Laterally Extended Endopelvic Resection (Leer) and Reconstructive Techniques for Treatment of Locally Advanced Cervix Cancer: A Case Report

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Abstract

The aim of this report is to describe the surgical procedure done in a 24-year-old woman who presents a locally advanced squamous cervix carcinoma and is proposed to laterally extended endopelvic resection (LEER), intraoperative radiation therapy with electrons (IORT) and urinary and colon diversion with vaginal reconstruction. A year after surgery the patient is alive, without disease and with and acceptable quality of life.

Introduction

Cancer of the uterine cervix is the third most common gynaecologic cancer diagnosis and cause of death among gynaecologic cancers in the United States [1]. Cervical cancer has lower incidence and mortality rates than uterine corpus and ovarian cancer, as well as many other cancer sites. These rankings are similar to global estimates for other developed countries [2]. Women with locally advanced cervical cancer (stage IB2 to IVA) have a higher rate of recurrence and worse survival than those with early-stage disease (stage IA to IB1). After surgery alone, the rate of relapse is at least 30 percent, and five-year survival rates range from 80 percent for stage IB disease to 30 percent for stage III disease [3, 4]. Exenteration has been used for the last 6 decades, mainly to treat cancers of the lower and middle female genital tract in the irradiated pelvis. New ablative techniques based on developmentally derived surgical anatomy termed laterally extended endopelvic resection (LEER) aim to increase the curative resection rate, even of tumours extending to and fixed to the pelvic sidewall. The aim of this report is to describe the case of a patient with locally advanced cervix cancer who is treated by LEER and other reconstructive techniques in order to improve her quality of life.

Case Description

A 24-year-old woman presenting moderately differentiated squamous carcinoma in biopsy. Physical exam reveals a thickened cervix with bleeding ulcers and a mass of 20 mm is observed in posterior cervical lip by ultrasonographs.

Analytically only emphasize a raised SCC levels. The extension study with MRI show a diffuse thickening of the cervix of approximately 60x50x45 mm infiltrating upper third of the vagina, uterine inferior third and regions 6 cm from the anus. As well as 3 left iliac nodes and other bilateral inguinal ones.

After studies she is staged as locally advanced cervix and paraaortic lymphadenectomy retroperitoneal staging is done to determine the level of radiation, being negative the nodes studied. She begins chemotherapy (weekly CDDP) concomitant with external radiation therapy (TD: 50.4Gy) and complete gynaecological brachytherapy PDR (HR 30Gy), which ended with complete response.

Eight months later a RMI control is done, where a mass of 4 cm appears affecting the rectum and right parametrium. PET-CT is applied, and it excludes extrapelvic disease so the patient is proposed to LEER as a part of the total pelvic exenteration , intraoperative radiation therapy with electrons (IORT), urinary diversion (Indiana type) with both vaginal and rectum reconstruction.

Description of Surgical Procedure

LEER (Laterally extended endopelvic resection) was based on total mesorectal excision, total mesometrial resection, and total mesovesical resection. The inclusion of pelvic side wall and floor muscles, such as the obturator internus, pubococcygeus, iliococcygeus, coccygeus muscles, and eventually of the internal iliac vessel system (figure 1).

IORT was delivered on the right parametrial bed (infiltrated in MRI) and left parametrium (surgical infiltration), with pelvic nerves...
either side of the suture line in the posterior wall of the reservoir. The stomal apertura was made through the abdominal wall in the right lower quadrant. The last step was to complete the reservoir, for this, a large Malecot catheter was brought into the pouch and secured with an absorbable purse string suture. The ileal segment was pulled through the stomal aperture and the reservoir positioned against the anterior and lateral abdominal wall.

To build a neovagina a rectus abdomenis myocutaneous flap was used. An elliptical cutaneous paddle 12 cm in diameter that had a vertical axis centered over the upper half of the rectus abdominis muscle. The paddle extended from the costal margin to just below the umbilicus; its lateral borders extended to within 2 cm of palpable muscle, to enhance the viability of the lateral paddle margins (Figure 3a). A vertical incision was made through skin, subcutaneous tissue, and anterior rectus fascia. The rectus muscle was divided using electrocautery, with care taken to ligate the superior epigastric vessels on the posterior aspect of the muscle. To prevent separation of muscle from the anterior rectus fascia, which might devitalize the paddle, the muscle was fixed to the edge of the overlying fascia and skin with interrupted sutures. The remaining muscle was carefully dissected free from the posterior rectus fascia to the pubic symphysis, with care taken

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to preserve the inferior epigastric vessels. The paddle was tubularized by folding the paddle in half (Figure 3b), the lateral edge and apex were closed with interrupted suture, and the neovagina was rotated into the pelvis without tension and sutured to the vulvar introit. A resection of the sigmoid colon and the rectum were performed during the exenteration and a terminal colostomy was made to ensure digestive diversion.

Therefore, local tumor relapses are often multicompartmental even at small sizes. According to the theory of compartmental tumor spread, advanced and recurrent tumors may require multicompartmental resection for local tumor control [5].

Laterally extended endopelvic resection (LEER) is aimed to resect en bloc multiple visceral compartments in the female pelvis within intact borders for local control of advanced and recurrent malignancies of the lower female genital tract [7, 8].

In our patient, after completing initial treatment with chemotherapy and radiation therapy, no signs of radiological disease appeared, nevertheless, the cervical cancer mass relapsed months later. So it was decided to perform a LEER procedure following this theory.

In surgical treatment of the pelvic recurrent disease the free margins of the specimen is mandatory. IORT can provide an additional dose of irradiation on a well-defined area, which is considered a high risk of local recurrence.

The continent reservoir (Indiana Pouch) was created in a classic manner, although in literature is described that appendix can provide a convenient continence mechanism, in our patient is not applicable as she had pelvic radiation because of the associated atrophy and fibrosis of the appendix. We preferred this type of continent reservoir instead of the Miami pouch because of the high rate of complications of the last one in case of prior pelvic radiation [9].

Gracilis myocutaneous flaps have been used most commonly to create a neovagina in young people. However, gracilis flaps are associated with a high failure rate (11–37%) due to vascular compromise; leave unsightly scars on the medial thighs; are frequently too large and bulky to use when the perineal body and anus are preserved [10, 11]. In our patient we preferred a vertical myocutaneous flap to create the neovagina and one year after the intervention, the patient has none of these complications and it has achieved an increase in its quality of life, although a long-term monitoring is necessary to assess late complications.

In young patients the reconstructive procedures improve the quality of life after the treatment. The continent reservoir employed in our patient is well tolerated and the needless plastic bag used in another type of urinary diversion also improves quality of life. In the same way the neovagina created with a rectus adominis flap decreases the feeling of mutilation by the patient.

Conclusion

LEER has a significant potential role to rescue selected patients with locally advanced or recurrent gynecologic cancers, including those with pelvic side wall disease. The best results in this type of salvage surgery are when free margins are obtained. The use of IORT as a part of the procedure ensures the microscopic treatment of the margin without any secondary effect.

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In conclusion in selected experienced teams in tertiary centers and in selected patients this salvage surgery can be the last opportunity of cure of these patients.

Competing Interests

The authors declare that they have no competing interests.
References


