

Overview

- Wound care 101
- Etiology and treatment of lactation-related wounds
- Things that are NOT wounds but get mistaken as wounds
 - Subacute mastitis
 - Blebs
 - Vasospasm
 - Dermatitis
 - Hyperkeratosis
 - Adenomas
 - Cancer
 - Miscellaneous

Image: Tucci Studios



Skin Layers

- Epidermis
 - Sealing, protective
 - Epidermal appendages are lined with epidermal cells for regeneration and reepithelialization
- Dermis
 - Structure, strength
- Subcutaneous
 - Padding
- Muscle

Phases (Overlap – Not Discrete)

- Inflammatory
 - Clot formed, WBC begin autolysis
- Proliferative
 - Epithelialization: fibroblasts form collagen, new vessels formed, granulation formed, epithelial cells migrate from the edges
- Maturation
 - Tissue remodeling to take back strength

Types of Wounds

- Acute: heal quickly, transient cause, lack impediments to healing
 - Lacerations, abrasions, punctures, burns, surgical incisions
- Chronic
 - Pressure ulcers, neuropathic ulcers, ischemic ulcers, inflammatory (chronic disease, cancer)



Treatment Goals

- Wound bed prep for healing
 - Debridement of dead tissue and exudate: autolytic (safe/slower), enzymatic, **biosurgical**, mechanical (WTD-out of favor), **sharp/surgical**
- Well **vascularized** with **minimal exudate**
- **Dressing** that facilitates healing
- **Skin edges fresh** to allow epithelial cells to migrate



Topical Therapy Principles

- Remove dead tissue
- Absorb excess exudate
- Facilitate autolytic debridement
- Maintain **moist wound surface**
- Minimize pain
- Protect peri-wound skin
- Thermal insulation
- Protect from trauma



Moist Wound Healing

- Migration of cells more effective
- Cells can perform needed tasks
- Growth factors and chemo-attractants better able to interact with target cells
- Pain minimized
- Less scar tissue



Topical Dressings



- Fillers
 - Absorptive: calcium alginate +/- silver
 - Hydrating: balm
- Covers
 - Hydrogel, mepilex, polymem



What Keeps Wounds From Healing?

- Ischemia
 - All wound healing needs adequate perfusion
- Edema
- Lack of moist healing
- Trauma



IATROGENIC: APNO-NO-NO!

- Misuse of topical agents/antiseptics
- Steroids
 - Inhibit macrophages, lymphocytes, decrease antibody production, diminish antigen processing
- NSAIDs interfere with platelet activation, angiogenesis, collagen production

How to Make APNO: The Recipe

All Purpose Nipple Ointment is a custom medication that requires a prescription. If, after you speak to your doctor and have an exam, the doctor believes this medication can help, she can provide you with a detailed prescription. Certain pharmacists, known as compounding pharmacists, can prepare this ointment for you. You can also make the mixture yourself, but you still need a prescription. Here's what you need to make APNO.

1. Bacitracin (Impregnated) 2% ointment (not cream): 75 grams. Bacitracin is the antibiotic. It treats infections of the skin. For the ingredients, you will need to get a prescription from your doctor. If you are not able to get bacitracin, you can use bacitracin. However, bacitracin does not work as well.
2. Betamethasone 5% ointment (not cream): 15 grams. Betamethasone is the anti-inflammatory. It treats swelling, itching, dryness, redness, and general irritation of the skin from conditions such as infections, allergic reactions, and eczema. Your doctor can give you a prescription for this medication, or you can get it over-the-counter in a weaker concentration.
3. Miconazole powder to make a final concentration of 2% miconazole. This ingredient is the anti-fungal. It treats yeast and fungal infections of the skin. This medication is available by prescription and over-the-counter. According to Dr. Shewman, if miconazole powder is not available, it is better not to substitute anything and just include the two ointments. It is also better to choose an anti-fungal powder over an ointment because it will give you a better concentration of the antifungal agent, and the concentrations of the ointments and betamethasone will stay higher.
4. Optional: It may also be helpful to add lanolin powder so that the final concentration of lanolin is 2%. Lanolin is a pain reliever.

