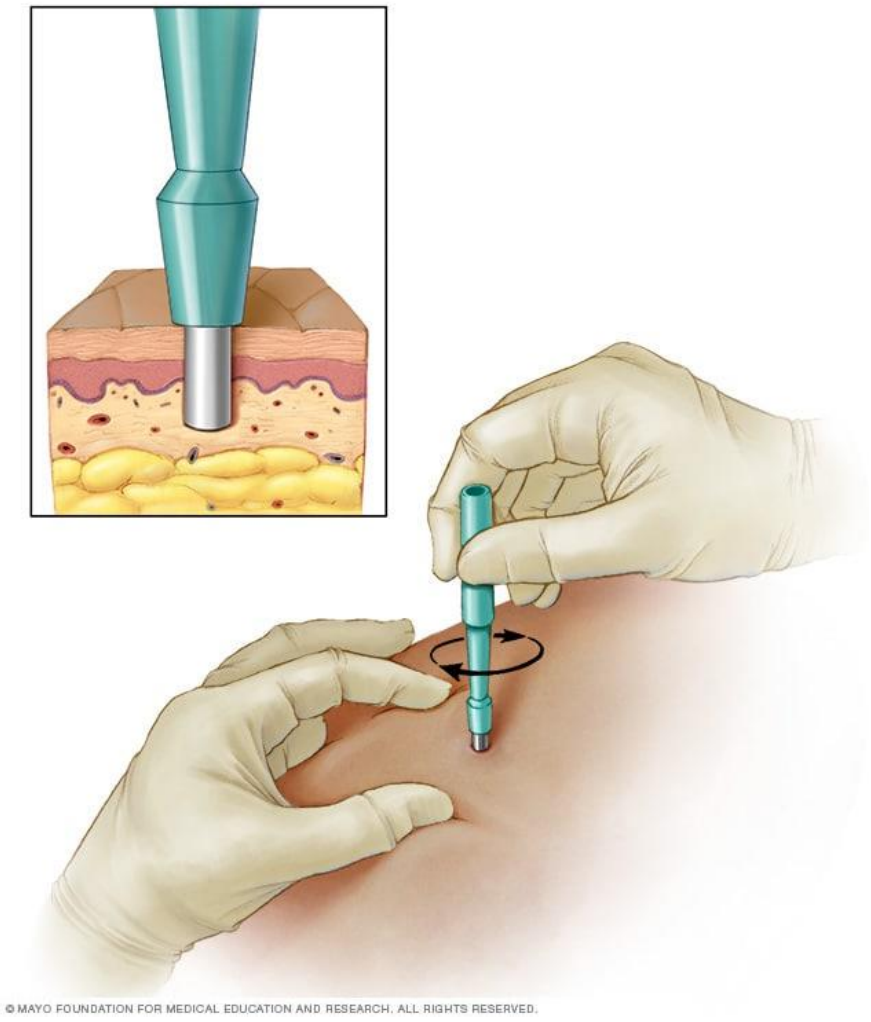
  - ~~Atypically pigmented lesions~~
  - ~~Superficial melanomas~~

Shave Biopsy Contraindications

- Invasive melanoma
- Lesions that extend into the deeper dermis or sub-q fat
  - Sebaceous cyst
  - Neurofibroma

Punch Biopsy



- A procedure for sampling of an endophytic skin lesion or full thickness of skin for histopathologic examination.

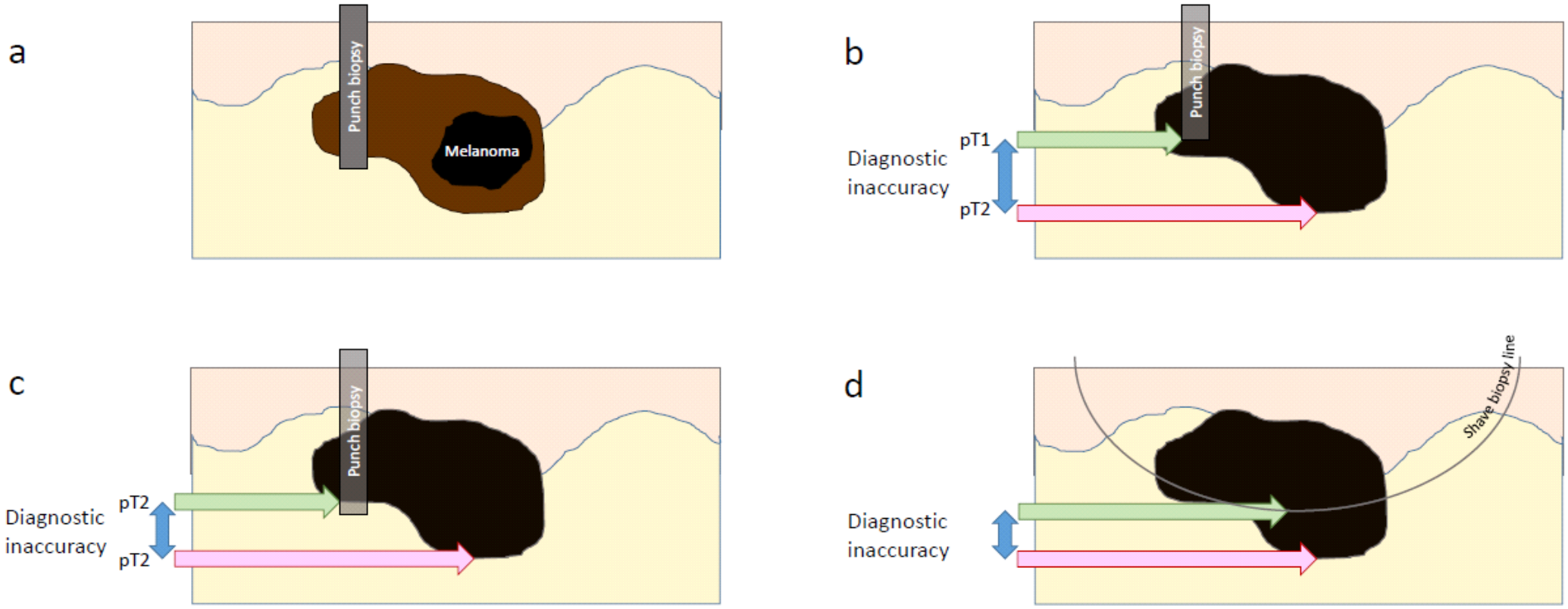
Punch Biopsy Indications

- Small pigmented lesions of the skin (nevi or small melanomas)
- Benign skin tumors (i.e., dermatofibroma, neurofibroma)
- Vascular disease of the skin or subcutaneous fat
- Superficial inflammatory or granulomatous diseases
- Papulosquamous disease (i.e., psoriasis)
- Connective tissue disorders (i.e., systemic lupus erythematosus, discoid lupus erythematosus)

