Primary Care Procedures "The Basics"

AAPA We Are Family Medicine Conference

February 3rd 2023

Disclosures

- . Joseph Carter – I have no relevant relationships with ineligible companies* to disclose within the past 24 months
- Ben Olmedo - I have no relevant relationships with ineligible companies* to disclose within the past 24 months
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LEARNING OBJECTIVES

- **Explain the indications and contraindications of basic primary care procedures.**
- **Describe required materials to be able to execute basic primary care procedures.**
- **Demonstrate familiarization in execution of basic primary care procedures.**

OVERVIEW

- Administering Anesthetics
  - Local vs Field vs Digital Blocks
- Skin Biopsy
  - Shave vs Punch
- Suturing
  - Simple Interrupted vs Running
  - Mattress Sutures: Vertical vs Horizontal
- Fluorescein Eye Exam with Woods Lamp
- Foreign Body Removal
- Incision and Drainage – Abscess
- Nail Trephination (i.e. draining subungual hematoma)

Patient & Provider Safety

- Universal Precautions
- Comfort with Procedure (i.e. know your limits)
- Extra Hand available for help
- Proper equipment available
- Comfortable Room and Positioning
- Taking a "Time Out" before the procedure begins
- Anticipate Complications
- Prepare for "Difficult" Patient
- Consent well before procedure as part of pre-preparation
- Parental Consent / Guardian Consent, when indicated

Administering Anesthetics

- Indications
  - Procedure requiring local anesthesia – infiltrative anesthetic agent
  - Amides vs. Esters → Amide Anesthetics – Lidocaine / Xylocaine
- Contraindications
  - Absolute vs. Relative
- Materials
  - Syringe – Drawing Needle – Injection Needle – Skin Cleansing Agent
  - 2x2 / 4x4 Guaze
  - Anesthetic Agent with or without Buffer Solution
  - Pain Control agents / techniques
- Techniques for Procedure
  - Local Cutaneous Infiltration
  - Field Block
  - Digital Block

Administering Anesthetics

Table 1. Standard Procedure for Infiltrative Anesthesia

- Review anatomy and choose an anesthetic technique
- Consider contraindications
  - Absolute contraindications: patient refusal, infection at injection site, allergy to local anesthetic, nonsterile conditions
  - Relative contraindications: coagulopathy, preexisting neuropathy of the target nerve
- Discuss the procedure with the patient, including what he or she can expect and the possible complications; obtain signed informed consent as needed
- Evaluate the surrounding area and areas distal to the injection site for signs of neurovascular compromise
- Choose and label the appropriate anesthetic agent based on the technique and clinical situation; warm and buffer solutions as indicated
- Cleanse the injection site (for intact skin, alcohol wipes are as effective as chlorhexidine [Peridex] or povidone/iodine)
- Rapidly insert the needle (27- to 30-gauge) through the skin into the subcutaneous layer, using distraction techniques as necessary; consider aspiration before injection
- Slowly and steadily inject small volumes of anesthetic while withdrawing the needle
- Test the area for adequate anesthesia

Administering Anesthetics

Table 2. Commonly Used Infiltrative Anesthetic Agents

Agent	Concentration	Onset*	Duration*	Maximum dose	
				mg per kg	*mL*
Amides					
Lidocaine (Xylocaine)	0.5%, 1%, or 2%†	Rapid: < 2 minutes	30 to 60 minutes	4 (up to 300 mg per dose)	0.5%: 60 1%: 30 2%: 15
Lidocaine with epinephrine‡	1% or 2%	Rapid: < 2 minutes§	1 to 4 hours	7 (up to 500 mg per dose)	1%: 50 2%: 25
Bupivacaine (Marcaine)	0.25% or 0.5%	Slow: 5 minutes	2 to 4 hours	2 (up to 175 mg per dose)	0.25%: 70 0.5%: 35
Esters					
Procaine (Novocain)	1% or 2%	Moderate: 2 to 5 minutes	15 to 60 minutes	7 (up to 600 mg per dose)	1%: 60 2%: 30
Tetracaine (Pontocaine)	0.5%	Slow: 5 to 10 minutes	2 to 3 hours	1.4 (up to 120 mg per dose)	24

*—*Similar for all concentrations of each agent.*

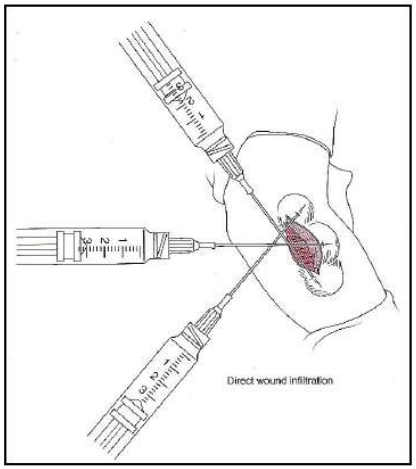
†—*Higher concentrations provide no additional anesthetic effects.*

‡—*Epinephrine concentration may be 1:100,000 or 1:200,000.*

§—*May take up to 5 minutes for epinephrine to be effective.*

Information from references 4, and 6 through 9.

Administering Anesthetics



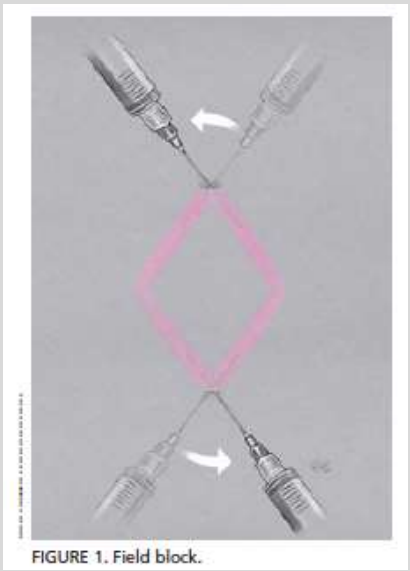


FIGURE 1. Field block.

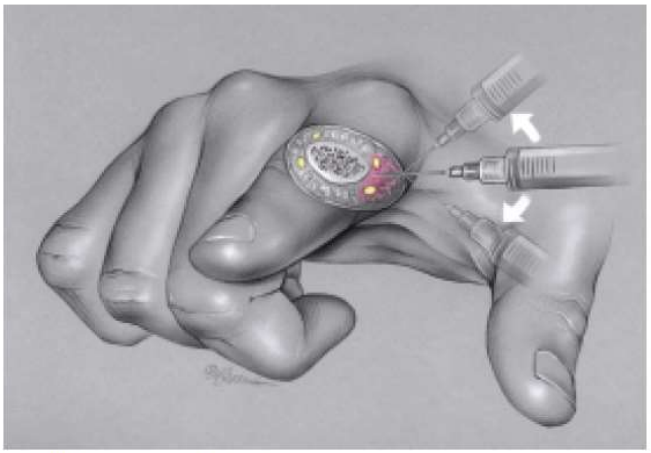


FIGURE 4. Digital nerve block.

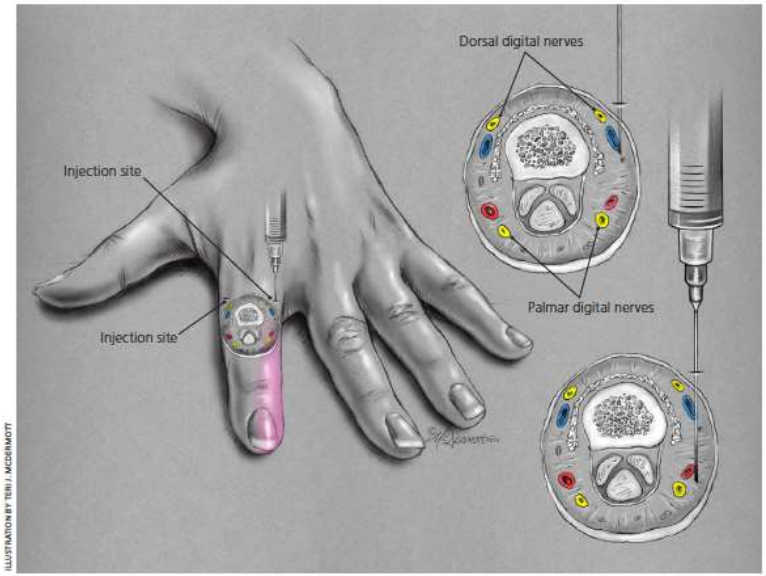


Figure 4. Digital nerve block of the fingers (the technique is the same for the toes).

Administering Anesthetics

HANDS-ON PRACTICE!!!

Skin Biopsy Shave vs. Punch

- Indications
  - Diagnosis vs. Diagnosis & Treatment
  - ABCDE System
- Contraindications
  - Absolute: Infection, Anesthetic Allergy
  - Relative: Bleeding disorder, anti-coagulation, Size/Type of Lesion
  - Melanoma vs. Full Thickness Abnormal Skin Lesion
  - Anatomical Area – face, ear, eyelid, palms, soles, groin, etc…
- Materials
  - Skin Prep, Local Anesthesia, Biopsy/Shave Equip, Hemostatic Agents, Wound Care
- Techniques for Procedure
  - Superficial Shave vs Punch Biopsy
  - Full Thickness Excision Beyond Scope for Workshop

Skin Biopsy Shave vs. Punch

Table 1. Indications for Skin Biopsy

Indication	*Clinical presentation*	*Possible diagnosis*	*Biopsy technique*
Diagnosis	Rashes or blisters involving dermis	Drug reaction, cutaneous lymphoma, deep tissue infection, erythema multiforme, Kaposi sarcoma, lupus erythematosus, pemphigoid, pemphigus, vasculitis	Partial/perilesional punch
	Processes involving the subcutis	Erythema nodosum, panniculitis	Elliptical excision, saucerization
Diagnosis and treatment	Atypical moles and pigmented lesions	Dysplastic nevi, malignant melanoma	Elliptical excision; saucerization; punch for 1- to 4-mm lesions with 1- to 3-mm margins[3,4]

Adapted with permission from Alguire PC, Mathes BM. Skin biopsy techniques for the internist. J Gen Intern Med. *1998;13(1):47, with additional information from references 3 and 4.*

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendation	*Evidence rating*	*References*	*Comments*
Whenever possible, lesions should be excised for diagnostic purposes using narrow margins.	C	4, 5, 22	Consensus guidelines
Punch or superficial shave biopsies may be more appropriate in carefully selected clinical circumstances (e.g., for large lesions, when melanoma suspicion is low) because of their potential effects on staging and prognosis.	C	3, 7, 9-13, 16	Consensus guidelines
A suspected melanoma should be excised using a 1- to 3-mm margin.	C	3, 4	Consensus guidelines
The type of biopsy performed does not influence survival rates in patients with melanoma.	B	5, 10-12, 14-16	Total of 5,240 patients in seven outcome case-control series

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to http://www.aafp.org/afpsort.xml.

