

OPEN

Vacuum Sealing Drainage as Treatment of Severe Buttocks and Perianal Infection

A Case Report and Review of the Literature (Care-Compliant)

Jianqiang Ni, MD, PhD, Hongzhi Liu, MD, Xiaoyang Liu, MD, Lugang Zhou, MD, Yujie Sun, MD, Peng Shi, MD, Wei Hao, MD, Hao Su, MD, and Xin Wang, MD

Abstract: Vacuum sealing is a therapeutic concept to achieve secure and rapid wound healing in traumatic soft tissue damage. Its application and effect in the treatment of severe buttocks and perianal infection are unclear.

We describe a case of buttocks and perianal infection using the vacuum sealing drainage (VSD) technique. A 58-year-old man was admitted with buttocks and perianal severe infection, which was caused by injection. The size of the wounds was 40 × 30 cm. Colostomy was applied prior to the prompt surgical debridement to prevent defecation and keep the perianal region clean. Emergency debridement was then conducted. After the wounds were thoroughly washed with conventional disinfection solution, they were then covered by VSD system.

The infection was controlled 9 days after the first surgery by prompt surgical debridement, the application of VSD treatment, and the use of narrow-spectrum antibiotics based on susceptibility result. After 3 applications of VSD treatment, skin grafting harvested from the left leg was conducted. All free skin grafts survived at 8 weeks. Colon was placed back into the abdominal cavity finally.

Initial colostomy and debridement, the temporary VSD cover followed after several days by skin grafting is a reliable treatment regimen for severe buttocks and perianal infection.

(*Medicine* 94(43):e1766)

Abbreviations: PAAG = polyacrylamide hydrogel, VAC = vacuum assisted closure, VSD = vacuum sealing drainage.

BACKGROUND

The vacuum sealing drainage (VSD) technique is a therapeutic concept to achieve secure and rapid wound healing in traumatic soft wound and chronic infections.^{1,2} Its use is widespread among the surgical specialties, many of which employ negative-pressure wound therapy to varying degrees as part of their armamentarium against challenging wounds.³ Wound cavities are filled with polyvinyl alcohol embedded foam and drainage tubes. The tubes are either drawn transcutaneously

through the tissue or placed epicutaneously, depending on the condition of the wound. The wound including the adjacent skin and the drainage tubes is covered by a transparent vapor transmitting polyurethane film. When the drainage tubes are connected with a vacuum bottle, negative pressures are established. In anatomically difficult body regions such as buttocks and perianal infection, it is still questionable whether these dressings have similar beneficial effects.

In this case, the patient suffered from a severe buttocks and perianal infection after injection. We used negative-pressure wound therapy to help the wound healing successfully.

MATERIALS AND METHODS

Case Presentation

A 58-year-old man suffered from a severe buttocks and perianal infection after injection (Fig. 1) was reviewed with institutional review board approval of the authors' institution. He was admitted to our emergency department after a failure conservative treatment of another hospital. He had a little bit fever (38.5 °C, 101.3F), the WBC was 12 × 10⁹/L with a normal ECG. The size of the wounds was 40 × 30 cm. The infection reached the deep fascia layer and involved superficial muscles. A colostomy was applied first to prevent defecation and keep the perianal region clean. After the tissue culture was taken, emergency debridement was conducted strictly to remove infective soft tissues (Fig. 2). The necrosis boundary was not clear because of the severe infection. After VSD had been conducted on the gluteal region for 4 days (Fig. 3), the drainage tubes became obstructed by a substantial amount of waste (Fig. 4); thus, the VSD dressing and semipermeable membrane were replaced. The infection was controlled 9 days after the first surgery by prompt surgical debridement, the application of VSD treatment, and the use of narrow-spectrum antibiotics based on tissue culture result. The patient had a normal temperature with normal WBC at that time. Finally, granulation tissues on the buttock surface grew well and grafted skin was conducted to close the wound (Fig. 5). Eight weeks later, the skin graft had completely survived (Fig. 6). The colon was placed back into the abdominal cavity.

RESULTS

We performed a MEDLINE search for articles published in English. We found that injection leading to such severe buttocks and perianal infection has never been reported. The management of the perineal skin graft wound is complex, because it has an irregular skin surface and is close to the urethra anteriorly and the anus posteriorly, which can easily contaminate the wound. The VSD technique has been widely used for treating various types of wound surfaces and deep wounds, such as soft

Editor: Mustafa Rasid Toksoz.

Received: January 14, 2015; revised: September 14, 2015; accepted: September 17, 2015.

