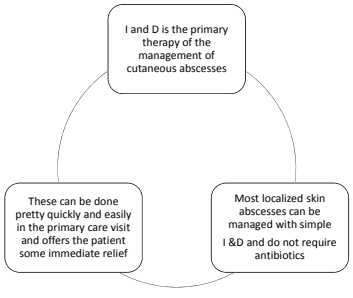
Common Procedures in Primary Care

Objectives:

- Matrexotomy
- Incision and Drainage
- Shave Biopsies

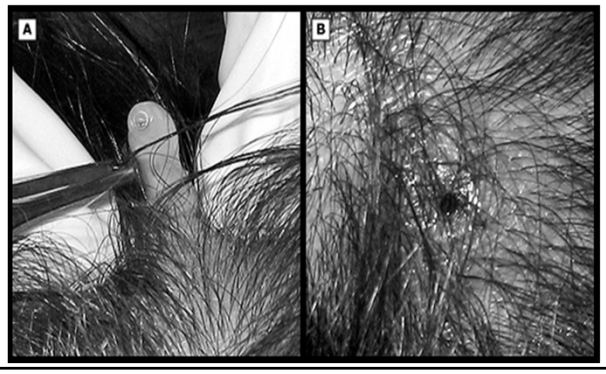
"More and more patients are going to the Internet for medical advice. To keep my practice going, I changed my name to Dr. Google."



Incision and Drainage (I and D)

Differential Diagnosis

- These typically do not need I and D
  - Vascular malformation
  - Myiasis – botfly larvae and should be considered in travels returning from Central or South America
  - Kerion- pt with tinea capitis may develop a boggy tender exudative scalp mass
  - Herpetic whitlow-herpes simplex virus complication via a break in the skin
  - Hidrandenitis suppurativa- chronic relapsing inflammatory disease
  - Sexually transmitted disease
  - Cat scratch disease



Complications

- These are uncommon and are typically a result of inadequate or overaggressive drainage:
  - Inadequate drainage- may result in local extension and development of a larger abscess. This may lead to osteomyelitis, tenosynovitis, septic thrombophlebitis, necrotizing fasciitis or fistula formation
  - Overaggressive drainage- may damage adjacent structures (nerves and vessels) and may lead to bacteremia

The Procedure

Anesthesia- Using 1% lidocaine with epi do a field block of the abscess

The anesthetic is most effective if infiltrated in the skin overlying and surrounding the abscess rather than directly into or under it.

Incision- should be made over the most fluctuant point of the abscess, If this is an infected EIC then you will want to include the punctum in you incision.

The Procedure (Continued)

Swab – take a swab from within the abscess and send off for sensitivity and culture

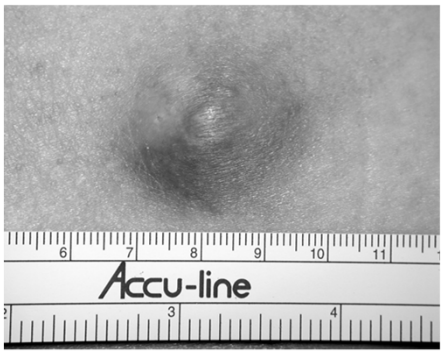
Exploration – probe the abscess with forceps, scissors or your finger to break down loculi and evacuate as much of the pus as possible

Irrigation – you may wash out the abscess cavity with large amounts of normal saline. There is no evidence to support the use of one form of irrigation solution over another.

I and D Procedure (continued)

Pack- loosely pack the abscess cavity from the bottom up. 1/4-1/2 inch guaze packing works well. You want to be sure that the packing is loose to avoid significant discomfort and difficulty changing the dressing. Leave a portion out of the wound to form a 'wick' this allows the wound to continue draining to avoid the reformation of the abscess.

You may cover the area with some guaze and tape or tagaderm which makes a nice dressing if the abscess in not too large- patient may leave this in place until they return to have the 'wick' pulled



Follow up

This 'wick' should be removed in about 48-72 hours Typically you will not need to repack the wound unless it is a large wound and still draining

Antibiotics are not usually required if the abscess is less than 3 cm. Treatment with I and D alone leads to resolution without complications at the same rate (>90%) as patients treated with I and D and antibiotics

It may take many weeks to fully heal.

