L.C. – 55 ♂

- Pt presented to CCMC ED after sustaining injury to R-foot. States while at work, dropped a weight on his R-foot, specifically over the hallux.
- Pt was wearing boots, not steel-tipped
- Instant pain to foot and blood to sock/toe once removed shoe
L.C. – 55 ♂

- PMH: HLD, CAD, CHF, HTN, non-compliance, ARI
- PSx: hernia repair, L-leg ORIF
- SH: 1pk/d/1yr; 6 beers/d; hx substance abuse
- FH: n/c
- Allx: NKDA
- VS: 98.4; 105; 16 @ 98%; 6/10 pain
L.C. – 55 ♂
L.C. – 55 ♂

- Neuro: (+)protective w/ SWMF to hallux, digits all
- Vasc: (+)DP/PT; CRT>3s
- Ortho: crepitus felt on manipulation hallux; (+)AROM w/ pain to 1MTPJ & 2nd digit; (-) rotational deformation of hallux
- Derm: eryth/edema hallux/2nd toe w/ active bleeding from prox nail fold; nail adhered except at prox/med nail fold; ~25-50% subungual hematoma
L.C. – 55 ♂
XR(R): AP and MO
L.C. – 55 ♂
XR(R): Lat
Classification?

- Rosenthal
  - Zone 1: distal to distal/bony phalanx
  - Zone 2: distal to lunula
  - Zone 3: proximal to lunula

Nail Anatomy

• Nail Bed
  – Proximal Germinal Matrix: responsible for 90% of nail production; demarcated at nail base (lunula)
  – Distal Sterile Matrix: responsible for nail adhesion

• Nail: keratinous material produced by death of germinal cells
What do you do?
What I did...

• What I was thinking...
  – Should I remove the nail? Is it the “correct” amount of hematoma to remove?
  – Open Fx?
  – Tetanus?
  – Antibiotics?
  – What do I need in the ED to remove the nail? And do a dressing change? (So I can sit and do everything all at once)
  – Suture? Kind? Size?

• Evaluated nail. Bleeding and proximal avulsion.
• Nail Removed w/ suture removal kit
  – Hallux Block
  – Betadine/Saline scrub
  – 4x4 Tourniquet
  – Nail Avulsion
  – Betadine/Saline flush
  – Suture nail bed closed
  – Dressing

• Antibiotics
  – Ancef x1 dose in ED
  – Keflex 500mg TID x 14 d
  – F/U office 1 week
Patient Questions

• Will it hurt?
  – Yes. You broke your toe.
  – Pressure from pain if leave hematoma in place

• Will the nail grow back/normal?
  – It should. Can take anywhere btn 7-12 months full growth. Depends on amt of damage to prox nail fold/matrix/prox 25% of nail bed
  – Normal? Possibly. Damage to nail bed can deform new nail growth. More proximal/germinal matrix damage predicts more deformity
    • Nail plate thickening, discoloration, distorted orientation, onychocryptosis, onycholysis
  – Beau’s Line – temporary thinning/line across nail plate due to arrest 3-4wks post injury (Baden et al.)
Suture

• Absorbable (for Nail Bed) Vicryl (Polyglactic Acid) - braided
  – Monocryl (Poliglecaprone) - monofilament
  – Dexon (Polyglycolic Acid)
  – PDS (Polydioxanone) - monofilament
  – Maxon (Polyglyconate)
  – Chromic Gut – monofilament

• Dermabond (2-octyl-cyanoacrylate)
  – Liquid, polymerizes in minutes. 3 application, 30 seconds between
  – Used for skin/simple lacerations where 5/6-0 suture suitable
  – Wait 5 minutes before dressing application.
  – Polymerized film sloughs off after 5-10 days. Light/no washing until 10d
  – In-vitro inhibition of MRSA, MRSE, E.Coli
  – “Do not use in areas of high moisture or friction”
  – “Do not apply liquid or ointment medications onto wounds closed with Dermabond” – may decrease integrity of Dermabond

• *Non-Absorbable SUture for Nail Folds is OK
A prospective, randomized, controlled trial of 2-octylcyanoacrylate versus suture repair for nail bed injuries.


- 6-0 Chromic Gut vs Dermabond
- 40 consecutive patients w/ nail bed lac
- “At each follow-up time point [of 1, 3, &6 months], there was no statistical difference in physician-judged cosmesis, patient-perceived cosmetic outcome, pain, or functional ability between the Dermabond and suture treatment cohorts”

- Time of repair
  - Dermabond – 9.5 minutes
  - Chromic – 27.8 minutes

- Conclusion
  - Dermabond provides similar cosmetic and functional results with much faster repair time

PMID:18294549
Surgical treatment of acute fingernail injuries


• Key Points
  – Keep nail s/p avulsion (drill 2-3 holes for drainage)
    • Biological dressing or nonadherent
    • Act as splint
    • Keep nail bed/eponychium separate for new/normal growth, prevent dead space
  – Subungual Hematoma
    • 25-50% - drain w/ electrocautery
    • +50% - assoc w/ phalanx fx = high risk of bed lac

PMCID: PMC3349021
References

• http://www.uptodate.com/contents/toe-fractures-in-adults

• http://www.uptodate.com/contents/subungual-hematoma?source=see_link