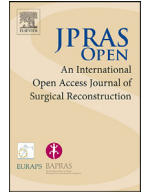




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Short Communication

Gluteal fold flap for pelvic and perineal reconstruction following total pelvic exenteration ☆

Shoichi Ishikawa^{a,*}, Hideki Yokogawa^b, Tomoya Sato^a,
Eiko Hirokawa^b, Shigeru Ichioka^a, Takashi Nakatsuka^a

^a Department of Plastic and Reconstructive Surgery, Saitama Medical University, 38 Morohongo, Moroyama, Iruma-gun, Saitama, Japan

^b Department of Plastic and Reconstructive Surgery, Saitama Medical University International Medical Center, 1397-1 Yamane, Hidaka, Saitama, Japan

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ABSTRACT

Background: The rectus abdominis myocutaneous flap has been used as the first choice for pelvic and perineal reconstruction. However, due to previous abdominal surgery and multiple stoma placements in our patients, the rectus abdominis myocutaneous flap could not be used for such reconstruction. Here, we describe the use of bilateral gluteal fold flaps for pelvic and perineal reconstruction following total pelvic exenteration to treat recurrent cervical cancer.

Methods: We performed three bilateral gluteal fold flap operations for perineal reconstruction in three patients between 2008 and 2011. The cause of the perineal defect was total pelvic exenteration, which was performed to treat recurrent cervical cancer in all patients.

Results: All flaps completely survived and there were no severe postoperative complication. Good cosmetic results were achieved in all patients.

Conclusions: The gluteal fold flap is a useful option for reconstructing extensive pelvic and perial defect after total pelvic exenteration

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* Corresponding author.

E-mail address: isika00@saitama-med.ac.jp (S. Ishikawa).

because of sufficient soft tissue volume, reliable blood supply, cosmetic results and minimal donor-site morbidity.

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Introduction

The use of various flaps for the reconstruction following pelvic exenteration have been reported. Especially, the rectus abdominis myocutaneous flap have been widely used.¹ However, if the rectus abdominis flap is unavailable, the reconstruction following total pelvic exenteration is challenging.

The gluteal fold flap was reported as “lotus petal flap” by Yii and Niranjana.² The usefulness of the gluteal fold flap for perineal reconstruction, especially after radical vulvectomy has been well described.^{3,4} There have been no reports of using these flaps following total pelvic exenteration.

In our patients, we could not use the rectus abdominis flap because all the patients had undergone previous abdominal surgery and needed colostomy and urostomy. We present successful reconstruction with bilateral gluteal fold flaps following total pelvic exenteration, in three patients.

Patients and methods

Three patients underwent pelvic and perineal reconstruction with the use of bilateral gluteal fold flaps following total pelvic exenteration and extensive perineal resection to treat recurrent cervical cancer between 2008 and 2011 at Saitama Medical University International Medical Center. All patients had undergone total hysterectomy for the treatment of primary cervical cancer. Prior to total pelvic exenteration, all the patients received radiotherapy and two patients also received chemotherapy. A summary of the patients is presented in Table 1.

Surgical technique

In the operating room, the patient was placed in the lithotomy position. Total pelvic exenteration and extensive perineal resection with en bloc resection of the rectum, bladder, vagina and anus were performed. After total pelvic exenteration, colostomy and urostomy were undertaken. The gluteal fold flaps based on several perforators were designed on both sides, according to the size of the perineal defect (Figure 1a). These two flaps were of the same size to reconstruct symmetrical pudendal cleft. The flaps were raised from the lateral side above the fascia of the gluteus maximus muscle (Figure 1b). The edge of the flaps were de-epithelialized. The de-epithelialized part and subcutaneous tissue were transposed into the defect to fill the pelvic cavity (Figure 1c). Two flaps were sutured to reconstruct the natural external appearance of the perineum (Figure 1d). The donor sites were primarily closed in all cases. Suction tubes were placed under the flaps and donor sites.

Table 1
Summary of patients.

Patient	Age (yr)	Preoperative radiotherapy/chemotherapy	Diagnosis	Procedure	Size of each flap (cm)	Complications	Follow-up (mo)
1	38	Y/Y	Recurrent cervical cancer	Total pelvic exenteration	14 × 6	None	15
2	62	Y/N	Recurrent cervical cancer	Total pelvic exenteration	14 × 8	None	94
3	31	Y/Y	Recurrent cervical cancer	Total pelvic exenteration	16 × 8	Wound dehiscence	18

