

Laparoscopic Resection of Vaginal Cuff Recurrence Following Surgery for Endometrial Cancer

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Objective: Vaginal cuff recurrence of endometrial cancer is generally managed with radiotherapy, and surgical reports are scarce. We report a laparoscopic resection technique for isolated vaginal cuff recurrence.

Methods: A 57-year-old woman underwent laparoscopic hysterectomy with bilateral salpingo-oophorectomy for grade 1 endometrioid carcinoma (FIGO stage IA) without adjuvant therapy. Nine months postoperatively, she was referred to our hospital with suspected vaginal cuff and pelvic lymph node recurrence. Imaging revealed no invasion of adjacent organs, and lymph nodes were deemed resectable.

Results: Laparoscopic resection of the vaginal cuff tumor and pelvic lymphadenectomy were performed. Following the principles of radical hysterectomy, the bilateral cardinal ligaments, uterosacral ligaments, and the anterior and posterior layers of the vesicouterine ligaments were divided. The vaginal canal was circumferentially incised, and the recurrent tumor was excised. As paravaginal tissue invasion was not suspected, the hypogastric nerves were preserved. Specimens were retrieved transvaginally in protective bags. Histopathological examination confirmed recurrent grade 3 endometrioid carcinoma with negative margins and pelvic nodal metastases. Postoperative chemotherapy was administered, and the patient remains disease-free.

Conclusion: This technique represents a valuable therapeutic option, providing safe and definitive resection for patients with vaginal cuff recurrence.

Key words: Endometrial cancer, Surgical resection, Laparoscopy, Vaginal recurrence

INTRODUCTION

Most endometrial carcinomas are detected at an early stage and have a favorable prognosis; however, 6–13% recur, usually within 3 years [1, 2]. Recurrence most commonly involves the vagina, followed by the pelvis, peritoneum, lymph nodes, and distant organs [3]. Vaginal cuff recurrence is one of the few potentially curable sites. Radiotherapy is the recommended treatment [4], whereas complete surgical excision can be considered in selected cases. Herein, we present a case of vaginal cuff recurrence that was successfully managed using laparoscopic resection.

MATERIALS AND METHODS

A 57-year-old nulligravid woman (BMI 32.0) was referred for recurrent endometrial cancer. She had previously undergone laparoscopic hysterectomy with bilateral salpingo-oophorectomy for stage IA, grade 1 endometrioid carcinoma without myometrial invasion, cervical involvement, and lymphovascular space invasion (LVSI). Peritoneal cytology was negative, and surgical margins were negative. No postoperative adjuvant therapy was administered in accordance with the latest clinical guidelines for endometrial cancer, because she was in a low-risk group for recurrence [4]. The

procedure was performed without the use of a uterine manipulator to avoid the risk of tumor dissemination, particularly via transtubal spillage into the peritoneal cavity.

Nine months later, a mobile 3-cm vaginal cuff mass was detected. Pelvic magnetic resonance imaging revealed a 3 × 2-cm lesion with restricted diffusion and no invasion of the bladder, rectum, or paravaginal tissue (Fig. 1). Contrast-enhanced computed tomography revealed a 12-mm left obturator lymph node but no distant metastasis. A biopsy confirmed recurrent endometrioid carcinoma. As the disease was confined to the vaginal cuff and regional nodes, and the tumor was clinically assessed as involving the deep stroma by pelvic examination rather than being superficial, laparoscopic resection of the cuff tumor with pelvic lymphadenectomy was planned according to radical hysterectomy principles to achieve complete resection and minimize tumor spillage. This study was conducted in accordance with the principles of the Declaration of Helsinki.

RESULTS

Vaginal mucosal closure

A 3-cm recurrent tumor was identified in the vaginal cuff. Circumferential traction sutures were placed

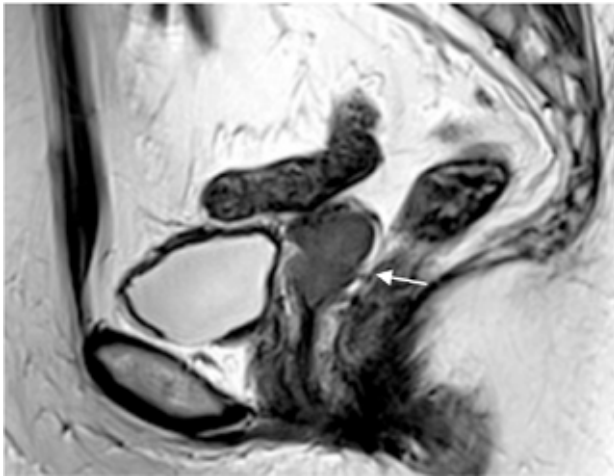


Fig. 1 Sagittal T2-weighted magnetic resonance image showing a 3 × 2 cm low-signal recurrent tumor at the vaginal cuff (arrow indicates the recurrent tumor).



