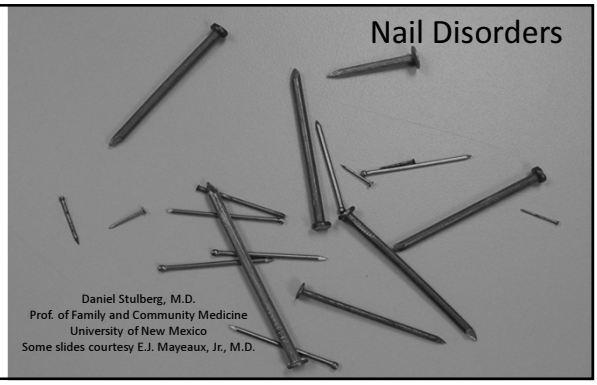
Nail Disorders



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Some slides courtesy E.J. Mayeaux, Jr., M.D.

Disclosure Statement:

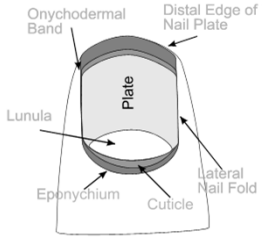
- Co-Author,
  - Dermatologic and Cosmetic Procedures in Office Practice. Elsevier, Inc., Philadelphia. 2012.
  - Cutaneous Cryosurgery Fourth EditionCRC press 2014

Objectives

- Recognize normal nail anatomy
- Evaluate the chief complaint of abnormal appearing nails
- Utilize medical and physical modalities in the management of nail disorders, as feasible

Normal Nail Anatomy

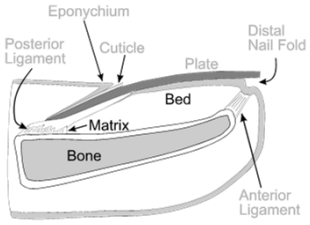
- Nail plate
  - Hard, flexible
  - Keratinized sq. cells
  - Borders - proximal and lateral nail folds
  - Longitudinal grooves on ventral surface
  - Onychodermal band = Hyponychium



Courtesy of Dr. E.J. Mayeaux, Jr., M.D.

Normal Nail Anatomy

- Nail bed
  - Highly vascular
  - Germinal tissue
  - Longitudinal ridges - interdigitates with nail
  - Borders lunula, lateral nail folds, and hyponychium



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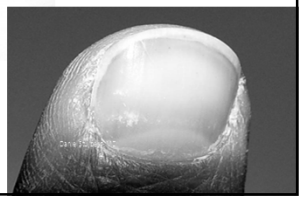
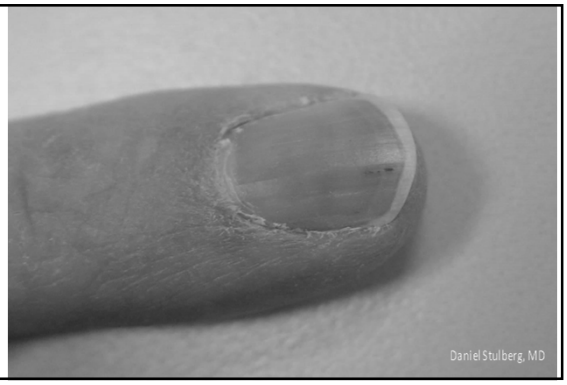


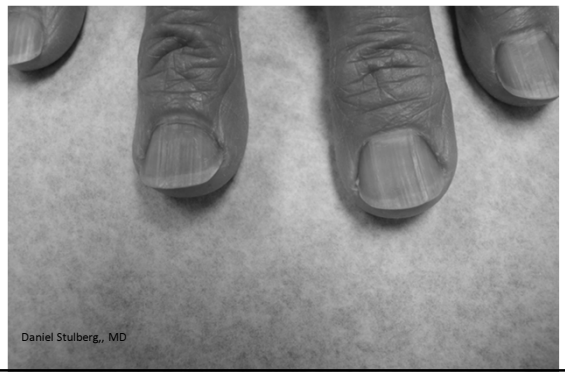
Leukonychia

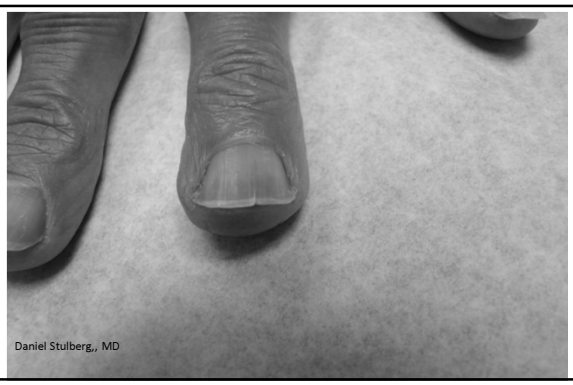
- No clinical significance
- Possibly due to minor trauma to proximal nailbed



Splinter Hemorrhage

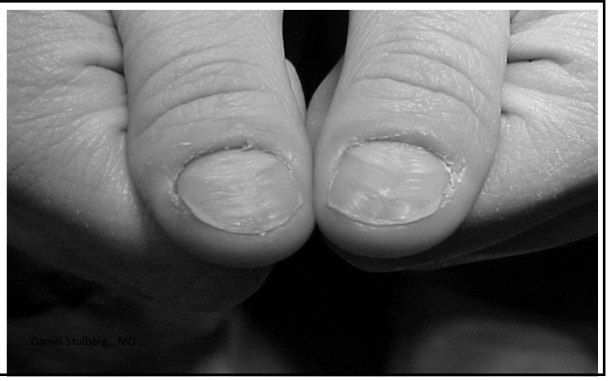
- Most commonly a benign finding due to local trauma – up to 20% of normal people
- Can be sign of Bacterial Endocarditis with septic emboli