Skin Biopsy Shave vs. Punch

Table 4. Materials for Punch and Shave Biopsies

Material	*Comment*
Skin preparation solution (e.g., povidone/iodine, chlorhexidine [Peridex])	—
Clean towel or drape	A Cochrane review showed that plastic adhesive drapes do not reduce the risk of surgical site infection, and may actually increase it.[23]
Local anesthesia (lidocaine [Xylocaine] 1 or 2%, with or without 1:100,000 epinephrine)	Two small prospective randomized controlled trials showed that lidocaine iontophoresis is a safe and effective topical anesthetic,[24] and that lidocaine/tetracaine (Synera) patches may be beneficial for older patients undergoing skin procedures.[25]
3-mL syringe	—
21-gauge needle for drawing up anesthetic Smallest possible 25- to 30-gauge needle for injecting	Pain can be minimized using above referenced non-needle techniques, using slow (30-second) injection, and by mixing 1 mL of sodium bicarbonate with 9 mL of lidocaine.[18,26] These techniques may cut pain scores by more than 50 percent.
Skin punches (2, 3, 4, 6, and 8 mm) Flexible shave biopsy instrument (Dermablade), double-sided razor blades, or no. 15 scalpel blade Forceps Scissors Needle driver (punch) Gauze pads Nonabsorbable sutures or adhesive (Table 2) Nonsterile gloves Small adhesive bandages (circular or square) Enough 10% formalin containers for number of biopsies to be performed	—
White petrolatum on a swab	A randomized controlled trial showed that white petrolatum is a safe wound care ointment for ambulatory surgery and decreases the risk of allergic reactions and gram-negative bacterial superinfections. The authors estimate a savings of $8 million to $10 million per year in the United States if petrolatum was used instead of topical antibiotics.[27]
Hemostatic agents	Aluminum chloride 20% solution, Monsel solution (ferric subsulfate), silver nitrate sticks (75% silver nitrate/25% potassium nitrate).

Table 2. Type of Suture and Timing of Removal by Location

Location	*Type of suture**	*Timing of suture removal (days)*
Arms	4-0	7 to 10
Face	5-0 or 6-0	3 to 5
Hands or feet	4-0 or 5-0	10 to 14
Legs	4-0	10 to 14
Palms or soles	3-0 or 4-0	14 to 21
Scalp	4-0	7 to 10
Trunk	3-0 or 4-0	10 to 14

**—Using polypropylene (Prolene), silk, or nylon.*

Information from references 18 through 20.

Skin Biopsy

Shave

Table 5. Performing a Shave Biopsy

Obtain consent.

Clean skin.

Anesthetize skin.

Superficial shave:

- For macular or raised nonsuspicious lesions, hold blade parallel to the skin and shallowly remove a thin disk or the lesion itself, if raised (Figures 1 and 2).

Saucerization:

- For pigmented lesions, measure a 1- to 3-mm margin before shaving[3,4] (Figure 4A; also see http://www.youtube.com/user/AFPJournal#p/a/u/1/R0yvX-ty9VM [scoop shave biopsy–long version] and http://www.youtube.com/user/AFPJournal#p/a/u/2/bCrRr1s3wCI [scoop shave biopsy–short version]).
- Anesthetize, creating a wheal to make the lesion easier to shave (Figure 4B), and squeeze skin between the thumb and forefinger of the nondominant hand to further elevate the lesion.[1,6]
- Hold blade at a 45-degree angle to the skin, bend or bow the blade depending on the width of lesion, and remove a disk of tissue well into the subcutaneous fat[1,8] (Figure 5).
- If a nidus of pigment remains after saucerization, a punch or elliptical biopsy must be performed, and the sample sent in the same specimen container (Figure 6).
- Use a hemostatic agent or electrocautery and wipe clean.

Dress with petrolatum and instruct the patient to keep the area moist and covered for at least one week to minimize scarring.

Information from references 1, 3, 4, 6, and 8.

Table 7. Dressing and Care of Biopsy Site

Clean area after hemostasis is achieved.

Cover with petrolatum and sterile dressing.

Send tissue to pathology in formalin; if specimen is large enough and there is high suspicion for malignancy, consider suture tagging an area for pathologist.

Give discharge instructions; keep area covered and dry for 24 hours (punch biopsies) or covered and moist for at least one week (shave biopsies).

Complications are rare; bleeding can be managed with pressure, suture, or cautery; if infection occurs, it usually appears within three days after biopsy and can be treated with suture removal or oral antibiotics.[38]

Skin Biopsy

Shave

Figure 1. A double-edged blade is held parallel to the skin for a superficial shave biopsy.

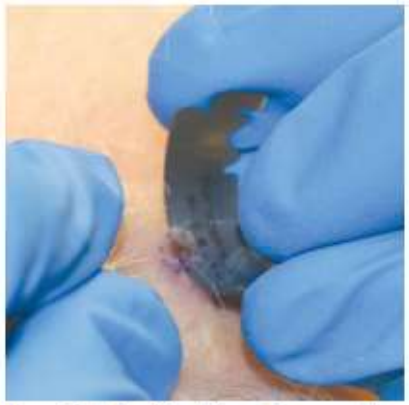


Figure 2. A thin disk of tissue is removed in a superficial shave biopsy.

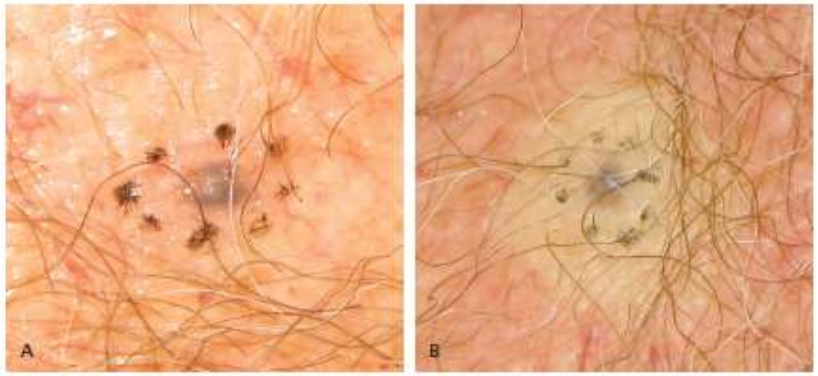


Figure 4. Preparation for shave biopsy of a pigmented macular nevus. *(A)* A 2-mm margin is marked around the lesion. *(B)* Injection of anesthetic created a dermal wheal that elevated the lesion, making it easier to shave.

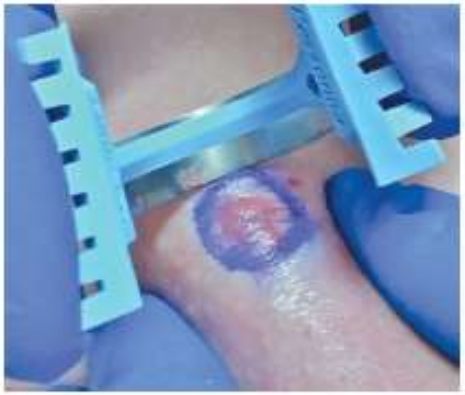


Figure 5. Proper 45-degree angulation of blade for a deep scoop shave biopsy.

Skin Biopsy

Punch

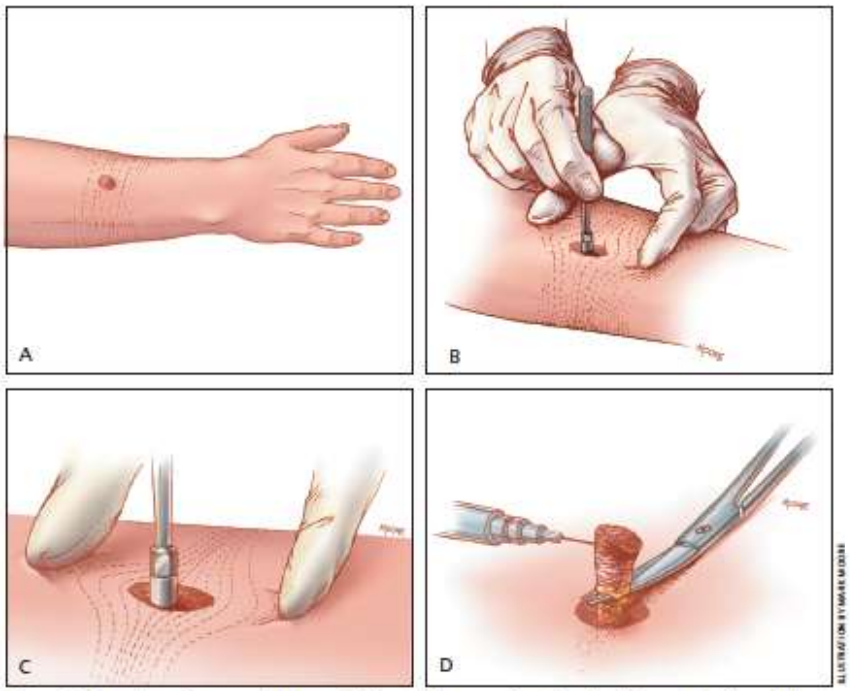


Figure 8. Procedure for punch biopsy. *(A)* Just before performing the biopsy, the lines of least skin tension (Langer lines) are determined. *(B)* The skin is stretched 90 degrees perpendicular to the Langer lines using the nondominant hand. *(C)* The punch biopsy instrument is held perpendicular to the surface of the lesion. The instrument is pressed down into the lesion while it is rotated clockwise and counterclockwise, cutting down into the subcutaneous fat. The punch biopsy instrument is removed. *(D)* The specimen is gently lifted with a needle to avoid crush artifact. Scissors are used to cut the specimen free at a level below the dermis. Small punch biopsy defects do not require suturing, whereas larger wounds (4 to 5 mm) should be closed to reduce healing time and scarring.

Adapted with permission from Zuber TJ. Punch biopsy of the skin. Am Fam Physician. *2002;65(6):1155-1158.*

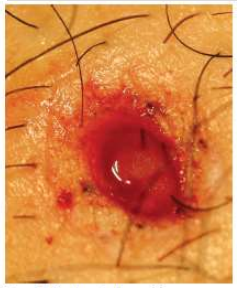


Figure 9. Punch oval after excision.

Figure 10. Tissue is gently removed with forceps after a punch biopsy.

Skin Biopsy
Shave vs.
Punch

HANDS-ON PRACTICE!!!