Combine all the ingredients in equal parts, thus the mixture is complete. You should have approximately 30 grams or one ounce of APNO.

APNO-NO-NO-NO



Image: YourSassyGrandma

APNO-NO-NO-NO

You deserve so much better than APNO.

No other ointment is as good as APNO.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

It's the only ointment that's been proven to work.

IATROGENIC Continued

General Measures

1. Nipples can be warmed for short periods of time after each feeding, using a hair dryer on low setting.

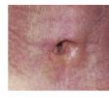
2. Nipples should be exposed to air as much as possible.

3. When it is not possible to expose nipples to air, plastic dome-shaped breast shells (best nipple shields) can be worn to protect your nipples from rubbing by your clothing. Nursing pads keep moisture against the nipple and may cause damage that way. They also tend to stick to damaged nipples. If you leak a lot you can wear the pad over the breast shell.

- Poor application techniques (tapes)
- Drying of wound
- Reduction of wound temperature with dressing changes
- Trauma from aggressive cleaning
- Fibrinous exudate bathing the wound



Poll: Which are Infected?



None!



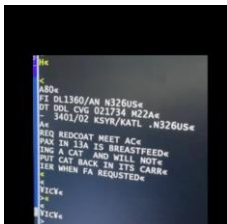
Poll: What About This?



NEWS

Woman Allegedly Breastfeeds Cat on Delta Airlines Flight

BY KLA BROWN ON 11/05/21 AT 10:07 PM EST

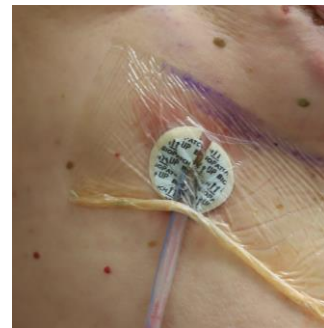


Nope,
Not Infected

However, a TikTok account from flight attendant Ainsley Elizabeth appears to refer to the incident, with a video posted on November 2 claiming that "security met the flight because a woman was breastfeeding her cat."

"This woman had one of those, like, hairless cats swaddled up in a blanket so it looked like a baby," Ainsley Elizabeth said in a follow-up video posted on November 13. "Her shirt was up and she was trying to get the cat to latch and she wouldn't put the cat back in the carrier. And the cat was screaming for its life."

This?



Nope



What About These Drain Sites?





Nope!

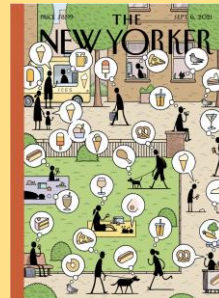
THIS?



YES! WHY?

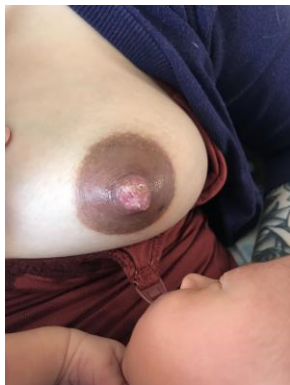


Etiology of Lactation Wounds



- Engorgement/latch
- Pump Trauma
- Biting
- Nipple piercings
- Fluid collection drainage
- Iatrogenic/self-inflicted
- Granulomatous mastitis

Early
Latch Trauma



Pump Trauma



Infant Biting



Nipple Piercings



Drainage Site Wounds



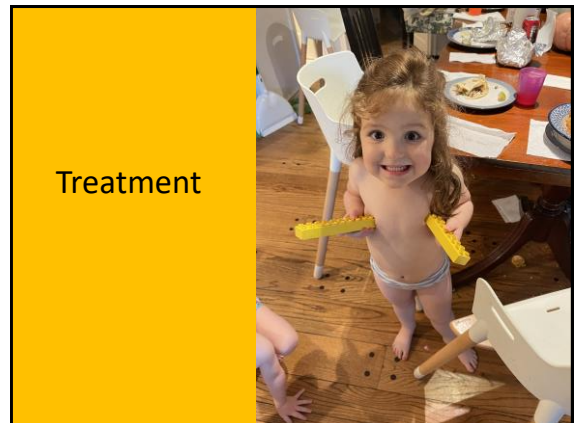
Iatrogenic/Self-Inflicted



Granulomatous Mastitis



Treatment



Pump trauma



What Would
You Do?



