NAIL SURGERY TECHNIQUES

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THE AGENDA

• Pincer nails
• Disappearing Nail bed
• Nail Biopsy techniques
QUESTIONS TO ASK:

• When were your nails last normal?
• History of Raynaud’s, diabetes, medications, etc
• Ability to care for surgical site
• Activity level, what’s next in their life
• Consent
EXAMINING THE NAILS

• No nail polish
• Good lighting
• Bend their knees and have them place feet flat on exam chair
  • Allows me to use the dermatoscope
ALTERNATE VIEWS OF ANESTHESIA

EXTERNAL VIBRATORY DEVICE (BUZZY, MMJ LABS)

DISTAL WING BLOCK:
CREATING A “TOURNIQUET OF FLUID”
PATIENTS WHO HAVE DIFFICULTY TO ACHIEVE OR MAINTAIN LOCAL ANESTHESIA?

- “resistance” to certain local anesthetics
- Pts were injected with test wheals of lidocaine, bupivicaine, and mepivicaine, area then scratched with a corner of an alcohol swab packet.
  - Patients did not have reaction to lidocaine, mepivicaine, or all three, but most were hypoesthetic to mepivicaine

PINCER NAIL

• Aka Trumpet nails
• Cornelius and Shelley in 1968: Result of transverse overcurvature of the nail plate that increases distally along longitudinal axis
• Great toenail
• Enlarged base of distal phalanx
• Traction osteophytes
• Hereditary vs Acquired
• Not the same as an ingrown nail
• Cosmetic and/or Painful

Dermatol Surg 2001; 27: 261-266
MECHANOBIOLOGY

• Physical forces and changes in cell/tissue mechanics contribute to pathology
• Toenails are subject to constant physical forces
• Hypothesis: nails have an automatic curvature function to adapt to the daily upward forces
• Imbalance: pincer nails
CURVATURE INDEX

- A = Apparent width of the nail tip
- B = Traced length of nail tip
- B/A = curvature index
- Shows severity before and after surgical intervention

Plast Reconstr Surg Glob Open 2013;1:e49
CONSERVATIVE THERAPIES

• Trimming/Debridement
• Nail steel or plastic bracing (Sogawa method)
• Nail taping, nail splinting
• Keryflex nail resin
• Urea occlusion method
• Recurrence is high since not addressing underlying deformity

Plast Reconstr Surg Glob Open 2016
SURGICAL THERAPIES

- Target the underlying deformity—if not, relapse
- Nail avulsion not recommended
- Targeting the lateral osteophytes on the distal phalanx → DIPJ ligament issue
- Targeting the lateral matrix horns to reduce width of the nail bed via chemical or surgical
- Other methods: dermal grafting, dermal flap
SURGICAL TECHNIQUE: ZIGZAG NAIL BED FLAP METHOD

Arch Plast Surg 2015;42:207-213
SURGICAL TECHNIQUE: INVERTED T INCISION METHOD (MODIFIED HANEKE’S METHOD)
RETROSPECTIVE REVIEW

• 20 nails with pincer vs control group

• Interphalangeal angles and base widths were measured via radiograph

• Zig-zag flap and Inverted T incision

A, width of the nail root; B, width of the nail tip; C, height of the nail tip. Width index = B/A × 100, height index = C/B × 100.

Arch Plast Surg 2015;42:207-213
• Radiographs: osteophytes 14/20 in the pincer nail group and Interphalangeal angle significantly higher in the pincer vs control group.

• No difference in the indices between zigzag and inverted T, followed 6 months after surgery.
FROM ACROSS THE POND

THE ONLY PROCEDURE IN THE WORLD
ELIMINATING PROBLEMS CAUSED BY
INGROWN TOENAILS

www.arkadasmethod.com
DISAPPEARING NAIL BED

- Coined in 2005 by Dr Daniel (Cutis 2005;76:325–327)
- A shortened or narrowed nail bed that is the result of long standing onycholysis
  - 20% shorter than the bilateral nail
- Long standing onycholysis can cause epithelialization to occur and dermatoglyphics to appear; distal nail ingrowth
- May occur on fingernails (onychophagia) or toenails (hallux most common)
WHAT CAN CAUSE IT?