Longitudinal Ridges

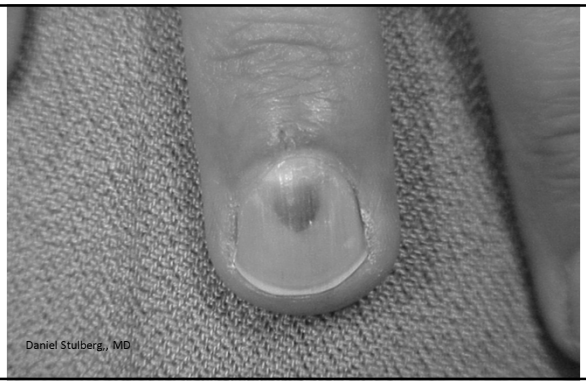
- Normal variant
- More common in elderly

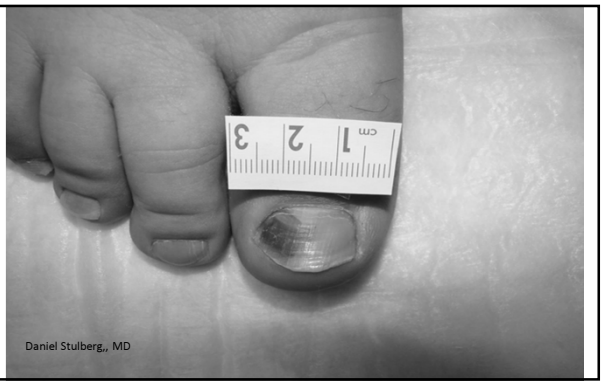


Transverse Nail Ridges / Habit Tic Deformity

- Repetitive trauma to cuticle
- Most common childhood nail condition
- Reassurance - No Tx is necessary
- Behavior modification helpful

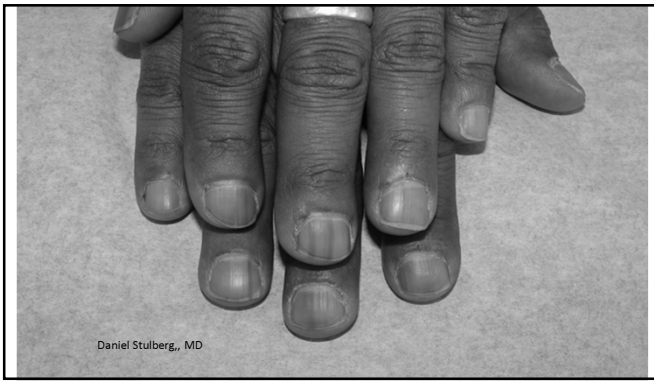
Tulley AS, et al. Evaluation of Nail Abnormalities. Am Fam Physician. 2012; 85(8):779-787





Subungual Hematoma

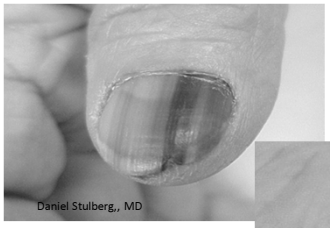
- Treatment
- Loss of nail and regrowth

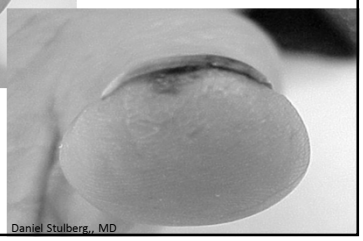


Nail Streaking / Longitudinal Bands / Longitudinal Melanonychia

- Up to 90% of Black people have streaking usually multiple nails
  - Habif - Clinical Dermatology

Hutchinson's sign



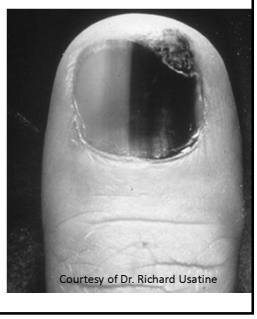


Factors Leaning Toward Melanoma

- New longitudinal band in light skinned individual
- Sudden change in width or color
- Single nail involvement
- Pigmentation of nail fold or prox. nail margin – Hutchinson's sign
- More than 3 mm wide
- Family or personal history of melanoma or dysplastic nevi
- Destruction or disruption of nail plate

Subungual Melanoma

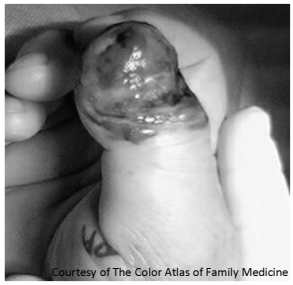
- Small number of patients with LM have subungual melanoma
- Benign vs. malignant - often difficult
  - Bx if cause not apparent



Tulley AS, et al. Evaluation of Nail Abnormalities. Am Fam Physician. 2012; 85(8):779-787

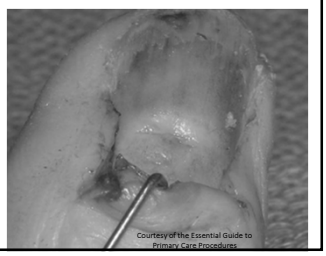
Subungual Melanoma

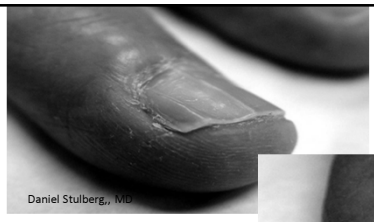
- 45% to 60% arise on hand
  - Most in the thumb
- On foot, occurs on great toe
- Median age = 60s - 70s
- Males = females

