CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 11 (2015) 87–90

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

# Vacuum-assisted closure for open perineal wound after abdominoperineal resection

Shiki Fujino, Norikatsu Miyoshi*, Masayuki Ohue, Shingo Noura, Yoshiyuki Fujiwara, Masahiko Yano, Masahiko Higashiyama, Masato Sakon

*Department of Surgery, Osaka Medical Center for Cancer and Cardiovascular Diseases, 1-3-3 Nakamichi, Higashinari-ku, Osaka 537-8511, Japan*

ARTICLE INFO

*Article history:*
Received 11 February 2015
Received in revised form 24 April 2015
Accepted 26 April 2015
Available online 29 April 2015

*Keywords:*
VAC
APR
SSI
Vacuum assisted closure
Perineal wound
Abdominoperineal resection

ABSTRACT

*INTRODUCTION:* In colorectal cancer surgery, surgical site infection (SSI) is a common complication, and especially, perineal wound complications after abdominoperineal resection (APR) remain to be serious clinical problems. Vacuum-assisted closure (VAC) therapy was first reported in another surgical field in 1997, and it is useful for treating complex wounds because it promotes granulation. VAC therapy has been recently used for open abdominal wounds. We introduced VAC for treating open perineal wound of APR and report the usefulness of it.

*PRESENTATION OF CASE:* We treated four patients. Firstly, in cases 1 and 2, we introduced VAC therapy to the management of SSI of the perineal wound after APR, and it was useful to control postoperative perineal wound infection. And also, in cases 3 and 4, we introduced VAC therapy to prevent perineal wound infection. Perineal wound infection did not happen.

*DISCUSSION:* A vertical rectus abdominis myocutaneous flap has been reported to decrease perineal wound complications including pelvic abscess and open perineal wound; however it results in significant operative blood loss, increased operative time, and additional surgical complications. In our cases, there were no complications relating to VAC therapy and it promoted rapid wound healing. Our results suggested that it is an effective treatment for APR in a high-risk case of an open perineal wound.

*CONCLUSION:* VAC therapy is a less invasive method and a useful treatment for open perineal wound of APR.



## 1. Introduction

In colorectal cancer surgery, surgical site infection (SSI) is a common complication, and various procedures have been attempted to decrease its incidence. Especially, perineal wound complications, including pelvic abscesses and open perineal wound infections, after abdominoperineal resection (APR) remain to be serious clinical problems; SSIs occur in more than 40% of the cases according to several reports [1,2]. We retrospectively studied the details of eighty-three patients who underwent APR at Osaka Medical Center for Cancer and Cardiovascular Diseases (OMCCD) from 2003 to 2013; pelvic abscess occurred in 23 patients (28%) and open perineal wound infection occurred in 39 patients (47%). SSIs are associated with a long hospital stay, decreasing the quality of life of the patient. A vertical rectus abdominis myocutaneous flap has been reported to decrease perineal wound complications [2]. Although this flap is very useful for the reconstruction of the pelvic defect resulting from APR, it results in significant operative blood loss, increased operative time, and additional surgical complications arising from the use of the normal tissue used for the reconstruction.

Vacuum-assisted closure (VAC) was first reported in another surgical field in 1997 [3]. It has become a common modality for treating complex wounds, assisting secondary wound healing. The mechanism for assisting wound healing is as follows: an open-cell foam placed in the wound cavity with a controlled negative pressure is able to decrease bacterial colonization, tissue edema, and wound tension, while increasing blood flow. It leads to the promotion of better tissue granulation. Recently, VAC has been used for the treatment of open abdominal wounds, and shown to decrease the operative time for abdominal wall reconstruction [4]. We introduced VAC for treating open perineal wounds after APR. Here, we report four cases in which VAC therapy (VAC; KCI International, San Antonio, TX, USA) was successful for treating the perineal wound after APR. There are few reports of VAC therapy for treating open perineal wounds after APR, so that we mention the usefulness of it.

* Corresponding author. Tel.: +81 6 6972 1181; fax: +81 6 6981 8005.
*E-mail address:* miyosi-no@mc.pref.osaka.jp (N. Miyoshi).

