



Dealing with Toe Edema: The Art of Toe Bandaging

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Abstract

Background: Although toe swelling has been observed clinically, traditional compression applications do not address. Published literature initially cited toe swelling was secondary to compression wrapping.¹⁻⁴ A closer review of compression science concludes that although the bandage may have exacerbated the swelling, it was most likely there and was overlooked.⁵ Toe swelling, as with any clinical presentation of swelling, occurs due to lymphatic insufficiency.⁶ Clinically, a positive stemmer sign has been shown to have a high sensitivity (92%) to identify lymphatic insufficiency.⁶ There are numerous products available on the market to address toe swelling (see image below).³ The application of a toe bandage is a simple and cost-effective way to manage toe edema and optimize healing of wounds located on the toes or forefoot area.

Methods: A case series (n=5), with photos before and after, clearly demonstrating the clinical impact of an appropriately applied toe bandage to mitigate toe swelling and promote healing of wounds on the toe and/forefoot. Specifics of each case will be provided, as well as depictions of step-by-step application of a basic toe wrap.

Conclusion: Management of toe and/or forefoot swelling can be achieved with an appropriately applied toe bandage. A toe bandage application facilitates healing of wounds on the toe/forefoot area which is not address with traditional compression applications. Clinicians treating patients with toe swelling and/or wounds located on the toe or forefoot should be trained in the application of a basic toe bandage.



Alternatives to toe bandage include ready-to-wear micro-fine toe caps (A), custom flat knit toe gloves (B), or fabricated toe glove from fuzzy wale stockinette (FWC) (C).

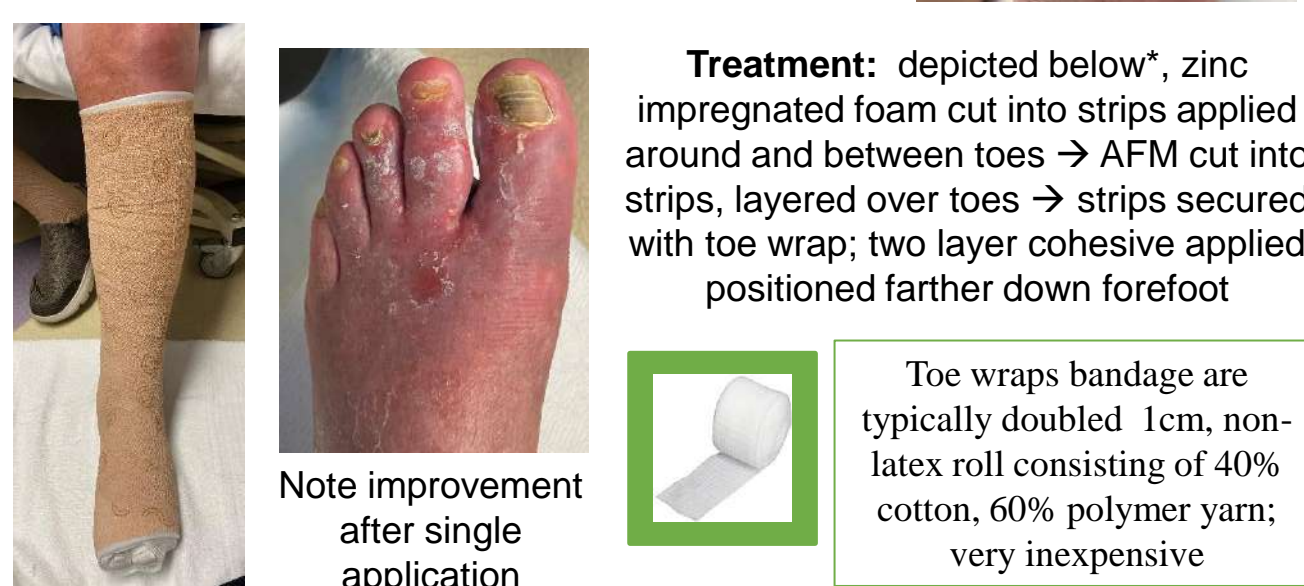
Case 1¹

HPI: 70 year old male presented with 2 wk. h/o ulceration on lower leg and 'weeping' from top of foot and between toes.