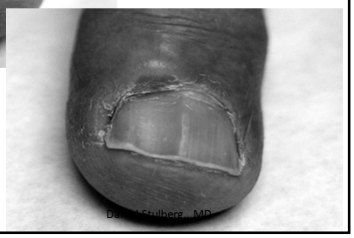


Subungual Melanoma

- Biopsy if etiology uncertain
- Provide adequate tissue
- No single bx method best
  - Dystrophy less with distal matrix bx
  - Appearance less crucial in the toes
  - Bx more aggressively in older patients

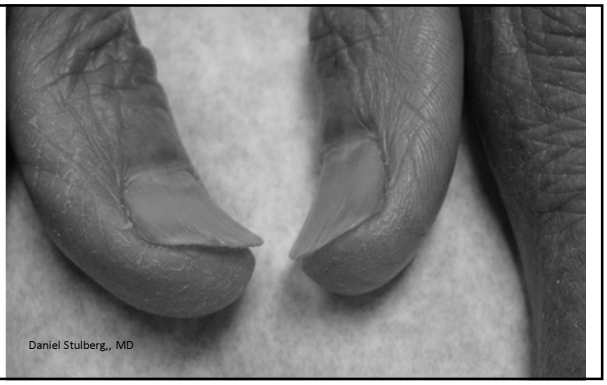






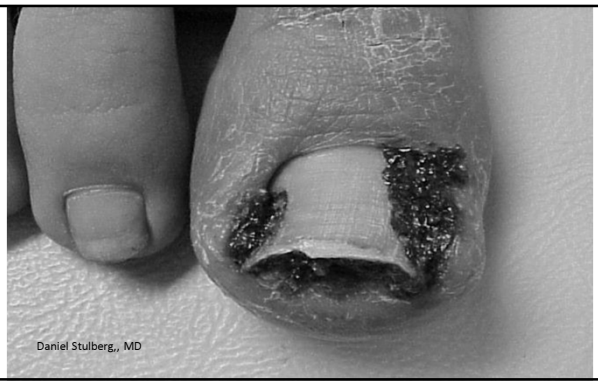
Local Deformation

- Digital mucous cyst deforming nail



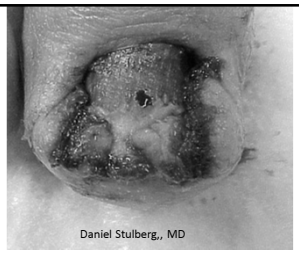
Koilonychia - Spooning

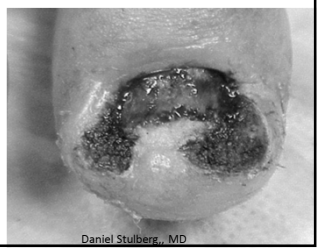
- Normal variant
- See commonly in infants/toddlers
- Iron deficiency anemia
- Hemochromatosis
- Raynaud's
- SLE
- Trauma

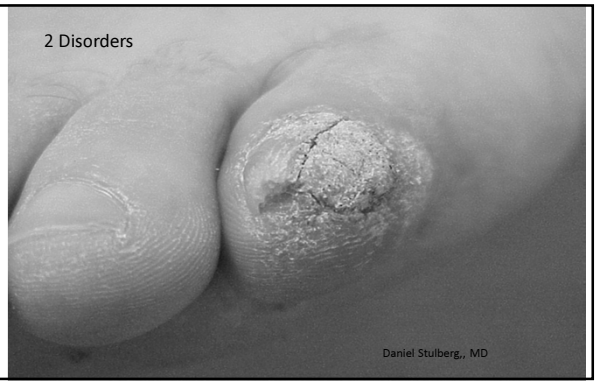


Ingrown Toenail

- Poor fitting shoes
- Trauma
- Improper nail care
- Chronic irritation and hypertrophy
- Nail removal
- Excision of hypertrophic skin

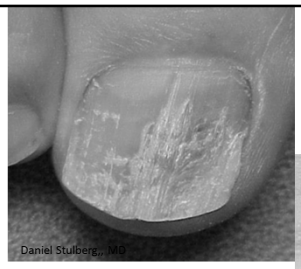


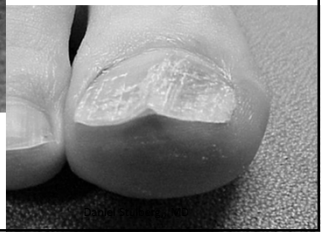


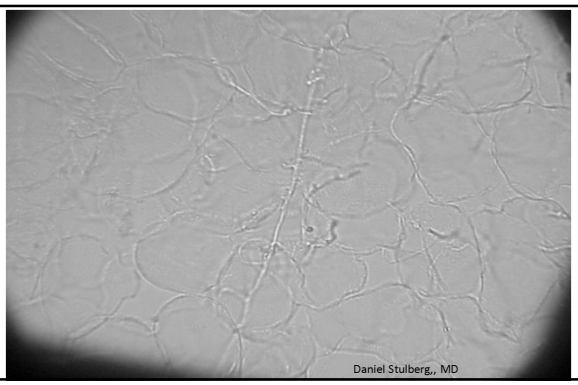


Wart

- Secondary onycholysis and disruption
- Treatment options







Onychomycosis

- Fungal infection of the nails
- Dermatophytes
  - Trychophyton rubrum 70%
  - Trychophyton mentragrophytes 20%
    Tosti, A E-Medicine 2/2016
  - Less common – Candida
    - Immune compromise /diffuse infection
- Single digit or multiple digits
- Very common in adults
  - May also occur in children

Risk Factors

- Male > Female
- Age
- Genetic predisposition
- Decreased immune system
- Diabetes
- Poor circulation
- Trauma

Onychomycosis

- Distal subungual onychomycosis
  - Most common
  - Invades hyponychium/onychodermal band
  - Distal nail turns yellow or white