http://dx.doi.org/10.1016/j.ijscr.2015.04.031

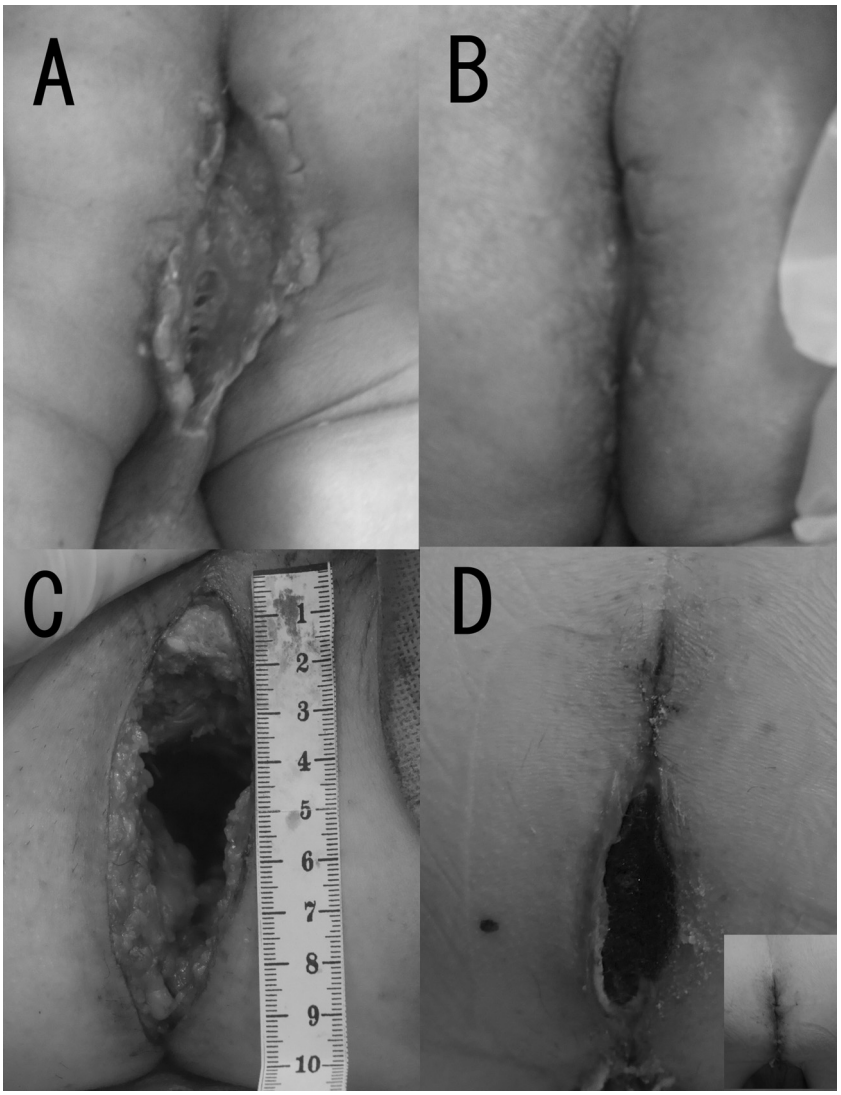


**Fig. 1.** The perineal wound pictures of cases 1 and 3.
In case 1, the open perineal wound was observed and VAC therapy was started on POD 30 (A); the wound was cured on POD 39 (B). In case 3, the perineal defect after APR was observed (C) and VAC therapy was started on POD 0. The wound became smaller and was sutured on POD 6 (D).

## 2. Presentation of case

From June 2013 to December 2014, four patients underwent APR and VAC therapy at OMCCD and the clinical information was summarized in Table 1. In cases 1 and 3, traditional APR was performed. In cases 2 and 4, the operation for recurrence was performed. In all cases, open surgery was performed, and the pelvic cavity could not be filled with the greater omentum.

In case 1, APR with urinary tract impairment was performed and an open abdominal wound was observed around 3 weeks after the operation (Fig. 1A). No organs were exposed through the open perineal wound. Although the wound was washed with water every day, it was hard to control infection. Then, VAC therapy, in which an open-cell foam (GranuFoam; KCI International, San Antonio, TX) was placed in the open wound, was introduced on postoperative day (POD) 30. On POD 39, the wound infection was well

**Table 1**
Clinical characteristics and perioperative factors of all 4 patients.

| Case No. | Sex | Age | Rectal tumor status | Preoperative chemotherapy/ radiotherapy | Other organs resected with tumor | Open perineal wound size ($cm^3$) | Organ exposed to wound cavity | VAC treatment period (POD[a]) | Postoperative hospital stay (POD[a]) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Male | 74 | Primary rectal cancer | No/No | None | $15 \times 4 \times 3\,cm^3$ | None | 30–39 | 59 |
| 2 | Female | 53 | Re-recurrence of rectal cancer (invasion to vagina and right gluteus muscle) | Yes/No | Vagina right gluteus muscle | $10 \times 10 \times 10\,cm^3$ | Bladder | 30–55 | 57 |
| 3 | Male | 73 | Primary anorectal melanoma | No/No | None | $10 \times 8 \times 3\,cm^3$ | None | 0–6 | 29 |
| 4 | Female | 34 | Recurrence of rectal cancer (invasion to vagina) | Yes/No | Vagina | $20 \times 20 \times 10\,cm^3$ | Vagina | 0–27 | 36 |

[a] POD, postoperative day.