



Laparoscopic Radical Parametrectomy: An Alternative for Cervical or Endometrial Carcinoma After Hysterectomy

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Abstract

Purpose Radical parametrectomy is indicated in selected oncologic conditions. We evaluated the efficacy and morbidity of laparoscopic radical parametrectomy following simple hysterectomy in patients with invasive cervical carcinoma and vault carcinoma.

Methods Between January 2011 and December 2014, five patients underwent laparoscopic radical parametrectomy at our centre. The indications for radical parametrectomy were histologically verified recurrence of endometrial cancer in the vaginal stump, and simple hysterectomy for cervical cancer. Clinicopathologic information including demographics, indication for hysterectomy, tumor stage, histology, nodal status, operative complications, length of stay, recurrence and survival was noted.

Results In all patients, R0 resection could be achieved. The mean duration of surgery was 168 min. No intra- or postoperative transfusions were given. There was bladder injury in one patient intraoperatively in which bladder was inadvertently opened up due to undue pressure of grasper while dissecting it from anterior vaginal wall. Mean post-operative length of stay was 2.4 days. The urinary catheter was removed after a mean duration of 14 days. Surgical margins in all five patients were free of tumor. One patient developed recurrence after 15 months.

Conclusions LRP is an acceptable option for patients diagnosed with incidental finding of invasive cervical cancer at the time of simple hysterectomy. Careful selection of LRP for patients not having residual tumor will obviate adjuvant radiotherapy in most cases.

Keywords Parametrectomy · Laparoscopy · Invasive cervical cancer · Unexpected cervical cancer · Vault carcinoma

Introduction

Treatment options following unexpected histopathologic verification of cervical or endometrial cancer after inadequate primary surgery are not standardized. The choice must be made between radiotherapy or radical parametrectomy [1–4]. Since radiation therapy results in loss of ovarian function and greater frequency of sexual dysfunction than operative techniques, RP seems more beneficial option. It can be performed safely in most patients, who have an early-stage invasive carcinoma of the cervix with the expectation of an acceptable rate of long-term disease-free survival and obviating the need of radiotherapy as an adjuvant treatment altogether [5]. Due to inadequate screening and diagnostic workup, we have frequent cases of cervical carcinoma as incidental finding in simple hysterectomy specimens [6].

Described in 1961 by Daniel and Brunschwig, RP is a surgical procedure that allows one to complete the evaluation of the tissues of concern, namely upper vagina, parametrium and the regional lymphatics [7].

This is our first case series of five consecutive patients. In this series, we evaluated laparoscopic radical parametrectomy with laparoscopic lymphadenectomy as a valid

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alternative with respect to higher oncologic safety and lower morbidity. It provides an enhanced operative visual field and clarity and resolution unmatched by abdominal surgery, and it exposes much deeper anatomic structure of cardinal and sacral ligaments as well as paravesical and pararectal spaces. This is particularly helpful when pelvic adhesions are present. The cleavage planes can be accurately identified which poses minimum risk of injury to vital organs.

Materials and Methods

Between January 2011 and December 2014, five patients underwent laparoscopic radical parametrectomy at our centre. The indications for radical parametrectomy were histologically verified recurrence of endometrial cancer in the vaginal stump, and simple hysterectomy for cervical cancer. All patients were informed about the two alternatives of treatment—reoperation versus radiotherapy—and decided for surgery, subsequently. To be considered eligible for RP, patients were required to have a normal pelvic examination before surgery including assessment of vault, paravaginal, parametrial tissue with per rectal examination. There was no evidence of residual disease in the parametrium (stage IA–IIA) and no enlarged nodes on CT scan preoperatively.

Clinicopathologic information including demographics, indication for hysterectomy, tumor stage, histology, nodal status, operative complications, length of stay, recurrence and survival was noted. During surgery, on first endoview, the whole abdomen was assessed for any other site of disease including para-aortic nodes. In all five patients, there was no evidence of extensive disease metastasis. All patients were followed up with clinical examination, serial pap smears, CT/PET–CT scan and chest radiograph postoperatively.

Results

The mean age of patients was 48.2 years. Demographic and clinicopathologic information of the patients is outlined in Table 1. The mean duration of surgery was 168 min. No intra- or postoperative transfusions were given. Pelvic lymphadenectomy was performed in all patients. Median number of dissected pelvic lymph nodes was 12. Mean postoperative length of hospital stay was 2.4 days. The urinary catheter was removed after a mean duration of 14 days. In the surgical specimens, resection was confirmed with adequate margins in all patients. Figures 1 and 2 depict the final parametrectomy specimen with vaginal cuff and margins.