Punch Biopsy Contraindications

- Lesions suspicious for melanoma
- Pigmented lesions larger than the available punch
- Superficial artery or nerve at biopsy site

Shave and Punch Biopsy Contraindications



Excisional Biopsy

- Excisional biopsy intends to excise the entire lesion
  - Incisional biopsy takes just a portion of the lesion for diagnostic purposes
- Full thickness tissue including skin, dermis and subcutaneous tissue, down to muscle.

Excisional Biopsy Indications

- Pigmented lesions larger than available punches
- Suspicious pigmented lesions

Comparison of Biopsy Types

	Shave	Punch	Incisional	Excisional
Instrument	Scalpel or Razor	Punch / Trephine	Scalpel	Scalpel
Removal	Partial or Complete	Partial or Complete	Partial	Complete
Orientation	Horizontal	Vertical	Vertical	Vertical
Suture	No	Yes	Yes	Yes
Depth	Superficial	Deep	Deep	Deep

Procedure

- Decided need for biopsy including appropriate type of biopsy
  - Make friends with your pathologist
- Documented lesion
- Explained procedure to the patient
  - Risks, benefits, alternatives
- Documented informed consent

Biopsy Equipment

- PPE: Gloves – Nonsterile gloves or Sterile, Mask, Goggles
- Marking Pen
- Alcohol Wipes
- Lidocaine (or Xylocaine) 1% or 2%, with or without epinephrine
- Syringe: 3-mL syringe
- Needle: 21-gauge needle for drawing up anesthetic
- Needle: 25- to 30-gauge needle or smallest possible size for injecting
- Skin Prep: Povidone/iodine or chlorhexidine to clean the skin in preparation for the procedure.
- Drape (e.g. fenestrated drape) or clean towel
- Forceps: toothed forceps to minimize crush artifacts.
- Needle holder
- Scissors

- Blade: Flexible shave biopsy instrument (Dermablade), double-sided razor blades, or surgical blade (No. 15) and scalpel handle, biopsy punch of appropriate size
- Sterile gauze, 2x2 inch or 4x4 inch
- Cotton swabs
- Hemostatic agents: Chemical Cauterization: Aluminum chloride 20-50% solution (Drysol), OR ferric subsulfate (Monsel solution) OR silver nitrate sticks (75% silver nitrate/25% potassium nitrate) OR
- Electrical cauterization: Electrodesiccation, electrofulguration, or electrocoagulation.
- Dressing
  - Small adhesive bandages (circular or square) or nonstick bandage and tape
  - White petrolatum on a swab or antibiotic ointment.
- Pathology specimen container(s) filled with 10% formalin solution, Michel's solution or normal saline. Enough containers for the number of biopsies to be performed.
- Patient labels
- Laboratory requisition form or enter **Histopathology** order through EHR

