The use of Wound Vacuum-assisted Closure (V.A.C.™) system in the treatment of Recurrent or Complex Pilonidal Cyst Disease: Experience in 4 Adolescent Patients

S Saad, E Shakov, V Sebastian, A Saad

Citation

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Abstract

Four consecutive adolescent patients presented to our pediatric surgical service with complex and recurrent pilonidal cysts. These patients underwent multiple procedures during a time period range of 11 to 24 months without success. Wound Vacuum-Assisted Closure (V.A.C. ™) system was used for eight weeks in all patients with success to treat their complex wounds. All four patients had successful granulation and healing of their wounds in a very short time (eight weeks) by using the V.A.C. ™ system compared to the lengthy period of care (11 to 24 months) when using the standard technique. Based on our experience, Wound Vacuum-Assisted Closure (V.A.C. ™) system is recommended to be used in any patient with complex or recurrent pilonidal cyst.

INTRODUCTION

The Wound Vacuum-assisted Closure (V.A.C.™) system requires placing an open-cell foam dressing into the wound cavity and simultaneously applies a controlled sub-atmospheric pressure (125 mmHg below ambient pressure). The technique removes chronic edema, leading to an increase in localized blood flow, and the applied forces result in the enhanced formation of granulation tissue. Vacuum assisted closure has become extremely efficacious in the treatment of chronic and difficult wounds.[1]

METHODS

All four patients initially underwent surgical excisions of the pilonidal cyst followed by primary closure of the wound and application of a penrose drain. Pre-operative antibiotic treatment followed by a 10-day post-operative antibiotic course was used. Intra-operative identification of the sinus tract was made using a lacrimal probe and methylene blue injection of the sinus tract opening. Closure of the wound was accomplished with a subcutaneous 3-0 vicryl suture followed by a subcuticular 4-0 vicryl reinforced with 3-0 nylon interrupted suture. All procedures were done as same-day surgery. The drain had been pulled on initial follow-up within seven days on all the patients.

CASE REPORT 1

The patient is a 16 year-old female who presented with a one-week history of a draining pilonidal cyst. The patient underwent surgical excision three months later and had good healing but recurrent draining from the distal portion of the scar, which was managed conservatively with dressing changes with no success. The patient subsequently underwent wider re-excision of the pilonidal cyst with primary closure five months after the first surgery. After 24 months of standard treatment of the pilonidal cyst, and after another recurrence, the V.A.C.™ system was utilized. The V.A.C.™ system was placed intra-operatively on the third wide re-excision. Within eight weeks of treatment with the wound V.A.C.™, the pilonidal cyst was successfully treated.

CASE REPORT 2

The patient is a16 year-old obese male who initially complained of a bleeding mass at the tip of his coccyx diagnosed as a pilonidal cyst. The patient underwent initial excision after 10 weeks. After 13 months of the standard treatment of the pilonidal cyst, and another recurrence, the V.A.C.™ system was utilized. The patient had resolution of the wound in eight weeks time with a small area of drainage, which resolved with local care.

CASE REPORT 3

The patient is a 14 year-old female who was originally treated by another surgeon. Patient claimed to have been hit by a stick to the sacrum and fell on her coccyx prior to

developing a pilonidal cyst. Patient underwent excision of the cyst two months later but did not heal the site and had continued drainage from the area. The patient presented at our office three months later and underwent re-excision in two months. After 26 months of standard treatment of the pilonidal cyst, and after another recurrence, the V.A.C.™ system was utilized. The patient underwent final re-excision with intra-operative placement of the V.A.C.™ system. The patient's wound healed within eight weeks. The patient developed small perineal wounds and is currently managed with local wound care.

CASE REPORT 4

The patient is a 17 year-old obese male who presented to the office with a pilonidal cyst that was incised and drained in the office. Three months later the patient underwent initial surgical excision of the pilonidal cyst. Two weeks later, the patient developed minor bleeding from the incision site. After 16 months of standard treatment of the pilonidal cyst and another recurrence, the V.A.C.™ system was utilized (Fig. 1). The patient underwent re-excision with intra-operative placement of the V.A.C.™ system (Fig. 2 & 3). Within eight weeks of treatment with the wound V.A.C.™ system, the pilonidal cyst was successfully treated.

