

Gluteal-fold adipofascial perforator flap transposition for rectourethral fistula reconstruction

Keywords: Rectourethral fistula, rconstruction, gluteal-fold perforator flap, adipofascial flap, perforator flap

Abstract: Objective: If a rectourinary fistula does not close spontaneously, it requires surgical closure. We present our experience of rectourethral fistula reconstruction using a gluteal-fold perforator flap, resulting in a successful outcome. Patient and Methods: The present was a 64-year-old man with prostate cancer who underwent radical prostatectomy. However, he developed rectourinary fistula, which required surgical closure. A dissection was undertaken to divide the fistula tract, and the rectal and urethral defect were closed. A 12.0x3.0-cm gluteal-fold adipofascial perforator flap was harvested and placed in the space between the rectum and urethra. Results: The viability of all flaps was favorable, without infection or necrosis. The patient could walk the next day, and was discharged two weeks later without fecaluria or liquid stool. Conclusions: We conclude that the gluteal-fold adipofascial perforator flap offers excellent functional advantages in rectourethral fistula reconstruction with minimal morbidity at the donor site.

1 Abstract

2 **Objective:** If a rectourinary fistula does not close spontaneously, it requires surgical

3 closure. We present our experience of rectourethral fistula reconstruction using a

4 gluteal-fold perforator flap, resulting in a successful outcome. **Patient and Methods:**

5 The patient was a 64-year-old man with prostate cancer who underwent radical

6 prostatectomy. However, he developed rectourinary fistula, which required surgical

7 closure. A dissection was undertaken to divide the fistula tract, and the rectal and

8 urethral defect were closed. A 12.0x3.0-cm gluteal-fold adipofascial perforator flap

9 was harvested and placed in the space between the rectum and urethra. **Results:**

10 The viability of all flap was favorable, without infection or necrosis. The patient

11 could walk the next day, and was discharged two weeks later without fecaluria or

12 liquid stool. **Conclusions:** We conclude that the gluteal-fold adipofascial perforator

13 flap offers excellent functional advantages in rectourethral fistula reconstruction with

14 minimal morbidity at the donor site.

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18

Introduction

19 Rectourinary fistula develops in 0.6 to 9% of patients after radical prostatectomy,
20 and seldom spontaneously heals. Generally, initial treatment required colostomy,
21 but this fails in more than 50% and these patients require surgical fistula closure [1].
22 Various surgical procedures have been suggested for the repair of these fistulas [2].
23 A major technique to prevent recurrent rectourinary fistula has been with gracilis
24 muscle interposition [3]. However, it leads to high-level morbidity at the donor site,
25 including a long scar, wide resection area, and muscle loss.

26 We present a case of rectourethral fistula reconstructed with a gluteal-fold
27 perforator flap, resulting in a successful outcome.

28

Patient and Methods

29 A 64-year-old man was diagnosed with prostate cancer on biopsy and underwent
30 radical prostatectomy. On the 5th day after surgery, he developed fecaluria and
31 liquid stool. Retrograde cystourethrography showed the filling of the bladder and
32 the contrast in the rectum, which suggested the development of a rectourethral

33 fistula (Figure 1). Although we created a colon stoma, the fistula had remained for
34 7 months. As liquid stool continued and did not decrease, surgical closure using a
35 gluteal-fold adipofascial perforator flap was planned.

36 The patient was placed in a supine position with the legs abducted. A horizontal
37 incision was made between the anus and scrotum. The dissection was undertaken
38 to divide the fistula tract, and all inflamed tissue was removed. The rectal and
39 urethral defect were closed (Figure 2). The location of the cutaneous perforator
40 vessels from the internal pudendal artery were identified on the medial side of the
41 ischial tuberosity preoperatively using a Doppler flowmeter. The adipofascial flap
42 was designed to include these points according to the size of the space between
43 the rectum and bladder.

44 Dissection of the flap was carried out lateral to medial in the fascial plane until the
45 perforator vessel could be seen. A 12.0x3.0-cm adipofascial flap including a
46 7.0x3.0-cm hatchet-shaped skin flap was harvested (Figure 3). The adipofascial
47 flap was rotated and placed in the space between the rectum and urethra (Figures 4,

48 5, 6).

49 The viability of all flap was favorable, without infection or necrosis. Computed
50 tomography after 3 weeks showed that the adipofascial flap filled the soft tissue
51 defect between the rectum and bladder, and resolved the rectourinary fistula
52 (Figure 7). The patient could walk the next day, and was discharged two weeks
53 later without fecaluria or liquid stool. The urinary bladder catheter was removed 4
54 weeks after surgery. Two months later, the patient did not complain of
55 rectourethral fistula symptoms.