Onychomycosis Diagnosis

- Tendency to label any process involving nail as a fungal infection
  - Diff Dx – Leukonychia, psoriasis, eczema, habit tic, dystrophic nails
- Confirm before treatment?
  - Microscopy
  - Sabouraud's medium etc.
  - Nail clippings to lab
  - Dermoscopy – streaking aurora borealis pattern
  - PCR

Onychomycosis Treatment

- Indication
  - Pain
  - Diabetes
  - Cosmesis

Onychomycosis Treatment Highlights

- Terbinafine (Lamisil) - Drug of Choice 6 wks fingernails 12 weeks toenails 250 mg daily
- Itraconazole - drug interactions, CYP3A4 inhibitor
  - More effective if due to Candida
- Ciclopirox (Penlac) – Lacking in effect
  - ? Prevent recurrence

Onychomycosis Treatment Difficulties

- Liver damage
  - Avoid Ketoconazole
  - Griseofulvin
  - Terbinafine 1/50,000 – 1/100,000
    - Q 6wks LFT's/CBC
    - Avoid if ANC<1000, renal or hepatic disease
- Treatment failure
- Reinfection

Yan J, Wang X, Chen S. Systematic review of severe acute liver injury caused by terbinafine. Int J Clin Pharm. 2014 Aug;36(4):679-83.

Onychomycosis Tx

Drug	Dose	Course
Griseofulvin (Grifulvin V)	500mg PO qday or 15-20mg/kg/day	4-9 months (f), 6-12 months (t)
Terbinafine (Lamisil)	250mg PO qday or < 20kg: 62.5mg/day 20-40kg: 125 mg/day	6 weeks (f), 12 weeks (t)
Terbinafine (Lamisil) pulse (not FDA indicated)	500mg 1wk/mo x4mo (not thoroughly studied)	6 weeks (f), 12 weeks (t)
Itraconazole (Sporanox)	200mg daily	2 months (f), 3 months (t)
Itraconazole (Sporanox) pulse	200mg BiD or 5mg/kg/day capsules for 1 wk/month	2 months (f), 3 months (t)
Fluconazole (Diflucan) (not FDA indicated)	150mg or 3-6mk/kg once weekly (not thoroughly studied)	12-16 weeks (f), 18-26 weeks (t)
Ciclopirox 8% nail lacquer (Penlac)	Apply daily to nail and surrounding 5mm skin.	Up to 48 weeks
Efinaconazole 10% soln (Jublia)	Apply to affected toenail(s) qDay	Up to 48 weeks
Tavaborole (Kerydin)	Apply to affected toenail(s) qDay	Up to 48 weeks

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.

Treatment Adjuncts

- Nail avulsion
  - Decrease the adverse effects
  - Decrease duration of oral therapy
  - Decrease pain from onychogryphosis

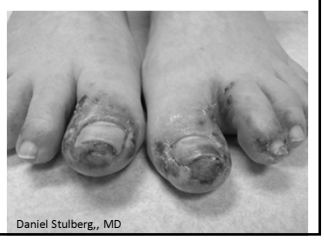
Efficacy Meta-Analysis

- Terbinafine (76 ±3 percent)
- Itraconazole pulse therapy (63 ±7 percent)
- Griseofulvin (60 ±6 percent)
- Itraconazole continuous therapy (59 ±5 percent)
- Fluconazole (48 ±5 percent) and Posaconazole off label
- Ciclopirox (Penlac) (7 percent)*

Gupta AK,. Br J Dermatol 2004; 150:537. *Gupta AK. J Drugs Dermatol 2005; 4:481.

Complementary Medicine

- Laser
- Photodynamic therapy
- Vicks VapoRub
- 40 to 50% urea compound
  - 3-7 days under occlusion
- Banana peels
- Tea Tree oil 2-3 times/day



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VapoRub for Onychomycosis??

- Vicks VapoRub has been advocated in the lay literature as an effective tx
  - 5/18 (27.8%) mycological cure @ 48 wks
  - 10/18 (55.6%) had partial clearance
  - 3/18 (16.7%) showed no change

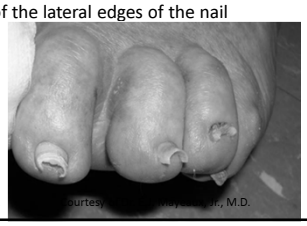
Derby R, et al. J Am Board Fam Med 2011;24:69 –74

Reducing Recurrence 2014 BAD Guidelines

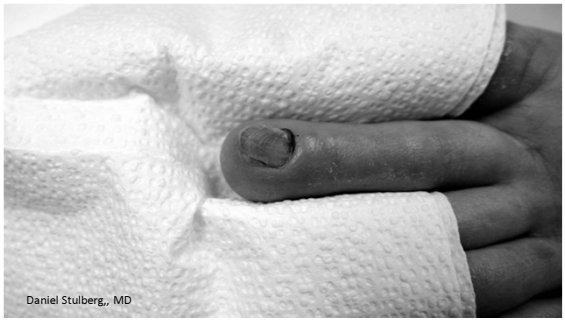
- ?discard shoes
- Alternate shoes
- Keep feet dry
- Antifungal powder in shoes
  - Miconazole
  - Clotrimazole
  - Tolnaftate
- Naphthalene moth balls in bag x 3 days
- Treat family members
- British Academy of Dermatology - The British Journal of

Pincer Nails

- Unknown etiology
- Widening of distal phalanx, onycho
- Hereditary or acquired
- Result of inward folding of the lateral edges of the nail
- Treatment
- Shorten nails
- Lateral matricectomy



Lee JI, Lee YB, Oh ST, Park HJ, Cho BK. A clinical study of 35 cases of pincer nails. Ann Dermatol. 2011 Nov;23(4):417-23.