Figure 1

Figure 1: Recurrent draining pilonidal sinuses after excision

Figure 2

Figure 2: Sacral wound after wide local excision

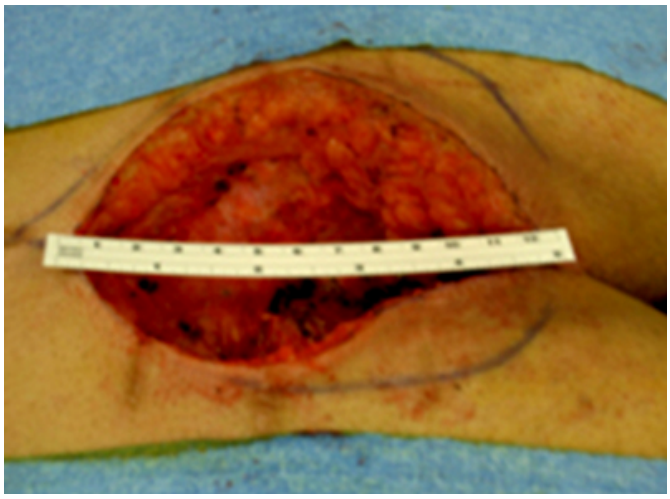
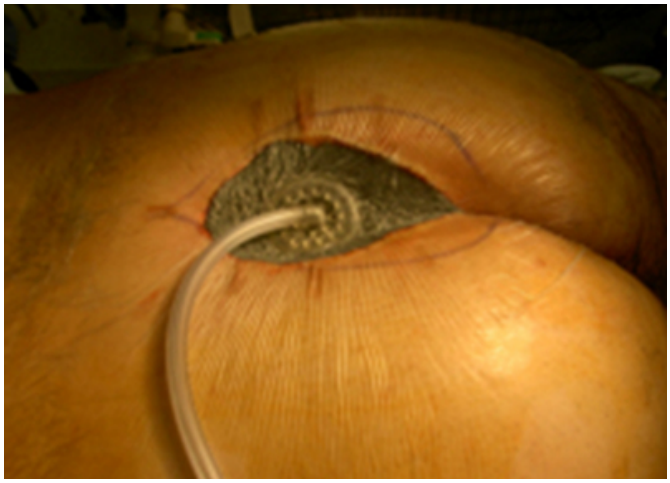


Figure 3

Figure 3: Sacral wound with VAC in place



DISCUSSION

Pilonidal disease is an acquired condition of hair follicles in the natal cleft. Mayo first described it in 1833[3] and later Hodges coined the term pilonidal disease in 1880[4]. The name originates from the terms “pilus” (hair) and “nidus” (nest); it is meant to describe a process that originates from a “nest of hair”. The disease has a peak incidence between 16 and 20 years[5] with incidence higher in hirsute obese individuals. The number of patients treated annually is between 40,000 to 70,000[6]. Treatment involves excising the tracts with associated affected tissue. Recurrence for primary chronic pilonidal sinus excision has been reported from 6-8%[7]. The lowest recurrence rates of 6% were obtained with fistulotomy with marsupialisation of the sinus tract[7]. Other sources claim recurrence rates as high as 50%[6].

The healing of wounds in this area presents unique challenges. Dressings are difficult to secure, risks of infection are high due to fecal soiling and adequate wound care after excision with primary closure may require near total immobilization of the patient.

Recurrent pilonidal sinus disease presents as a persistent, midline, non-healing wound. Originally recurrence was thought to be due to inadequate excision although chronic midline tension has been thought to be the cause recently[5]. Patient with recurrent pilonidal disease can have the VAC device placed intra-operatively, after excision and then be managed as an outpatient with dressing changes every 3 days by a visiting nurse.

The VAC device consists of a polyurethane foam and clear adhesive dressing with a connecting tube to a canister and the VAC unit. The drape is vapor permeable to facilitate gas exchange, which is important especially when treating anaerobic wound infections. The exudates are collected into a small reservoir that is changed as required. The mini VAC has been introduced recently. This device is battery operated and portable. Thus this reduces hospital stay and facilitates return of the patient to functional status for activities of daily living. The theory behind the use of sub-atmospheric pressure is that 80-90 % of wound closure is caused by wound contraction by myofibroblasts and the VAC device helps by exerting a centripetal force.

The VAC is a system that applies controlled negative sub-atmospheric pressure to wounds. This method was shown to enhance healing and promote closure of open wounds[1]. The technique has been found to decrease tissue edema, increase blood flow and granulation tissue formation[2]. Wounds treated with a negative pressure of 125mm of Hg have been shown to have the highest increase in blood flow and granulation tissue formation as compared with other pressures[2,8].

In the original animal studies with the VAC, dressings were changed daily and showed decrease in bacterial counts[2]. A conflicting study showed that the bacterial counts had increased with the VAC therapy[9]. In this study, although bacterial counts were higher, the beneficial effect of the VAC on the wound was appreciated. This technique provides both adequate wound drainage and a humid environment necessary for wound healing with the benefits of both open and closed (moist) wound healing[10].

SUMMARY

The VAC offers a safe and reliable alternative to older methods of managing the large wounds of recurrent pilonidal sinuses. It affords fewer dressing changes, allows mobility and permits earlier return to activities of daily living. A prospective, randomized study is needed to compare VAC treatment with conventional treatment modalities for recurrent pilonidal sinuses but is difficult because it is unlikely to be able to successfully recruit patients into the traditional treatment method. However, based on our small series of patients, the wound Vacuum-assisted Closure (V.A.C.™) system significantly reduced the treatment time compared to the standard surgical treatment with local wound care (eight weeks vs. 11 to 24 months, respectively). The V.A.C.™ system also successfully healed the complex pilonidal wounds in our patients after several unsuccessful surgical excisions and local wound care. Wound Vacuum-assisted Closure (V.A.C. ™) system is recommended to be used in any patient with complex or recurrent pilonidal cyst.

CORRESPONDENCE TO

Vinod A Sebastian M.D.
Department of Surgery
Monmouth Medical Center
300 Second Avenue
Long Branch, NJ-07740

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Author Information

Saad A. Saad, M.D., FACS, FAAP
Department of Pediatric Surgery, Monmouth Medical Center

Emil Shakov, M.D.
Department of Surgery, Monmouth Medical Center

Vinod Sebastian, M.D.
Department of Surgery, Monmouth Medical Center

Adam Saad, M.D.
Department of Surgery, Drexel Medical School