International Journal of Surgery Case Reports 99 (2022) 107690

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.elsevier.com/locate/ijscr

Case report

Local skin flap procedure for repair of rectovaginal fistula: A case report

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ARTICLE INFO

Keywords:
Local flap
Rectovaginal fistula
Rectal surgery

ABSTRACT

Introduction: Rectovaginal fistula (RVF) is an increasingly common rectal surgery complication. Although various RVF closure operations have been reported, no one approach is considered ideal. Consequently, some patients must undergo more complex and technically challenging surgical procedures. We describe the successful use of simple local skin flap plasty for RVF repair.

Presentation of case: A 74-year-old Japanese female developed RVF after robot-assisted laparoscopic proctectomy with intersphincteric resection, hand-sewn coloanal anastomosis, and a temporary ileostomy. Three months later, reconstructive surgery was performed using a local flap. The fistula was successfully closed and healed well without complications.

Discussion: A local flap consists of the skin and subcutaneous tissue harvested from a nearby site that maintains its intrinsic blood supply.

Conclusion: This novel approach to RVF repair appears simple, effective, and safe.

1. Introduction

Rectovaginal fistula (RVF) is an epithelial lined tract between the rectum and vagina, and can result in recurrent infections of the vagina or lower urinary tract [1]. RVF is a common complication of rectal surgery, the incidence has been reported to be around 10 % [2–5]. A surgical repair will be needed if medical treatment cannot effectively remediate the condition. Although many surgical options are available, there is no definitive standard treatment option for RVF repair. Moreover, successful RVF repair is challenging, with a high failure rate due to several factors. The anovaginal septum is poorly vascularized and too thin to cover the fistula and achieve direct repair [6]. This is the first report of a simple local skin flap plasty for successful RVF repair after robot-assisted laparoscopic intersphincteric resection with hand-sewn anastomosis. This case report has been reported in line with the SCARE Criteria [7].

2. Case presentation

A 74-year-old Japanese female with rectal cancer was referred to our outpatient clinic. She was a homemaker, with no familiar, drug, psychosocial or personal histories. The rectal cancer categorized as cT1b cN0 cM0 was located 2 cm from the dentate line to the oral side. Following institutional standards, she received no radiation therapy or chemotherapy before surgery and underwent robot-assisted laparoscopic proctectomy with intersphincteric resection, hand-sewn coloanal an astomosis, and a temporary ileostomy. Her postoperative course was uneventful, and she was discharged on postoperative day 15. Pathological findings confirmed the preoperative findings (tumor: Rectum type 0-I, 45 × 28 mm in size, pT1b, pN0, pM0, Stage 1). Therefore, she was followed-up without adjuvant therapy.

Approximately 3 months after the first surgery, she developed RVF on the anterior wall of the rectum, ~4 cm from the anus, and on the posterior vaginal wall, ~1 cm from the vaginal opening. Each RVF had a diameter of ~1 cm. Gastrografin enema showed a contrast agent entering the vagina through the lower rectal fistula (Fig. 1).

Since she had already undergone a temporary ileostomy during the initial surgery, reconstructive surgery was undertaken. The patient was placed in a lithotomy position with skin markings. The entry hole on the rectal side was sutured with 3-0 vicryl, using a simple interrupted suture. For the fistula on the vaginal side, the entrance hole's mucosa was excised and then sutured with 3-0 vicryl and a simple interrupted suture. Following a 27 × 55 mm flap design, a local flap was rotated into the closed vaginal fistula through the subcutaneous tunnel, fixed, and finally closed with 3-0 vicryl sutures (Fig. 2). A plastic surgeon with 20-year experience performed the procedure. The total operative time was 1 h 25 min and the patient lost approximately 15 ml of blood. Her

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https://doi.org/10.1016/j.ijscr.2022.107690
Received 26 August 2022; Received in revised form 17 September 2022; Accepted 18 September 2022
Available online 19 September 2022

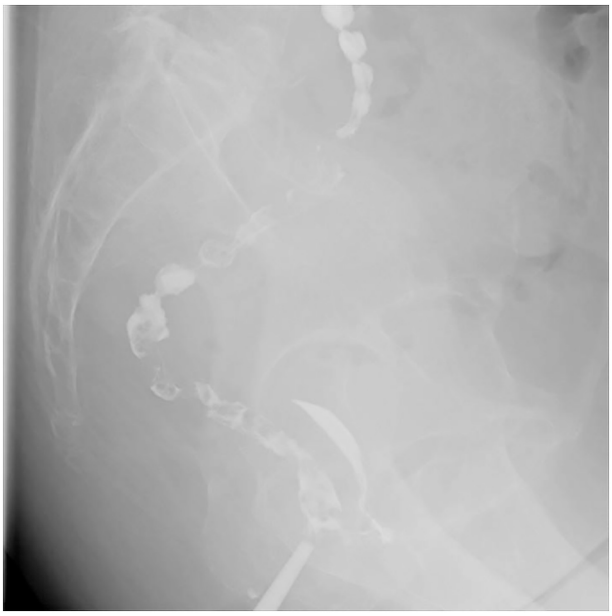

Fig. 1. Gastrografin enema identifying a rectovaginal fistula.

postoperative course was uneventful, and she was discharged on postoperative day 5.