56 DISCUSSION

57 Although rectourinary fistula after radical prostatectomy is rare, if it does not
58 spontaneously close after colostomy, surgical closure should be considered.
59 Various surgical procedures have been suggested for the repair of these fistulas [2].
60 The rectal flap method with the York-Mason approach and gracilis muscle flap
61 interposition are the most common procedures. For radiated cases, gracilis muscle
62 interposition may be preferred, because bringing viable tissue to interpose between

63 the rectum and urethra results in complete dissection between these two organs,
64 and both the rectal and urethral defects are repaired [1] . However, the gracilis
65 muscle is usually thin and the blood supply to the distal part of the muscle flap
66 becomes tenuous, which may lead to an insufficient flap volume to fill the cavity.
67 Furthermore, a gracilis muscle flap requires an extended incision for flap harvest
68 and mobilization [4].

69 The most significant advantage of the perforator flap is that there is no need to
70 sacrifice any main arteries; thus, there is minimal morbidity at the donor site [5].
71 Also, elevating the gracilis muscle flap sometimes causes prolonged sensory
72 disturbance of the medial thigh and gluteal regions, and the large muscle flap
73 involves a risk of developing hematoma [6]. On the other hand, the dissection of
74 adipofascial perforator flaps was carried out at a supra-fascial or fascial plane level,
75 bring free from nervous disturbance. Furthermore, the small incision reduced
76 intra-operative bleeding [6].
77 An ideal flap has a favorably vascularized skin paddle with the suitable thickness

78 and width as the wound, which minimizes negative impacts on walking, creates a
79 natural esthetic appearance, and only requires a single-stage operation [7]. A
80 gluteal-fold adipofascial perforator flap fully satisfies these requirements.

81 Furthermore, surgeon can harvest the flap in the same operative field without
82 position changing, which is another advantage.

83 We conclude that the gluteal-fold adipofascial perforator flap offers excellent
84 functional advantages in rectourethral fistula reconstruction, with minimal morbidity
85 at the donor site.

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88

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Figure Legends

110 Figure 1: Retrograde cystourethrography shows contrast fluid passing through
111 the rectum. (arrow ①: bladder, ②: rectum)

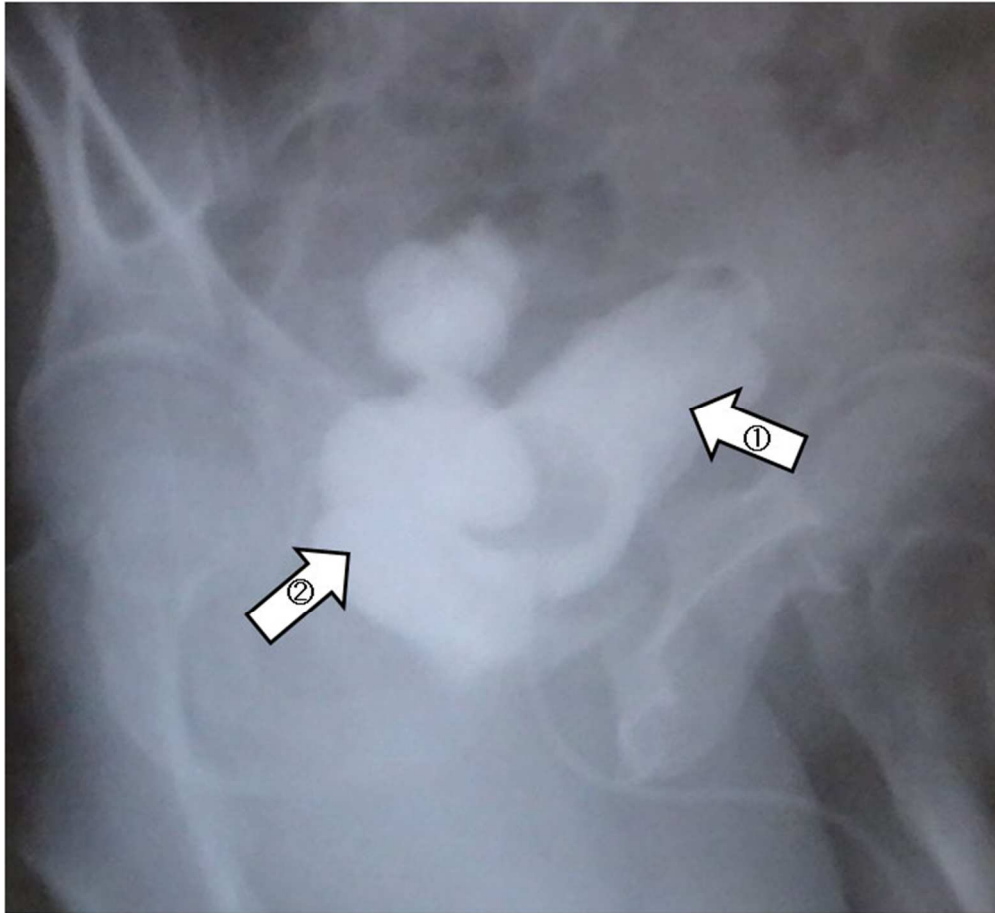
112 Figure 2: Intraoperative view showing dissection to divide the fistula tract and
113 the removal of all inflamed tissue.