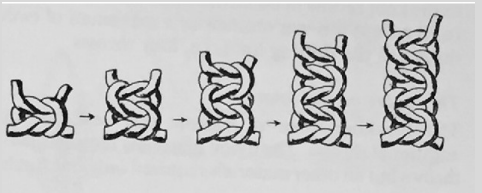
Suturing

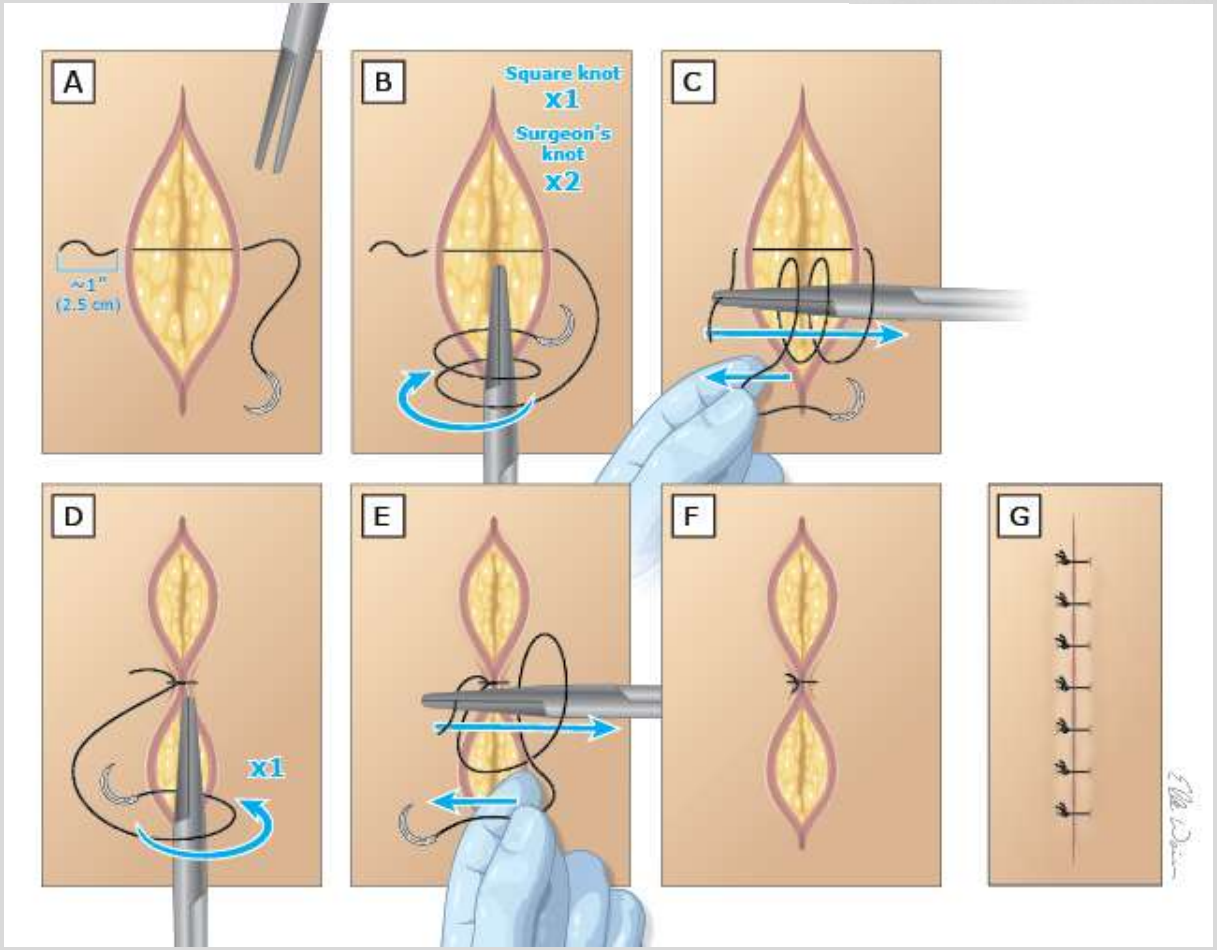
Overview

- Indications (for Primary Care Outpatient Laceration Repair)
  - Within 12 hours of injury, not contaminated / infected
  - Patient neurovascularly intact after injury
  - Superficial Wound requiring closure to achieve hemostasis, infection prevention, restore function and minimize scarring.
- Contraindications (When to Refer – seek higher level care)
  - Lacerations involving nerves, arteries, bones or joints
  - Full thickness lacerations of face or deep wounds of hand/feet
  - Penetrating wounds of unknown depth
  - Severe crush injuries
  - Concerns about cosmetic outcomes
- Materials
  - Wound care, PPE, irrigation, Suture repair kit, local anesthetic
  - Sterile gloves vs Surgical Gloves
- Techniques for Procedure
  - Instrument Suture Tie
  - Simple Interrupted vs. Running vs. Mattress Sutures

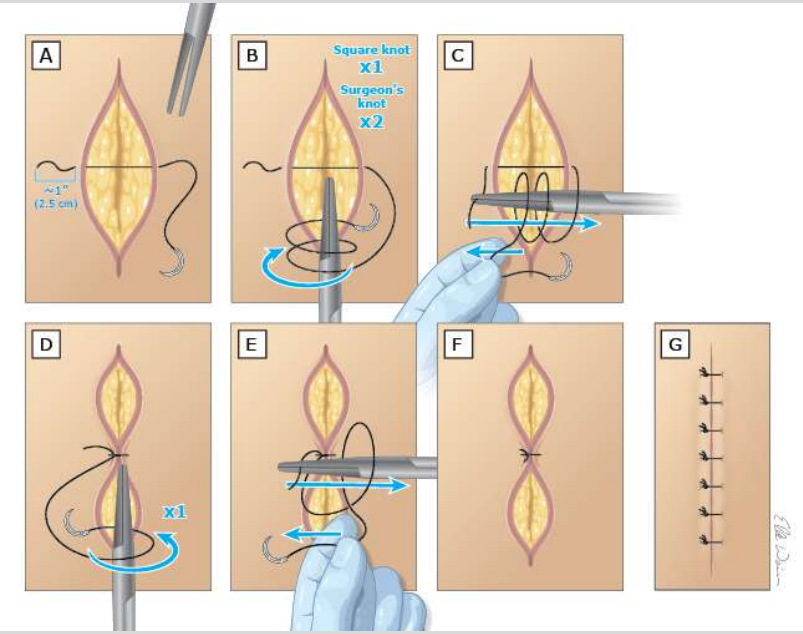
Suturing

Instrument Tie





Suturing Simple Interrupted



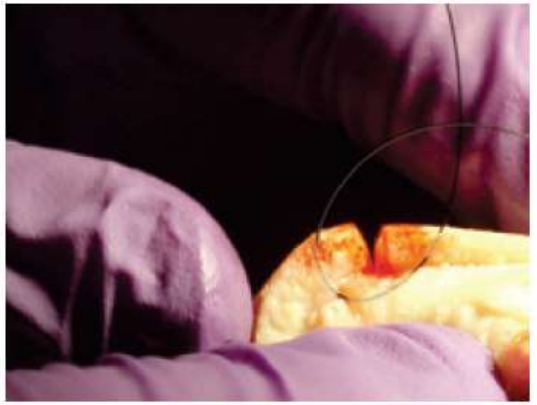
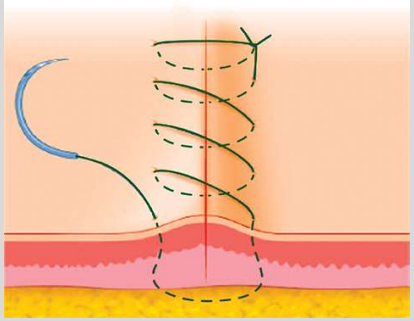
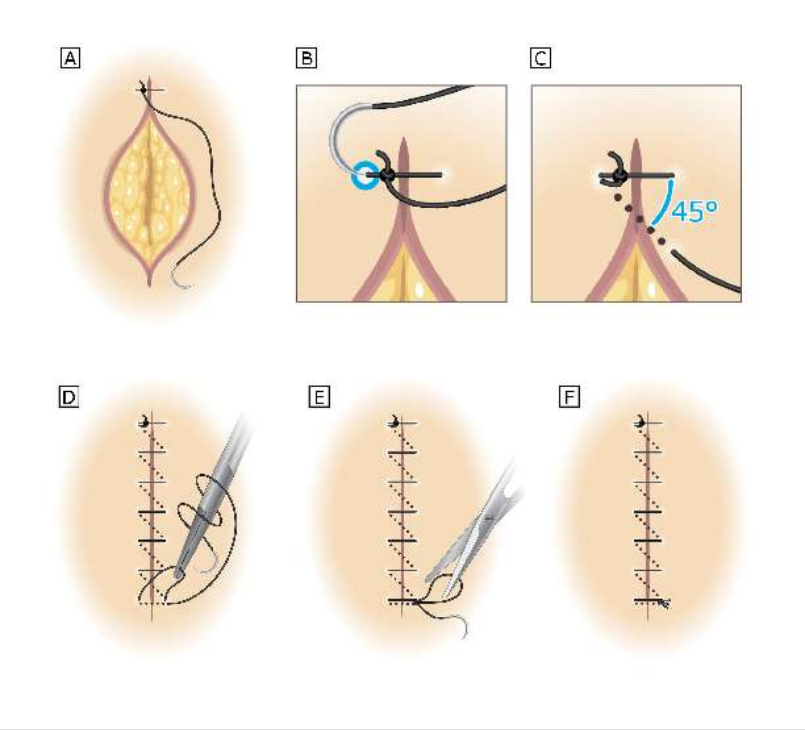
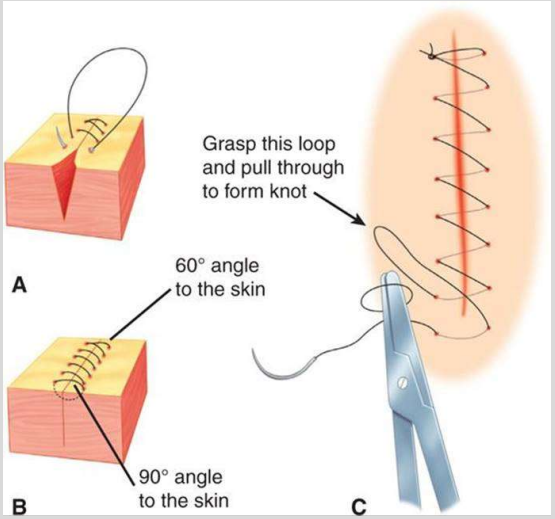


Figure 2. Proper technique of a single interrupted stitch for wound eversion and closure. The needle should pierce the skin at a 90-degree angle with the trailing suture following the curve of the needle, which is accomplished by twisting the wrist.