PMH: s/p MI, heart failure -> LVAD, obesity, HTN, CVD



Previous treatment elastic stockinette and alginate dressing secured with gauze/tape. Note standard of care compression application do not include forefoot or toes.



Treatment: depicted below*, zinc impregnated foam cut into strips applied around and between toes -> AFM cut into strips, layered over toes -> strips secured with toe wrap; two layer cohesive applied positioned farther down forefoot

Toe wraps bandage are typically doubled 1cm, non-latex roll consisting of 40% cotton, 60% polymer yarn; very inexpensive

Note improvement after single application

Case 2²

HPI: 64 y/o male presented with 5yr. h/o R LE swelling; 1mo h/o weeping/ulceration from top of foot and between toes.

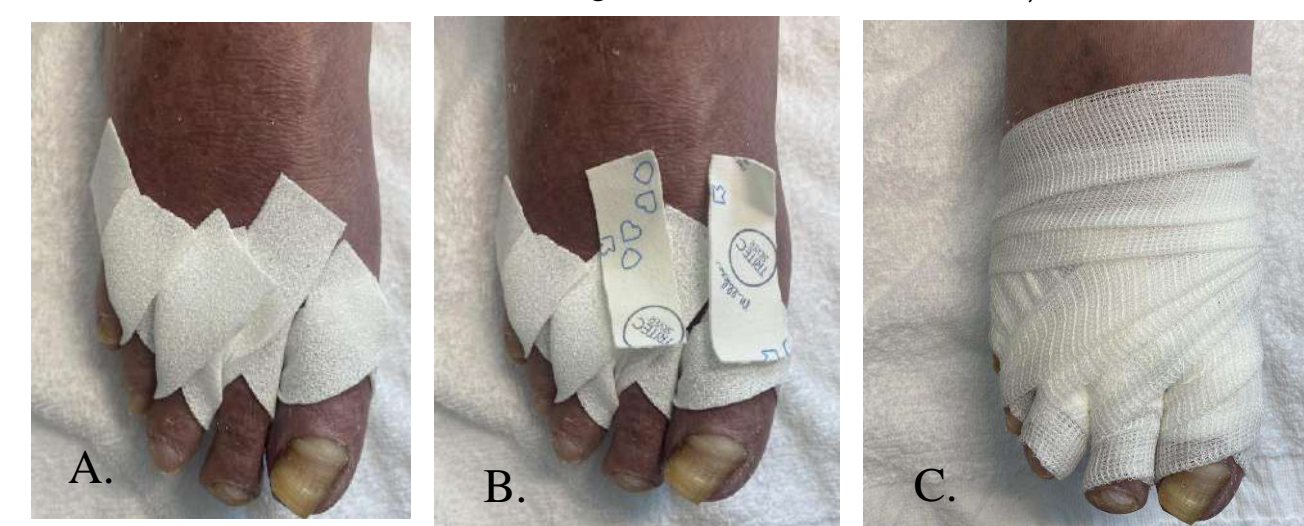
PMH: MS, HTN, recurrent LE wounds, HOH, difficulty swallowing, minimal ambulation

Treatment: depicted below*; lower leg swelling address with multi-component lymphedema wrap



Initial Visit: forefoot and toes are macerated from excessive drainage

D/C: Integument restored, edema reduced



*Individualized 'Step-by-Step' Approach: Strips of zinc impregnated foam applied around toe covering macerated tissue (A) -> topped with a wicking contact layer dressing(B) -> secured with toe bandage(C).

Case 3¹

HPI: 75 y/o male presented with non-healing amputation site x 3mo

PMH: obesity, DM, recurrent ulceration 2nd digit d/t trauma from orthopedic brace, CVD, Lymphedema bilateral LE with use of custom flat knit garments long term.