Fig. 2 After incising the vaginal mucosa with a sharp scalpel, the mucosa was dissected and continuously sutured with 0-Vicryl to completely cover the tumor.

on the vaginal wall, approximately 3 cm distal to the tumor. After local anesthesia was administered, the vaginal mucosa was incised using a scalpel, dissected, and then closed with a continuous suture to completely cover the tumor (Fig. 2).

Transition to laparoscopy and pelvic lymphadenectomy

In addition to the diamond-shaped trocar placement, an auxiliary trocar was inserted into the left upper abdomen for the traction forceps. Bilateral pelvic lymphadenectomy was performed and the retrieved lymph nodes were placed in protective bags.

Management of the cardinal and uterosacral ligaments

The umbilical ligament was identified and the uterine artery was ligated and divided. The ureters were isolated from the retroperitoneum, and the pararectal spaces (Okabayashi and Latzko) were developed to identify the hypogastric nerve. The deep uterine vein was identified and divided, and the cardinal ligament was transected. The uterosacral ligament was subsequently transected with preservation of the hypogastric nerve. (Fig. 3).

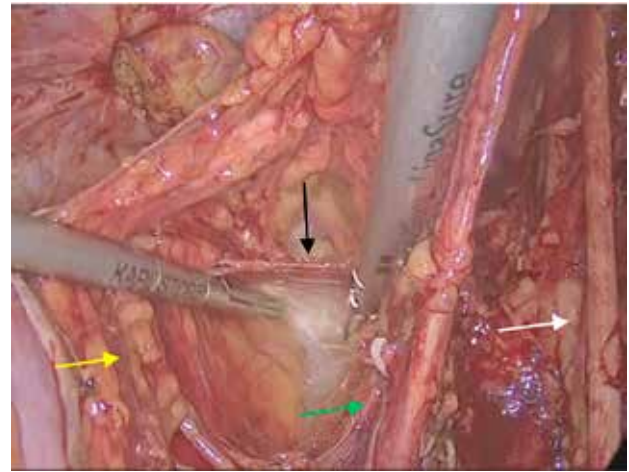


Fig. 3 Laparoscopic view showing the developed vesicouterine and rectouterine spaces with exposure of the right cardinal ligament (black arrow indicates the cardinal ligament, yellow arrow the ureter, green arrow the lateral umbilical ligament, and white arrow the obturator nerve).

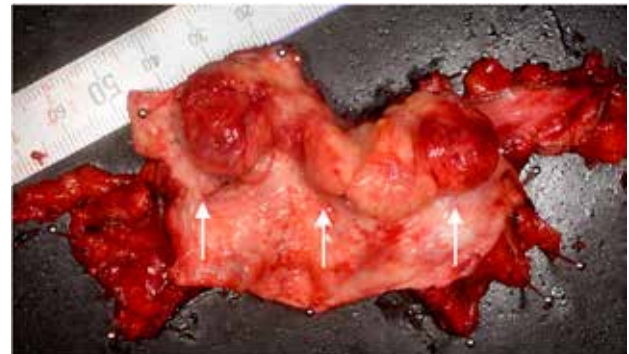


Fig. 4 Macroscopic view of the resected specimen showing a 3-cm recurrent tumor at the vaginal cuff.

Dissection of the vesicouterine peritoneum and bladder pillars

As the vesicouterine peritoneum and pouch of Douglas had been sutured in the previous surgery, the bladder–peritoneum boundary was obscured. Tension was applied vaginally with a gauze, the peritoneum was incised, and the bladder was dissected caudally. The bladder was sufficiently mobilized caudally, and the anterior and posterior layers of the vesicouterine ligament were transected.

Vaginal incision and specimen retrieval

A circumferential incision was made around the vaginal canal to prevent the opening of the vaginal mucosal closure and the recurrent tumor was excised. The tumor and lymph nodes were placed in protective bags and removed transvaginally. The canal was then irrigated and closed.

