



Case report

Laparoscopic pelvic surgery after reconstructive surgery with vertical rectus abdominis muscle flap: A case report

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ABSTRACT

Introduction: Patients who have experienced vertical rectus abdominis muscle (VRAM) flap reconstruction are under risk of the abdominal incisional hernia (donor site hernia), and laparotomy increases the risk.

Presentation of the case: We present the case of a 71-year-old nulliparous woman who experienced radical vulvectomy against extramammary Paget disease and reconstructive surgery with VRAM flap 7 years ago and developed right ovarian tumor. In this case, right ovarian tumor was removed with laparoscopic surgery, instead of laparotomy, and the risk of incisional hernia was successfully minimized.

Discussion: Incisional (donor site) hernia after reconstructive surgery using VRAM flap has been reported in between 2 and 10%. While VRAM flap can fill larger amount of skin and subcutaneous tissue to recipient site, the risk of postoperative incisional hernia of abdominal wall is substantial.

Conclusion: Reconstructive surgery of with VRAM flap is required for extramammary vulvar Paget disease expanding wide range, and develops the risk of incisional hernia.

Laparoscopic surgery should be applied in patients who have experienced VRAM flap reconstruction and developed pelvic tumor for avoiding the risk of incisional hernia as long as it can be allowed on oncologic aspects such as recurrence.

1. Introduction

Paget disease of vulva is one of extramammary Paget disease, is a rare type and accounts for 1% of vulvar malignancies [1]. The lesion is sometimes widespread requiring not only wide local excision but also kinds of reconstructive surgery including myocutaneous flap [2].

In perineal wound reconstruction, inferior pedicled vertical rectus abdominis myocutaneous (VRAM) flap is has been used because VRAM flap is easily and safely harvested and it is big and thick enough to cover huge and/or deep, complex defects of recipient site without microsurgery [3]. VRAM flap however, contains a risk of donor site hernia (abdominal incisional hernia) because VRAM flap requires longitudinal incision of anterior fascia of rectus abdominis muscle [4]. Laparotomy against abdominal-pelvic tumor after VRAM flap reconstruction can increase the risk of incisional hernia while laparoscopic surgery may not.

We present the case of a 71-year-old woman in whom right ovarian tumor was laparoscopically resected and the risk of incisional hernia was successfully avoided after surgery of the Paget disease in the

perineum with perineal reconstruction using VRAM flap.

2. Presentation of the case

A 64-year-old Japanese woman with a diagnosis of vulvar Paget disease was introduced to our hospital from a clinic nearby for the treatment of the disease. She had experienced pruritus in her perineum for about fifteen years, and antifungal agent and topical corticosteroids had been prescribed, however, they had recently been not effective so much. She had past illnesses of bronchial asthma and pulmonary tuberculosis. On presentation, she was slender build with a height of 150 cm and weighing 43.6 kg. Vital signs were stable. General physical examination revealed no remarkable findings. Gynecological examination revealed a normal-sized uterus, palpable bilateral adnexa, an unremarkable vagina and an eczematoid appearance vulva with red background invading clitoris, bilateral labia minora and majora, and a part of skin of medial side of right femur (Fig. 1). Urethra and anus were intact. Enhance computed tomography (CT) showed no evidence of metastatic lesions. The result of blood examination was almost normal.

Abbreviations: RAM, rectus abdominis myocutaneous; VRAM, vertical rectus abdominis myocutaneous.

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Surgical resection was planned for the vast vulvar Paget disease after mapping biopsy which determined the surgical margin. A few weeks later, radical vulvectomy preserving urethra and anus was performed with reconstructive surgery of VRAM flap because tissue defect was huge and simple wound closure was unreasonable (Figs. 1 and 2). Histological examination confirmed extramammary Paget disease of vulva with a part of dermal micro-invasion and without involvement of surgical margin.