Skin Biopsies

-Skin biopsies are relatively simple but essential procedure in the management of skin disordered

-More errors are made from failing to biopsy then from unnecessary biopsies. However a biopsy cannot replace good clinical skills as many dermatologic conditions have nonspecific histopathology.

-We will be reviewing shave and small punch biopsy procedures today

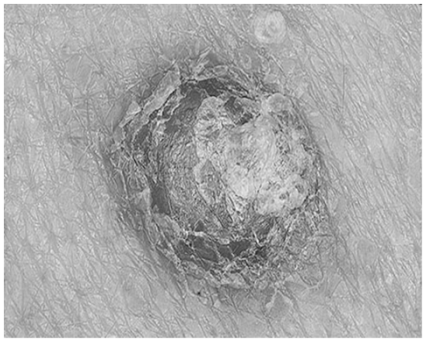
Indications for a Skin Biopsy

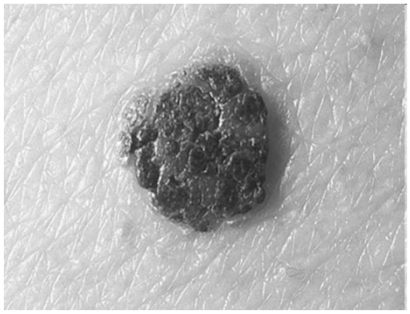
- Suspected neoplastic lesions
- Bullous disorders
- To clarify a diagnosis when a limited number of differentials are being considered
- Biopsy can also be the definitive treatment for irritated, inflamed, precancerous or malignant lesions.

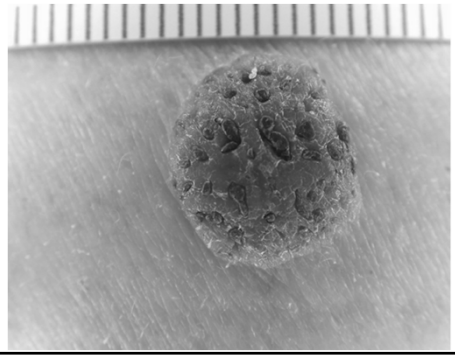
Indications for Shave biopsy

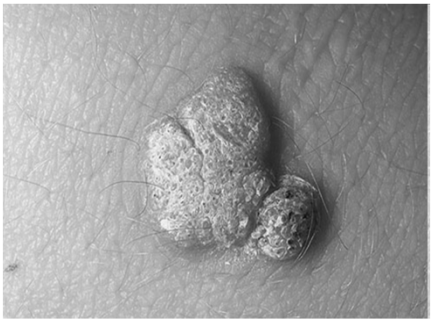
- Elevated lesions or Lesions confined to the epidermis:
  - Seborrheic or actinic keratoses
  - Skin tags
  - Warts
  - Basal cell carcinoma
  - Squamous cell carcinoma
  - Pyogenic granuloma
  - Keratoacanthoma

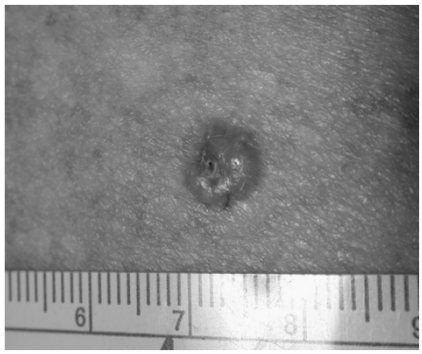
Suspected melanomas should be excised for staging purposes







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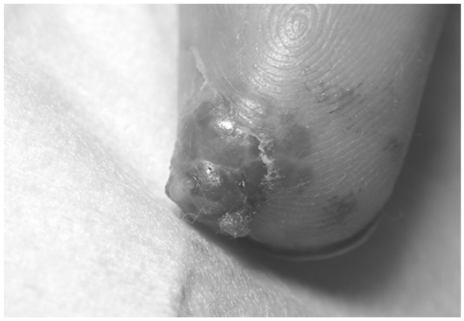
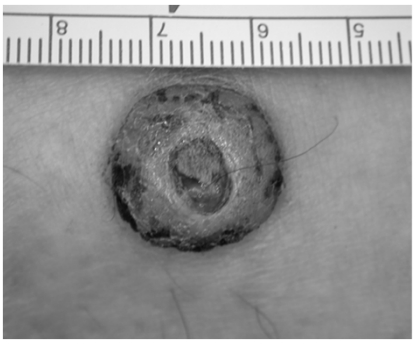