PPE

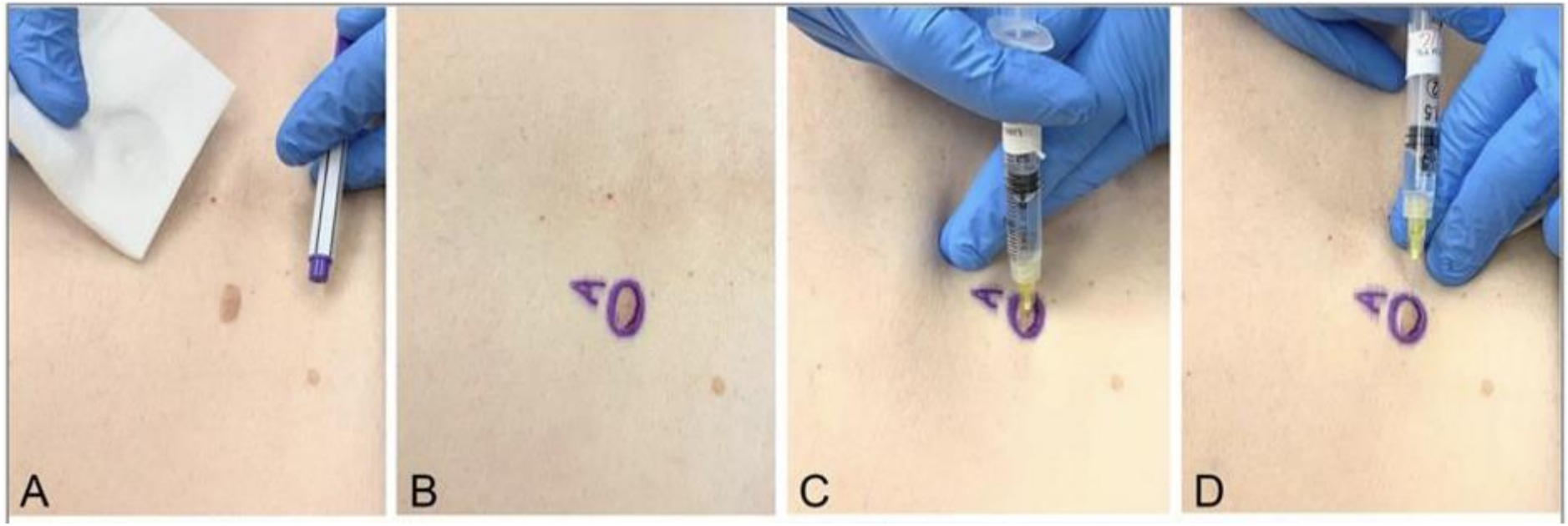
jection


SINGLE USE ONLY


NDC 63323-488-37
Xylocaine®– MPF
(lidocaine HCl and epinephrine Injection, USP)
1.5% (15 mg/mL)
NDC 63323-484-57
Xylocaine®
(lidocaine HCl Injection, USP)
0.5% (5 mg/mL)
NDC 63323-485-27
Xylocaine®
1% (10 mg/mL)
20 mL Multiple Dose Vial
NDC 63323-486-17
Xylocaine®
(lidocaine HCl Injection, USP)
2% (20 mg/mL)
10 mL Multiple Dose Vial

Biopsy Procedure

- Skin Marker
- Alcohol swab
- Lidocaine 1% or 2 % with or without Epi
- 3 cc Luer Lock Syringe with 25 ga, 27 ga, or 30 ga needle



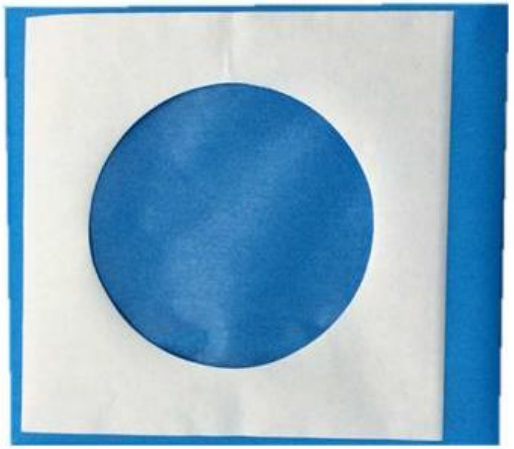
- Journal of the American Association of Nurse Practitioners November 2022 doi: 10.1097/JXX.0000000000000791

Biopsy Procedure

- Lidocaine Injection
  - Give first injection perpendicular to the skin
  - Fan out to instill Lidocaine to anesthetize the entire lesion plus a margin of surrounding skin
    - Include area to place sutures for punch or excsion
  - Lidocaine with Epi needs 15 mins for epinephrine to constrict blood vessels

Biopsy Procedure

- Antiseptic Skin Prep
  - Shave Biopsy (clean procedure)
    - Alcohol
  - Punch and Excisional biopsy (sterile procedure)
    - Chloraprep, Chlorhexidine, Povidone-Iodine
    - Don sterile gloves
- Sterile Drape
  - Punch and Excision
  - Suture