No signs of recurrence of Paget disease in perineum have been present for 6 years after the operation, however, right ovarian tumor was pointed out because she complained abdominal distension. T2-weighted magnetic resonance imaging (MRI) showed $10 \times 9 \times 8$ -cm, multilocular tumor without solid part suggesting benign, mucinous right ovarian tumor (Fig. 3). However, there was no evidence of incisional hernia of the donor site of VRAM flap. Because the tumor grew bigger, surgical resection of right ovarian tumor was planned when she was 71 years old. The risk of incisional hernia of the donor site of VRAM flap due to an laparotomy against the right ovarian tumor with longitudinal incision of anterior fascia of rectus abdominis muscle was supposed, therefore, laparoscopic surgery, which could decrease the risk of incisional hernia was adopted (after consultation with surgeons of plastic surgery). In the laparoscopic surgery with a 12-mm trocar at the navel for the laparoscope, and three 5-mm ports in the middle, left and right lower quadrants for the forceps as standard diamond trocar placement, right ovarian tumor and defect of lower half of right rectus abdominis muscle were observed (Fig. 4). Right ovarian tumor was resected and carried out through navel trocar site after aspiration of the contents of the tumor, followed by trocar site fascia closing. Total operation time was 1 h and 54 min and the total blood loss was 10 mL. Histological examination of right ovarian tumor confirmed mucinous cyst adenoma without malignant findings (Fig. 2D and E). During 1 year of follow-up, no signs of recurrence of Paget disease in perineum and incisional hernia have been present.

3. Discussion

In the current case report, we have presented a case with an ovarian tumor which was laparoscopically resected and the risk of incisional hernia of abdominal wall was successfully avoided after perineal reconstruction using VRAM flap.

It has been reported that incisional hernia occurs around 10 to 50% of patients with prior abdominal incision [5,6]. There are many risk factors of incisional hernia other than obesity as a most important patient factor; older age, diabetes mellitus, immunosuppressive therapy including glucocorticoid, smoking, chronic respiratory disease, malnutrition, and so on [7]. In this case, the patient was an elderly woman of 71 years old and has bronchial asthma of chronic respiratory disease as past illness. Furthermore, she had a history of reconstructive surgery using VRAM flap which was performed by vertical incision of anterior fascia of rectus abdominis muscle, which is the risk of incisional hernia postoperatively. If the right ovarian tumor had been removed by



Fig. 2. Findings of donor site of VRAM flap.

laparotomy, instead of laparoscopy, the potential risk of incisional hernia should have been increased.

Incisional (donor site) hernia after reconstructive surgery using VRAM flap has been reported in between 2 and 10% [4,8]. While VRAM flap can fill larger amount of skin and subcutaneous tissue to recipient site, the risk of postoperative incisional hernia of abdominal wall is substantial. It is known that using mesh for donor site closure cannot illuminate the incidence of incisional hernia completely [4].

The incidence of port site hernia after laparoscopic surgery is considerably lower than incisional hernia following laparotomy, although it widely ranges from 0 to 5% depending on the researched surgical field, the diameters, the number, and the access technique of inserted ports, and fascial closure of port site [9]. Especially, after gynecologic laparoscopic surgery, the incidence of port site hernia is quite low as reported around 0% [10]. As both laparotomy and laparoscopic surgeries share similar patient risk factors of postoperative hernia, laparoscopic surgery, instead of laparotomy, should be performed for gynecologic tumor as long as it can be allowed on oncologic aspects such as recurrence.

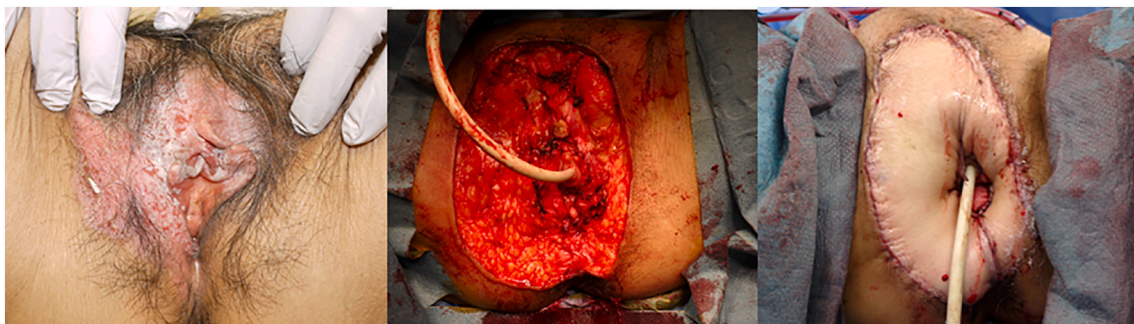


Fig. 1. Preoperative findings of Paget disease of vulva (left). Findings during operation (middle). Findings of recipient site of VRAM flap (right).