Ischemia/Strangulation Rx

- Be wary of lubricants like coconut oil – can allow mom to turn up suction to dangerously high levels
- Limit duration of time pumping
- Proper suction
- Proper flange fit
- Take a break from pumping and hand express



Superficial Ulcerations Tx



COMPREHENSIVE INVITED REVIEW

Wound Dressings and Comparative Effectiveness Data

Authors: Sarah D. Goss, MD, and Nancy L. Tomasz, MD

Journal: Wound Management and Practice, Volume 18, Number 1, February 2013

Background: Wound healing is a complex process involving multiple factors, including the wound itself, the patient, and the environment.

Objective: The purpose of this review is to provide a comprehensive overview of the current evidence regarding the effectiveness of various wound dressings.

Methods: A systematic review of the literature was conducted, focusing on the effectiveness of various wound dressings in promoting wound healing.

Results: The review found that hydrogel dressings are highly effective in promoting wound healing, particularly in the context of superficial ulcerations.

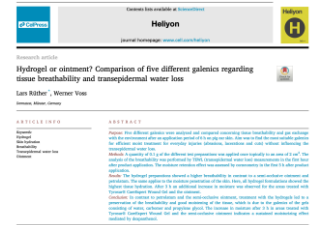
Conclusion: Hydrogel dressings are a valuable tool in the management of superficial ulcerations, offering a moist, closed environment that facilitates healing.



Sarah D. Goss, MD

- It's simple: MOIST, CLOSED wound healing!
- Note that hydrogel products marketed for lactation state do not use with balm
- However, a benefit of hydrogel in general is its ability to be "used in conjunction with topical medications"

"Hydrogel bases therefore offer great potential, as they can easily be combined with various substances that facilitate wound healing and/or have anti-inflammatory properties to promote healing in chronic wounds. However, there is still a lot of educational work to be done by the treating physicians to make patients aware of these benefits and to establish ideal moist wound management as a standard approach even for minor wounds."



Invaginations: Evert to Assess

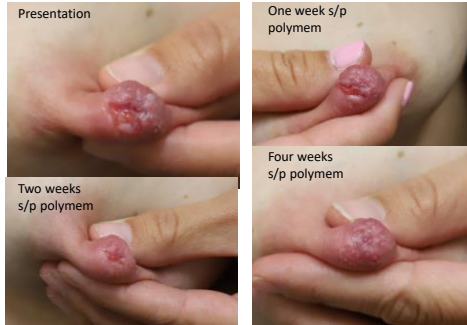


Cratered/Exudate Rx

- Need "fillers"
 - Absorb excess exudate, promote tissue ingrowth



Remove Exudate/Biosurgical Debridement



Pump Trauma Causing Abscess Rx

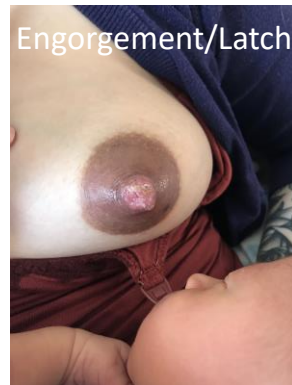
- Drain it
- Place stab incision and drain site AWAY from areola if possible
- Hand express and feed baby at breast if possible



DON'T SOAK THE NIPPLE IN SALT WATER!



