

# Negative pressure wound therapy: from ‘lip service’ to a billion dollar patent feud

**N**egative pressure wound therapy (NPWT): mention it to clinicians and they’ll tell you it is an effective technique for removing exudate, facilitating and accelerating tissue granulation, and even altering the bacterial population of the wound bed (Mouës et al, 2004). Mention NPWT to non-medical individuals and you’ll most likely be met with raised eyebrows and disbelief. Applying suction to a wound? Bizarre! Those familiar with ancient medical history may be forgiven for recollecting the primitive cupping techniques used to rectify so-called imbalances in the humours, through the application of a hot glass to an area of punctured skin. But applying suction to an open wound? Where, and indeed how did this treatment modality come into being? How could it be known to be beneficial? Once again, from what can be discerned in the surviving literature, the answer is in ancient practices.

According to Harris (1838), Roman armies contained personnel who were thought to have hereditary powers of healing; such individuals applied direct mouth suction to wounds – allegedly with great success. To give some reference of the antiquity of this, Cato (presumably the Elder, 234 BC – 149 BC) reputedly took a group of these healers on his African campaign, such was their effectiveness (Miller, 2012).

From there the annals jump to post-Renaissance surgeon Dominique Anel (1679 – 1730), developer of the wide-mouthed lachrymal syringe. Even some 1800+ years after Cato, soldiers were still employing ‘lip service’ to deep puncture wounds suffered in battle (Price, 1969). The grotesque horror of orally draining cavities, sinuses, and abscesses can scarcely be imagined.

The replacement of the human mouth as a means of wound suction for something altogether more effective and indeed suitable came in the early 1950s, when, according to Bobkiewicz et al (2014), the first attempts at what we may consider ‘modern’ vacuum therapy were made. Unsurprisingly, the novel use of suction pumps at this stage was not without problems. Difficulties maintaining an effective seal were not alleviated




**During the Roman era, individuals thought to have hereditary powers of healing, were assigned to give direct suction by mouth to the wounds of soldiers**

until the use of Redon drains went some way to solve the problem, thus enabling the use of negative pressure therapy (Bobkiewicz et al, 2014).

However, it wasn’t until after innovation by Soviet surgeons — such as Dr. Nail Bagaoutdinov during the latter part of the 20th century, driven in part by the Soviet–Afghan war — that Argenta and Morykwas produced the first commercially available system, thanks largely to the use of polyurethane foams as a sealable dressing (Miller 2012, Bobkiewicz et al, 2014).

Thus the synonymous V.A.C. system was born, thereby propelling its manufacturer (KCI) into the global spotlight. Interestingly, the product was released to market some two years before patents were obtained or research published (Otterbourg, 2012), rather unlike current practices. The V.A.C. system’s widespread and successful use in the treatment of IED wounds in Iraq and Afghanistan, coupled with the enormous revenue it was generating, meant that potential rivals were anxious to get involved. A number of high court patent battles over the V.A.C. system followed, which were sufficiently high-stakes for it to be recounted in the pages of Fortune Magazine, no less (Otterbourg, 2012).

For such a mechanically simple treatment with such unpleasant early methods of application, NPWT has certainly come a long way, and the tale of advancement driven by warfare is a familiar refrain to followers of this column. 

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