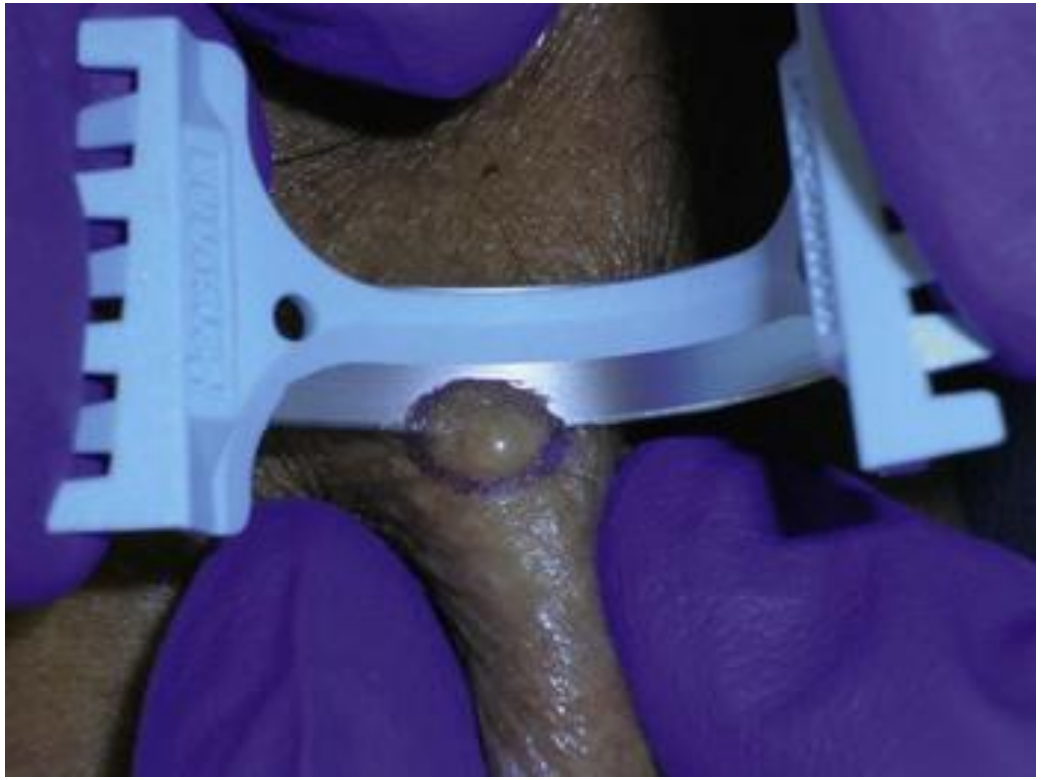
Shave Biopsy

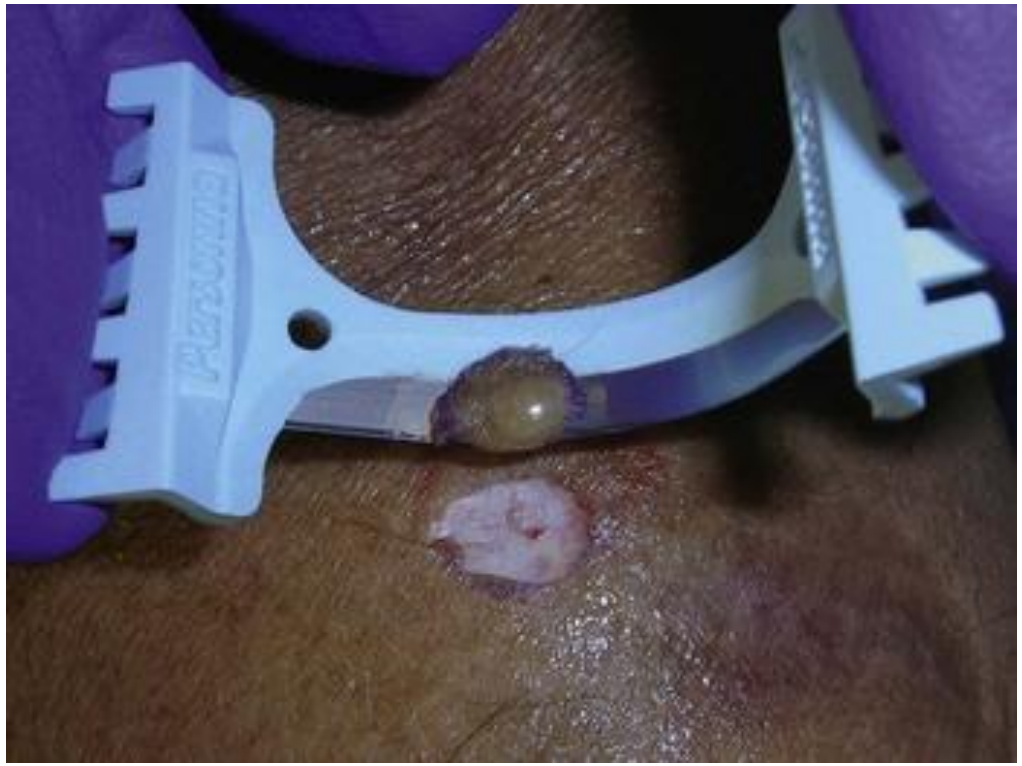
- Dermablade

- Double sided razor
  - Broken in half to make two single edge blades
  - https://youtu.be/EUmnaSreNH8