114 Figure 3: Intraoperative view of the design of the gluteal-fold adipofascial
115 perforator flap (①: cutaneous perforator vessels from the internal pudendal
116 artery, ②: a 7.0x3.0-cm hatchet-shaped skin flap, ③: a 12.0x3.0-cm
117 adipofascial flap)

118 Figure 4: Intraoperative view of the elevated adipofascial perforator flap.

- 119 Figure 5: View of the reconstructed rectourinary fistula using the gluteal-fold
120 perforator flap just after surgery.
- 121 Figure 6: Diagram of gluteal-fold adipofascial perforator flap transposition for the
122 rectourethral fistula technique.
- 123 Figure 7: Computed tomography after 3 weeks showing adipofascial flap
124 (arrow) transposition to separate the rectum and bladder, and resolution of the
125 rectourinary fistula.

Figure 1



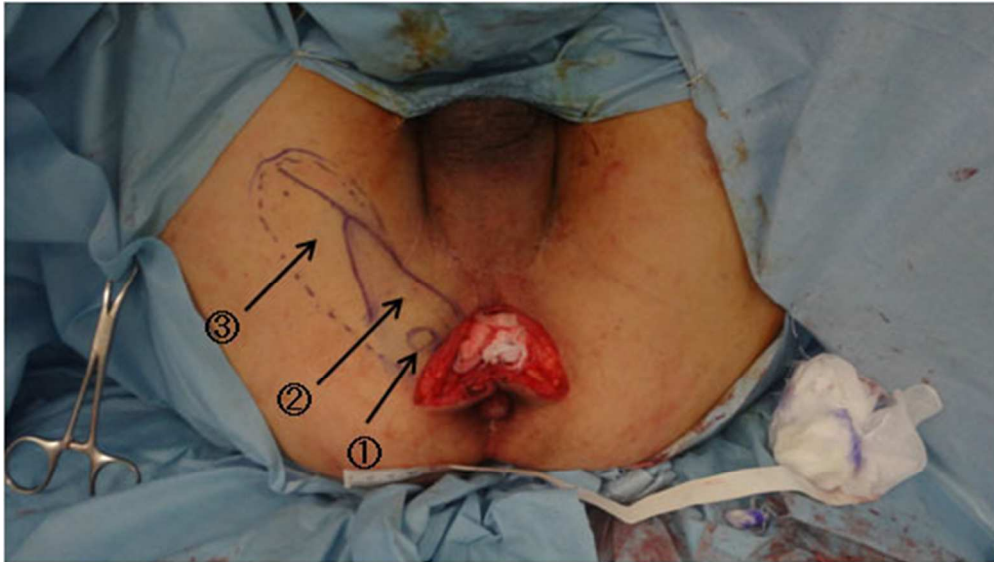
Retrograde cystourethrography shows contrast fluid passing through the rectum. (arrow ①: bladder, ②: rectum)
60x55mm (300 x 300 DPI)

Figure 2



Intraoperative view showing dissection to divide the fistula tract and the removal of all inflamed tissue.
78x44mm (300 x 300 DPI)

Figure 3



Intraoperative view of the design of the gluteal-fold adipofascial perforator flap (①: cutaneous perforator vessels from the internal pudendal artery, ②: a 7.0x3.0-cm hatchet-shaped skin flap, ③: a 12.0x3.0-cm adipofascial flap)
44x25mm (300 x 300 DPI)

Figure 4



Intraoperative view of the elevated adipofascial perforator flap.
78x44mm (300 x 300 DPI)

Figure 5



View of the reconstructed rectourinary fistula using the gluteal-fold perforator flap just after surgery.
78x44mm (300 x 300 DPI)