Engorgement/Latch





Latch Trauma Rx



- Treat engorgement
 - Ice, lymphatic drainage, do not remove excess milk
- Treat hyperlactation
 - Babies continue to clamp with high flow
- Adjust position
- Treat trauma with moist/closed healing versus fillers if cratered/exudate



Bites

Bite Trauma RX

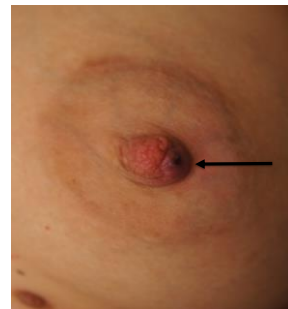
- Dirty wound, no suturing, glue, or tape-> close by secondary intention with basic wound care support



Remove Exudate/Biosurgical Debridement



Nipple Piercing Sites



Nipple Piercing Site Trauma Rx

- Wound care if ulceration or cratering
- Hematoma: moist heat for spontaneous drainage
- NSAID for pain
- Aspirate/stab incision if large



Day of left breast abscess drainage



Post drain day #1: persistent erythema, no undrained fluid collection: antibiotics changed



Post drain day #2: improved erythema



Post drain day #3: drain removed



Post-drain removal day #2: closing drain site



Post drain day #10: closed, healed, no residual erythema

What Will You Do With This?



DO NOT PACK

- Gets soaked with milk immediately
- Keeps wound persistently open
- Excessive granulation tissue
- Prolonged healing time



Images: Ellen Healy

Do NOT PUMP

- Fistula and hypertrophic granulation tissue formed
- A rare time to use silver nitrate on hypertrophic granulation on areola



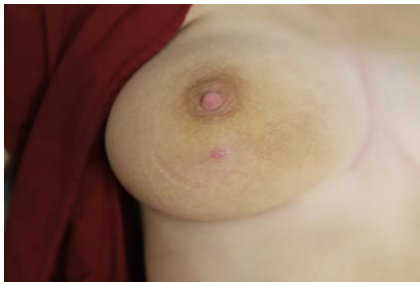
Consequence of patient told to "pump to empty"



Milk fistula in area of pump trauma



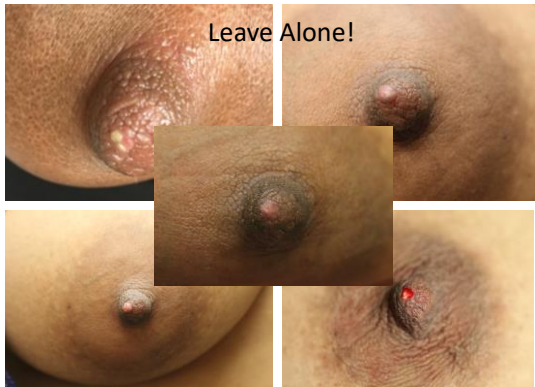
Everything closes eventually with appropriate management (2.5 weeks s/p drain)



Iatrogenic/Self-Inflicted Scar Tissue



Leave Alone!



Granulomatous Mastitis



Treatment

— Past

- Antibiotics
- Oral steroids
- Surgical debridement, drains and chronic wounds

— Present

- Intralesional Kenalog injections
- Methotrexate or azathioprine if they progress
- ?Humira



Kornfeld and Mitchell International Breastfeeding Journal
https://doi.org/10.1007/s10918-021-00116-2

International Breastfeeding Journal

CASE REPORT

Open Access

Management of idiopathic granulomatous mastitis in lactation: case report and review of the literature

Hannah W. Kornfeld¹ and Katrina B. Mitchell²

Abstract

Background: Idiopathic Granulomatous Mastitis (IGM) is a benign chronic inflammatory breast condition that mimics two common breast disorders: breast carcinoma and breast abscess. It can form breast masses, fistulae, and fluid collections, resulting in breast inflammation with infection and nipple areolar complex (NAC) involvement. IGM most often presents in women of childbearing age within a few years of pregnancy, and can significantly impact lactation. Despite the prevalence of this disease, no current literature describes an approach for managing IGM during breastfeeding.

Case presentation: A 28-year-old G3P3 patient of Native American origin presented to her obstetrician at 7 months pregnant with concerning left breast swelling and redness. She underwent a mammogram, ultrasound and core needle biopsy that confirmed the diagnosis of Idiopathic Granulomatous Mastitis. During the postpartum period, her subsequent emotional transcriptions (episodes) of her left breast. Due to the contraindication of breastfeeding after local steroid injection, the patient stopped breastfeeding from the affected breast and continued breastfeeding bilaterally.