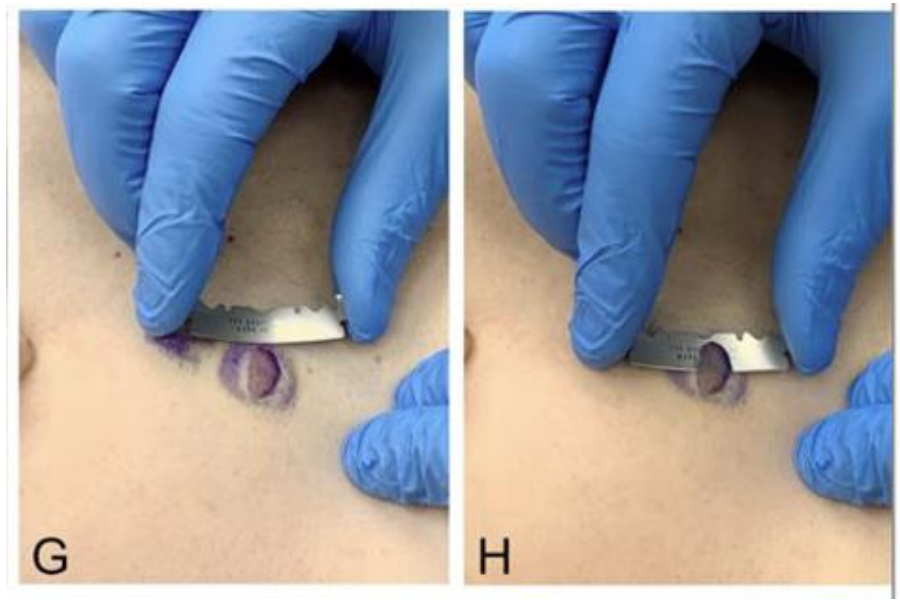
- # 15 blade on a handle

Shave Biopsy





Shave Biopsy

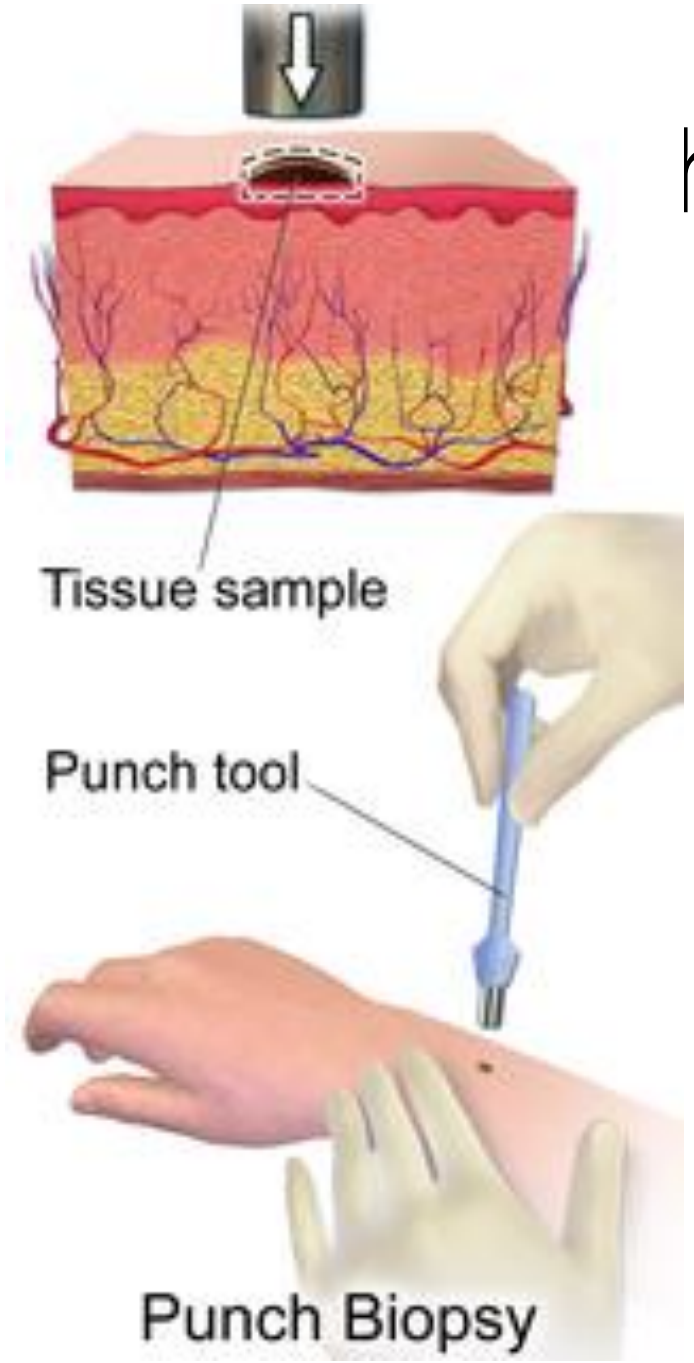


Shave Procedure

- Hold tissue firmly between thumb and finger or hold traction with non dominant hand to facilitate biopsy
- Use very short back and forth movements while advancing the blade
- Hemostasis can be obtained with Aluminum Chloride or electric cautery

Shave Procedure

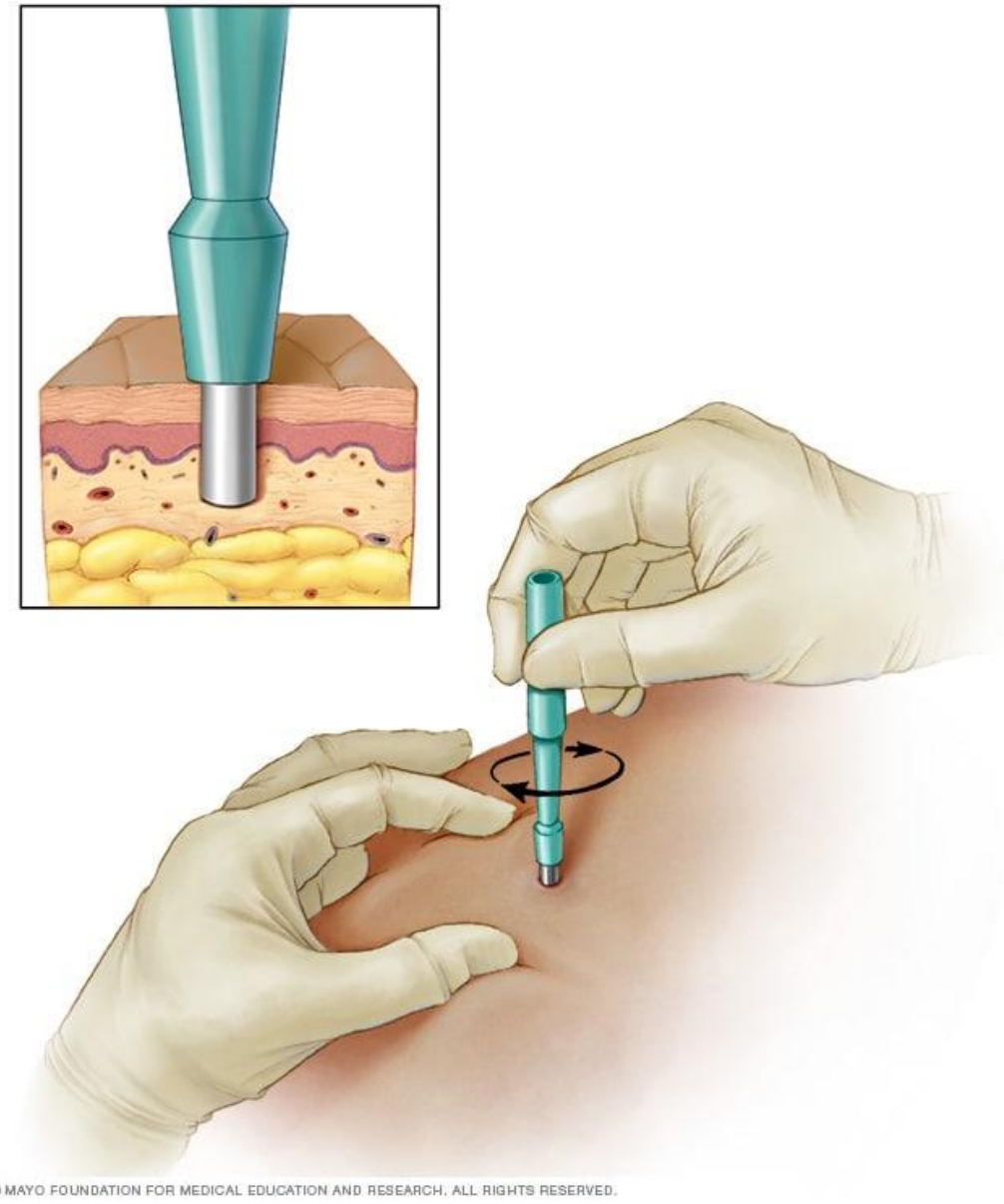
- Transfer specimen to container with forceps or cotton swab
- Apply thin layer of petrolatum ointment
- Cover with small adhesive bandage or nonstick gauze and tape
- Follow up with pathology results