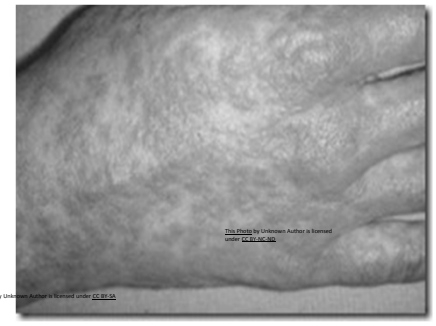


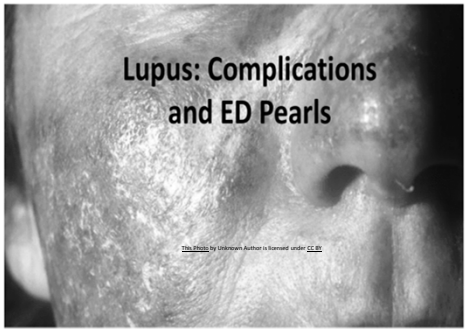
Indications Punch Biopsy

- Full thickness needed for Diagnosis
  - Drug reaction
  - Lupus erythematosus
  - Cutaneous lymphoma
  - Erythema multiforme
  - Vasculitis
  - Psoriasis
  - Deep tissue infection
  - Removal of small lesions

3 mm is the smallest punch size likely to give sufficient tissue for consistently accurate histologic diagnosis

These may close by secondary intension but greater than 3-4 mm have a better cosmetic outcome with the use of 1-2 sutures




Lupus: Complications
and ED Pearls
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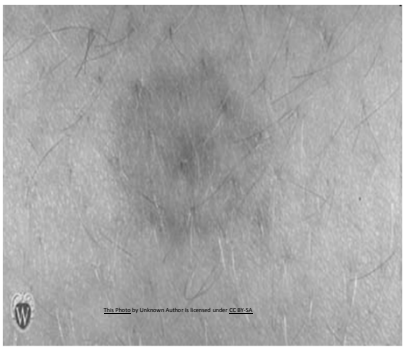
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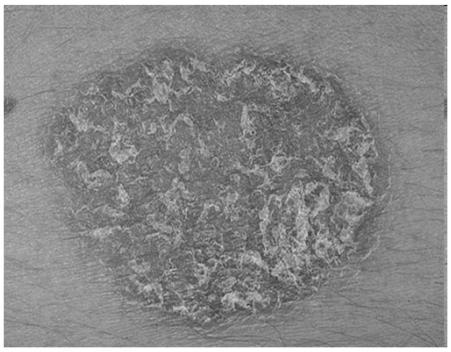
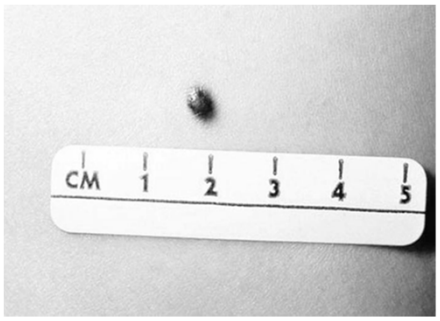




Contraindications

There are few absolute contra-indications to skin biopsy:

- Usually not preformed on infected sites unless the infection it the reason for the biopsy
- Allergies to topical antibiotics, antiseptics, local anesthetics and tape should be reviewed
- Patients should be asked about past bleeding or bleeding disorders: excessive bleeding is rarely a problem with patients taking aspirin or warfarin. If there is a concern of bleeding then refer to dermatology or a surgeon

Skin Site selection

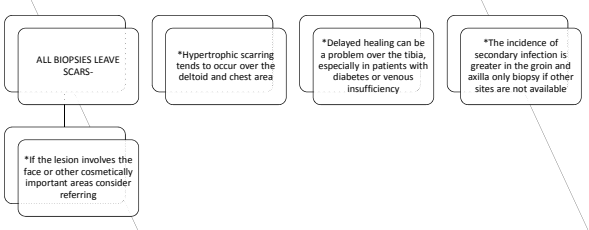
-Inflammatory lesions: the ones with characteristic inflammatory changes (erythema) should be biopsied first.