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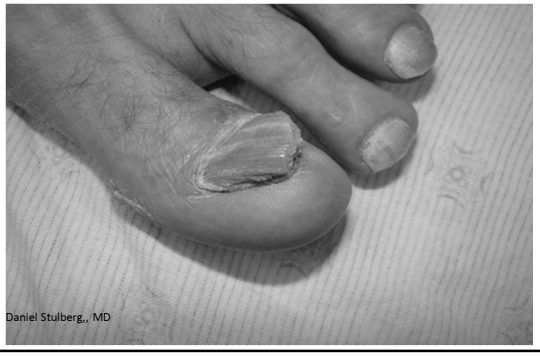

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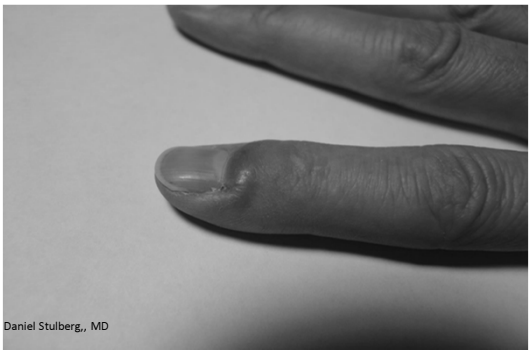
Hypertrophic Nail

- Trauma
- Chronic inflammation
- Poor fitting shoes
- Trim nails or surgical removal with ablation



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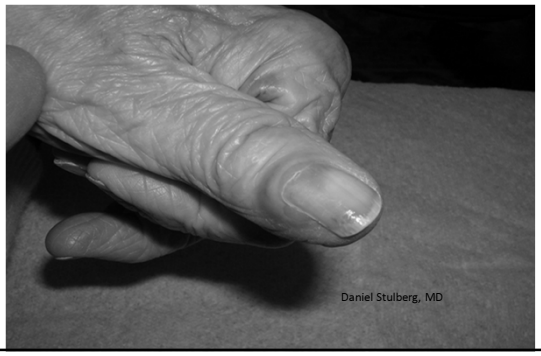
Paronychia

- Acute inflammation of the lateral and/or proximal nail folds
- Red, tender, throbbing, intensely painful
- Usually caused by infection
  - Staph aureus, Strep pyogenes, and Pseudomonas most common
- Small abscess forms

Paronychia

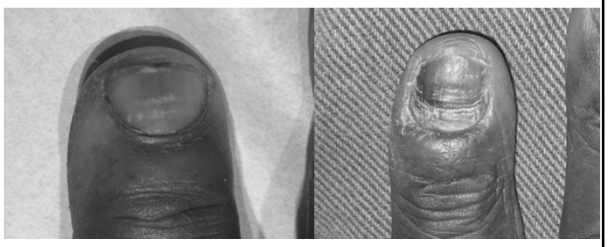
- Predisposing factors
  - Overzealous manicuring
  - Nail biting
  - Thumbsucking
  - Diabetes mellitus
  - Frequently immersed in water

Courtesy of Dr. E.J. Mayeaux, Jr.



Paronychia

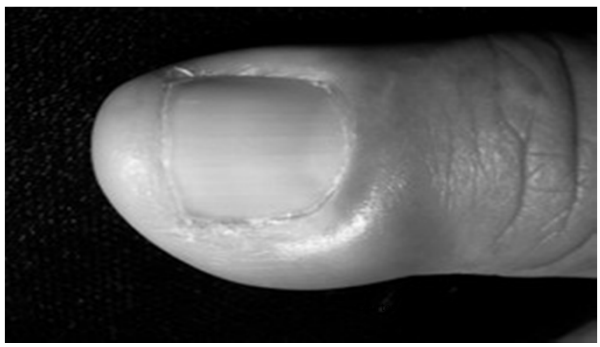
- Chronic paronychia - Candida vs inflammation



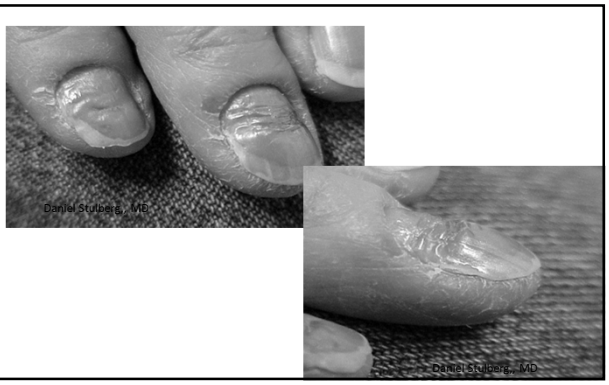
Courtesy of Dr. E.J. Mayeaux, Jr., M.D.

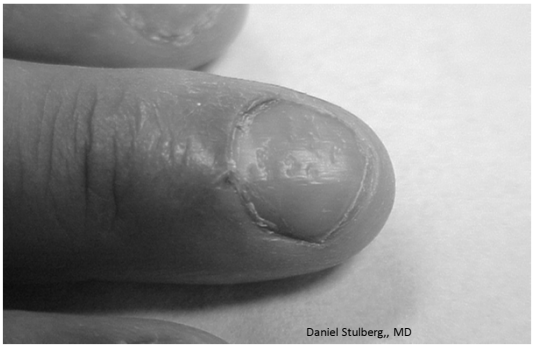
Paronychia

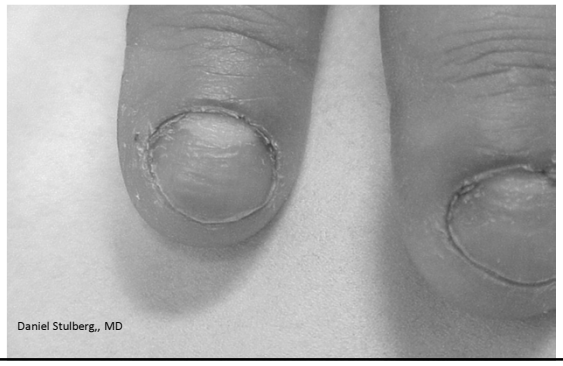
- Milder cases
  - Warm soaks 15 minutes 2-4 times daily, with or without systemic antibiotics
- More severe cases require I&D
- For chronic paronychia, trauma and irritants must be eliminated
  - Broad spectrum antifungals



