# Initial experience of a novel traditional Negative Pressure Wound Therapy dressing incorporating a distribution layer (tNPWT+DL†) in the treatment of soft tissue injuries

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## Introduction

- Traditional and single-use Negative Pressure Wound Therapy (tNPWT, sNPWT) are effective and widely used interventions used to manage a range of open wound indications, and closed incisions (1). In a randomized control trial comparing tNPWT with sNPWT††, sNPWT†† demonstrated superior outcomes including faster wound closure when used with and without a wound filler (2). These benefits are attributed to proprietary technology delivering a unique mode of action, distributing negative pressure across the wound and wider therapeutic zone incorporating the peri-wound area (3). Until now, this mode of action has been unique to wounds treated with sNPWT††. These cases present the initial experience of a novel tNPWT+DL† dressing incorporating this same proprietary technology (**Figure 1**). The dressing features a negative pressure distribution layer, and a silicone wound contact layer.

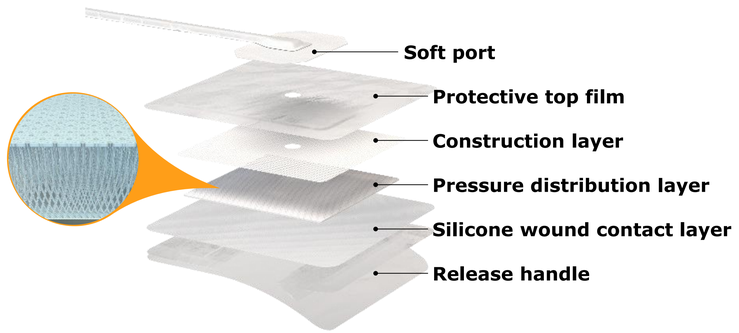


**Figure 1.** Novel tNPWT+DL† dressing and constituent layers.

## Methods

- Two retrospective cases are presented following the treatment of large complex, and challenging soft tissue wounds. The novel tNPWT+DL† dressing† was utilized in each case under the care of the lead author in the acute and post-acute setting. Wounds were surgically debrided when required and dressings were changed every 2-3 days unless otherwise stated. A Biodegradable Temporizing Matrix were utilized when appropriate. Treatment goals included controlling of edema and preparing the wounds for definitive closure.

## Conclusions

- The novel tNPWT+DL† dressing was successfully utilized to achieve the primary treatment goals, promoting granulation tissue formation and wound size reduction prior to grafting. In each case, periwound skin and tissue edema were well controlled.
- The proprietary pressure distribution layer enabled multiple open and closed wounds to be covered with a single dressing without the need for bridging.
- The silicone contact layer allowed for repositioning during dressing changes.
- The ability to cut and modify the dressing aided application and patient comfort.

## Case 1

- A 75-year-old female presented following a dog attack, with trauma to the right leg resulting in open wounds on the medial thigh and posterior distal leg. Upon initial presentation, the wound was surgically debrided and treated with traditional negative pressure (tNPWT) for 14 days prior to treatment with the novel tNPWT+DL dressing† as an in-patient. The patient had no wound related comorbidities.

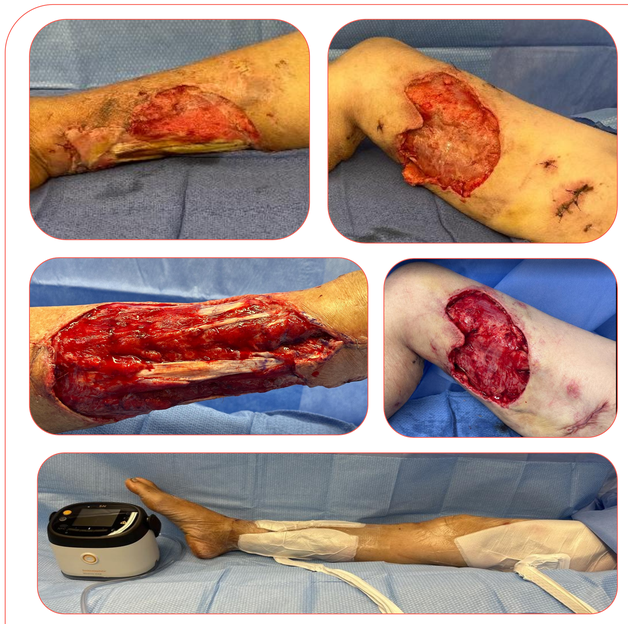

**Figure 2**. Wounds pre- and post-debridement and initiation of treatment with the tNPWT+DL† dressing. Application to the medial thigh wound allowed both the open wound and closed incisions to be covered with the same dressing. Modification of the dressing aided application around the almost circumferential posterior distal wound. Both wounds were connected to a single NPWT pump†††.

