

Novel use of VAC therapy in a patient with lymphocele following varicose surgery

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Varicose veins are a common problem and the condition affects 3 in 10 women and one in 10 men (BUPA Health Information Team, 2004). Varicose veins appear lumpy and bluish and are usually found on the legs. They occur when vein valves weaken or break causing venous stasis (BUPA Health Information Team, 2004). Pregnancy and obesity are common predisposing factors but they also occur in people whose jobs require they stand for extended periods, although there is little evidence to support this.

Treatment can include regular rest with legs elevated, compression hosiery, sclerotherapy (injection of a chemical solution into the vein) and microwave ablation but the most effective option is surgical removal involving ligation and stripping (BUPA Health Information Team, 2004). Two small incisions are made in the groin and the inside knee or the ankle if the whole vein needs to be removed. The affected vein is ligated and stripped out via the knee or ankle incision. Other small incisions may be required if smaller veins require removal – known as avulsion or phlebectomy (Parvin, 2006). The whole leg is then bandaged.

As with all surgical procedures complications can occur including bleeding, infection and deep vein thrombosis (DVT) and less commonly nerve damage leading to foot drop (Parvin, 2006). Lymph can sometimes collect under the incision and leak; this is known as a lymphocele and can take up to six weeks to settle (Parvin, 2006).

Case report

A 59-year-old man underwent ligation and stripping on his left leg in July 2005 and made an uneventful recovery. He was able to return to work and wore his anti-embolism stocking and commenced post-operative exercises as advised. He returned for suture removal at one week post-operatively with consultant follow-up planned for six weeks time. Complications



Figure 1. VAC Freedom Therapy unit.

developed when the groin wound started to leak copious amounts of straw-coloured fluid. He was alarmed and rang the treating hospital and was advised to attend the ward to be seen by his consultant. The consultant recommended that a drainage bag was fitted over the wound site. However, this leaked and several further attempts to cover the wound with a drainage bag failed so ward staff referred the patient for specialist wound care advice.

When the patient was seen in early August wound assessment showed local inflammation, a soft but stable groin incision with 2–3 leaking pinholes and excoriated peri-wound skin. The fluid that was leaking was straw-coloured and odourless and was identified as lymph.

The wound was dressed with 3–4 triple layers of Aquacel (ConvaTec, Ickenham) and Tegaderm (3M, Bracknell) with Cavilon spray (3M) used to protect the peri-wound skin. This successfully contained the fluid but required intensive management, continuity and compliance. Daily dressings were required and the patient's consultant suggested admission for rest and leg elevation. We were able to avoid this option by treating the patient in an outpatient setting with 24-hour specialist cover.

The wound remained intact but the edges were beginning to deteriorate. A narrow margin of slough formed and the leaking points varied. Leakage volume was estimated to be 200–300ml/day and his dressings were saturated twice a day. These dressings were

used for one week at which stage the patient was upset and due to sporadic lymph leakage it was felt that he would benefit from a break from the current treatment. The pattern of leakage had changed so that the dressing would remain dry for some time and then suddenly become saturated. There was also a local swelling near the wound where the leaking lymph was collecting in a lymphocele. It was decided to give the patient Tena Lady pads to absorb the leakage (SCA Hygiene Products UK Ltd, Dunstable) that he could change himself. Although this break was comfortable and convenient for the patient, after three days his peri-wound skin became excoriated and a small groin swelling was noticed which was possibly a lymphocele and the incision began to dehisce. This helped to prove to the patient who had become despondent with treatment that further intervention was needed. Assessment on 15th August showed small sinuses had developed which probed to 2–3cm although the exact depth was difficult to judge and confirm. It was evident that self-care was no longer viable.

At this point vacuum assisted closure (VAC) therapy (KCI, Oxford) was considered as a way to restore greater tissue viability, reduce cellular oedema and potentially collapse the probable lymphocele. Although an unusual application, it was thought that it could work in theory as it had previously been used successfully with groin wounds. The

only uncertainty was whether lymph leakage would be stimulated by the VAC therapy and create a circle of production. On 24th August the option was discussed with the patient's consultant, and although he was initially sceptical, he agreed that therapy could commence at the author's discretion.