Changes Associated with Systemic Diseases

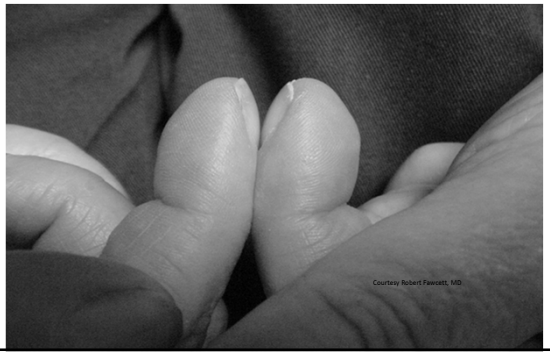






Eczema

- Onycholysis and deformity
- Poor attachment of cuticle and damage to proximal nailbed



Clubbing

- Spongy nail bed with loss of angle
- Pulmonary disease - often more inflammatory or cancer instead of just COPD
- Inflammatory bowel disease
- Cirrhosis
- Congenital heart disease

Pitting Disorders

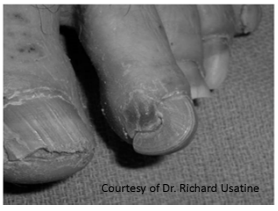
- Psoriasis
- Alopecia Areata
- Sarcoid
- Connective tissue dz
- Pemphigus vulgaris
- Incontinentia pigmenti

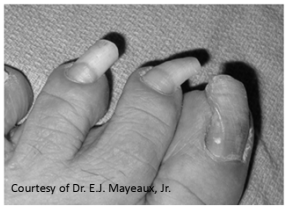
Color Changes of Nail/Lunula

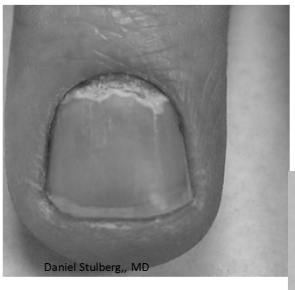
- Blue (Azure Lunula) - Wilson's disease (hepatolenticular degeneration)
- Red – CHF
- Yellow – Tetracycline
- Yellow – Yellow nail syndrome in respiratory diseases or lymphedema Slowed growth of nails often thickened
- Blue Grey – Argyria (Silver poisoning)
- Brown or Black – Excessive Fluoride ingestion
- Green – Pseudomonas infection
- White – Terry's nails of CHF, cirrhosis DM or aging