There was bladder injury in one patient intraoperatively in which bladder was inadvertently opened up due to undue pressure of grasper while dissecting it from anterior vaginal wall. The rent was repaired intraoperatively with vicryl 2-0 in two layers.

There was no residual tumor present in one patient. This was a case of a patient with carcinoma vault who had undergone vaginal hysterectomy 1 year ago. Histopathologic reports showed poorly differentiated adenocarcinoma with vascular invasion. PET–CT showed 4.2×3.3 cm lesion over vault. She took 11 cycles of chemotherapy and was then planned for LRP.

All pelvic (mean 12) lymph nodes were free of tumor except in one patient where they showed metastatic carcinoma. In three patients, postoperative teletherapy was given as adjuvant treatment. Following radical parametrectomy, decision for adjuvant therapy was made in an interdisciplinary approach in consultation with radiation and medical oncologist.

One patient had recurrence after 15 months for which adjuvant chemotherapy was given. She had moderately differentiated squamous cell carcinoma cervix with lymphovascular invasion and positive b/l pelvic lymph nodes on radical parametrectomy specimen. The specimen had negative vaginal margins with no evidence of metastasis in parametrium. She received concurrent chemotherapy with radiotherapy. After 15 months, PET–CT showed recurrent mass lesion of 4×3 cm in the right adnexa.

Discussion

Incidental finding of cervical carcinoma is rather frequent following simple hysterectomy for apparently benign diseases. In our series, the most common primary diagnosis was CIN and abnormal uterine bleeding. Inadequate preoperative (pre-hysterectomy) evaluation for patients with abnormal Pap smear and vaginal bleeding was the main reason of inappropriate management [6].

The rationale for parametrectomy is to remove occult disease at the time of extirpation of the cervical lesion. Patients with parametrial disease are over 7 times more likely to have pelvic nodal metastases and nearly 12 times more likely to have high para-aortic tumor spread than women with no parametrial disease. Parametrial metastases portend a poor prognosis with an increased risk of recurrence. Parametrial disease is strongly associated with histology, advanced grade, deep cervical invasion, LVSI, large tumor size, uterine and vaginal involvement, pelvic and para-aortic lymph node metastases, and advanced stage. The patterns of parametrial tumor spread are unpredictable, and the patients at risk for parametrial disease should undergo complete excision of the parametrium [8].

Table 1 Demographic and clinicopathologic characteristics of the patients

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5
Age (years)	50	41	58	52	40
Preoperative diagnosis	CA vault, scc, poorly differentiated	scc cervix	Vault adenocarcinoma	Cervical CA recurrence, scc	Adenocarcinoma cervix
Previous operation	TAH	TLH	VH	TLH	TAH & BSO
Time elapsed since previous sx	18 years	10 days	1 years	1 year	20 days
Tumor size (cm)	0.3 × 0.4	4 × 4	6 × 4	2 × 2	0.3
Duration of surgery (min)	180	180	120	180	90
Blood loss (ml)	90	50	70	50	30
Intraoperative complications	Nil	Nil	Nil	Bladder injury	Nil
Histology	scc, vault, poorly differentiated, PM free, 0/3, 0/4 lymph nodes	scc cervix, PM free, 1/19, 1/13 lymph nodes	No residual tumor, PM free, 0/8, 0/12 lymph nodes	scc vault, PM free, 0/13, 0/14 lymph nodes	Adenocarcinoma cervix, PM free, 0/13, 0/14 lymph nodes
Mean vaginal length (cm)	2.5	3	3	2.8	3
Mean parametrial margins (cm)	3	5	3.5	6	2
Postoperative complications	Nil	Nil	Nil	Nil	Nil
Restitution of bladder function (days)	14	21	14	14	14
Adjuvant therapy	RT	RT	no	RT	no
Follow-up	4 years	1.5 years	6 months	2 months	1 month

CA carcinoma, *sx* surgery, *VH* vaginal hysterectomy, *TLH* total laparoscopic hysterectomy, *TAH&BSO* total abdominal hysterectomy & bilateral salpingo oophorectomy, *scc* squamous cell carcinoma, *PM* parametrium, *RT* radiotherapy

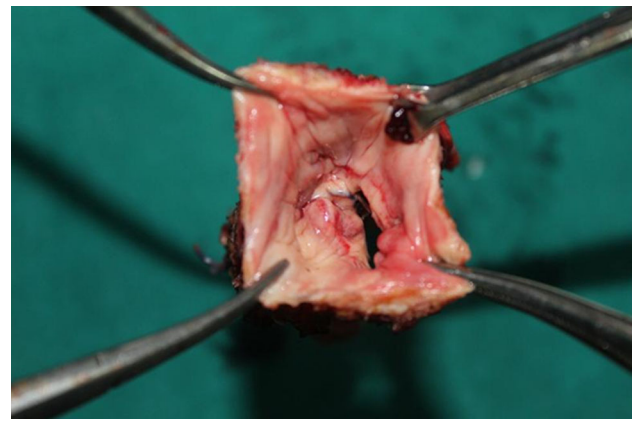
**Fig. 1** Radical parametrectomy specimen with vaginal cuff**Fig. 2** Vaginal margins in the parametrectomy specimen