After 2 weeks, her clinical symptoms had disappeared. After 2 months, a gastrografin enema showed no RVF recurrence (Fig. 3) and she was allowed to start a sexual life. However, during the COVID-19 pandemic, we were forced to re-schedule our activity giving priority to urgent procedures and non-deferrable oncological cases. Therefore, in this case, stoma closure was performed 7 months after the repair of rectovaginal fistula, following clinical and radiological verification of healing and non-recurrence. Three months after the second reconstructive surgery, the patient showed no signs of recurrence of RVF, no dysuria or postoperative pain.

3. Discussion

Although various operations have been reported, there is no universally agreed-upon method for RVF closure. Moreover, the literature on RVF principally focuses on "healing," and evidence levels are low [1,8]. Consequently, some patients must undergo subsequent surgical procedures that are more complex and technically challenging. These procedures potentially increase a patient's suffering and burden and likely prolong the hospital stay. Generally, less-invasive procedures are pursued first, and more complex and higher-risk procedures are attempted if those fail [6]. We describe a simple yet effective local flap RVF repair. We believe our method should be considered a potential definitive treatment for early-stage RVF before attempting higher-risk approaches.

The most common RVF repair procedure is transrectal surgery with an endorectal suture. The cure rate was previously reported as 62.5 % [8], which still requires investigation. Closure can also be achieved through the interposition of autologous tissue (Martius flap and gracilis muscle) or biomaterials. Autologous tissue is predominantly used to treat recurrent fistulas. The Multius procedure requires healthy tissue between the rectum and vagina and separating the rectum and vagina. Rectal fistula repair using a perineal approach with a Martius flap is technically demanding [9]. Gracilis interposition is much more complex and invasive than the Martius flap operation. A gracilis transposition flap is strongly recommended in cases of more than two repeated RVFs, or if the patient previously underwent radiation therapy [10]. Treatments using autologous tissue, such as Martius flap and gracilis interposition, have achieved high success rates; however, dyspareunia has been reported in 30 %–57 % [6]. Compared to these procedures, our local flap approach is effective and less invasive.

A local flap consists of the skin and subcutaneous tissue harvested from a site near a given defect. Such a flap maintains its intrinsic blood supply through the main supplier artery. Perforator arteries are cut when the flap is elevated; however, skin perfusion is completely supported by dermal superficial and deep arterial plexuses [11]. Tissue ischemia and necrosis, frequent postoperative complications, occur in the distal part, limiting the length-to-width ratio of local skin flaps to 1.5–2.0:1 [12]. Since the flap is taken from fresh tissue, the incision heals rapidly after suturing. In our experience, patients' symptoms improve rapidly and with little pain. The flap is commonly used in plastic surgery as a soft tissue substitute for repairing tracheocutaneous fistulas after tracheostomy [13–15].

In this study, we demonstrated for the first time that a local flap could be a treatment option for RVFs. Further study is required to determine the clinical importance of this finding.

4. Conclusion

We describe a case where a local skin flap procedure was used for RVF repair. Our novel approach is simple, less invasive, and produces reliably positive results.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Ethical approval

Ethics Committee approved the review of patient records.