Conclusions: Idiopathic Granulomatous Mastitis is a challenging chronic inflammatory breast disease that affects women primarily in the reproductive years, with a higher incidence in patients of Hispanic, Native American, Middle Eastern, and African descent. Treatment of IGM during pregnancy and lactation has thus far not been addressed. We review the literature on the treatment of IGM in the non-lactating population, and propose considerations for nursing breastfeeding women affected by this disease. Topical treatment has included systemic immunosuppression and surgery, but recent literature demonstrates that intraleisional injection of steroid can provide significant symptomatic relief to patients. A diagnosis of IGM does not preclude breastfeeding, though patients may experience challenges with milk production and latch on the affected breast. Individualized care should be provided, with considerations given to the following side-effects of systemic steroids, the need to assess a breast being treated with intraleisional steroids, and augmentation of milk production on the unaffected breast to prevent continued breastfeeding.

Keywords: Breastfeeding, Idiopathic granulomatous mastitis, Triamcinolone, Lactation, Single breast lactation, Steroid hormones, Lactation problems, Imaging, Postpartum, Infection, Inflammation

¹University of North Carolina at Chapel Hill, 101 South Drive, Chapel Hill, NC 27599, USA
²University of North Carolina at Chapel Hill, 101 South Drive, Chapel Hill, NC 27599, USA

Azathioprine

Biopsy Site



3 months PP; drain placed and AZA started

Day 3 after 14F seroma cath

Day 11

Summary of Treatment Principles



Treatment: Behavioral

- Avoid pump
 - Not physiologic
 - Suction levels
 - No infant bacterial exchange or mechanical debridement
 - Risk adding additional complications from pump
 - Mastitis, plugging, blebs
- Hand expression
- Side lying or laid back nursing



Treatment: Wound Care

- KEEP IT SIMPLE
- Treat it like a burn
 - Keep moist, cover 24/7
 - Use fillers (polymem) for cratering and cover for closed healing
 - Silver nitrate rarely for hypertrophic granulation tissue
 - PRN 0.1% triamcinolone for limited period of time for extreme pain



Wound Care DON'Ts

- NO
 - Hairdryers
 - "Letting it dry out"
 - Moist washcloths (unless you are purposely trying to open up the skin)
 - Soaking in salt
 - Topical antibiotics or antifungals
 - Tapes, glues, bandages
 - Shells, silverettes, anything else that increases nipple edema by constricting areola/nipple base
 - Sterilizing with alcohol and other drying agents
 - PICKING!
 - APNO-NO-NO!



Don't Close a Dirty Wound Primarily



- Vast majority of wounds on nipple/areola are dirty
- Large laceration with knife with presentation immediately: clean, close primarily
- Do not suture, dermabond, tape closed any wound on the breast or nipple!

P.S. These are NOT Wounds

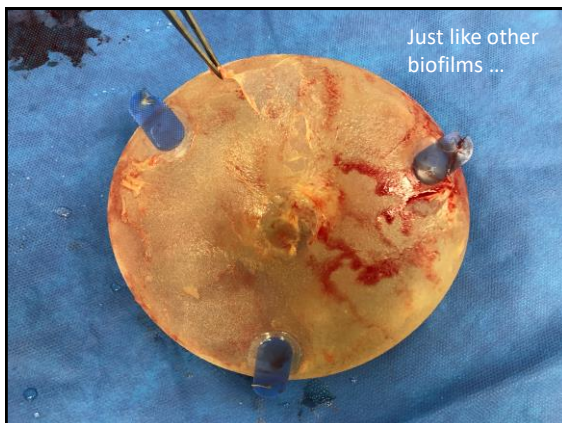


Subacute Mastitis

- Imbalance of natural breast flora akin to vaginal yeast infection or bacterial vaginosis
- May have history of previously treated acute mastitis
- Nipples/latch can be very tender and have scabbing, blebs, biofilm; underlying breast pain and plugging