- evolutionary changes may take time so if they are biopsied too early or very late the biopsy may have only nonspecific or secondary features

-Blistering Diseases: early lesions have more specific histopathology

- The newest vesicles are best to biopsy, ideally within 48 hours of appearance.
- Those with crusting, fissures, errosions, excoriations and ulceration may obscure the findings

Skin Site Selection and Scarring



Nonbullous lesion should include maximal lesion and minimal normal skin

Between 1 and 4 mm in diameter, biopsy the center or excise entirely

Larger lesions biopsy the edge, the thickest portion or the area that is most abnormal in color

Remove vesicles intact if possible with adjacent normal skin

Bullae (blister larger than 5 mm) should be biopsied at the edge to include a small part of the blister and adjacent intact skin, keeping the blister roof attached

Location within the Lesion

Shave and punch biopsies are clean, not sterile procedures

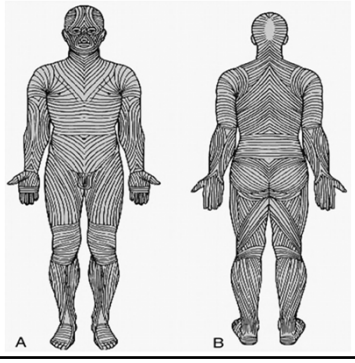
Identify the biopsy site before performing the definitive surgical treatment in case there is need for re-excision

Any common skin antiseptic may be used to prep the site – isopropyl alcohol, povidone-iodine or chlorhexidine gluconate

Mark the lesion with a skin pen prior to injection of anesthetic

Look for the tension lines (Langer's lines) surgical incisions placed parallel to these will close more easily and cosmetically

Techniques



Anesthesia

- Most commonly used is Lidocaine 1% or 2% with or without epinephrine
- Minimize the sting of anesthesia:
  - 30 guage needle or smaller needle
  - Make initial injection perpendicular to the skin
  - May use bicarb (ratio of 1:10)
  - Use room temperature medication
  - Inject slowly

Shave Biopsies

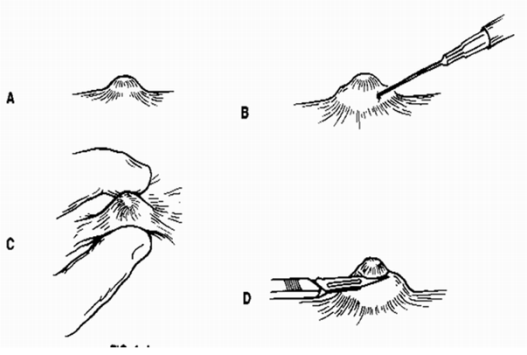
Shave biopsies can be either superficial or deep.

Superficial shave biopsies are done across or nearly parallel to the skin surface – into the epidermis or epidermis and limited superficial dermis

Raising the lesion with a wheal of injected anesthetic and stabilizing between the thumb and forefinger can facilitae the biopsy

Deeper shave will include depidermis and dermis which is important for assessing BCC and SCC

There is a saucer type defect and can be called a "saucerization" biopsy

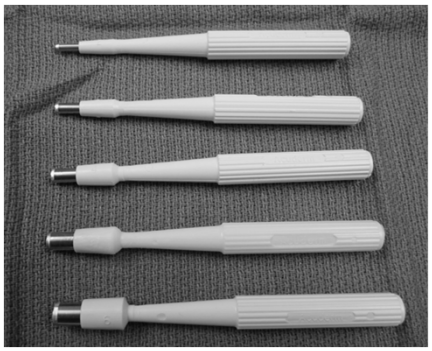


Shave biopsy

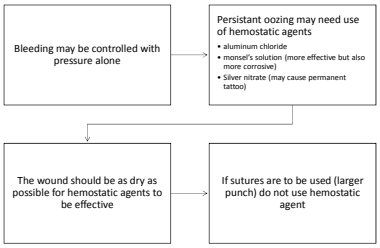
- Near end of the excision, Use finger to stabilize the lesion and prevent tearing
- Angle of the blade controls the depth of the biopsy
- Dermablade or 15 blade may be used
- Dermablade allows for easier control of depth and width of the biopsy
- Sissors are efficient for removing skin tags and other small exophytic growths