From the Yuhuangding Hospital, Qingdao University, Yantai, Shandong, China.

Correspondence: Xin Wang, Yuhuangding Hospital, Qingdao University, Yantai, Shandong, China (e-mail: jone-20002@163.com).

The authors have no funding and conflicts of interest to disclose.

Copyright © 2015 Wolters Kluwer Health, Inc. All rights reserved.

This is an open access article distributed under the Creative Commons Attribution-NoDerivatives License 4.0, which allows for redistribution, commercial and non-commercial, as long as it is passed along unchanged and in whole, with credit to the author.

ISSN: 0025-7974

DOI: 10.1097/MD.0000000000001766



FIGURE 1. Preoperative.



FIGURE 2. During the first surgery.

tissue in the foot, prosthetic infections, and large-area skin defects, but there are no reports on severe buttocks and perianal infections. The VSD technique combined with a colostomy showed an advantage to treat severe buttocks and perianal infections.

DISCUSSION

The management of buttocks and perianal infection is complex for several reasons. First, it is close to the urethra anteriorly and the anus posteriorly, which can easily be



FIGURE 3. Four days after the first surgery.



FIGURE 4. Four days after the second surgery.



FIGURE 5. After 3 applications of vacuum sealing drainage (VSD) treatment, granulation tissues on the wound surface grew well and free dermatoplasty was conducted to close the wound.

contaminated. Second, the perineum is irregular. Finally, the perineum is too mobile to fix the wound dressing.

VSD has been initiated since 1990s. It has been found to be useful in the treatment of various types of wound surfaces.⁴⁻⁷ Recently, Wu et al⁸ have reported the first use of VSD as a convenient and effective alternative to manage the complications



FIGURE 6. After 8 weeks, the skin graft had completely survived and the wound had healed well. The colon was sent back to abdominal cavity.

of extensive polyacrylamide hydrogel (PAAG) migration after breast augmentation. The mechanism of VSD for prompting granulation growth and accelerating wound healing has been proven at the cellular level.

VAC therapy is also an excellent alternative for managing complicated wounds after head and neck reconstruction. It has been proven to be safe and comfortable for the patient and provides good results regarding infection control, dead space obliteration, and improvement of wound healing.⁹

Perianal infections are difficult to treat because of the fecal contamination and the anatomical characteristics. In our study, a colostomy was applied first to prevent defecation and keep the perianal region clean. Then, the vacuum-assisted closure therapy was applied. Vacuum-based therapy appears to be safe, effective, and convenient for the patient and nursing staff and allows for less frequent dressing changes. It is a good treatment method for buttocks and perianal infections.

REFERENCES

1. Argenta LC, Morykwas MJ. Vacuum-assisted closure: a new method for wound control and treatment: clinical experience. *Ann Plast Surg.* 1997;38:563–577.
2. Etoz A, Ozgenel Y, Ozcan M. Application of negative pressured dressing. *Turk Plast Rekonstr Cer Derg.* 2004;12:102–105.
3. Novak A, Khan WS, Palmer J. The evidence-based principles of negative pressure wound therapy in trauma & orthopedics. *Open Orthop J.* 2014;8:168–177.
4. Li R-G, Ren G-h, Tan X-j, et al. Free flap transplantation combined with skin grafting and vacuum sealing drainage for repair of circumferential or sub-circumferential soft-tissue wounds of the lower leg. *Med Sci Monit.* 2013;19:510–517.
5. Liu L, Tan G, Luan F, et al. The use of external fixation combined with vacuum sealing drainage to treat open comminuted fractures of tibia in the Wenchuan earthquake. *Int Orthop.* 2012;36:1441–1447.
6. Ye J, Xie T, Wu M, et al. Negative pressure wound therapy applied before and after split-thickness skin graft helps healing of Fournier gangrene a case report (CARE-Compliant). *Medicine (Baltimore).* 2015;94:e426.
7. Tang J, Guo WC, Yu L, et al. Clinical efficacy of artificial skin combined with vacuum sealing drainage in treating large-area skin defects. *Chin J Traumatol.* 2010;13:289–292.
8. Wu J, Zhang X, Zhao Q, et al. Vacuum sealing drainage in the treatment of migrated polyacrylamide hydrogel after breast augmentation: a case report. *Breast Care (Basel).* 2014;9:273–275.
9. Yang YH, Jeng SF, Hsieh CH, et al. Vacuum-assisted closure for complicated wounds in head and neck region after reconstruction. *J Plast Reconstr Aesthet Surg.* 2013;66:e209–e216.