

Negative Pressure Wound Therapy in Limb Preservation: Powerful Tool, Not a Lifestyle

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In limb preservation — particularly in the diabetic foot — negative pressure wound therapy (NPWT) has proven to be one of the rare technologies that can legitimately be called transformative. When it emerged in the early 2000s, it offered something clinicians had long lacked: a reliable way to control exudate, reduce wound complexity, and promote granulation in challenging wounds.

But like many powerful tools, its impact depends entirely on *how* and *when* it is used. Unfortunately, it's now being used too broadly.

How NPWT Changed Limb Preservation

The modern adoption of NPWT in diabetic foot care was influenced by a randomized [clinical trial](#) published in 2005 (for which I was the first author) showing that, compared with advanced moist wound therapy, it significantly increased the proportion of healed wounds and reduced time to closure in patients with partial foot amputations related to diabetes. That study helped move NPWT from novelty to standard of care in limb salvage pathways, particularly after surgical debridement or amputation.

The biological rationale was — and remains — sound. NPWT, sometimes called vacuum-assisted therapy, simplifies wounds by reducing edema, managing exudate, stabilizing the wound environment, and encouraging the formation of granulation tissue, temporary connective tissue that begins to fill in the wound from its base outward. In wounds burdened by dead space, irregular geometry, or large amounts of drainage, it can convert chaos into order.

The Problem: NPWT Overreach

Over time, however, NPWT began to be misused. What was developed as a wound-simplification tool now is used too often as a default therapy applied from the first debridement until the last epithelial cell migrates across the wound bed.

This is not what NPWT was designed to do.

NPWT is a means to an end. It does not close wounds; it prepares them to close. When used indefinitely, it can delay definitive tissue reconstruction, prolong care, and increase cost without improving outcomes. In some settings, it becomes a technological holding pattern rather than a strategy.

This distinction matters.

Focus on Wound Complexity

In 2025, a large pragmatic randomized [trial](#), published in *The Lancet*, evaluated NPWT in surgical wounds healing by secondary intention (open wounds without edges that could be connected by sutures or other means). Eighty percent of participants had diabetes. Most wounds were on the foot or leg (90.4%) and arose from vascular surgery (90.2%), with small percentages the result of colorectal, plastic, or other surgery. The study found no meaningful benefit from NPWT over usual care in time to healing, and concluded that NPWT was not cost-effective in this broad surgical population.

This finding should not be misinterpreted as an indictment of NPWT itself. Instead, it highlights a critical truth: NPWT works best when the problem is local wound complexity.

In other words, diabetic postamputation wounds with dead space, high exudate, and biomechanical stress are fundamentally different from clean surgical wounds healing by secondary intention. The former would benefit from NPWT, but the latter may not.

NPWT also isn't the right approach when systemic factors interfere with [wound healing](#). Care pathways should not make NPWT the default approach for wounds healing by secondary intention. Precision determines success.

NPWT Is a Phase of Wound Healing

In limb preservation, NPWT should be viewed only as a *phase of care*. It is a tool to make wounds easier to heal — not a tool that heals wounds by itself.

Used appropriately, it excels at rapidly simplifying complex wounds, creating a uniform, granulating wound bed stabilizing

surgical sites after amputation or aggressive debridement.

Before proceeding to the next phase in wound healing, ask three questions:

- Has the wound been “simplified”?
- Is granulation tissue adequate for the next step?
- Is there a clearer path to closure than ongoing NPWT?

If the answer to all three is yes — the wound is clean, shallow, and biologically ready — it is time to move on. Continuing NPWT beyond this inflection point rarely adds value and may delay healing. The right next step varies by patient and wound characteristics. Options include:

- Split-thickness [skin grafting](#)
- Secondary intention with or without advanced dressings
- Cellular or tissue-based therapies
- Surgical closure when feasible

Bottom Line

NPWT remains one of the most important advances in wound healing and limb preservation of the past three decades. When used deliberately — early, purposefully, and temporarily — it can change trajectories and save limbs. When used indiscriminately or indefinitely, it risks becoming expensive noise.

Credits

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