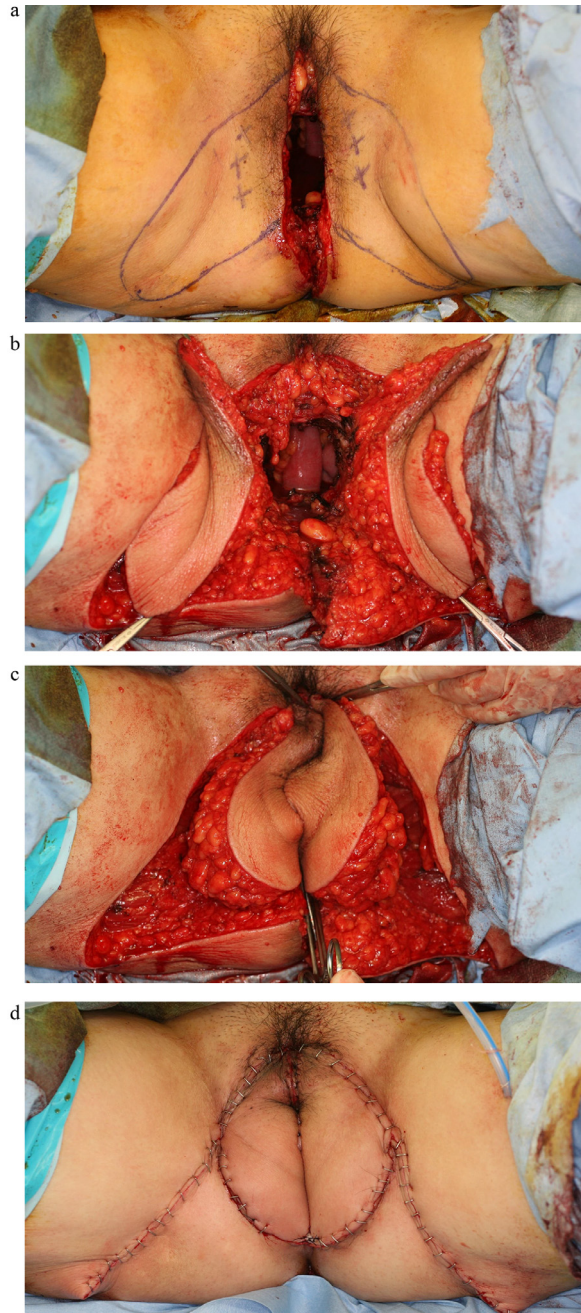


Figure 1. The patient in case 2, a 62-year-old woman with recurrent cervical cancer, underwent total pelvic exenteration with extensive perineal resection and bilateral gluteal flap.

a. Pelvic and perineal defect and flap design. The size of each flap was 14×8 cm.

b. The bilateral gluteal fold flaps were above the fascia of the gluteus maximus muscle.

c. The distal edges of the flaps were de-epithelialized and folded into the defect to fill the pelvic cavity.

d. The symmetrical and deep pudendal cleft was reconstructed. The donor site scars are at the gluteal folds.

Postoperative care

The patients kept their thighs abducted in bed to avoid pressure on the perineal region for the first 7 days. They were permitted to walk from the seventh day and to sit from the fourteenth day, postoperatively.

Results

The patients were followed for 15–94 months. All flaps completely survived. No severe pelvic and perineal complication occurred. Postoperative complications requiring further surgery occurred in one patient, who underwent resuture surgery under local anesthesia for minor wound dehiscence. A symmetrical external appearance of the perineum was achieved in all patients. Revision for esthetic or functional problems was not necessary for any patient.

Discussion

Several flaps, such as the rectus abdominis flap, the deep inferior epigastric perforator flap, the gracilis myocutaneous flap, the anterolateral thigh flap have been reported for the pelvic reconstruction.^{1,5–8} Among them, the rectus abdominis myocutaneous flap has been preferred method. The major advantage of this flap is adequate subcutaneous tissue to fill the pelvic cavity and sufficient skin flap to cover the perineal defect. However, as detailed above, the rectus abdominis flap was unavailable in the case of our patients. We used bilateral gluteal fold flaps following total pelvic exenteration.

Dead space in the pelvis is the most challenging issue related to reconstruction following total pelvic exenteration. We performed de-epithelialization of the edge of bilateral flaps and transposed into the pelvic cavity. The method was reported by Hashimoto.⁹ We observed that the dead space in the pelvis was filled with the soft tissue of this flap from the abdominal cavity. After the operation, severe pelvic complication was not occurred.

The gluteal fold flap has several advantages. First, the blood supply of the gluteal fold flap is reliable. This flap is based on several perforators from internal pudendal artery in the triangle formed by the ischial tuberosity, anus, and vaginal orifice. On the other hand, the blood supply of the distal area of the flap from abdominal or thigh is sometimes unstable because the pedicle vessels are distant from the perineal region. Second, the excellent cosmetic result is achieved for the perineal reconstruction. The perineal defect following extensive perineal resection was large and complex. A symmetrical and deep pudendal cleft is achieved by suturing the bilateral gluteal fold flaps and adjusting the subcutaneous volume of the flap to suit the defect in the perineum. Third, donor site scars of this flap are aesthetic. The scars of the donor site are concealed in the gluteal fold and minimal because the pedicle vessels are nearby the perineal region. Fourth, this flap is easy and safe to elevate because it is unnecessary to skeletonize the perforator and dissect the muscle.

There have been a few reports of using bilateral gluteal fold flaps after the abdominoperineal resection and posterior pelvic exenteration.^{9,10} However, to our knowledge, there are no reports on their use following total pelvic exenteration. In the present three cases, we were able to achieve the reconstruction with no severe postoperative complication and excellent aesthetic results. However, as the adipose tissue of the flap may be not enough to fill the pelvis dead space in slim patients, it is necessary to consider the use of the other flaps.

Conclusion

We report here the successful reconstruction of pelvic and perineal defect following total pelvic exenteration and extensive perineal resection with bilateral gluteal fold flaps. This method could be a versatile option for pelvic and perineal reconstruction following total pelvic exenteration.

Conflict of interest

None

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