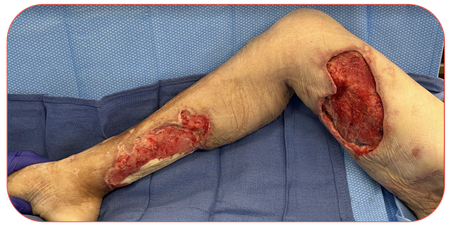

**Figure 3**. Post-debridement, following 5 days tNPWT+DL† treatment. Complete closure of incisional wounds

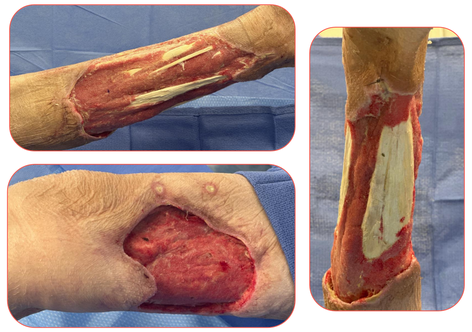

**Figure 4**. Day 14 tNPWT+DL† treatment. Medial thigh wound achieved a 36% area reduction and transitioned to sNPWT†† treatment. Following debridement of the posterior distal wound, a BTM was applied, and tNPWT+DL† treatment continued without a wound filler.

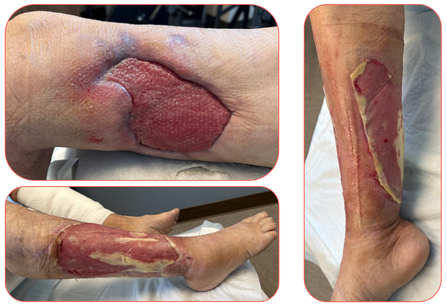

**Figure 5.** Day 52 post treatment initiation. Medial thigh wound had granulated in preparation for a split thickness skin graft. BTM has almost completely granulated and continues treatment with the tNPWT+DL† dressing allowing decreased dressing changes.

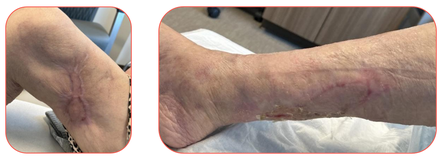

**Figure 5.** Following grafting, the medial thigh wound is completely healed, and the posterior distal wound continues to progress toward full closure.

## Case 2

- A 48-year-old male presented with two open wounds previously surgically debrided and treated with tNPWT requiring bridging at an outside facility. Both wounds were the result of an infection and were connected by tunnelling. The patient was diabetic, with a Hgb A1C of 12%, and anemic with a Hgb level of 8.8 g/dL.

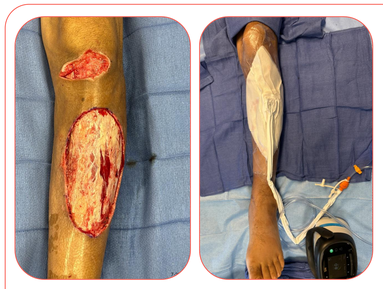

**Figure 7.** BTM was applied to both wound beds and bolstered with foam wound filler and the tNPWT+DL† dressing.

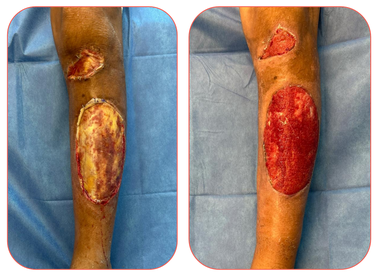

**Figure 8.** Day 14 (left) and Day 31 (right) following initiation of treatment with the tNPWT+DL† dressing. At day-31, the wound bed is completely granulated.

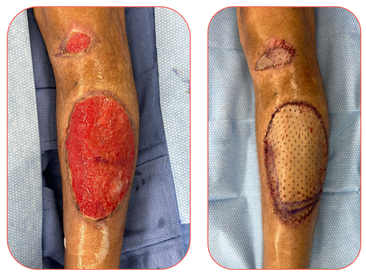

**Figure 9.** Day 44, the wound bed was prepared for split thickness skin graft (STSG) using a hydrosurgery debridement system. STSG was bolstered with sNPWT††.

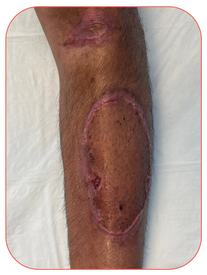

**Figure 10.** Day 69, STSG has taken and wounds are completely closed.

**References:** (1) Apelqvist J, Willy C, Fagerdahl A-M, Fraccalvieri M, Malmsjö M, Piaggesi A, et al. EWMA Document: Negative Pressure Wound Therapy. Journal of Wound Care. 2017;26(Sup3):S1-S154. (2) Kirsner R, Dove C, Reyzelman A, Vayser D, Jaimes H. A prospective, randomized, controlled clinical trial on the efficacy of a single-use negative pressure wound therapy system, compared to traditional negative pressure wound therapy in the treatment of chronic ulcers of the lower extremities. Wound Repair Regen. 2019;27(5):519-29. (3) Brownhill VR, Huddleston E, Bell A, Hart J, Webster I, Hardman MJ, et al. Pre-Clinical Assessment of Single-Use Negative Pressure Wound Therapy During In Vivo Porcine Wound Healing. Adv Wound Care (New Rochelle). 2021;10(7):345-56.

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†RENASYS◊ WOUND+ Negative Pressure Wound Therapy dressing, Smith & Nephew.

††PICO◊ single-use Negative Pressure Wound Therapy, Smith & Nephew.

†††RENASYS ◊ EDGE Negative Pressure Wound Therapy, Smith & Nephew



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