Punch biopsy

- Use direction of the skin tension
- Raise lesion with a intradermal wheal
- Select the appropriate punch size
- Stabilize the skin with thumb and forefinger, stretching to tension line to create an oval rather than round wound
- Use constant steady downward pressure with circular twisting
- Do not stop and remove the punch until you feel the "give" when the punch reaches the subcutaneous fat
- Remove sample and use guaze to apply pressure

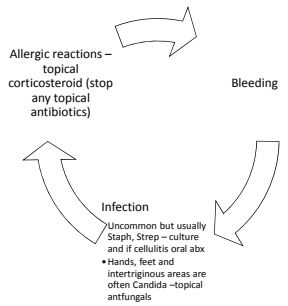


Hemostasis



Wound Dressing

- Wounds heal faster when moist and under occlusive or semiocclusive dressing
- Apply thin film of ointment (Aquaphor or vasoline)
- Cover with guaze and tape or tegaderm
- Dressing should be removed in 24 hours and cleaned with soap and water and re-dressed
- For secondary intension clean this way until healed over or for at least 5 days



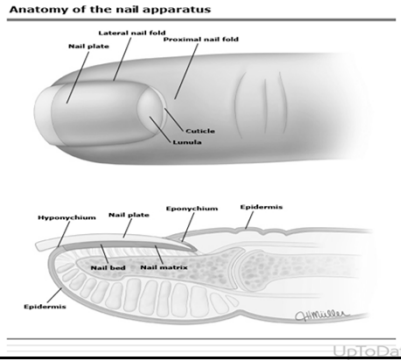
Complicaitons

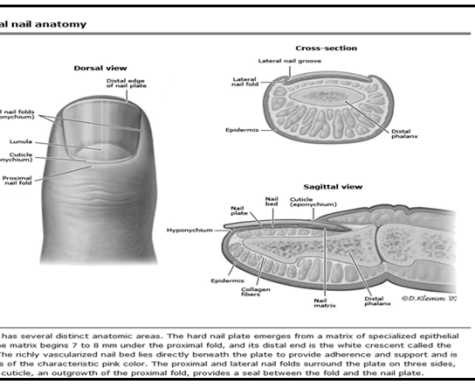
Matrixectomy/Ingrown Toenail Removal

Anatomy of the Nail

The nail unit is composed of the nail matrix, the nail bed, the proximal and lateral nail folds, and the hyponychium

The **nail matrix** ultimately form the nail plate Although most of the nail matrix is hidden beneath the proximal nail fold, the distal third of the nail matrix is sometimes visible through the nail plate as a half-moon shaped structure called the **lunula**





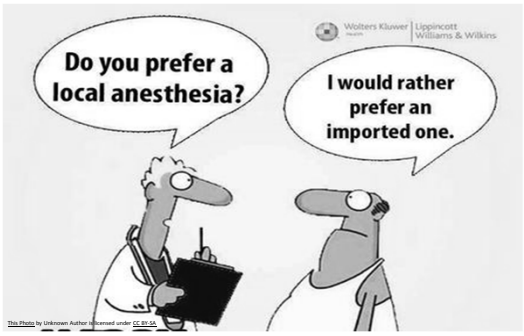
Anatomy of the Nail (continued)

The proximal and lateral nail folds are collectively known as the **paronychium**. The nail folds serve to protect the nail plate and direct its growth in the correct orientation

The **hyponychium**, located at the distal free edge of the nail, is contiguous with the volar skin and functions to seal and protect the distal nail unit from the environment.

Trauma to this may result in onycholysis and subsequent bacterial invasion.

The paronychium plus the hyponychium and nail bed is called the **perionychium**



Anesthesia

- The effect of lidocaine or procaine may last only 30 to 40 minutes, but anesthesia with bupivicaine(Marcaine) 0.25 percent typically lasts several hours.
- For this reason Bupivacaine may be used in combination with shorter-acting agents for rapid onset of anesthesia with a prolonged effect.
- This is probably not necessary; one small randomized trial found that bupivacaine alone had a similar onset of action to that of lidocaine plus bupivacaine

Anesthesia (continued)