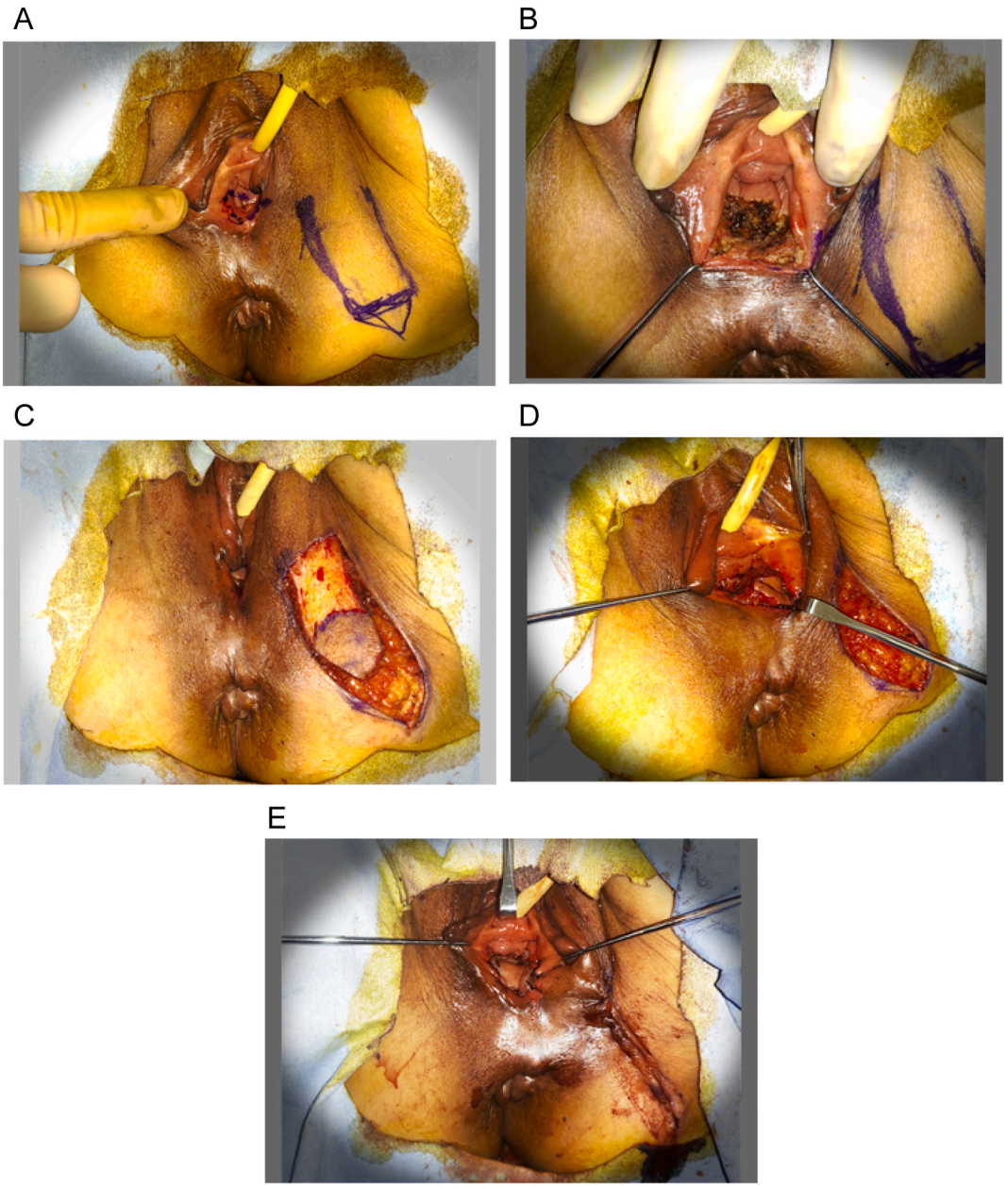

Fig. 2. a. Marking the local flap incision site.
b. Fistulectomy of the vaginal side
c. Denuded flap for the fistula; the epidermis is not included
d. The flap is rotated to cover the vaginal fistula through the subcutaneous tunnel.
e. After suturing.

Funding

None.

Guarantor

Hitoshi Ojima.

Research registration number

Our report was one of the most basic procedures in plastic surgery. Therefore, registration on the Research Registry is not required.

CRediT authorship contribution statement

Kazunosuke Yamada: Study concept, Data collection, Surgical therapy, Writing – original draft preparation,
Tarou Hirose: Surgical therapy,
Hitoshi Ojima: Editing and writing.

Declaration of competing interest

None.

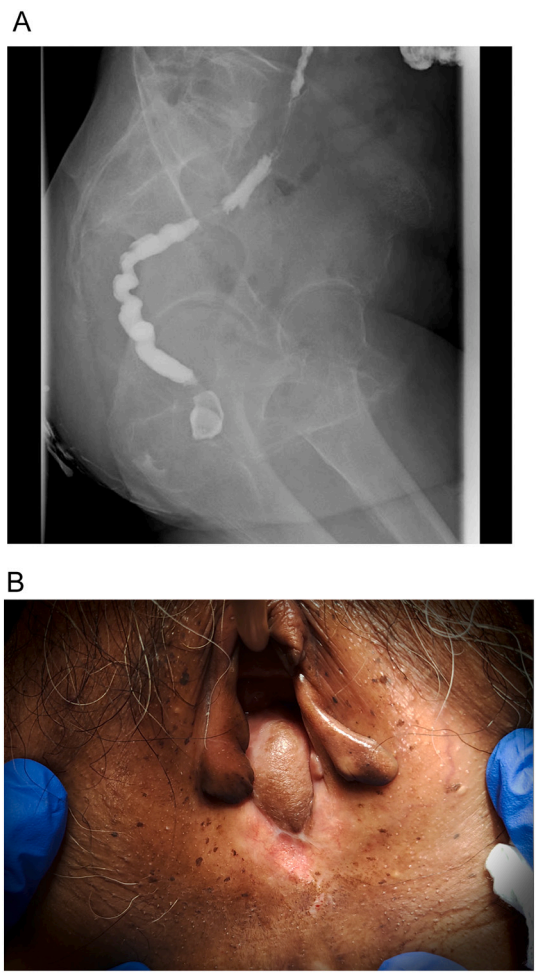

Fig. 3. (a) No fistula recurrence, and (b) healed recipient site two months after reconstructive surgery.

Acknowledgments

The authors would like to acknowledge Enago (www.enago.jp) for the English language review.

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