Initial Visit: Non-healing x 3mo Patient had been instructed by provider to cover with 'band aid'

4wks treatment: wound healing depicted; wound closed 5 1/2wks



Treatment: AFM applied between toes -> secured with FWC sewn toe glove secured with toe wrap. A two layer cohesive wrap was applied over the toe wrap in standard fashion. Patient seen 2x/wk. Pt required thin compression wrap to allow ongoing use of orthopedic CROW walker for safe transfer/gait

Case 4¹

HPI: 67y/o male presents with recurrent, non-healing wounds on toes and variable LE swelling x 6mos. Pt intolerant of traditional compression applications due to variable volume r/t end-stage CHF. Most stressing aspect to patient was non-healing toe wounds

PMH: end stage CHF, cirrhosis, HTN, DM, Berger's Disease

Treatment: 'Some Compression is Better Than None!' Focus of initial treatment was just toes as this was patient's primary concern. Treatment as outlined below. Changed 2x/wk.



1wk 2wk Wounds healed at 2 1/2 wks

AFM applied as primary dressing over wounds; Protective strips of comfort layer cut into strips layer applied over the toes and secured with toe wraps(A) -> thin, non-compressive nylon applied to secure the toe wraps(B) -> OTC 10-15mmHg compression stocking applied for lower leg compression(C).

Case 5³

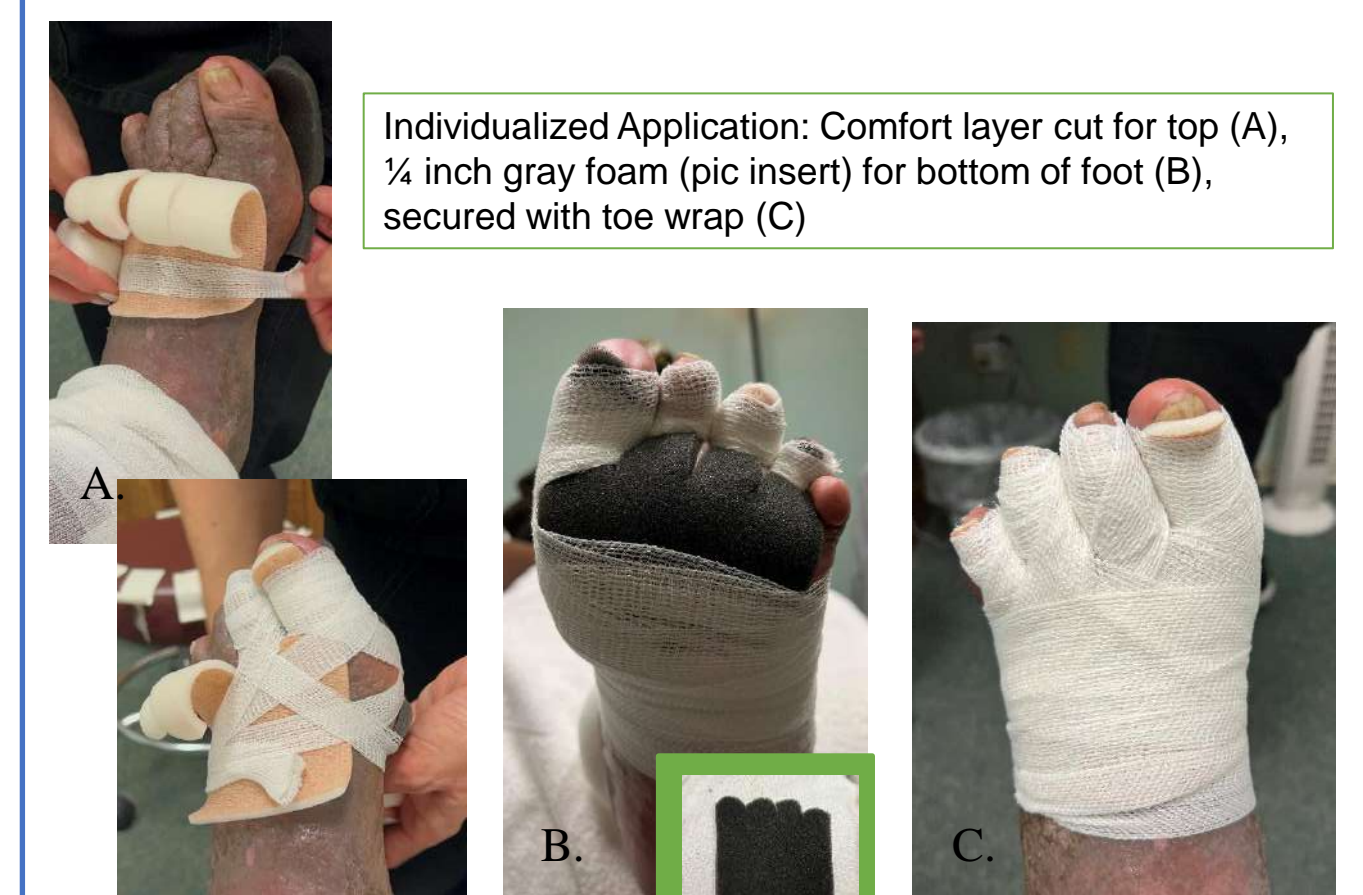
HPI: 75y/o male presented with chronic recalcitrant wounds left LE, significant trophic changes lower leg and foot. Originally sustained shrapnel wound in Vietnam War, suffering recurrent wounds/cellulitis bouts over the years.

