

## ***PALLIATIVE CARE TIPS***

### **Issue # 36 Subcutaneous Drainage of Lower Limb Edema**

(Collect them all)

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In their 2004 article, Clein and Pugachev demonstrated that controlled subcutaneous drainage of intractable lower limb edema has the potential to improve patient comfort in the palliative care setting (1,2). Given the debilitating nature of this problem and the symptomatic relief achieved, other centres may wish to attempt this intervention. We would like to expand on Clein and Pugachev's article by describing the technique utilized by our program.

Materials required for drainage sites are as follows:

1. 19G winged needle infusion sets – two. (e.g. Terumo Surshield Winged Infusion Set™, see Figure 1)
2. Urine Leg Bags and straps (e.g. Bardic Dispoz-a-Bag Leg Bag™, see Figure 4)
3. Single Non-Conductive Connecting Tube (e.g. Tyco Healthcare-Kendall™, see Figure 3)
4. Luer Locks – two (e.g. B-D Interlink Threaded Lock Cannula™, see Figure 2)
5. Latex needleless injection cap (to fit Luer lock) X 2
6. Large transparent occlusive dressing X 4
7. Topical anesthetic cream [e.g. EMLA® (eutectic mixture of local anaesthetics)]
8. Alcohol swabs X 4
9. Sterile and non-sterile gloves

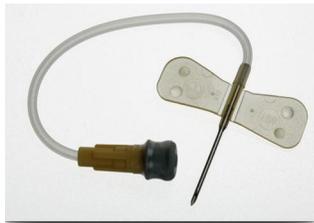


Figure 1. Winged needle infusion set (19G), Terumo Surshield Winged Infusion Set™. All Rights Reserved. Reprinted with permission.



Figure 2. B-D Interlink Threaded Lock Cannula™. All Rights Reserved. Reprinted with permission.



Figure 3. Non-Conductive Connecting Tube  
Tyco Healthcare-Kendall™.  
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Figure 4. Urine Leg Bag. Bardic Dispoz-a-  
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#### Protocol:

1. Obtain informed consent.  
(Note: Potential procedural and long-term complications include: infection, hemorrhage, allergic reaction to butterfly needle, continued leakage following needle removal, and failure of effective drainage)
2. Although previous articles (reference #2) have suggested needle insertion through areas of localized erythema and cellulitis should be avoided, effective drainage may, in fact, improve these conditions, and is not viewed as an absolute contraindication at our institution.
3. Application of anaesthetic cream (e.g. EMLA™) to the dorsum of the feet within an area of non-erythematous skin is optional. With non-sterile gloves, spread anaesthetic cream in a circular pattern to a diameter approximating 3 centimetres. Cover with a transparent occlusive dressing and leave in place for 30 to 60 minutes. While awaiting anaesthetic effect, proceed with step 4.
4. Cut connecting tubing in half. Connect larger lumen end to a urine collection bag. Repeat with the other half of the tubing and the second urine collection bag. Connect smaller lumen end (cut end) of suction tubing to the smaller end of a blue Luer lock (interlink cannula). Repeat with the second urine bag/tubing.
5. After 30 -60 minutes has elapsed, remove occlusive dressing and wipe off anesthetic cream (if utilized) with warm damp cloth and pad dry. Be gentle, as skin is likely fragile.

6. Commence sterile technique. Swab insertion sites with alcohol swabs. Insert 16 to 19 G winged needle (bevel up and point directed superiorly) into sterile area on the dorsum of the foot. Place occlusive dressing over winged needle site, with tubing directed toward the toes (do not loop tubing as you would for an injection site).
7. Repeat procedure (if indicated) on the remaining limb.
8. Connect winged needle infusion sets to Luer locks (interlink cannula). Reinforce tubing connections with waterproof tape.
9. If patient is mobile, arrange urine collection leg bags as desired. Exercise caution as tethering straps may cause trauma in areas of fragile skin. If patient is bed/chair bound, hang urine collection bags to drain by gravity (standard rather than leg urine drainage bags may be used for these patients).
10. No guidelines exist on the maximum allowable drainage volume or duration. However, our team has observed up to 10 litres of lower limb drainage within the first 24 hours post needle insertion, and up to 33 litres of drainage over 5 days. This volume of drainage occurred without adverse symptoms or metabolic derangements
11. Intravenous albumin infusion (100ml of 25% albumin) following large volume drainage (greater than 2L/day), has the potential to increase serum osmotic pressure and help prevent edema recurrence.
12. Similar to their use in hypodermoclysis, subcutaneous needles do not require replacement unless local complications arise.

#### Conclusion:

Experience at our centre suggests that the response to a trial of subcutaneous edema drainage tends to be all or none. Aside from the severity of the edema, the presence of leaking or 'weeping' edema, and the ability to mobilize affected limbs (greater mobility seems to result in more effective drainage), we have yet to identify those patient characteristics that predict a successful outcome. It is our hope that sharing our protocol will allow more centres to undertake prospective research in order to identify the best methods and most appropriate population for this intervention.

Competing Interests: The authors declare that they have no competing interests (this includes any interest in or relationship to the companies whose products are described in this article).

Acknowledgements: The authors would like to thank Terumo Medical Corporation; Becton, Dickinson and Company; Covidien AG; and Bard Canada Incorporated for permission to include photographs of their products. These permissions in no way imply endorsement of the off-label uses of the products described in this article.

#### References:

- 1) Clein LJ, Pugachev E: Reduction of Edema of Lower Extremities by Subcutaneous, Controlled Drainage: Eight cases. *American Journal of Hospice and Palliative Medicine* 2004; 21:228-232.
- 2) Faily J, De Kock I, Mirhosseini M, Fainsinger R: The Use of Subcutaneous Drainage for the Management of Lower Extremity Edema in Cancer Patients. *Journal of Palliative Care*.2007;23,3:185-187.

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