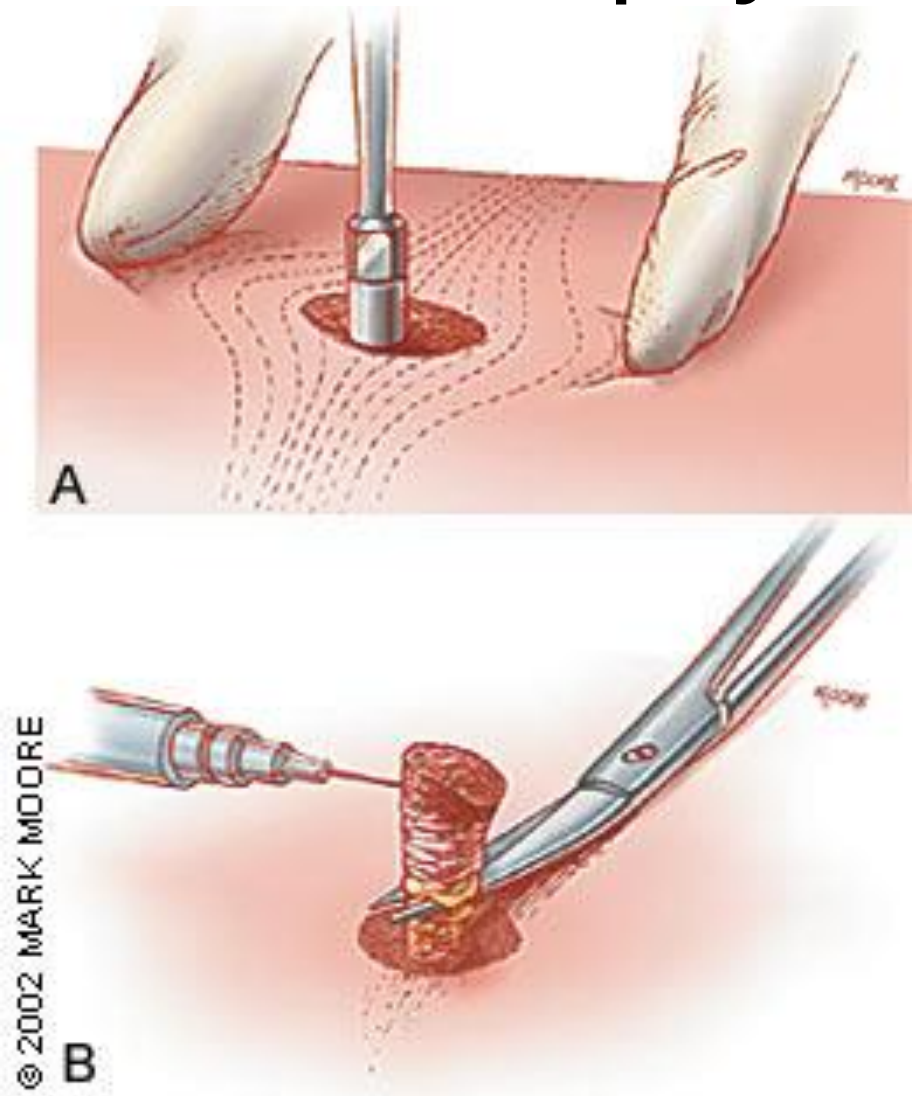
h Biopsy

- Marked, Local, Skin Prep
- Choose a punch that will include the entire lesion
- For skin biopsy
  - 3mm or 4mm

- Don sterile gloves
- Hold the punch perpendicular to the skin
- Stretch the skin with your non dominant hand
- Using steady pressure rotate in one direction to advance the punch into the tissue



Punch Biopsy



- Gently lift the punch away from the skin
- Lift the specimen using
  - 30 ga needle
  - fine toothed forceps
- Transect the base with fine scissors
- Transfer specimen to container

Punch Biopsy

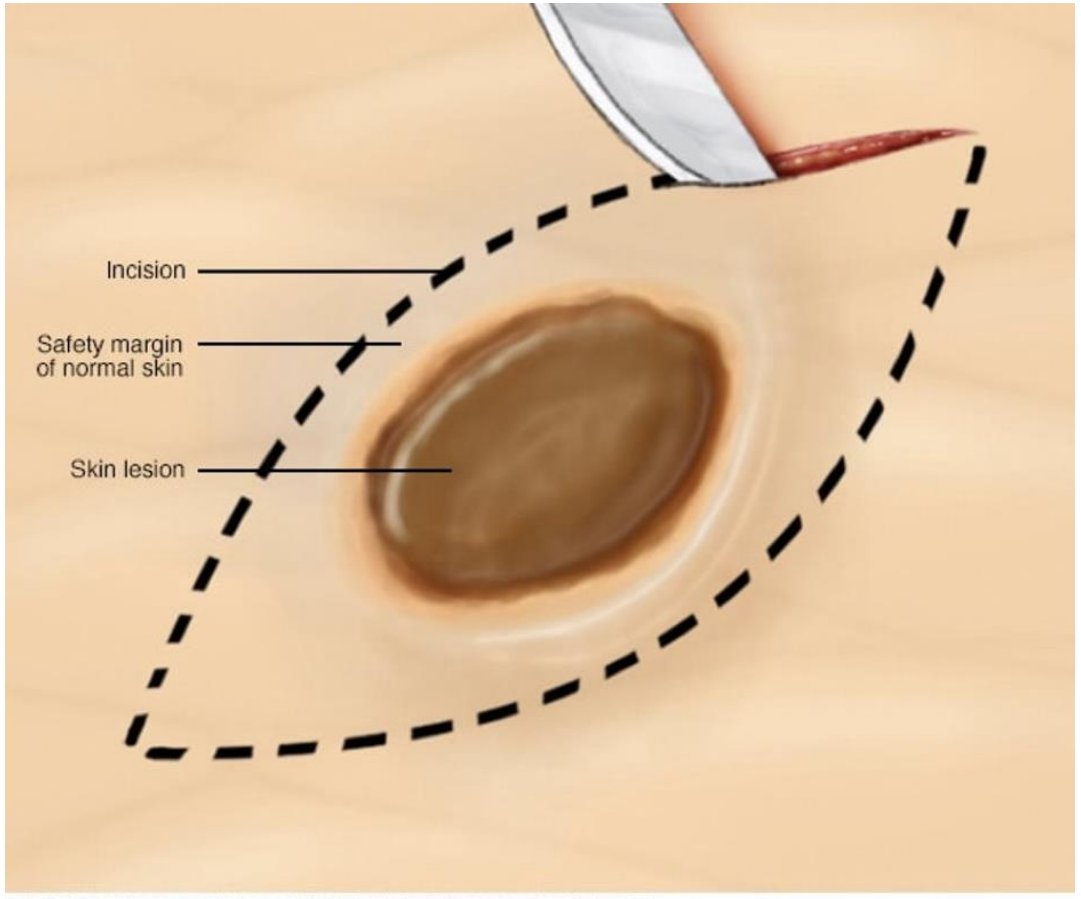
- Hemostasis
  - Pressure with sterile gauze
  - Electric cautery if bleeding is significant
    - Being careful not to injure skin
- Close the wound with monofilament non absorbable suture
  - Suture can also provide hemostasis
  - 1 or 2 simple interrupted sutures