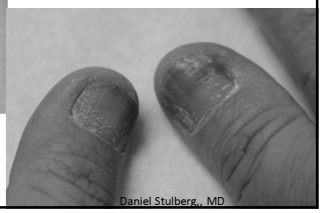
Onychogryphosis

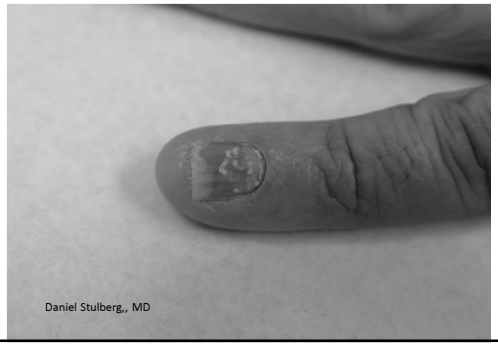
- Trauma
- Elderly
- Onychomycosis





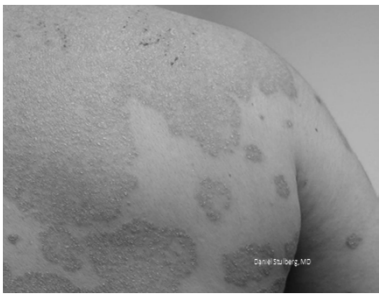


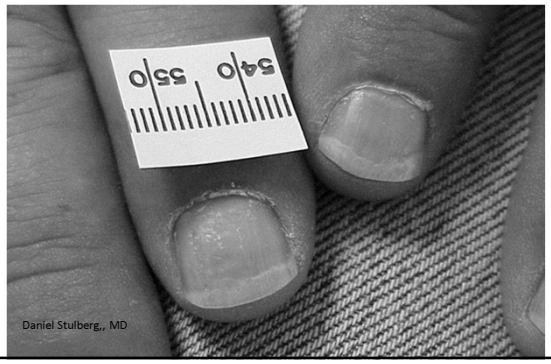


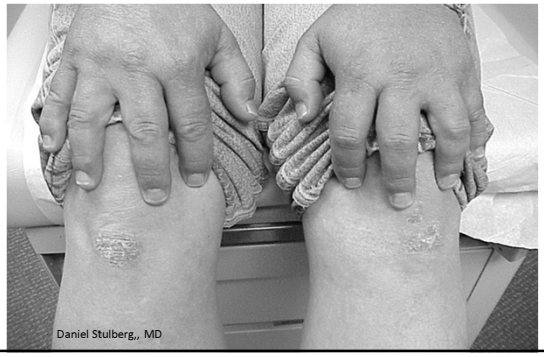


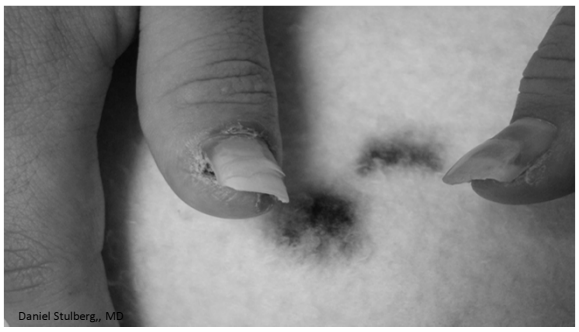
Psoriasis

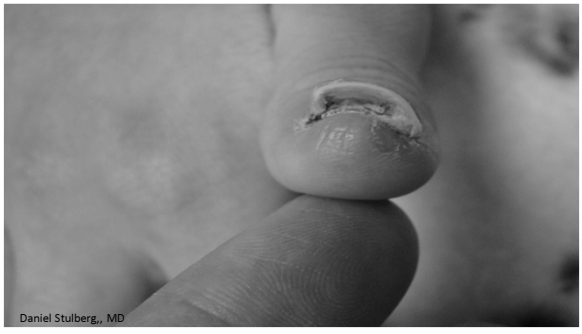
- Pitting
- Oil staining
- Mechanism











Psoriasis

- Nail involvement - 10% to 50%
- Usually coexists with skin psoriasis
- Nail involvement = higher incidence of arthritis
- Nail plate pitting
  - Proximal matrix forms superficial plate
  - Pinpoints to punched out lesions
  - Not specific for psoriasis

Courtesy of Dr. E.J. Mayeaux, Jr., M.D.

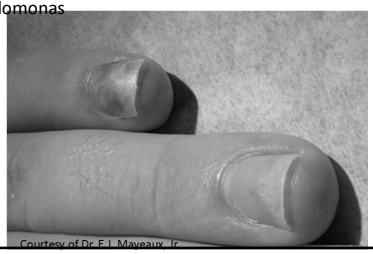
Psoriasis

- Longitudinal matrix involvement produces ridging or splitting
- Transverse produces Beau's lines
- Intermediate produces leukonychia and diminished integrity

Courtesy of Dr. Richard Usatine

Psoriasis

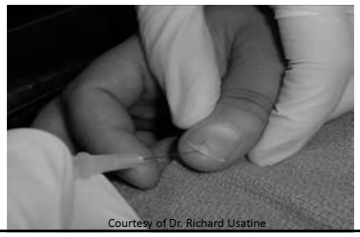
- Distal onycholysis enhances microbial colonization
  - Greenish-blue discoloration suggests Candida or pseudomonas



Courtesy of Dr. E.J. Mayeaux, Jr.

Psoriasis Treatment

- Nail disease often refractory
- Intralesional corticosteroid injection into the proximal nail fold
  - Pain minimized by precooling or block
  - Nail bed dz = proximal injection
  - Matrix disease = fold injection



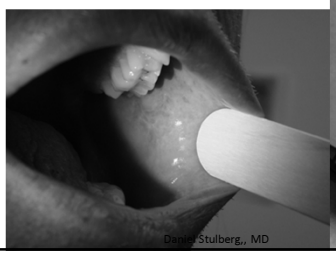
Courtesy of Dr. Richard Usatine

Psoriasis Treatment

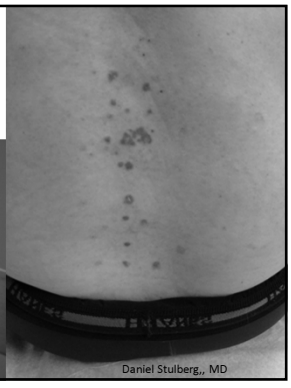
- Topical high-potency corticosteroid solution or ointment QHS under occlusion with cellophane wrap
  - Occlusion <2 wks
- Corticosteroid and calcipotriol
- Oral and topical PUVA for cutaneous and nail psoriasis
- Narrow-band UVB
- Systemic MTX, retinoids, cyclosporine, biologicals

Lichen Planus

- Uncertain etiology



Daniel Stulberg,, MD



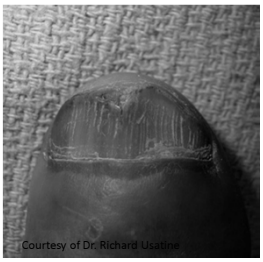
Daniel Stulberg,, MD

Lichen Planus

- Lichen Planus is often a scarring disease when it affects the nail bed and mucosa especially the vagina

Lichen Planus

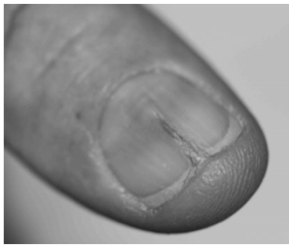
- Nail involvement in 10% to 20% of patients
  - Brittle, ridged nails most common
  - Onychorrhexis or splitting



Tosti A, Peluso AM, Fanti PA, Piraccini BM. Nail lichen planus: clinical and pathologic study of twenty-four patients. J Am Acad Dermatol 1993; 28:724.

Lichen Planus

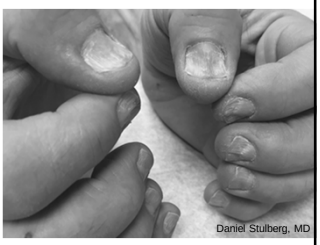
- Proximal matrix dz produces onychorrhexis brittle or splitting



Courtesy of Dr. E.J. Mayeaux, Jr., M.D.