Suturing Running Sutures

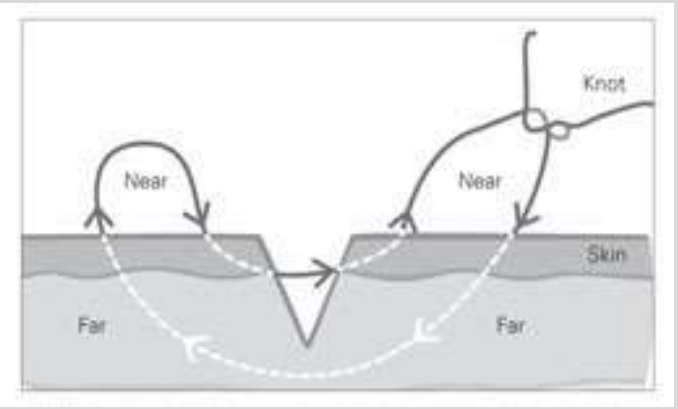






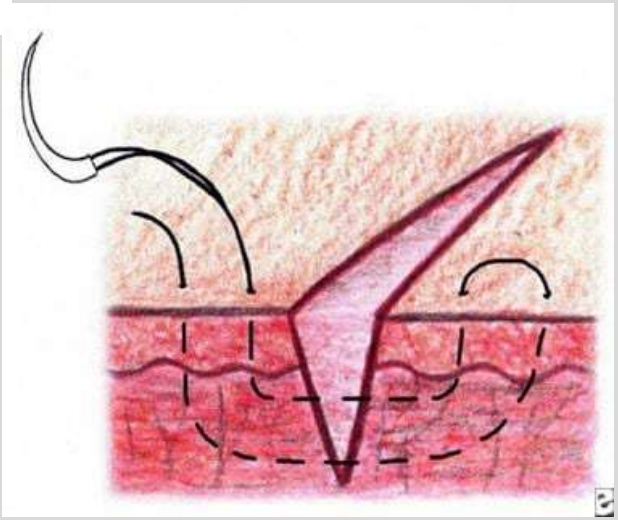
Suturing Mattress Sutures – Vertical

Figure 4. Vertical mattress suture technique.



"FAR-FAR NEAR-NEAR"

- **High Tension Wound**
- **Everting wound edges that invert**
- **Closing large / gaping wound**



Suturing Mattress Sutures – Horizontal

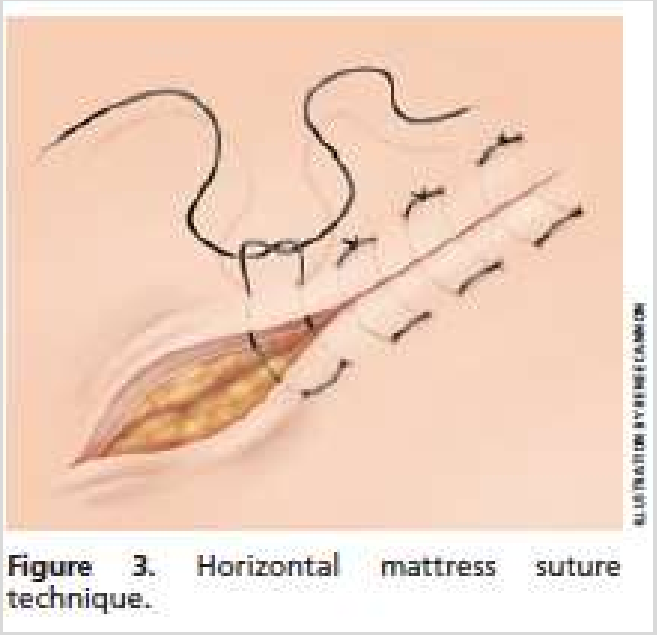
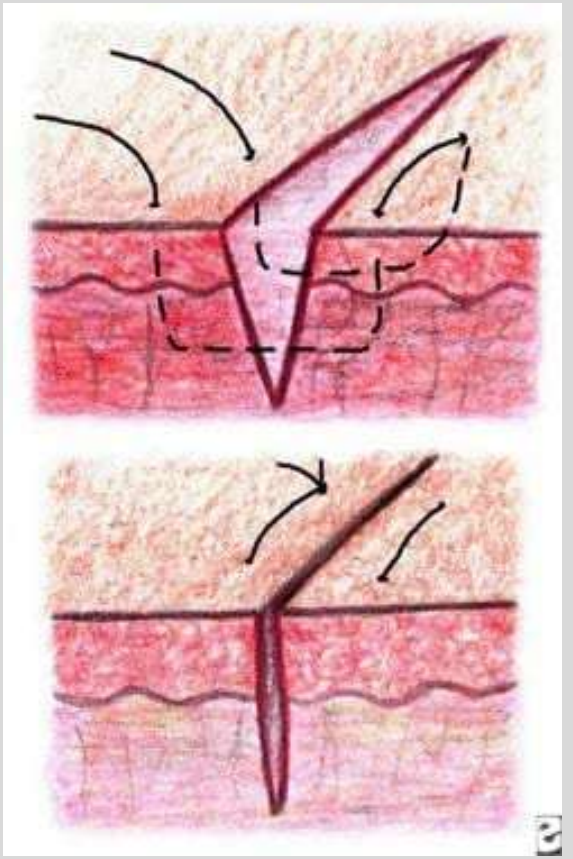


Figure 3. Horizontal mattress suture technique.



- **Taking Tension off a wound**
- **Fragile Skin**
- **Closing large / gaping wound**

Suturing

Removal

Table 2. Timing of Suture or Staple Removal

Wound location	*Timing of removal (days)*
Face	Three to five
Scalp	Seven to 10
Arms	Seven to 10
Trunk	10 to 14
Legs	10 to 14
Hands or feet	10 to 14
Palms or soles	14 to 21

Optimal cosmetic results – use finest suture possible, depending on skin thickness and wound tension:

3-0 or 4-0 suture = trunk
4-0 or 5-0 suture = extremities*
5-0 or 6-0 suture = face

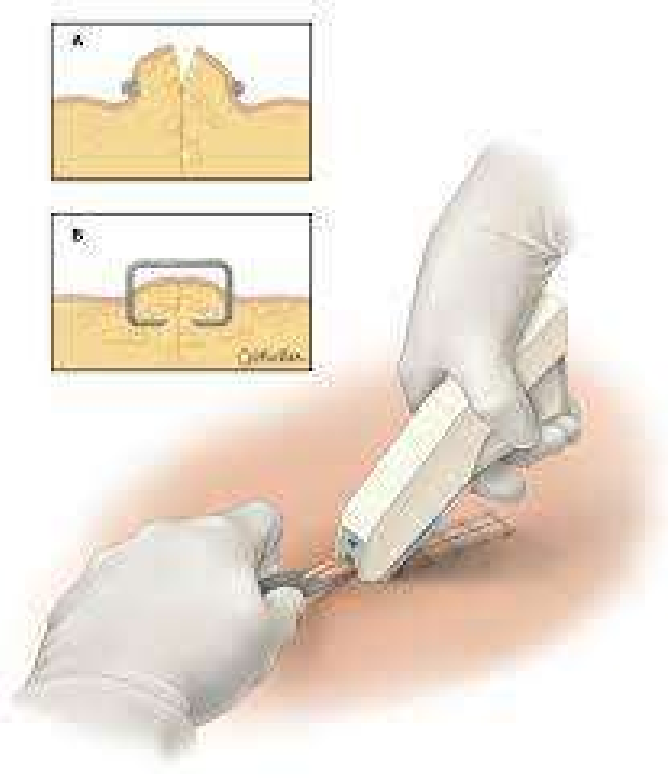
*Can use sutures on the scalp, in extremis, but staples are usually a better option

Table 3. Guidelines for Tetanus Prophylaxis in Adults Receiving Routine Wound Management

	Clean, minor wound		*All other wounds**	
History of absorbed tetanus toxoid	*Tdap or Td*	*TIG*	*Tdap or Td*	*TIG*
Unknown or less than three doses	Yes	No	Yes	Yes
More than three doses	No†	No	No‡	No

Skin Staples

Placement



Scalp wounds, wounds in non-cosmetic areas, especially long, linear wounds

Materials:

- Sterile gloves for the provider
- Sterile gauze, bandage, and tape for dressing
- Sterile drapes (optional)
- Irrigation solution (eg, sterile normal saline)
- 30 to 60 mL syringe with 18 to 19 gauge IV catheter or irrigation device with splash shield
- Staple device
- Adson forceps (forceps with teeth)
- Antibiotic ointment (eg, bacitracin)
- Staple remover

Skin Staples

Removal

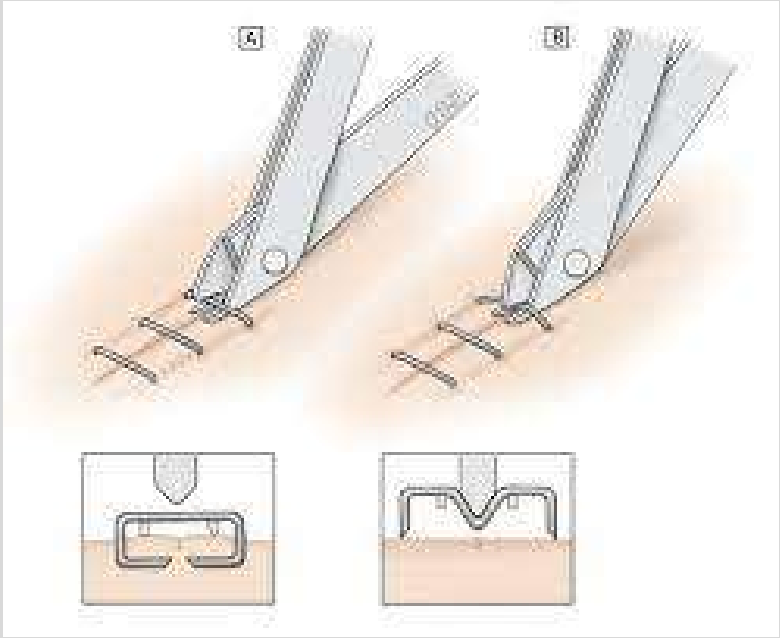
The interval between application and removal of the staple is the same as that for standard suture placement and removal:

- **Scalp – 7 to 10 days**
- **Trunk and upper extremities – 7 days**
- **Lower extremities – 8 to 10 days**

The procedure for staple removal is as follows:

- Position both prongs of the staple remover under the staple.
- Depress the handle of the staple remover so that the staple is bent outward in the midline, easing it out of the skin.

