

Commentary

The efficacy of VAC therapy on chemotherapeutic extravasation ulcers: An experimental study

This is now a well-established fact that the application of sub atmospheric pressure in a closed draining system on acute or chronic

wounds speeds up the wound healing. This is known as negative pressure wound therapy (NPWT). The therapy in recent years is popularised by Morykwas *et al.*^[1] The sub atmospheric pressure at wound site is usually in the range of minus 80 to minus mm of mercury. Mechanism of action of negative pressure on wound is by following ways:

1. Wound contraction: This purely is mechanical effect
2. Effect on wound interface: Alteration of cytoskeleton of cell on wound bed, thereby increasing the rate of cell division

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3. Effect on blood flow: NPWT is known to enhance blood supply of the wound and improves quality of granulation tissue
4. Edema: NPWT helps in reducing all types of oedema that is, acute inflammatory to chronic intractable
5. Infection: NPWT not only control surface bacterial load by continuous suction, but also prevent bacterial invasion of wound thereby controlling sepsis in extensive wounds
6. Isolation of wound from environment: Chances of cross infection of wound are minimised
7. Moist wound healing: Semi-occlusive dressing helps in achieving continuous moist environment, which helps in rapid epithelisation.

In acute wounds, including burn wounds,^[2] NPWT help in reducing oedema and controlling bacterial migration, thereby preventing wound infection and septicemia. In wounds with exposed hardware or exposed bone, by applying sub atmospheric pressure, healthy granulation cover is achieved, and skin graft will suffice ultimately, which otherwise will need a flap cover.

In chronic wounds like bed sores and diabetic ulcer, application of NPWT helps in achieving wound closure. This doesn't mean that NPWT is the answer for all types of intractable wounds and ulcers. The efficacy of NPWT is doubtful in ischaemic ulcers^[3] (e.g., Burger's disease). Rather many surgeons have bad experience of ulcer getting worse after NPWT. Studies showing good results in Burger's disease by NPWT therapy are those in which sub atmospheric pressure was applied over the lesion only after proper revascularisation of the limb.^[4]

The author has used NPWT in ulcers formed after the leakage of the chemotherapeutic agent in experimental animals and has not found any significant wound improvement from the control group being treated by conventional dressings. Only reduction in wound size

was appreciable in NPWT group than the control group that author rightly attributed to mechanical forces of negative pressure acting on wound margins.

There is not much literature on the role of NPWT on chemotherapeutic agent extravagated ulcers, in all probability these wounds behave akin to ischemic ulcer having prolonged subclinical fibrosis in surrounding areas, making them resistant to NPWT. In clinical practice, these wounds are usually encountered on dorsum of the hand as dorsal vein is easily approachable for multiple sittings of chemotherapy. These ulcers are avascular and fibrotic, and often need a Groin flap to enhance blood supply to prevent extensor tendon adhesions in that area. Role of NPWT in these types of wounds requires further evaluation.

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REFERENCES

1. Morykwas MJ, Argenta LC, Shelton-Brown EI, McGuirt W. Vacuum-assisted closure: A new method for wound control and treatment: Animal studies and basic foundation. *Ann Plast Surg* 1997;38:553-62.
2. Kamolz LP, Andel H, Haslik W, Winter W, Meissl G, Frey M. Use of subatmospheric pressure therapy to prevent burn wound progression in human: First experiences. *Burns* 2004;30:253-8.
3. Armstrong DG, Lavery LA, Diabetic Foot Study Consortium. Negative pressure wound therapy after partial diabetic foot amputation: A multicentre, randomised controlled trial. *Lancet* 2005;366:1704-10.
4. Nishimura K, Kanaoka Y, Harada S, Saiki M, Marumoto A, Nakamura Y, *et al.* Vacuum-assisted closure (VAC) for bilateral severe ischemic foot after revascularization: A patient report. *Acta Med* 2008;51:11-5.

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