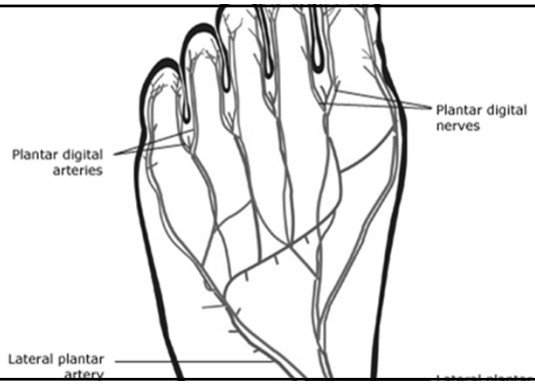
Use of epinephrine — Epinephrine causes local vasoconstriction, thereby reducing bleeding, and maintains the anesthetic in the tissues for a longer period of time. Injecting epinephrine into the base of a digit causes vasoconstriction of these vessels, which may increase the risk of digital ischemia in susceptible individuals.

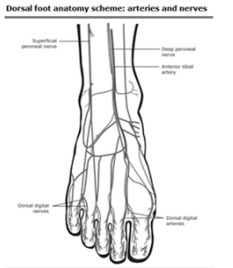
One alternative to using epinephrine to control bleeding when performing a digital block is to place a small tourniquet clamped around the base of the digit during the procedure. This method is used for short procedures; prolonged digit ischemia (over 60 minutes) must be avoided. Be certain to remove the drain once the procedure is completed.

DIGITAL BLOCK PROCEDURES

Performing a digital block is relatively straightforward but requires attention to specific precautions. The basic approach is the same for both toes and fingers

Great toe- While the technique is similar for fingers and toes, the great toe is approached somewhat differently as there are nerve branches that come up the dorsal aspect of the great toe that can be missed if anesthetic is only injected laterally and medially





General considerations

- Regardless of the technique chosen, advance and inject slowly to minimize pain being caused by distension of the tissues. Avoid using more than 3 to 4 mL of anesthetic solution.
- Use a small gauge needle- 27 to 30 gauge is recommended.
- Before injecting the solution, slowly retract on the plunger of the syringe to avoid injecting into one of the digital blood vessels that accompany the digital nerves.
- While the procedure is somewhat uncomfortable, it should not cause undue pain. Excessive pain or paresthesias suggests that the needle is against or in a nerve.
- Withdraw 2 mm and reinject; the goal is to bathe the surrounding tissue and nerve with anesthetic, rather than injecting directly into the nerve.

General considerations (Continued)

- It can take 10 to 15 minutes for the anesthetic to take complete effect. Therefore, it is recommended to wait for at least 10 minutes after injection to ensure that an adequate block will be achieved. If sensation is present after 10 minutes, wait an additional five minutes.
- Test for anesthesia by pinching the tissues with forceps or with a needle prick.
- Bilateral blocks achieve complete anesthesia, If anesthesia is only required on one side of a digit, the block may be limited to that side.
- If sensation persists at the nail tip despite adequate injection, a wing block can be used

Three-sided toe block

Place	Once the area has been prepped, place the patient's foot flat and plantar-side down on a sterile drape. Alternatively, place the heel on the drape and stabilize the toe with the other hand.
Hold	Hold the syringe perpendicular to the toe and insert the needle just distal to the MTP (metatarsal/phalangeal) joint at the lateral edge of the toe.
Inject	Inject anesthetic into the subcutaneous dorsal tissue.

Great toe digital block

To perform a three-sided toe block or four-sided ring block, insert the needle just distal to the MTP (metatarsal/phalangeal) joint at the lateral edge of the toe. Slowly advance the needle straight from the dorsal to the plantar surface, injecting as the needle is advanced. This picture shows the position of the needle just after it has been inserted.

Courtesy of Robert Baldor, MD.

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Three-sided toe block (continued)

Slowly advance the needle straight from the dorsal to the plantar surface, injecting as the needle is advanced Avoid pushing the needle through the plantar surface.

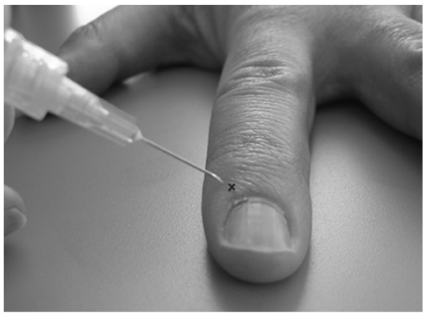
One to 2 mL of anesthetic should be sufficient.