Some patients describe a pinching sensation during removal



Fluorescein Eye exam & Woods Lamp

- Indications
  - Suspected Corneal injury/infection, foreign body
  - When in doubt – REFER to Ophthalmology
- Contraindications
  - Injury to Globe, obvious soft tissue trauma, allergy to fluorescein
- Materials
  - Eye Tray – local ophthalmic anesthesia – Irrigation – Ophthalmoscope
  - Woods Lamp / Cobalt Blue lamp / magnification
  - Slit Lamp: Beyond Scope – Advanced (not available in primary care)
- Techniques for Procedure
  - Fluorescein strips vs. eye drops

Fluorescein Eye exam & Woods Lamp

Table 1. Suggested Eye Tray Contents for the Treatment of Eye Injuries

Medications

Short-acting mydriatic agent (e.g., tropicamide [Mydriacyl])

Topical anesthetic (e.g., proparacaine [Ophthetic], tetracaine [Pontocaine])

Topical antibiotics (e.g., bacitracin [AK-tracin], erythromycin)

Materials

Basin to catch water during eye irrigation

Cobalt-blue filtered light and fluorescein dye to detect corneal abrasions

Cotton-tipped swabs to facilitate examination and foreign body removal

Diluted sodium hypochlorite spray to disinfect work surfaces

For chemical burns: intravenous drip tubing, one liter of isotonic saline, litmus or pH paper

Handheld ophthalmoscope

Hypodermic needle (18 gauge) for removal of foreign bodies and rust rings

Loupe

Sterile water

NOTE: *An eye tray should be prepared in advance in case of an eye injury.*

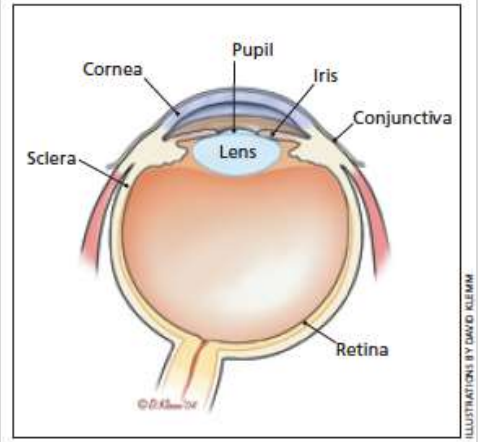


Figure 1. Cornea in relationship to the rest of the eye.

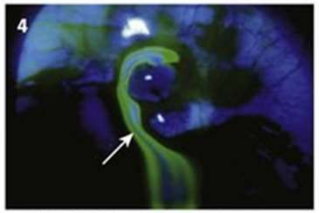
Fluorescein Eye exam & Woods Lamp

THE FLUORESCEIN EXAMINATION

Moisten the fluorescein strip with 1 drop of saline or topical anesthetic. Depress the lower lid and gently place a wetted strip onto the inside of the patient's lower lid so that only the smallest amount is instilled.

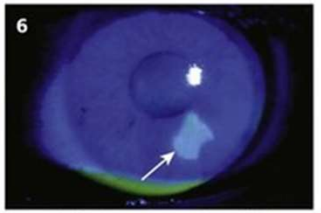
Examine the eye with a Wood lamp or a slit lamp with a cobalt blue filter (shown). Check for areas of bright green fluorescence on the corneal and conjunctival surfaces. Because the naked eyes may not be able to appreciate small defects, magnification should be used.

The Eidolon Bluminator ophthalmic illuminator provides an intense blue LED light with 7× magnification. *(Courtesy of Michael W. Ohlson, OD, FAAO, and Victor J. Doherty, Eidolon Optical, LLC.)*

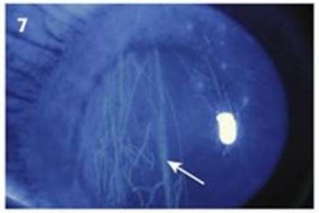


Positive Seidel test. Fluorescein seen streaming down the cornea indicates an open-globe injury. *(From Krachmer JH, Mannis M, Holland E, eds.* Cornea. *3rd ed. St. Louis; Mosby; 2010.)*

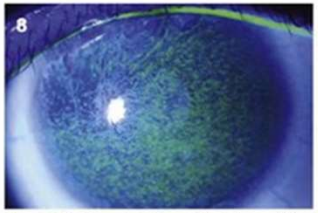
Large corneal abrasion seen with the naked eye. Smaller abrasions or corneal injuries produced by keratitis or a welder's arc flash require slit lamp evaluation to identify minor corneal defects.



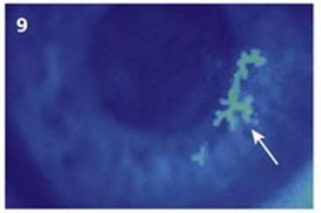
Corneal abrasion as seen via a slit lamp. A moderate-sized abrasion (*arrow*) is revealed by fluorescein staining and blue light. *(From Friedman NJ, Raiser PK, Pineda R.* Massachusetts Ear & Eye Infirmary Illustrated Manual of Ophthalmology. *3rd ed. Philadelphia Saunders; 2009.)*



Vertical linear abrasions. These types of abrasions are typically caused by a foreign body trapped under the upper eyelid. *(From Kliegman R, Stanton B, Behrman R, et al, eds.* Nelson Textbook of Pediatrics. *19th ed. Philadelphia: Saunders; 2011.)*



Superficial punctate keratitis. These diffuse, shallow corneal irregularities are caused by chemical irritation, viral illnesses, exposure to bright light, and many other conditions.



Herpes simplex keratitis. A classic herpetic epithelial dendritic lesion is seen on this fluorescein examination. *(From Palay DA, Krachmer JH, eds.* Primary Care Ophthalmology: Concepts and Clinical Practice. *2nd ed. St. Louis: Mosby; 2005.)*

Fluorescein Eye exam & Woods Lamp

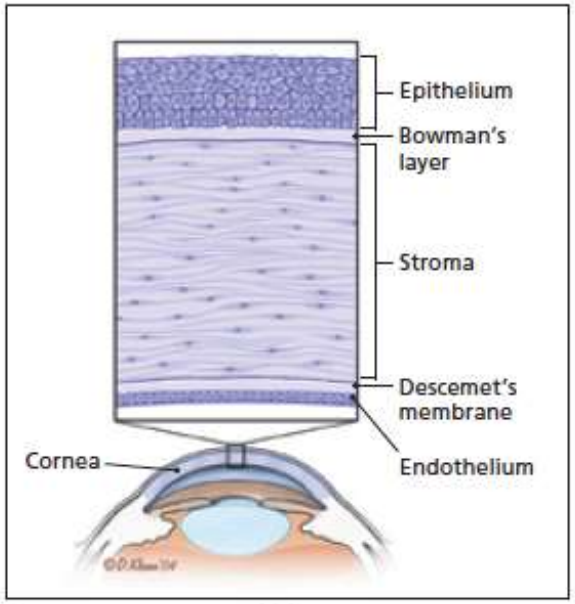


Figure 2. Anatomy of the cornea.

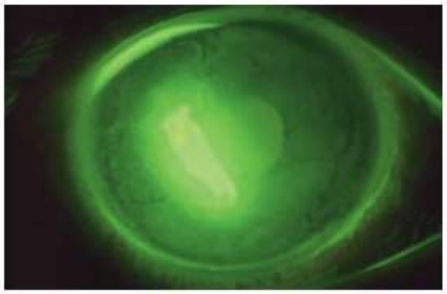


Figure 3. Corneal abrasion stained with fluorescein.

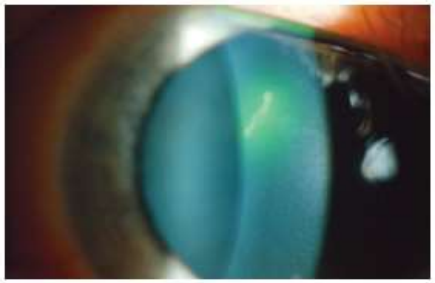


Figure 4. Corneal abrasion stained with fluorescein and highlighted by cobalt blue light.

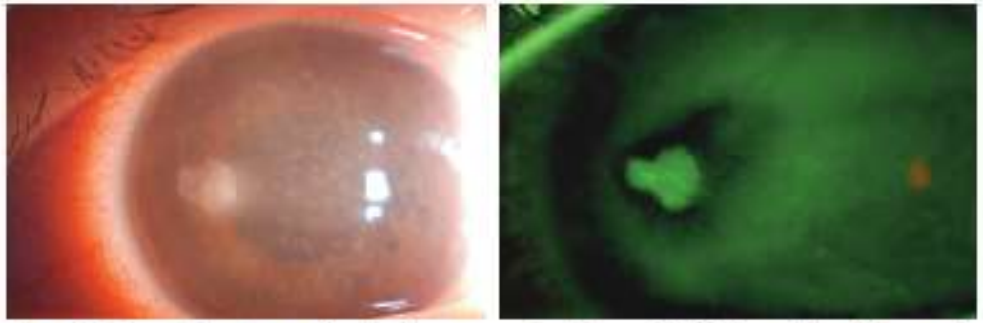


Figure 6. Corneal ulcer in a patient who wears contact lenses. *(Left)* View without fluorescein stain. *(Right)* View with fluorescein stain.

Fluorescein Eye exam & Woods Lamp

Eye patching can result in decreased oxygen delivery, increased moisture, and a higher chance of infection.

Strength of Recommendation (SOR) Labels

Key clinical recommendations	SOR labels	References
Patching is not effective for treatment of corneal abrasions and is not recommended.	A	2,3,6
Consider topical nonsteroidal anti-inflammatory drugs in patients with corneal abrasions.	A	9
Topical mydriatics are not effective for treatment of corneal abrasions and are not recommended.	B	10
Consider use of topical antibiotics in patients with corneal abrasions.	C	11,12
Discontinue contact lens use in patients with corneal abrasions.	C	13

Fluorescein
Eye exam &
Woods Lamp

HANDS-ON PRACTICE!!!

Foreign Body Removal

- Indications
  - Retained Foreign body in the skin, bodily orifice or surgical placement
  - Benefits outweigh Risks
  - Clinician comfort: When in doubt – Refer!
- Contraindications
  - Active infection, severe trauma, neurovascular compromise, deeply embedded, requiring unavailable imaging, location/anatomy
  - Risks Outweigh Benefits
- Materials
  - Local Anesthesia – Splinter Forceps – Suture Tray – Irrigation, etc…
  - "Foreign Body Removal Kit"
- Techniques for Procedure
  - Direct Wound Visualization
  - Magnification

Foreign Body Removal

Ear, Nose & Throat

Table 1. Management of Common Foreign Bodies in the Ear, Nose, and Throat

Location	*Common foreign bodies*	*Removal technique*	*Indications for referral*
Ear	Beads, plastic toys, pebbles, popcorn kernels[2]	Irrigation with water Grasping foreign body with forceps, cerumen loop, right-angle ball hook, or suction catheter Acetone to dissolve Styrofoam foreign body[4]	Need for sedation Canal or tympanic membrane trauma Foreign body is nongraspable, tightly wedged, or touching tympanic membrane Sharp foreign body Removal attempts unsuccessful[1-3,12]
Nose	Beads, buttons, toy parts, pebbles, candle wax, food, paper, cloth, button batteries[5,6]	Grasping with forceps, curved hook, cerumen loop, or suction catheter Thin, lubricated, balloon-tip catheter[7] Patient "blows nose" with opposite nostril obstructed PPV delivered to patient's mouth with opposite nostril obstructed[8,9,11]; PPV may also be delivered by bag mask[10]	Tumor or mass suspected Removal attempts unsuccessful Edema, bony destruction, granulation tissue from chronic foreign body[12]
Throat (pharynx)*	Plastic, metal pin, seeds, nuts, bones, coins, dental appliances[14-18]	Often need to be removed endoscopically, requiring sedation[14,18] and, thus, referral	Inadequate visualization Need for sedation Signs of airway compromise[13,14]

PPV = positive pressure ventilation.