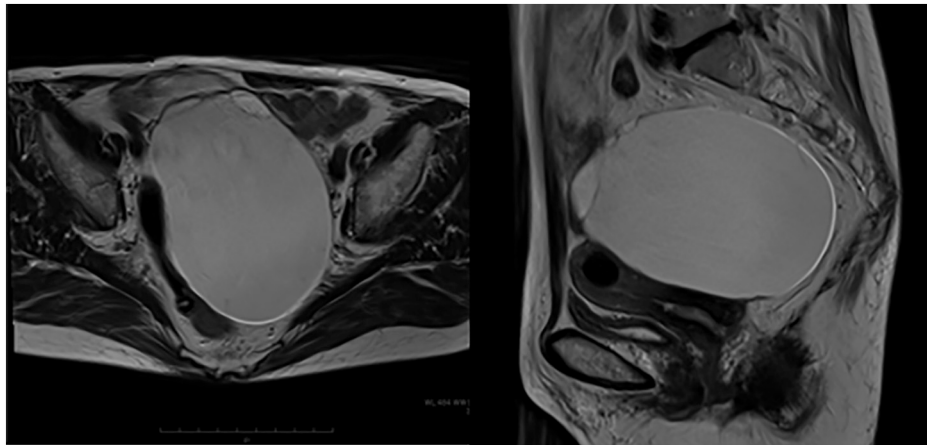


Fig. 3. Findings of T2-weighted magnetic resonance imaging of right ovarian tumor, horizontal section (left) and sagittal section (right).

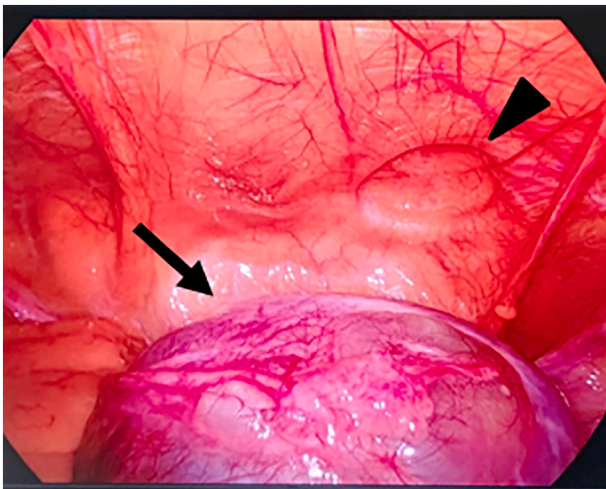


Fig. 4. Findings during laparoscopic surgery. Arrow; right ovarian tumor. Arrow head; defect of inferior half of rectus abdominis muscle.

4. Conclusion

Laparoscopic surgery should be applied especially when the risk of incisional hernia postoperative of laparotomy is relatively high. Reconstructive surgery with VRAM flap is required for extramammary vulvar Paget disease expanding wide range, and develops the risk of incisional (donor site) hernia, so similar cases to this may appear in the future. Our findings suggest that laparoscopic surgery might be a suitable option for gynecologic tumor of such situations.

Source of funding

None.

Ethical approval

This study was conducted in accordance with the Declaration of Helsinki, and the use of data/material is only for research purpose. Approval was obtained from the Ethics Committee of Nagoya University Graduate School of Medicine (reference number; 2017-0497). This work has been reported in line with the SCARE 2020 criteria [11].

Consent

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

Authors' contributions

Conception and Design of study; KiN, Data collection; KiN, YI, KK, Data Analysis and Interpretation; KiN, Manuscript preparation; KiN, KaN, HK.

Research registration (for case reports detailing a new surgical technique or new equipment/technology)

Not applicable.

Availability of data and materials

The datasets generated and/or analyzed during the current study are not publicly available due to individual privacy, but are available from the corresponding author on reasonable request.

Guarantor

Kimihiro Nishino.

Provenance and peer review

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Authorship declaration

All authors read and approved the manuscript.

Declaration of competing interest

The authors declare that they have no competing interests and accept no funding.

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