Lichen Planus - Pterygium

- Diffuse matrix atrophy produces thinning of the plate
- Tends to predominate centrally, producing "angel wing" deformity
- Pterygium from matrix scarring
  - Specific for lichen planus
  - Total matrix scarring - anonychia



Lichen Planus Diagnosis

- Straightforward when the disorder coexists with cutaneous signs
- Mycologic studies to exclude onychomycosis
- If negative, a nail biopsy will likely be needed to confirm the diagnosis
  - Examination should include H&E and PAS staining

Lichen Planus Treatment

- Unless matrix scarring has occurred, the disease is treatable
- Intralesional corticosteroid therapy
  - Triamcinolone acetonide 2.5 to 5.0 mg/mL injected into the proximal and lateral nail folds at monthly intervals
  - Diffuse to the underlying matrix
- Systemic or topical corticosteroids
- Acitretin at a dose of 0.35 mg/kg per day may be a treatment option in recalcitrant cases

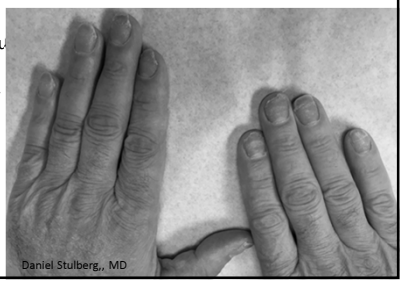
Piraccini BM, Saccani E, Starace M, et al. Nail lichen planus: response to treatment and long term follow-up. Eur J Dermatol 2010; 20:489.

Poly-ureaurethane 16% for Nails

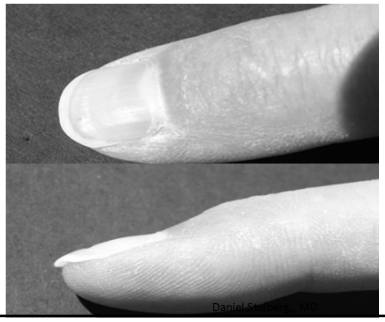
- FDA approved nail solution for the treatment of nail dystrophy
- For brittle nail syndrome
- Mechanically supports the damaged nail plate using a polymer blend that creates strong adhesion
- Forms a breathable barrier while protecting and strengthening the nail
- Allows for oxygen transfer while blocking water absorption

Beau's lines

- Horizontal ridge / depression
- Disruption in growth du to any severe disease
- Usually affects most or all nails



Beau's lines/ridges

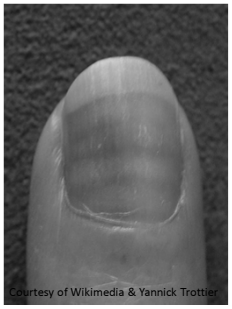


Mee's Lines

- Horizontal white band without ridging/depression
- Arsenic poisoning
- Carbon monoxide poisoning
- Severe systemic insult

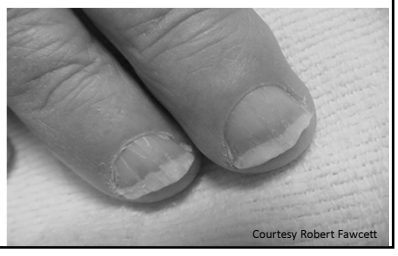
Assoc. with Systemic Disease

- Mee's lines
  - Multiple white transverse lines
  - Historically arsenic intoxication
  - Begins in matrix & extends across nail
  - Usually single, but may be multiple
  - Move distally as the nail grows
  - Bx shows plate fragmented
  - Chemical analysis of nail or hair



Half and Half Nails

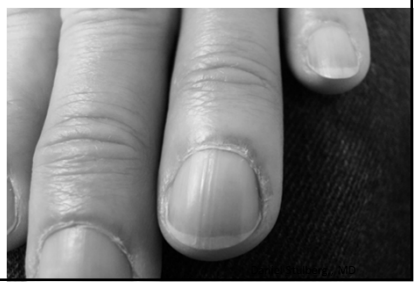
- Renal failure
- Loss of lunula
- Loss of convexity
- Distal onycholysis

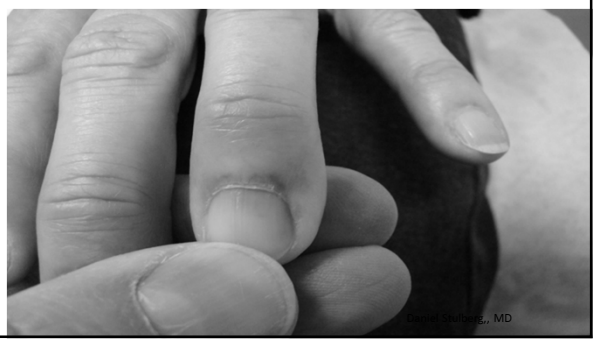


Fawcett RS, Nail abnormalities: clues to systemic disease. Am Fam Physician. 2004 Mar 15;69(6):1417-24.

Dermatomyositis

- Blush
- Dilated arterioles





Review of Dz Affecting Nail Anatomy

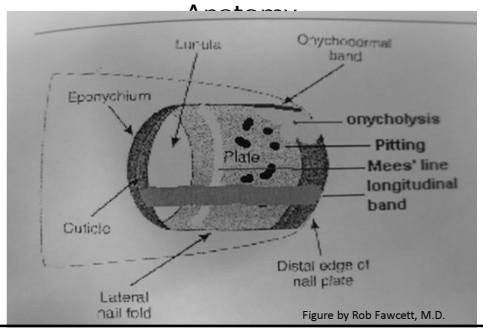


Figure by Rob Fawcett, M.D.

Review of Dz Affecting Nail

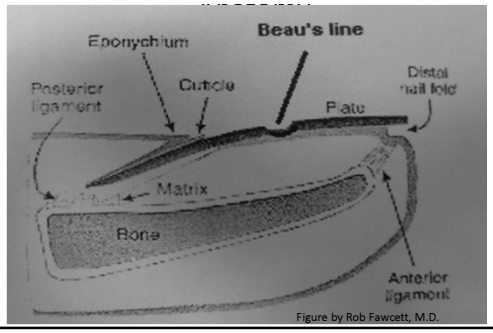


Figure by Rob Fawcett, M.D.