VAC therapy

VAC therapy works on the principle that negative pressure exerted on a wound bed promotes the response of the healing process. It exerts tensile force, reducing the interstitial spaces so reducing oedema, therefore increasing blood flow. It contains the wound in a closed environment so reducing risk of infection and removes excess exudate via a comfortably conformable 'dressing' which also controls odour and the protection of the peri-wound skin. VAC therapy was originally described by Morykwas et al in 1997 in a porcine study which showed an improvement in granulation tissue formation of 63% upon application of a continuous negative pressure of 125mmHg, compared with saline moistened gauze which was the standard treatment at the time. More recently Armstrong et al (2005) demonstrated a significant rate and quality of granulation tissue formation in patients undergoing transmetatarsal amputation for diabetic foot wounds ($p < 0.002$). The therapy consists of a micro-processor controlled therapy unit connected to a polyurethane medical grade foam via a therapeutic regulated accurate care (TRAC) pad and sealed with a film dressing and then connected to a VAC canister which collects and quantifies tissue fluid loss during therapy (KCI Medical, 2005). The proposed mode of action is that the application of negative pressure to the wound removes infectious materials and/or other fluids, assists tissue granulation in wounds, draws the edges of the wound together; decreases wound size, helps promote wound perfusion and provides a moist wound healing environment (KCI Medical, 2005). The system is closed and this reduces the potential for cross-infection. For this patient, the added benefits were odour control which is caused by the internal odour filter fitted within the canister, and greater protection for his peri-wound skin.

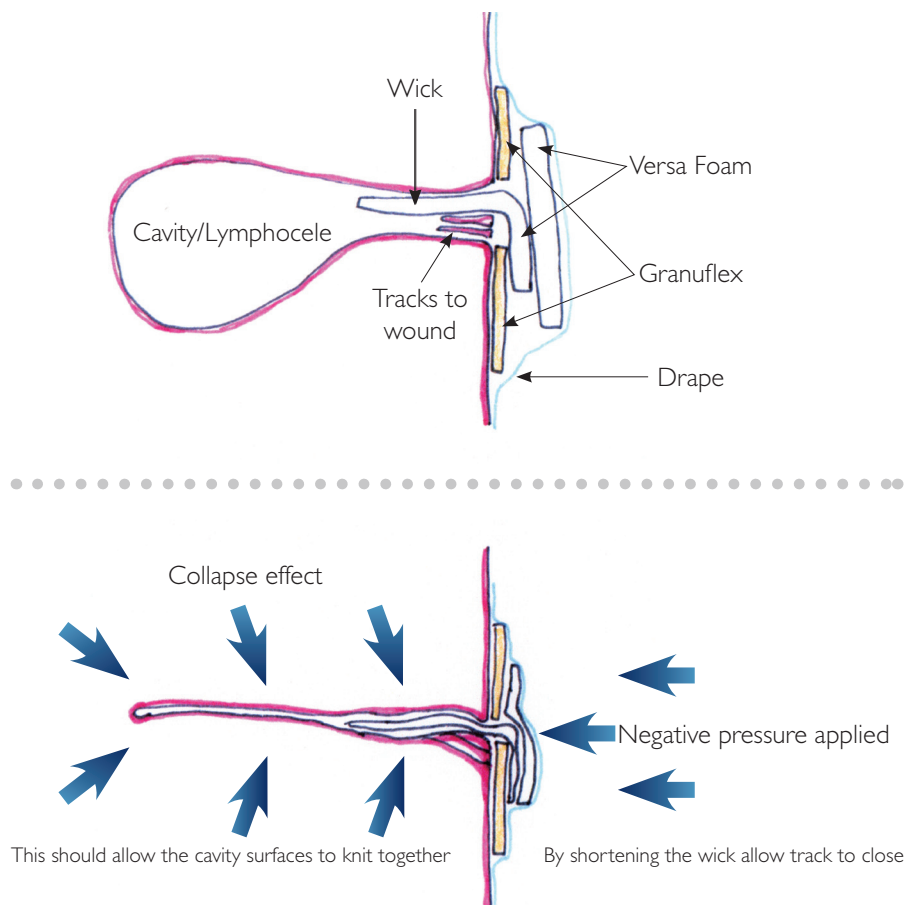


Figure 2. Novel application of VAC therapy where there is a hidden cavity with only a small exit track.

The patient was provided with relevant literature and information and the implications and technique were discussed. At this stage he was willing to try anything that could help to resolve his problems and was positive about trying this therapy.