Inject over the dorsum of the toe by partially withdrawing the needle and redirecting it across the dorsal aspect of the toe, injecting solution from the lateral to the medial aspect of the toe.

Inject the medial aspect of the toe by inserting the needle perpendicular to the medial aspect, entering via an area of previously anesthetized skin. Inject 1 to 2 mL from the dorsal to the plantar surface.

Wing Block Procedure

- An alternative procedure for achieving anesthesia of a distal digit (as might be needed for nail surgery) is to perform a wing block A wing block is relatively simple and may achieve more rapid anesthesia than a digital block. It can be used for fingers or toes and, if anesthesia is only needed on one side of a digit (as for a partial nail removal), can be performed unilaterally.
- Once the area has been prepped, place the patient's finger or toe flat and volar-side down on a sterile drape or stabilize the digit with the other hand.
- Holding the syringe at a 45 degree angle to the plane of the table and perpendicular to the long axis of the digit, insert the needle a short distance to enter the deep intradermal tissue of the dorsum of the digit at a point approximately 3 mm proximal to an imaginary point where a linear extension of the lateral and proximal nail folds would intersect.



Wing Block (Continued)

Inject the anesthetic into the intradermal tissue, first infiltrating the proximal nail fold; the needle can be advanced to allow infiltration along the proximal nail fold. The needle is then partially withdrawn and redirected to allow infiltration of the intradermal tissue along the lateral nail fold. As the anesthetic is injected, the folds blanch and distend creating a wing-like appearance.

When bilateral anesthesia is desired, anesthetic must be infiltrated similarly on the opposite lateral nail fold and along the entire proximal nail fold. For small digits, it may be possible to achieve this by advancing the needle without requiring a second skin puncture.

If sensation persists at the nail tip, additional anesthetic may be injected into the dermis of the sensate skin using a 30 gauge needle. Anesthesia should be almost immediate.

SUMMARY

Several safe and equally effective techniques are available to achieve a digital block.

Regardless of the technique, pay careful attention to details such as using aseptic techniques and minimizing the volume of anesthetic that is injected.

Check the adequacy of anesthesia before starting any procedure and administer additional anesthetic directly into sensate skin when necessary.

Informed Consent

Informed consent is always advisable when pursuing a procedure, regardless of how minor.

Explain the benefits and risks of the procedure, and make sure that the patient understands the issues.

Common risks for digital blocks include infection and bleeding. There is also the risk of distal paresthesia, if the nerve is damaged, and the possibility of distal infarct from vasospasm. These risks are small and can be avoided with careful attention to technique.

Prior to proceeding with the block, perform a neurologic exam to detect sensory abnormalities

Skin preparation

- Prepare the skin with a povidone iodine or chlorhexidine solution to decrease the risk of infection.
- Perform three separate scrubbings with the antibacterial solution to include both the injured area and the injection sites.
- This may be difficult with toes, an alternative is to soak the digit for five minutes in the antibacterial solution.
- Soaking rather than scrubbing may be best for inflamed, painful digits, such as those with an ingrown nail or paronychia.

COMPLICATIONS

Pain is the most common complication following nail surgery and is more likely to occur when infection is present before the procedure. Permanent procedures should be avoided in the presence of infection, and infection should be treated prior to operating whenever possible.

Many times, patients with persistent pain after the procedure were noncompliant with postoperative instructions regarding elevation and ice, so stress these aspects of wound care with patients.

Infection is always a possibility, even when one has been meticulous with patient preparation and technique. ask patients to contact you for the following situations:

- The pain worsens rather than improves over 24 hours
- There is increasing redness of the area
- A red streak develops
- Pus is present
- There is fever

COMPLICATIONS (continued)

In the first few postoperative days, bacterial infection, usually with *Staphylococcus aureus*, is most likely, but after one week, infections with *Candida*, which tend to remain localized, are increasingly prevalent.