Punch Biopsy

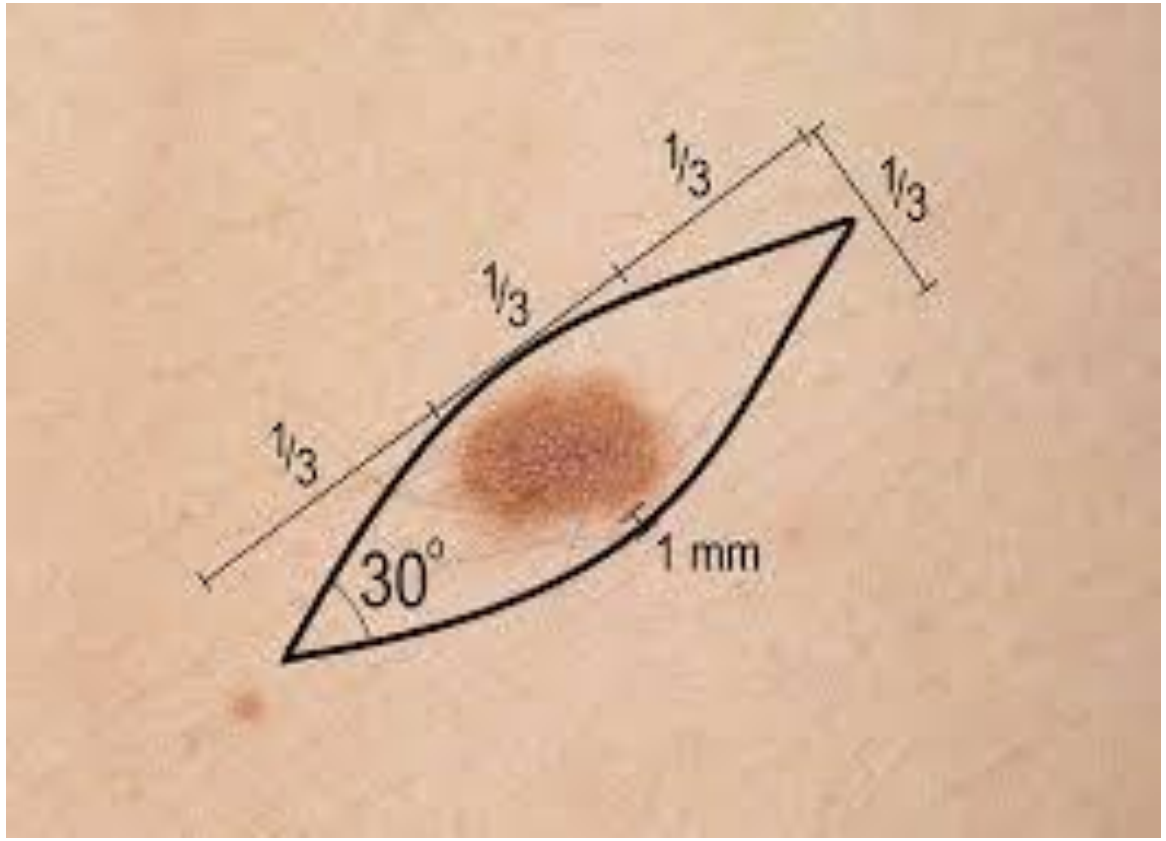
- Dressing Options
  - Antibiotic ointment thin layer
  - Adhesive bandage
  - Nonstick gauze and tape
  - Saline moistened gauze and tape
- Follow up for suture removal and pathology
  - 5-7 days face and neck
  - 7-10 days scalp and arms
  - 10-14 days trunk and legs

Excisional Biopsy

- Marking pen
- #15 scalpel and knife handle
- Fine toothed forceps
- Needle Holder
- Scissors