**—Most foreign bodies in the throat require consultation with a subspecialist.*

Information from references 1 through 18.

Foreign Body Removal

Ear, Nose & Throat

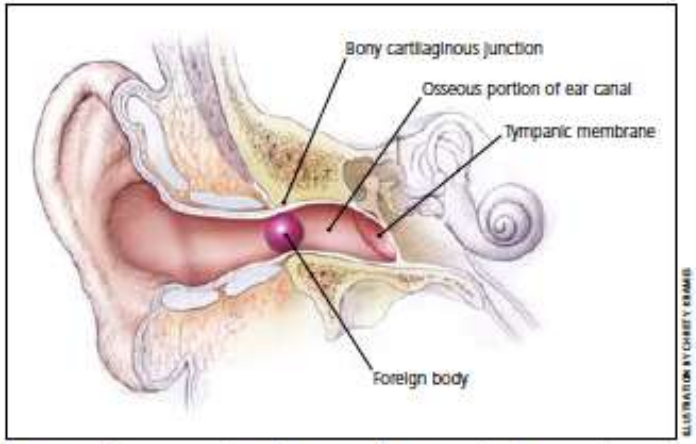


Figure 1. The external auditory canal. Foreign bodies may become lodged in the narrowing at the bony cartilaginous junction.

Pharyngeal foreign bodies should be suspected in patients with undiagnosed coughing, stridor, or hoarseness.

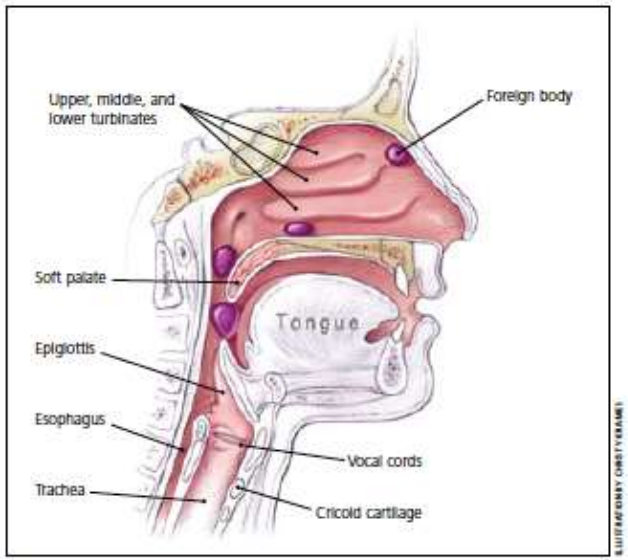


Figure 2. Nasopharyngeal and tracheal anatomy. Highlighted areas indicate points at which nasal foreign bodies may become lodged.

Foreign Body Removal

Skin & Soft Tissue

SORT: KEY RECOMMENDATIONS FOR PRACTICE

Clinical recommendation	Evidence rating	Comments
Radiography with underpenetration and multiple views should be used to evaluate deep wounds.[7]	C	Expert opinion in the absence of clinical trials
Ultrasonography should be used to localize radiolucent foreign bodies.[8]	C	In-vitro animal study showing improved localization compared with computed tomography and plain radiography
Foreign body wounds should be cleaned with normal saline or tap water.[18]	B	Consistent evidence from randomized controlled trials showing no difference in infection rates
Antiseptic solutions should not be used for cleaning foreign body wounds because they slow healing.[19]	C	In-vitro studies showing cytotoxicity with several solutions
Antibiotic prophylaxis is not indicated for simple non-bite wounds in immunocompetent patients.[36]	B	Consistent evidence from randomized controlled trials showing no benefit from treatment
Tetanus immunization history should be reviewed for patients who have wounds with foreign bodies.[40]	C	Expert opinion and consensus guideline in the absence of clinical trials

A – consistent, good-quality patient-oriented evidence; **B** – inconsistent or limited-quality patient-oriented evidence; **C** – consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to https://www.aafp.org/afpsort.

Foreign Body Removal

Skin & Soft Tissue

Table 1. Imaging Modalities for Localizing Various Types of Foreign Bodies in Skin and Subcutaneous Tissue

Computed tomography
Reserve for failed exploration or infection
Radiography
Bone
Fish spines (some)
Glass
Gravel/stone
Metal/aluminum
Pencil graphite
Plastic (some)
Teeth
Wood (e.g., splinters, cactus spines, thorns)
Ultrasonography
Glass
Metal
Pencil graphite
Plastic (some)
Stone
Wood

Foreign Body Removal

Skin & Soft Tissue

TABLE 1

Imaging of Foreign Bodies

Modality	Foreign body types detected	Relative cost*	Availability†	Radiation exposure‡	Advantages	Disadvantages
Computed tomography	Radiopaque (e.g., glass, metal)	$$	++	High	Three-dimensional, quick, detects objects near bone	High radiation exposure
Fluoroscopy	Radiopaque	$	+	Low	Real-time images, portable	Limited number of trained physicians
Magnetic resonance imaging	Radiolucent (e.g., wood, vegetation)	$$$	+	None	Can be used for chronic or complex foreign bodies	Dangerous if metal is present, time consuming
Radiography	Radiopaque	$	+++	Low	Easy to interpret, quick	May not detect vegetative foreign bodies or objects behind or in bone
Ultrasonography	Radiolucent	$	+++	None	Real-time images, portable	Operator dependent

*—Cost: $ (least expensive) to $$$ (most expensive).
†—Availability: + (least available) to +++ (most available).
‡—Radiation exposure (relative for adult): low (0.001 to 1 mSv); high (> 1 mSv).[5]

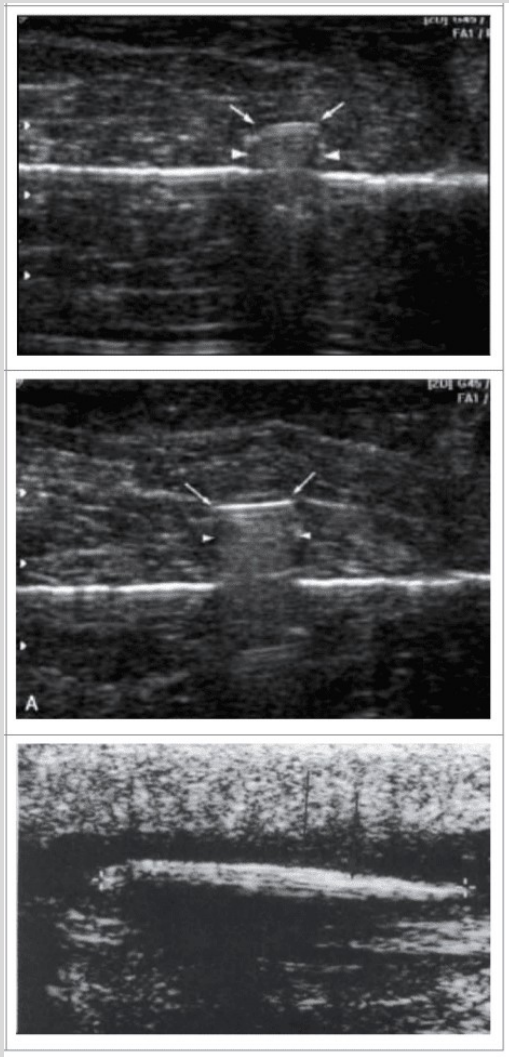
Information from reference 5.

Foreign Body Removal

Skin & Soft Tissue

FIGURE 1

Radiograph showing metallic shrapnel *(arrows)* in the soft tissues of the hand and wrist after an improvised explosive device blast.



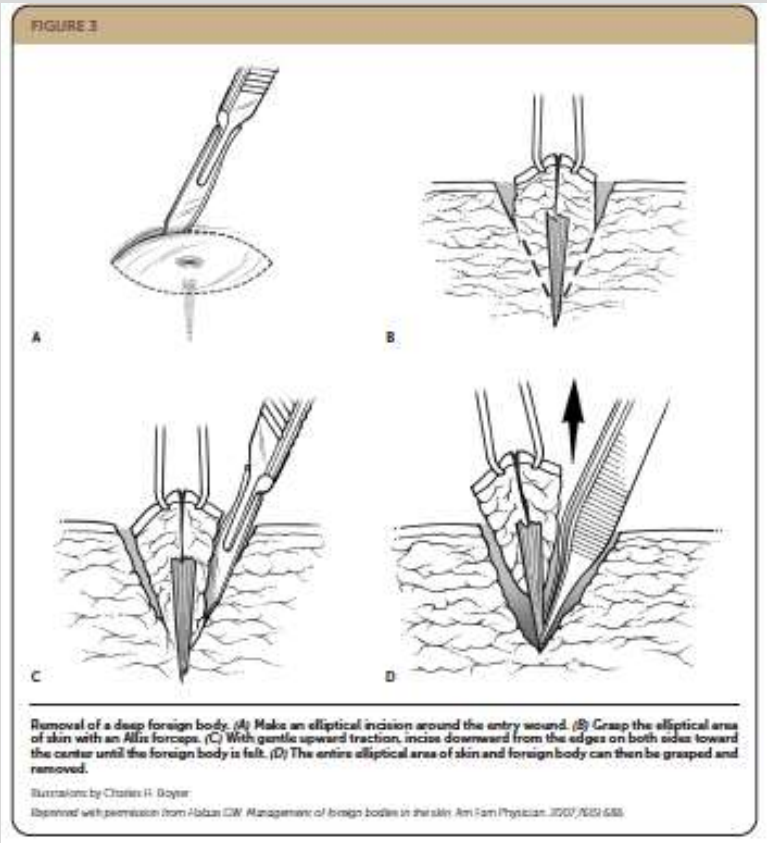
Foreign Body Removal

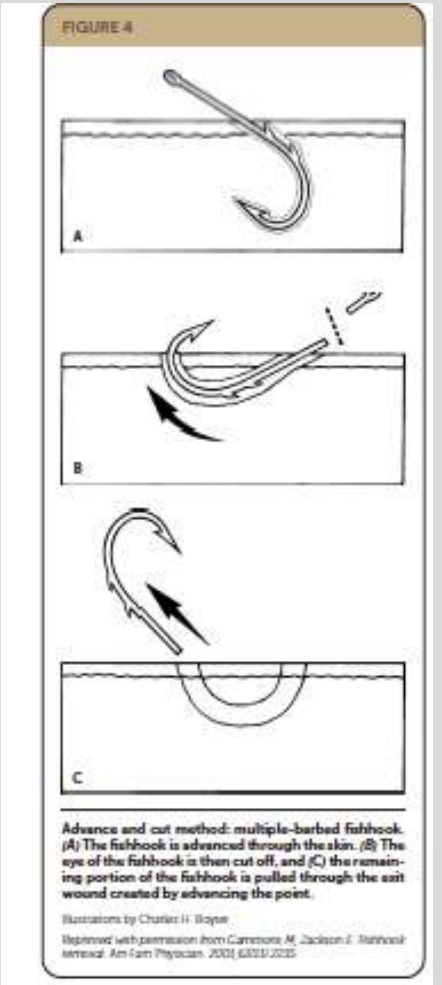
Skin & Soft Tissue

- **Wooden Splinters and Plant Spines**
- **Glass**
- **Metallic Fragments**
- **Gravel and Plastic**
- **Fish Hooks**
- **Marine Foreign Bodies**
- **Human & Animal Bites**
- **Traumatic Injury**
- **Etc…..**