Eglash et al JHL 2006, Milk Mob 2015



Subacute Mastitis Treatment



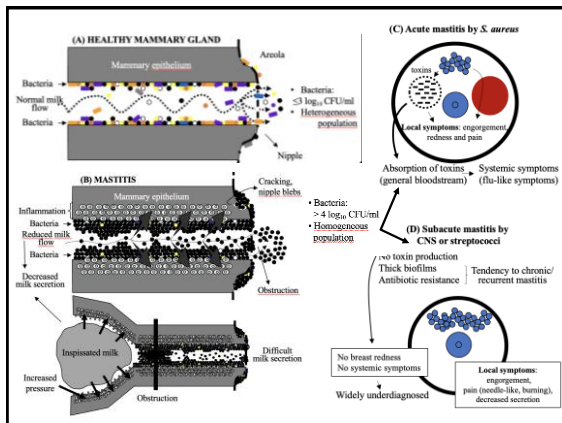
- Breastmilk culture
- Antibiotics
- Lecithin to emulsify milk
- Treat hyperlactation
- Probiotic

Eglash et al J Human Lact 2006, Milk Mob 2015

Treatment with Antibiotics



Nipple Blebs are NOT Trauma



“Cracked Nipple” (NOT Trauma)



Bleb Treatment



- Treat hyperlactation
- Treat subacute mastitis
- 0.1% triamcinolone to bleb
- Sunflower or soy lecithin by mouth
- DO NOT PICK and unroof!

Vasospasm Requires Warmth, Not Wound Care



Vasospasm



"Lady Mittens"



Image: Hothomedead

Dermatitis

- Assess allergies
 - Baby medication or food
 - Laundry detergent
 - Breast pad material
 - New nursing bra
 - Pump parts
 - Nipple crème, topical abx
- Tx
 - Remove allergen
 - 0.1% triamcinolone



36 Hours After Steroid Crème!



Not a Wound or Infection!



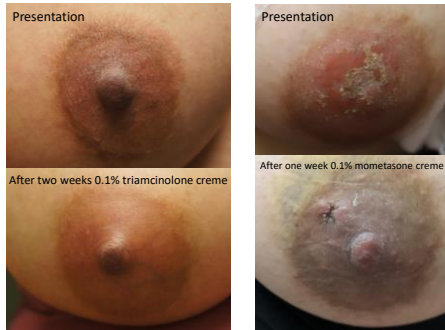
Presentation



Three months later with some recurrence after cessation of steroid



Dermatitis Treatment



Berens et al ABM Protocol # 26

Dermatitis with Secondary Skin Ulceration from Contact Irritant (Nystatin)



One Week Later s/p Steroid



Nipple Adenoma (May Bleed, Not a Wound)

- Benign proliferative process of lactiferous ducts
- Presents with nipple nodule, nipple erosion, nipple discharge



Lee and Boughey Breast J 2016

Treatment of Nipple Adenoma: Excise and Protect from Trauma



39 weeks pregnant

3 months postpartum
using nipple shields

Syringomatous Adenoma, Pyogenic Granuloma

- Laser, excision with coagulation, silver nitrate



Photos: Angela Berg, MD and Karen Rodnar, MD

Paget's

- Starts on nipple and moves to areola
 - Eczema is opposite
- Stages
 - Early: red, shiny
 - Intermediate: roughened nipple
 - Late: flattening of nipple, scaly erythematous lesion
 - Very late: complete loss of nipple



Breast Cancer Recurrence



Hyperkeratosis

- Thickening of stratum corneum (outer layer skin) usually with abnormal quality of keratin
- Tx
 - Calcitrene (synthetic derivative of Vitamin D₃ calcitriol)
 - Keratolytic moisturizer (urea or lactic acid)
 - Laser definitive



Herpes



Treatment of Herpes/Shingles

- Avoid contact on that breast
- Keep covered until lesions scab over
- Express and discard on affected breast
- Nurse on contralateral breast
- Antiviral medications are safe