Excisional Biopsy

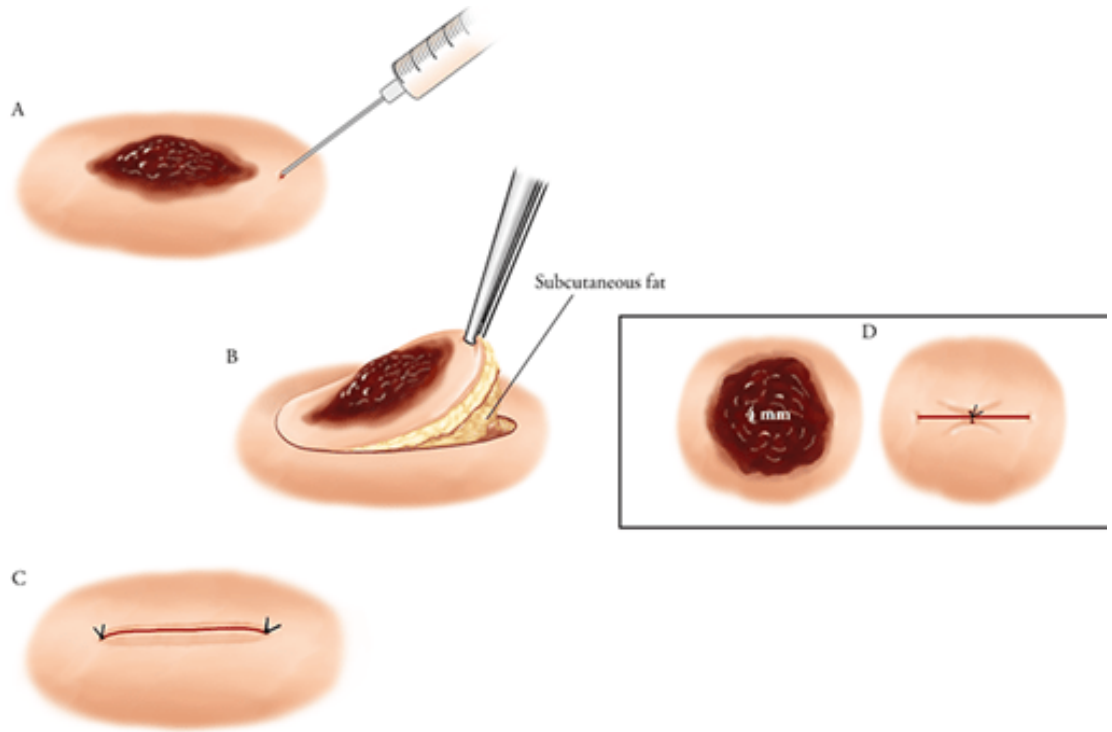


- Mark the incision lines prior to local
- Length 3x Width
- Inj Lidocaine
- Antiseptic skin prep
- Sterile Gloves
- Sterile drape

Excisional Biopsy

- Hold tension on skin with non-dominant hand
- Hold blade relatively vertical and make skin incision using one motion on each side of the elipse

Excisional Biopsy



- Use forceps to stabilize the specimen
- Incise full thickness through skin, dermis and into sub-q fat
  - ? Down to muscle
- Use forceps to transfer specimen to container

Excisional Biopsy

- Hemostasis
  - Pressure with sterile gauze
  - Electric cautery if bleeding is significant
  - Suture can also provide hemostasis

Excisional Biopsy

- Wound Closure
  - Might require 2 layer closure
  - Undermine under the dermal layer to facilitate closure
  - 1st Buried monofilament absorbable for dermis
  - 2nd Monofilament non absorbable on skin
    - Simple running or interrupted sutures

Excisional Biopsy

- Dressing Options
  - Antibiotic ointment thin layer
  - Adhesive bandage
  - Nonstick gauze and tape
  - Saline moistened gauze and tape
- Follow up for suture removal and pathology
  - 5-7 days face, neck
  - 7-10 days scalp and arms
  - 10-14 days trunk and legs

All Biopsy Procedures

- Specimen cup with appropriate transport medium
  - Formalin, Michel's, Saline Gauze

- Nevi
- Keratosis
- Lesions suspicious for skin cancer
- Neurofibroma

Tissue biopsy for immunofluorescence

- Connective tissue disorders
- Vasculitis
- Lupus
- Connective tissue disorders

Specimen Label

- Patient label
  - Label specimen in the presence of the patient
- Label Information
  - Patient name and DOB, MRN
  - Specimen number even if only one
  - Specimen name: "Left upper arm lesion"
  - Collection date and time
  - Collecting practitioner initials or name

Procedure Documentation

- Description of lesion
  - Size
  - Location
  - Rationale for biopsy
- PMH
  - Any contraindications
- Photograph
  - Close-up w/ruler
  - Body location
- Body Diagram
- Informed consent
- Mark Lesion w/patient

Procedure Documentation

- Local inj
  - Type and amount
- Clean/Sterile
- Skin Prep
  - Agent used
- Type of biopsy
  - Shave
  - Punch/incision
  - Excison
- Hemostatsis used
- Sutures
- Final incision size for excsion
- Any adverse events?
- Follow up plan
- Start and stop time?

Post Procedure Care

Give Written instructions to the patient

Wound Care:

- Keep the wound dry for 24 hours
- Wash twice daily with soap and water
- Shave Bx: Apply thin layer of Vaseline/Aquaphor/Petrolatum twice daily and cover with a band-aid if needed to keep ointment off clothing.
- Punch and Excision: Keeping the wound clean, will help reduces scabbing and make suture removal easier

Post Procedure Care

Pain Control:

- Most patients do not require any pain medication.
- Should you need pain control, begin with acetaminophen (Tylenol) 500mg tablets.
- Take 2 tablets every 6 hours as needed for pain.
  - If the above does not help, please call the office.

Activity:

- Avoid activity that will put tension on the sutures to decrease the risk of the sutures breaking and the wound opening.

Post Procedure Care

Bleeding:

- A small amount of bleeding is normal.
- If the wound is oozing, apply 10-15 minutes of firm pressure and then recheck. This stops bleeding in most cases.
- If bleeding is excessive, or cannot be stopped with the above technique, please call the office.

Post Procedure Care

Infection:

- Infection is a risk after any procedure.
- Signs of infection usually start 3-7 days after surgery
- Notify the office if you have
  - increasing redness
  - warmth
  - tenderness or have developed systemic symptoms
  - fever
  - chills

Follow up:

Return to the office in _____ days for suture removal

Coding

- CPT Codes:
  - Shave Bx
    - 11102 When shave removal is performed with the sole intent of obtaining pathologic diagnosis, tangential biopsy, single lesion
    - 11103 tangential biopsy, each additional lesion, reported separately in addition to primary code
  - Punch Bx
    - 11104 Punch biopsy of the skin (including simple closure) single lesion
    - 11105 Punch biopsy each additional lesion, including simple closure, reported separately in addition to primary code

Coding

- CPT Codes:
  - Incisional Bx
    - 11106 Incisional biopsy of skin (eg, wedge) (including simple closure) single lesion
    - 11107 Incisional biopsy, (eg, wedge) (including simple closure) each additional lesion, reported separately in addition to primary code
  - Excsional Bx
    - 11400-11446 should be used when the excision is a full-thickness (through the dermis) removal of a lesion, including margins, and includes simple (non-layered) closure.

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