On 30th August therapy commenced using the VAC Freedom® system (Figure 1) and Vers-Foam dressing. The patient's peri-wound skin was shaved to improve adhesion and seal and Cavilon was applied for protection and to assist dressing adhesion, along with a Granuflex (ConvaTec, Ickenham) border (for protection). A further strip of Granuflex was added to create a bridge to carry the foam and allow the TRAC pad to be sited in a more suitable position to prevent kinking and discomfort. Vers-Foam was cut into a 6x1 cm strip and gently inserted into the largest sinus leaving 3cm protruding like a tail that could be folded back onto the Granuflex strip. A second piece

of Vers-Foam was cut into a paddle shape and placed over the bridge then the whole area was secured and sealed with strips of VAC drape, a 5cm hole was cut and the TRAC pad was applied (Figure 2).

Therapy was commenced at 125mmHg continuous therapy which the patient found comfortable and painless. Therapy unit management and canister changes were explained and the patient was happy to go home with 24-hour support from KCI Medical and the SRN as required.

Exudate volume was initially high and two 300ml canisters were filled in 24 hours but this dropped dramatically after 48 hours along with the localised swelling. The foams used in KCI VAC therapy are a patented design which via uniform, connecting holes, collapse evenly, when the air is drawn out by the pump's negative pressure. The

wound gradually closes by the laying down of granulation tissue. The Vers-Foam is an open-cell polyvinyl alcohol foam used exclusively with VAC Therapy to transmit the negative pressure to the wound bed hence stimulating cell stretch and encouraging wound healing (Saxena et al, 2004). Initially the 'wick' was inserted well into the cavity to ensure its collapse. Once established the 'channel' created by this 'wick' can be closed by shortening the length of the wick. Dressings were renewed every three days and the author was able to shorten the Vers-Foam wick each time until 1 cm was left. Therapy was maintained on a continuous setting of 125mmHg. The patient could now confidently go back to work and was able to travel to Ireland on business.

The patient's consultant, NAG Jones commented on this case: 'Logically the use of a vacuum dressing might make a lymph leak persist. In this case placing the foam wick into the wound cavity allowed the cavity to be sucked 'flat' and obstructed the free flow of lymph out of the wound. By closing the cavity and producing healthy granulation, tissue healing was hastened quite dramatically. Such lymph leaks usually follow redo surgery in the groin where fibrosis makes the lymphatics vulnerable to division. I have actually used the technique on a subsequent patient and seen healing within 12 days.'

The outcome was dramatic. There had been little change over a two-week period using conventional methods, but within days of using VAC therapy there was very little exudate produced and no further swelling was noted. Therapy was discontinued after 12 days and no deterioration was seen. Tielle Lite (Johnson & Johnson, Skipton) was applied for a further few days, and then the healed site was exposed and the patient was informed about regular hygiene practice.

His only remaining problem was occasional leg swelling which resolved with rest, elevation and passive exercises, such as breathing exercises, ankle movements. It was also recommended that he avoided sitting or standing for long periods

Discussion

The patient was understandably upset about the results following what should have been a simple procedure with an overnight hospital stay which required minimal wound care. He had accepted there would be risks but felt guilty that complications had arisen because the surgery had been cosmetic. The adverse outcome had a significant impact on his quality of life. Early dressing failures left him distressed, uncomfortable and embarrassed by his wet clothing and perceived odour. Although the Aquacel and Tegaderm combination were more successful than drainage bags, the frequent dressing changes restricted the patient's freedom and ability to continue his normal work and social activities. He became increasingly distressed at the possibility of admission to hospital and having to have prolonged wound care. A study by Cole and Harding (2001) showed that stress could delay wound healing and lead to anxiety and depression and could have a further impact on the healing process.

The patient's mood was improved during his short treatment break and self-care with Tena Lady pads but as leakage increased and peri-wound integrity decreased he accepted a return to managed care and VAC therapy. His quality of life significantly improved along with his self-confidence and a return to normal daily activities. It was important for this patient that he did not require readmission to hospital.

Conclusion

Wound care is often a complex process and involves more than simply caring for the actual wound. This case study shows how important regular reassessment and continuity of care are for maintaining patient confidence, quality of life and outcome. By having an appropriate choice of dressings and observing careful hygiene, overall skin integrity was maintained and infection prevented.

VAC Therapy provided an optimal solution for this patient's various problems by reducing the frequency of dressing changes and preventing hospital readmission allowing him greater freedom. The VAC dressing remained

comfortable and intact throughout, further improving the patient's quality of life and healing outcome.

By preventing hospital admission, reducing dressing frequency and speeding healing, VAC therapy was a cost-effective option. It was satisfying to be able to assist the patient to maintain his normal activities, free from the burden of twice-daily dressings. Regular expert reassessment, continuity of care and his tolerance to the treatment without complaint all contributed to a successful outcome and the patient's satisfaction. **WUK**

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