PMH: PVD, A fib s/p pacemaker, s/p left hip surgery x 4, right hip surgery x 9, HTN, DM2,



Initial presentation pictured here. Previously applied compression to leg but none to address the of swelling and trophic changes of the forefoot or toes.

Toe wrap applied prior to traditional lymphedema multi-component wrap. (Patient seen 3x/wk for CDT)



Individualized Application: Comfort layer cut for top (A), 1/4 inch gray foam (pic insert) for bottom of foot (B), secured with toe wrap (C)



Note significant improvement of integument. Beyond resolution of wounds on forefoot, note reduction in appearance of papilloma's and hyperkeratosis of the forefoot and toes.

Take Away Message

1. Toe edema is REAL!!
2. Inclusion of a toe bandage should be part of the standard of care (SOC) when applying compression to the lower leg.
3. Toe edema can be managed with light application of toe bandage. Modification to the toe wrap to address advanced trophic changes include the incorporation of textured products, like FWC, or foam of varying densities.

Evaluation and management of forefoot and toe edema is a neglected area of compression therapy. Although it is well established that compression has a positive impact on integument health, few clinicians are aware that compression can be safely applied to this area. Additional instruction and hands-on training is available. (<https://www.ilwti.com/>)

References

1. King B. Toe bandaging to prevent and manage oedema. Nurs Times. 2007 Oct 23-29;103(43):44, 47. PMID: 17993118.
2. Chan CL, Meyer FJ, Hay RJ, Burnand KG. Toe ulceration associated with compression bandaging: observational study. BMJ. 2001 Nov 10;323(7321):1099. doi: 10.1136/bmj.323.7321.1099. PMID: 11701575; PMCID: PMC59685.
3. Elwell R, Wigg J. Microfine toe caps: an innovative and cost-saving solution. Br J Community Nurs. 2015 Apr;Suppl:S30, S32, S34-6. doi: 10.12968/bjcn.2015.20.Sup4.S30. PMID: 25950395.
4. Schuren, Jan & Mohr, K. (2010). Pascal's law and the dynamics of compression therapy: A study on healthy volunteers. International angiology : a journal of the International Union of Angiology. 29. 431-5
5. Mortimer P, Rockson S. New developments in clinical aspects of lymphatic disease. The Journal of Clinical Investigation <http://www.jci.org> Volume 124 Number 3 March 2014.
6. Goss JA, Greene AK. Sensitivity and Specificity of the Stemmer Sign for Lymphedema: A Clinical Lymphoscintigraphic Study. Plast Reconstr Surg Glob Open. 2019 Jun 25;7(6):e2295. doi: 10.1097/GOX.0000000000002295. PMID: 31624689; PMCID: PMC6635205.