Table 2 Comparative studies of LRP

References	Mean age (years)	Mode of surgery	No. of cases reported	Operative time (min)	Estimated blood loss (ml)	%Transfusion	Intraop complication (%)	Postoperative complication (%)	Hospital stay (days)	Reported mean vaginal length (cm)	Mean parametrium length (cm)
Lee et al. [14]	48	LRP	3	278.3	210	NR	66.7	NR	7.3	VL–NR	2.6
Kohler et al. [15]	53.3	LRP	6	424	NR	0	0	83.3	NR	VL–NR	4.5
Fleisch and Hatch [16]	40.5	LRP	6	207	300	NR	33.3	16.7	3.5	NR	NR
Liang et al. [17]	46.7	LRP	6	180	220	NR	0	0	11.5	NR	NR
Liang et al. [18]	47.6	LRP	21	176	220	9.5	NR	9.5	10.2	NR	NR
Vignancour et al. [19]	41.4	LRP	8	261.3	NR	NR	20	25	4.4	NR	NR
Buda et al. [20]	48.7	LRP	12	300	158.3	0	0	16.7	3.7	NR	2.7–3.1
Jiang et al. [21]	48.6	LRP	18	200	627.8	27.8	0	5.6	16.8	2.9–3.6	2.7–2.9
This study	48.2	LRP	5	168	58	0	0	0	2.4	2.5–3	3.5–4

VL vaginal length, NR not reported

Presence of persistent endometrial cancer in a cervical stump is even more rare since supracervical hysterectomy should be avoided in case of endometrial cancer. Tumor-related prognostic factors such as involvement of parametrium or lymph nodes remain open following incomplete surgery. Even in early cervical cancer, direct tumor invasion or tumor involvement of lymph nodes or lymphatic vessels can be diagnosed in up to 31 % of patients when complete histopathologic evaluation is performed. Following unexpected presence of cervical cancer in the hysterectomy specimen, tele- and brachytherapy have good results: the 5-year overall survival is between 75 and 96 % in FIGO stage IB1 if resection margins are free of tumor or if they show only microscopic involvement [1, 4, 9, 10]. When macroscopic tumor remains after primary surgery, prognosis is poor [4, 11]. In addition to the size of residual tumor, the histologic tumor type seems to be of prognostic value: following simple or supracervical hysterectomy for cervical cancer radiation is associated with lower survival in patients with adenocarcinoma compared to squamous cervical cancer. Whereas in the older literature radical surgery is associated with worse prognosis and considerable morbidity compared to radiotherapy, recent studies show that radical abdominal parametrectomy and pelvic lymphadenectomy are associated with adequate oncologic outcome: the 5-year survival rate was 89 % [2]. Radiation could be avoided in 78 % of patients [3]. Surgical morbidity of radical parametrectomy is comparable to morbidity caused by primary radical hysterectomy [3, 12]. When no remaining tumor is to be seen, no additional therapy is needed, which is also a safe predictor of recurrence-free survival [12], with the exception of adenocarcinoma. Selection of an eligible patient for RP is critical. Leath III et al. [13] showed patients with no clinical evidence of residual tumor at the vaginal apex and parametrium have an excellent overall survival.

Due to our minimally invasive dissection with preventive coagulation, blood loss was minimal (mean 58 ml) and transfusion was not necessary (Table 2). The duration of hospital stay (2.4 days) was also shorter compared to other studies of LRP. In addition, our intraoperative and postoperative complication rates were also lower than other published studies. The vaginal and parametrial margins were also comparable to other studies. We found that duration of urinary catheter drainage (14 days) was slightly longer in our study because of more extensive parametrectomy.

Our findings suggest that laparoscopic parametrectomy is a safe and effective alternative to conventional therapy in patients with undiagnosed invasive cancer at the time of simple hysterectomy or the cervical stump carcinoma at the time of supracervical hysterectomy. In our country, long waiting list for radiotherapy, frequent cases of inappropriately managed patients for lesions like CIN and high

incidence of cervical carcinoma are additional reasons that make RP an acceptable and safe alternative for carefully selected patients. To our knowledge, this is the first reported case series of radical parametrectomy in our country.

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