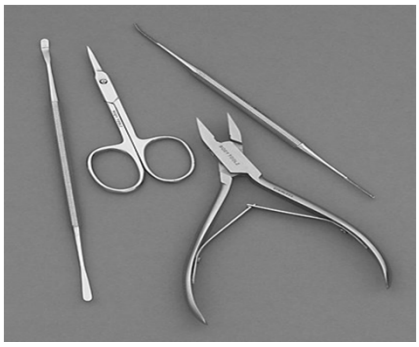
Candidal infections usually can be treated by discontinuing the antibiotic ointment and applying a topical antifungal agent (eg, topical clotrimazole, ketoconazole, econazole, naftifine, ciclopirox olamine).

Do not use combinations of topical antifungals and topical corticosteroids, because corticosteroids may exacerbate the fungal infection and retard healing.

PROCEDURE

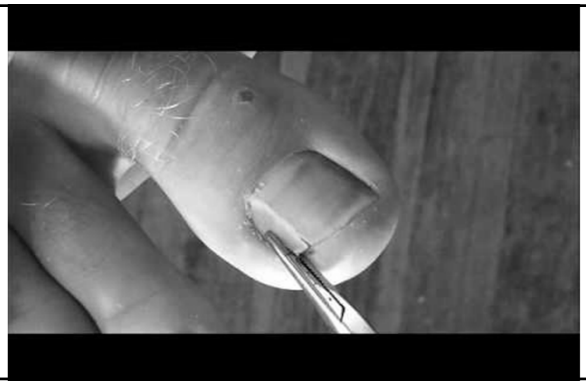
Supplies needed for chemical matrixectomy include:

- a preoperative antiseptic solution,
- anesthesia supplies,
- sterile drapes /sterile gloves,
- elevating instrument
- nail splitter (for partial matrixectomy),
- scissors, forceps, small curette (an ear curette)
- tourniquet
- cotton-tipped applicators, petroleum jelly, (88 percent) liquefied phenol, or antibiotic ointment, nonadherent gauze (Telfa), and roller gauze (Conform).



PROCEDURE

- The digit must be well anesthetized with a digital block and soaked in the antiseptic solution
- Place the patient in a recumbent position on the table, and apply sterile drapes to expose the operative site.
- The nail plate is partially avulsed if just a portion of the matrix is to be ablated or completely avulsed if the entire matrix is to be ablated.
- Any exuberant tissue should be curetted or excised with scissors and forceps. The area of matrix to be treated is then curetted sharply.
- A tourniquet is then placed at the base of the digit to prevent blood from diluting the phenol.
- The overlying proximal nail fold, adjacent nail bed, and lateral nail folds are then coated with petroleum jelly to prevent phenol from damaging these tissues.



PROCEDURE

Cotton-tipped applicators are stripped of all but a small wisp of cotton, or, alternatively, the bare end of the stick is covered with a small wisp of cotton, which is then saturated with phenol solution. The cotton wisp should be held against the inside mouth of the phenol bottle to drain the excess phenol to prevent dripping. The phenol-soaked wisp is then applied to the matrix and vigorously rubbed into the treatment area for 30 seconds.

One to two subsequent phenol applications are made. The tissue will denature quickly and turn white or gray this is self limiting -no irrigation is necessary.

However, some surgeons irrigate the treated area with 30 to 50 mL of isopropyl alcohol or water. The tourniquet is then removed [8]. The tourniquet should never be left in place for longer than 10 to 15 minutes.

PROCEDURE

- Petrolatum or an antibiotic ointment is placed on the nail bed, the site is covered with a nonadherent dressing (Telfa) Island bandaids work well The wrapping should be secure but not so tight as to be uncomfortable. Dressings wrapped too tightly may increase postoperative pain.
- The patient is then advised to go home and elevate the affected foot or hand for 12 to 24 hours. Adequate elevation requires that the limb be held above the level of the heart. Ice packs applied to the dorsal foot seems to diminish pain and slow the clearing of anesthesia.
- Acetaminophen and ibuprofen are appropriate analgesics used in **combination with**, but not as a substitute for, elevation. Most pain occurs in the first 24 to 48 hours, and the majority of patients can return to normal activities while wearing an open-toed shoe after 48 hours.
- Persistent pain or increasing pain after two days suggests an infection or chemical cellulitis. Infections should be cultured and treated with anti-staphylococcal antibiotics; chemical cellulitis is treated with elevation, ice, and nonsteroidal anti-inflammatory drugs.

https://youtu.be/EWIfZ6wWDyE

QUESTIONS??