The operative time was 196 minutes, with an estimated blood loss of 213 mL. The resected tumor measured 3 cm in diameter (Fig. 4). Histopathological examination revealed a grade 3 endometrioid carcinoma with negative surgical margins and metastatic involvement of the external iliac and obturator lymph nodes. Postoperatively, the patient received six cycles of doxorubicin-cisplatin chemotherapy. Transient bladder dysfunction required intermittent self-catheterization; however normal urinary function was restored within

3 months. The patient remained disease-free for 12 months after the surgery.

DISCUSSION

Recurrence of endometrial cancer varies by LVSI, histological grade, and molecular profiles; approximately 50%, local; 25%, distant; and 25%, combined [5, 6]. Rios-Dorail *et al.* reported that 2% of FIGO stage I endometrioid recurrences occurred at the vaginal cuff, most (69%) at the apex [7]. For local recurrence, radiotherapy is recommended in western countries, with 5-year pelvic control rates of 82–95% and overall survival of 50–83% [8–13]. Depending on prior therapy and recurrence site, salvage surgery, chemotherapy or hormone therapy can also be considered [14–17]. Notably, vaginal cuff recurrence is a potentially resectable site, and prognosis depends on achieving complete resection without residual tumor. In selected patients, surgical management may provide favorable outcomes, as reported by Hardarson *et al.*, who demonstrated lower re-recurrence rates and favorable survival in surgically treated patients compared with those treated with radiotherapy (0% vs. 40% re-recurrence; 100% vs. 83% survival) [18]. Furthermore, when the disease is refractory to radiotherapy, surgical resection may be difficult, and the response to systemic therapy may also be diminished. In this case, complete resection was considered feasible, and because the patient had initially been classified as having low-risk endometrial cancer, pathological evaluation of the recurrent lesion was also planned to inform subsequent treatment decisions and prognostic assessment.

The surgical approach depends on the tumor site (apex or lateral wall), depth of invasion, and extension to adjacent organs, such as the bladder, ureter, or rectum. Transvaginal excision has been reported in a limited number of cases, primarily for small and superficially invasive vaginal cuff recurrences. Superficial mucosal lesions may be amenable to this approach [19]; however, its applicability remains restricted due to concerns regarding inadequate deep surgical margins. When adjacent organ infiltration is present, pelvic exenteration may be necessary anterior to the urinary tract, posterior to the rectum, or total when both are involved. This procedure entails resection of the bladder, rectum, and vagina, and carries major risks including fistula, infection, and thromboembolism. Fix *et al.* reported complication rates of 30–84% and mortality rates of 2–5% [20]. Pelvic exenteration has long been performed, with detailed descriptions of surgical techniques. However, reports of cases without adjacent organ invasion that are unsuitable for complete transvaginal resection are scarce. Open surgery is commonly performed for resection of vaginal cuff recurrence. In contrast, laparoscopic approach enables better visualization of pelvic structures and facilitate more radical resection, particularly in cases with suspected deep stromal or parametrial involvement. In this case, the recurrence was confined to the vaginal cuff and pelvic lymph nodes without organ invasion, and surgical management was considered feasible. Given the suspected deep stromal involvement, resection was performed following the surgical principles of radical hysterectomy, including systematic dissection of the parametrial tissues. It requires the division of the cardi-

nal, rectovaginal, and vesicouterine ligaments. The lateral, posterior, and anterior margins were defined by transecting the cardinal, rectovaginal/uterosacral, and vesicouterine ligaments, respectively, with hypogastric nerve preservation. In the present case, resection based on radical hysterectomy principles was valuable to ensure oncologically adequate margins. The present case suggests that this approach may allow organ-preserving resection while avoiding the morbidity associated with exenterative surgery. In patients without adjacent organ invasion but with suspected deep stromal or parametrial involvement, the optimal extent of resection between limited local excision and pelvic exenteration has not been clearly defined. Previous reports have described laparoscopic or robotic radical parametrectomy with upper vaginectomy for vaginal cuff recurrence [21, 22]. However, specific intraoperative strategies aimed at minimizing tumor exposure have been infrequently detailed. In laparoscopic surgery for recurrent disease, careful attention to tumor handling may be warranted.

In the present case, vaginal mucosal closure was intentionally performed prior to intraperitoneal dissection to limit direct tumor exposure and to facilitate precise determination of the vaginal resection margin. Although no standardized surgical strategy has been established for vaginal cuff recurrence without organ invasion, application of radical hysterectomy-based anatomical principles combined with deliberate tumor isolation measures may represent a feasible organ-preserving option for carefully selected patients.

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