Foreign Body Removal

Skin & Soft Tissue





Foreign Body Removal

Skin & Soft Tissue

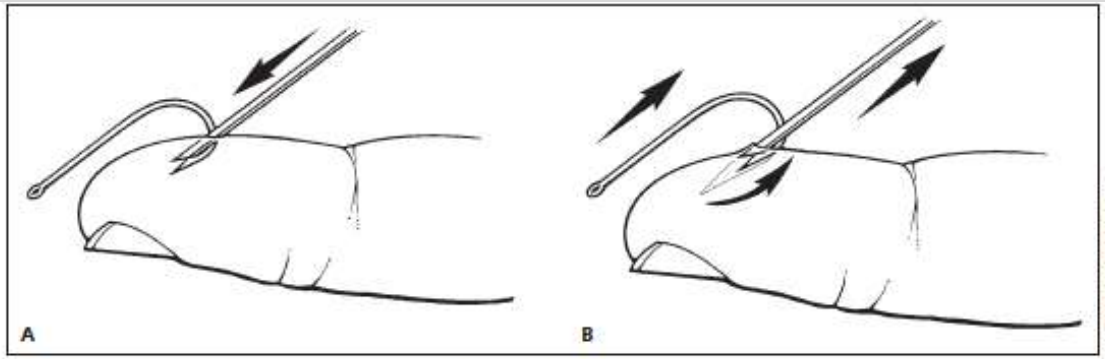


Figure 2. Needle cover technique to remove an embedded fishhook. *(A)* Advance an 18- or 20-gauge needle, bevel toward the tip of the fishhook, along the inside curve of the hook until the barb is covered. *(B)* Hold hook and needle firmly together and back out simultaneously.

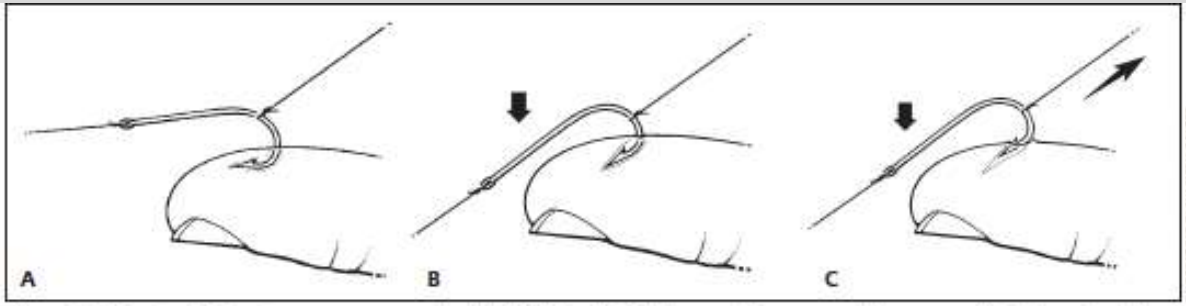


Figure 3. String technique to remove an embedded fishhook. *(A)* Place a string around the curve of the hook and pull gently along the line of the shank. *(B)* Disengage the barb by pressing downward on the shank of the hook. *(C)* While maintaining downward pressure, quickly and firmly pull the string to free the tip of the hook.

Foreign Body Removal

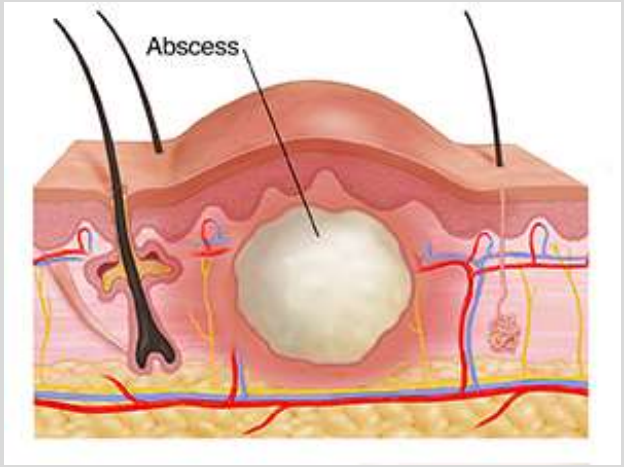
Skin & Soft Tissue

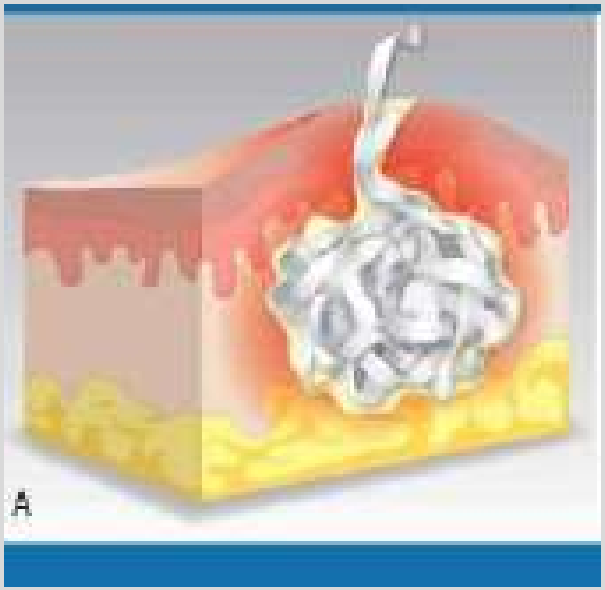
HANDS-ON PRACTICE!!!

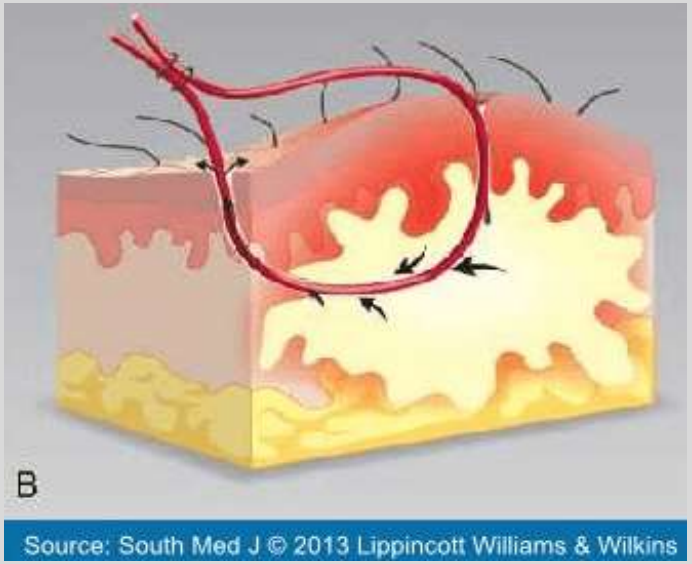
Incision & Drainage (I&D) Abscess

- Indications
  - Evidence of abscess on exam: warm, tender, erythematous, fluctuant mass on physical exam.
  - "soft" and "boggy" = ready for I&D
  - May require further treatment before I&D
  - Consider Ultrasound evaluation, if available.
- Contraindications
  - Large, deep, complex abscesses
  - Sensitive Areas (Face, Groin, Breasts, Hands/Feet), Close proximity to neurovascular structures (i.e. Neck, Groin)
  - Suspect diagnosis other than abscess (i.e. Solid Mass)
- Materials
  - Incision and Drainage Tray – Local Anesthetic – PPE – Irrigation
  - Packing vs Silicon Loop vs Penrose Drain – Wound Care
- Techniques for Procedure
  - Incision and Drainage – with or without packing
  - Incision and Loop Drainage

Incision & Drainage (I&D) Abscess







Source: South Med J © 2013 Lippincott Williams & Wilkins

Incision & Drainage (I&D) Abscess

- **Identify the Abscess** – confirm ready for I&D
- **Prepare Surgical Field**
  - Clean the Area
  - Anesthetize – Field Block
- **Make incision** over area of greatest fluctuance
- Obtain Wound Culture, if available/indicated.
- **Break up loculations.**
- **Irrigate.**
- If **< 5cm** allow healing by secondary intention vs packing vs loop
- If **> 5cm** consider packing vs loop
- **? Primary Closure ?**
- **Traditional I&D vs Loop Drainage**

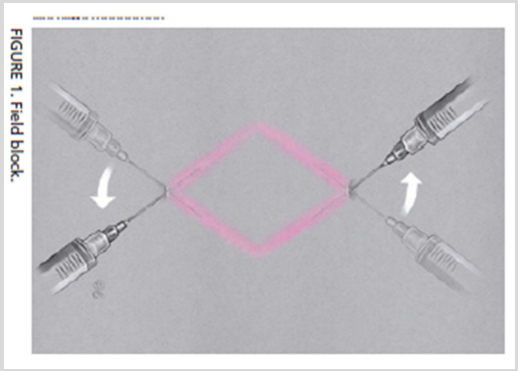
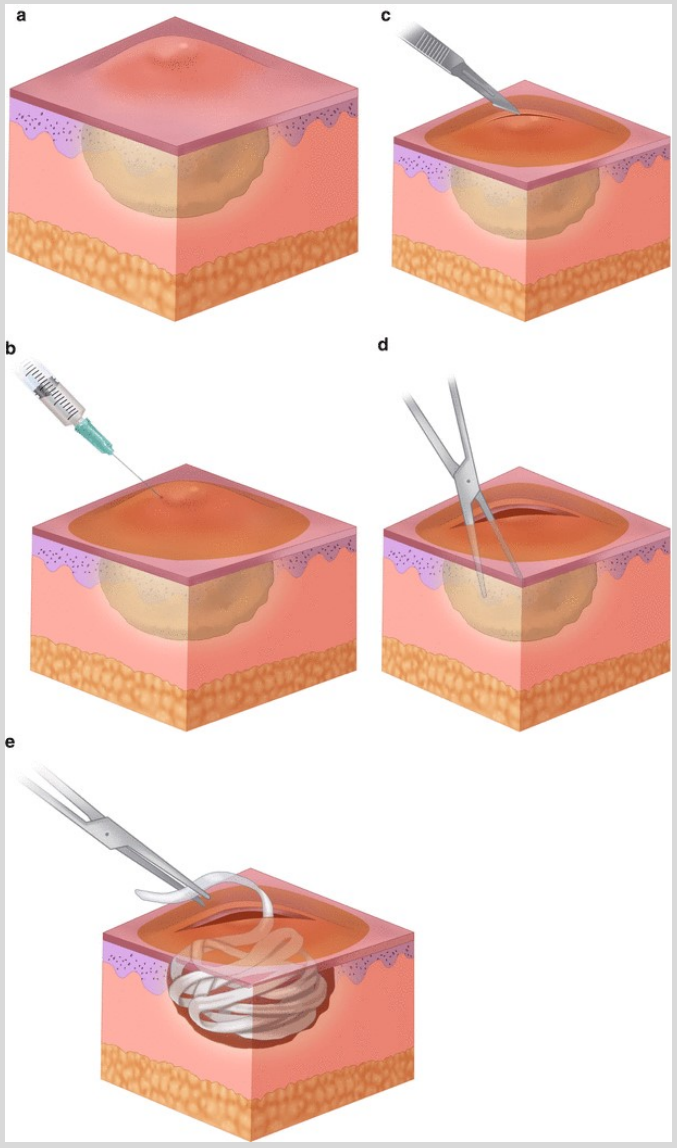


FIGURE 1. Field block.