Figure 6

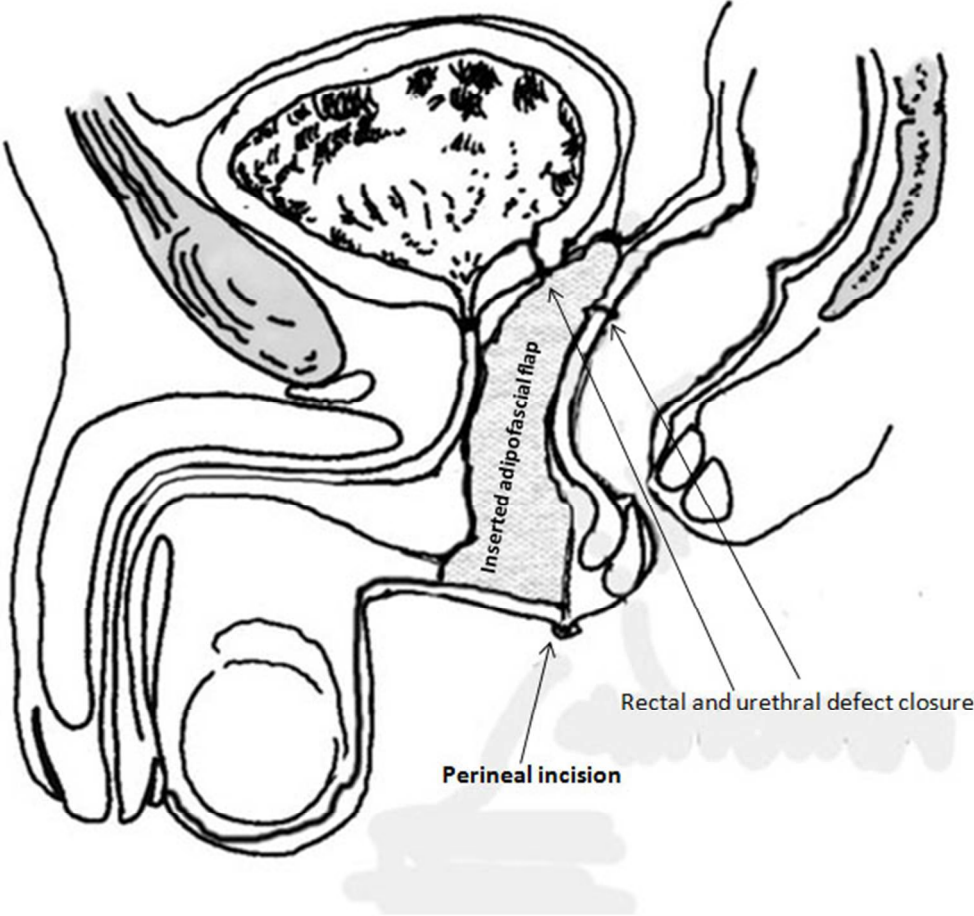
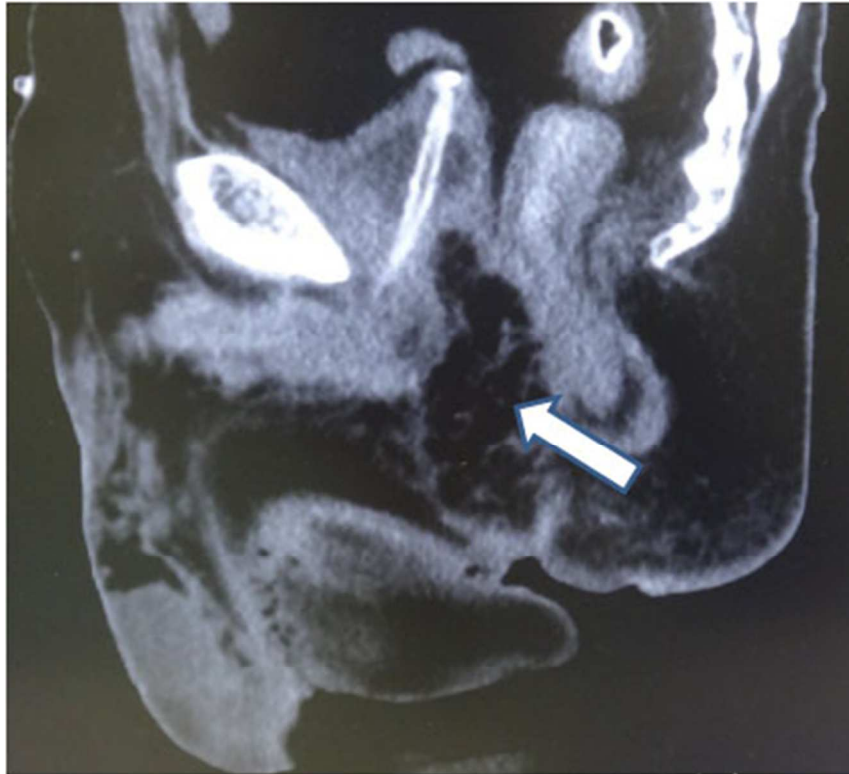


Diagram of gluteal-fold adipofascial perforator flap transposition for the rectourethral fistula technique.
217x201mm (72 x 72 DPI)

Figure 7



Computed tomography after 3 weeks showing adipofascial flap (arrow) transposition to separate the rectum and urethra, and resolution of the rectourinary fistula.
36x32mm (300 x 300 DPI)