• Onychomycosis
• Onychogryphosis
• Trauma (blunt force or repetitive)
• Nail Surgery (ie iatrogenic)
• Biomechanics (ie hallux extensus)
• Other disorders that cause nail onycholysis: ie psoriasis, lichen planus, medications

• You do want to rule out subungual exostosis or other boney deformity first

Daniel et al Skin Appendage Disord 2017;3:15–17
WEDGE EXCISION FOR DISAPPEARING NAIL BED
RETRONYCHIA

• Proximal Ingrowth of Nail Plate
• Toenails or fingernails
• Women > men
• Trauma from footwear, but…arthritis, idiopathic
• Treatment: total nail avulsion

BENIGN TUMOR: ONYCHOMATRICOMA

- Benign tumor of the nail matrix
- Misdiagnosed as Onychomycosis
- “worm holes”
- *J Foot Ankle Surg.* 2017 May 27
ONYCHOMYCOSIS AND ONYCHOMATRICOMA---TOGETHER?

• Skin Appendage Disord. 2016 May;1(4):209-12.

• Yellow discoloration, splinter hemorrhages, nail plate thickening

• Dermoscopy of nail plate (streaks and hemorrhage) vs distal nail (ruin appearance)
LONGITUDINAL MELANONYCHIA (LM)
NAIL BIOPSY TECHNIQUES

• Punch
  • Inflammatory disorders, infectious, subungual hematoma evac, LM <3mm
  • No nail plate avulsion, quick, fast recovery
  • Nail dystrophy if performed in proximal matrix

• Shave
  • LM, erythronychia
  • Good for larger lesions, no primary repair, risk of nail dystrophy low
  • Nail avulsion is needed

• Lateral longitudinal excision
  • LM, erythronychia, inflammatory
  • Sample of all parts of nail
  • Post op pain, spicule, permanently narrowed nail plate
PUNCH BIOPSIES FOR THE NAIL

- 3mm punch
- Can remove the nail plate (total or partial) or punch through nail plate
- Nail matrix for melanoma and melanonychia
  - Proximal vs distal matrix
- Nail bed punch good for inflammatory, infectious, neoplastic (ie psoriasis, lichen planus)
- Helpful to diagnose proximal subungual onychomycosis
SEQUELAE OF TOTAL NAIL AVULSION

• Even though we want to achieve maximum exposure, there are potential issues with total nail avulsion:
  • Dorsal pterygium formation
  • Pain
  • Disappearing nail bed
ALTERNATIVES TO TOTAL NAIL AVULSION WHEN CONSIDERING A NAIL BED OR MATRIX BIOPSY: PARTIAL NAIL PLATE AVULSIONS

- Provide exposure without total lysis of nail
- Can replace the nail plate after to create a biologic dressing
- Allow you to visualize longitudinal melanonychia that might be difficult to see once nail plate is removed
ALTERNATIVES TO TOTAL NAIL AVULSION: TRAP DOOR AVULSION

- Good for visualizing distal matrix, nail bed, and hyponychium
- Freer elevator
- Once you pass the onychodermal band, much less resistance
- Replace nail plate to act as biologic dressing
TRAP DOOR TECHNIQUE FOR LONGITUDINAL ERYTHRONYCHIA

- Red vertically oriented streak
- Splinter hemorrhages
- Distal nail splitting
- R/o glomus, SCC, wart
ALTERNATIVES TO TOTAL NAIL AVULSION: WINDOW

- Confined portion of nail bed
  - Foreign body, tumor, hematoma
- Use #11 blade to score and pry
- Nail plate window can be reattached with steri strip
ALTERNATIVES…:
LATERAL NAIL PLATE CURL

• Reflection of proximal nail fold for issues with matrix and eponychium
• Free proximal nail fold, hemostat or freer to dissect, then hemostat to curl nail
• Replace nail as biologic dressing
FOLLOWING AVULSION: MATRIX SHAVE BIOPSY

• JAAD 2007; 56:803-10
• LM in proximal or distal matrix
• >3mm wide
• Origin of band is scored with 1-2 mm margins with #15 blade, then blade turned parallel to matrix and shave
• May be placed on a paper and in a cassette to prevent curling
• www.cta-lab.com/nail_resources.html
COMPLICATIONS

• Nail dystrophy
• Bleeding
• Post op pain
• Cyst
• Spicule formation
• Scarring ***
THANK YOU!!!!

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