Incision & Drainage (I&D) Abscess

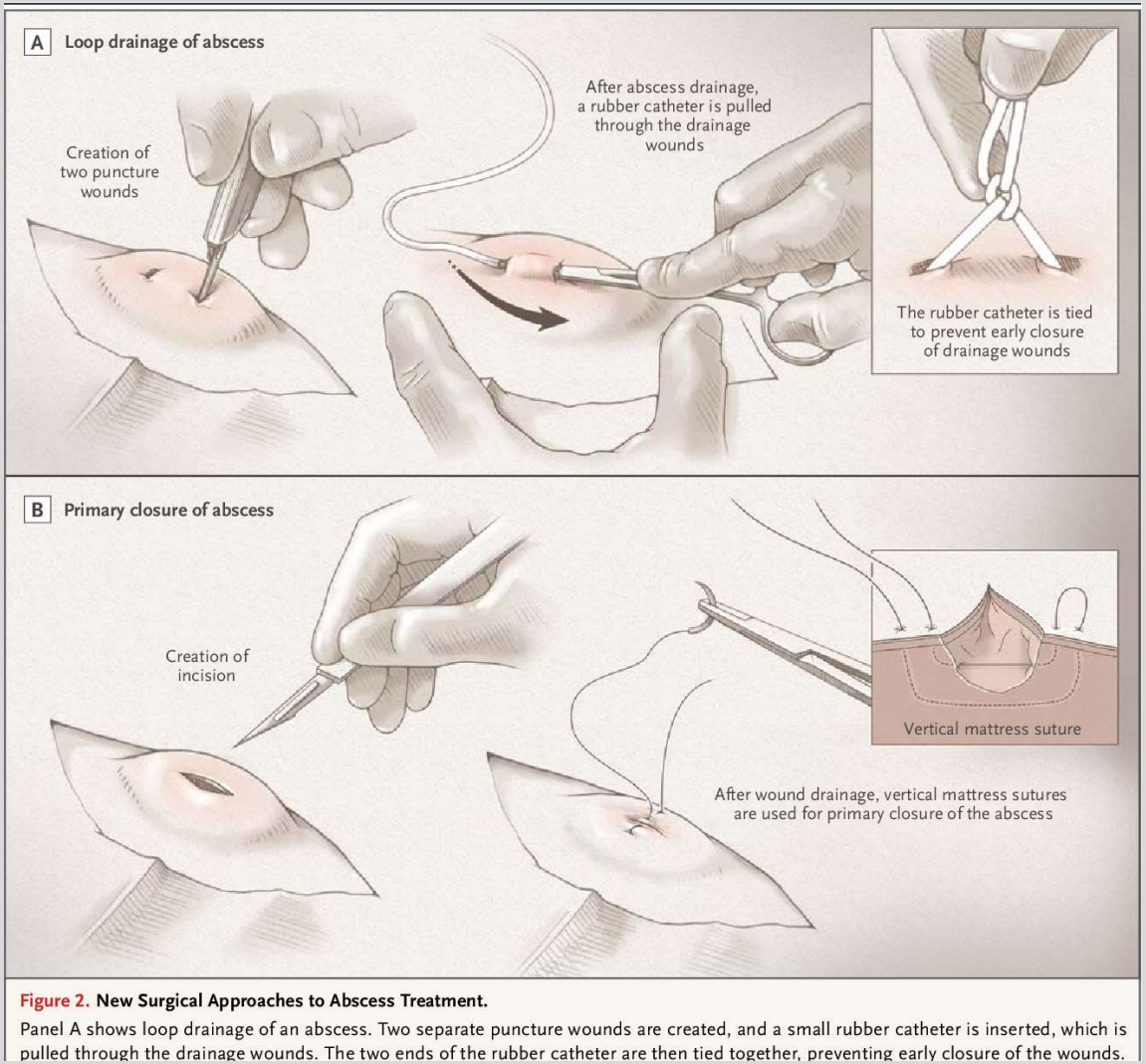


Figure 2. New Surgical Approaches to Abscess Treatment.

Panel A shows loop drainage of an abscess. Two separate puncture wounds are created, and a small rubber catheter is inserted, which is pulled through the drainage wounds. The two ends of the rubber catheter are then tied together, preventing early closure of the wounds.

Incision & Drainage (I&D) Abscess

HANDS-ON PRACTICE!!!

Nail Trephination

- Indications
  - Traumatic injury to finger/nail
  - Visible, painful hematoma beneath involved nails
- Contraindications
  - Crushed or Fractured Nail
  - Open Fracture
  - Hematoma >50% of nail – indicates laceration of nail bed
- Materials
  - 18G Needle – Local Anesthetic – alcohol/anti-septic – Gauze
  - Basin – Irrigation – Heparinized Hematocrit tube/capillary tube
  - "Nail Tray"
- Techniques for Procedure
  - Evacuation Technique – Cautery vs. Needle

Nail Trephination

TABLE 1
Diagnosis and Treatment of Fingertip Injuries

Condition	*Presentation*	*Diagnosis*	*Treatment*
Subungual hematoma	Painful, throbbing fingertip History of a crush injury is typical	Discolored nail Radiographs (AP, lateral, oblique) to rule out associated fractures	Subungual decompression through two to three small holes in nail created with cautery unit or heated paper clip Large subungual hematomas (involving ≥50 percent of the nail) may require nail removal and nail bed suturing. Splint the fingertip until tenderness subsides.

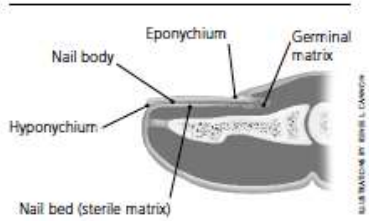
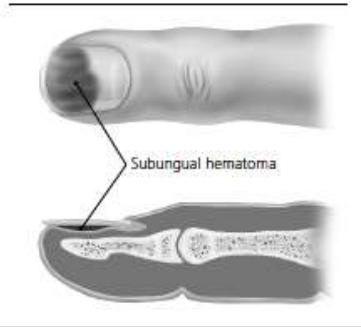


FIGURE 1. Fingernail anatomy.



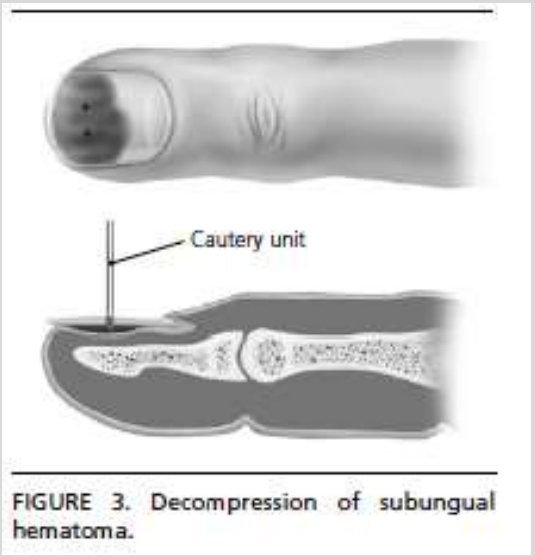
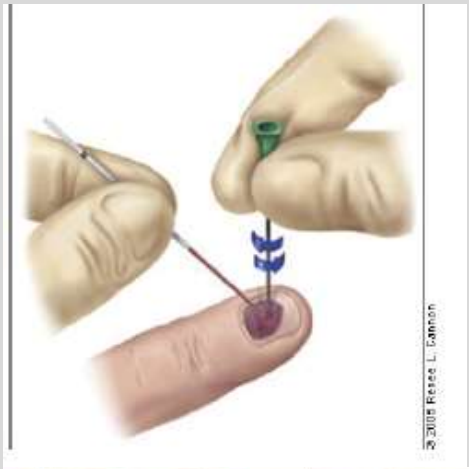


FIGURE 3. Decompression of subungual hematoma.

Nail Trephination



- If needed, proceed with Digital Block of impacted finger
- **Lightly Twist Needle over the hematoma OR utilize Heated Cautery Pen to carefully drain the hematoma**.
- Hole should be a **minimum of 2mm**.
- Care should be taken to **avoid nail bed injury**.
- Emesis basin with cold or warm water can be used to help with evacuation of coagulated blood.
- **Elevate the finger, use cool compresses, simple bandage and PO Pain Control as needed with NSAIDs/Tylenol.**

Nail Trephination

HANDS-ON PRACTICE!!!

SUMMARY:

LEARNING OBJECTIVES

- **Explain the indications and contraindications of basic primary care procedures.**
- **Describe required materials to be able to execute basic primary care procedures.**
- **Demonstrate familiarization in execution of basic primary care procedures.**

SUMMARY:

PROCEDURES

- Administering Anesthetics
  - Local vs Field vs Digital Blocks
- Skin Biopsy
  - Shave vs Punch
- Suturing
  - Simple Interrupted vs Running
  - Mattress Sutures: Vertical vs Horizontal
- Fluorescein Eye Exam with Woods Lamp
- Foreign Body Removal
- Incision and Drainage – Abscess
- Nail Trephination (i.e. draining subungual hematoma)

Questions ???

- Administering Anesthetics
  - Local vs Field vs Digital Blocks
- Skin Biopsy
  - Shave vs Punch
- Suturing
  - Simple Interrupted vs Running
  - Mattress Sutures: Vertical vs Horizontal
- Fluorescein Eye Exam with Woods Lamp
- Foreign Body Removal
- Incision and Drainage – Abscess
- Nail Trephination (i.e. draining subungual hematoma)

After Action Review

- **Helpful vs. Not Helpful**
- **What would you keep?**
- **What would you change?**
- **Insights, Recommendations, Comments?**

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