

Laparoscopic management of early stage endometrial cancer

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Summary

Purpose of investigation: The purpose of this study was to evaluate the feasibility of laparoscopic hysterectomy versus the trans-abdominal approach with systemic pelvic lymphadenectomy in early stage endometrial cancer.

Methods: From January 1996 to April 2002, 59 women were treated for endometrial cancer at the Department of Gynecology in Padova, Italy (29 by the laparoscopic technique and 30 by laparotomy). Every patient underwent hysterosalpingo-oophorectomy with systemic pelvic lymphadenectomy.

Results: Comparing the two techniques, operating time was longer and hospital stay was significantly shorter for laparoscopy; no differences were observed about the number of removed lymph nodes (range 5-33) or intra-postoperative complications.

Conclusion: The laparoscopic approach to endometrial cancer is certainly to be considered appropriate and efficacious, even if it requires skilled surgeons and adequate oncologic training. It is important to perform pelvic lymphadenectomy in all cases of early stage cancer.

Key words: Endometrial cancer; Laparoscopic hysterectomy; Laparotomic hysterectomy; Lymphadenectomy.

Introduction

Endometrial cancer is the most common gynecologic malignancy (36,000 new cases in the United States in 2000) [1]. Seventy-three percent of endometrial cancers are diagnosed at an early stage, when tumor is still confined to the uterine corpus and more than 90% of cases occur in women older than 50 years. Lymph-node metastases in Stage I were observed in about 11% of cases [2, 11].

For over a decade, the International Federation of Gynecology and Obstetrics (FIGO) staging for endometrial cancer has been based on surgical and pathological findings and therefore surgery is the "back-bone" in the treatment of this tumor [5, 11]. The surgery of choice is total abdominal hysterectomy, bilateral salpingo-oophorectomy, peritoneal washing, and sampling of the pelvic and paraortic lymphnodes. Several authors have reported vaginal hysterectomy to be an acceptable alternative in a selected population of patients but it does not allow adequate lymphnode sampling, inspection of the abdominal cavity or peritoneal washings [3, 4]. Laparoscopic-assisted vaginal hysterectomy (LAVH) and bilateral salpingo-oophorectomy have recently gained favour in the treatment of low-risk endometrial cancer. In fact, laparoscopy exploits the advantages of vaginal surgery in terms of short hospital stay, reduced morbidity and pain, while meeting the requisites for adequate surgical staging and adnexal removal with good intrabdominal inspection, peritoneal washings, pelvic and/or paraortic node dissection which are recommended for adequate surgical pathological staging [7]. Despite its proposed

advantages, laparoscopic staging of endometrial cancer is performed in relatively few institutions and therefore there are few data about the feasibility of the procedure among a number of centres and surgeons. The purpose of our study was to evaluate the feasibility of laparoscopic hysterectomy in Stage I endometrial cancer in comparison to the traditional transabdominal approach.

Patients and Methods

From January 1996 to April 2002, 59 patients with Stage I endometrial cancer were treated at the Clinic of Gynecology and Obstetrics, University of Padova, Italy. Twenty-nine cases were prospectively assigned to the laparoscopic approach (26 laparoscopic-assisted vaginal hysterectomy-LAVH and 3 laparoscopic hysterectomy-LH) and 30 cases were treated with traditional surgery.

All patients underwent hysteroscopy and endometrial biopsy, with the aim of defining the extension of the lesion, histotype and grading.

Antibiotic short therapy with cephalosporins, 2 g I V, at the beginning of surgery was used in both groups.

A clinical examination was carried out for every patient after a period of 7-30 days.

Technique

1. Laparoscopic systemic pelvic lymphadenectomy

A four-port technique as previously described by Childers *et al.* [9] was used in all cases: a 10-mm umbilical port for the telescope, two ancillary lateral 5-mm ports and a central 10-mm port were placed at the superpubic level, an uterine manipulator was inserted and general anaesthesia was used.

Laparoscopic staging included an accurate inspection of the intraperitoneal cavity in a systematic fashion. Then, systemic pelvic lymphadenectomy was carried out using the following technique by ultrasonic scalpel (Ultracision) pushing up and to

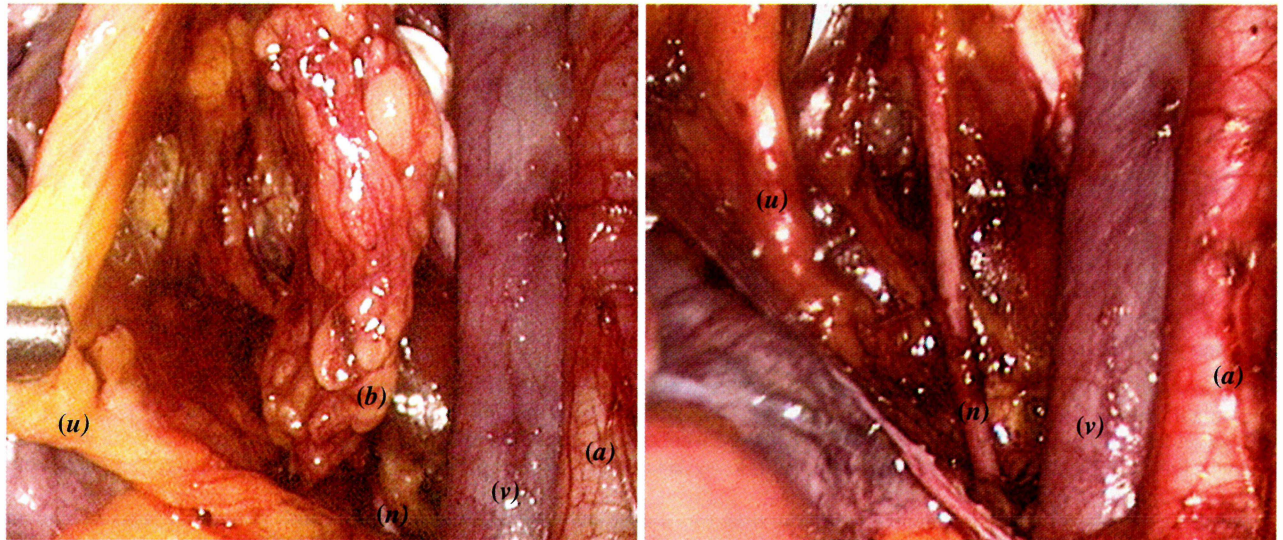


Figure 1. — Lymphoglandular block of right obturator fossa. (b) from the left to right iliac artery (a) iliac vein (v) obturator nerve (n) doliterated umbilical artery (u).

Figure 2. — Interiliac area: from left to right, iliac artery (a), iliac vein (v), obturator nerve (n), obliterated umbilical artery (u).

the opposite side the uterus in order to stretch the pelvic lateral peritoneum (Figures 1 and 2).

- Section of the peritoneal lateral leaf of the broad ligament extended to the round ligament and to the pelvic edge at the lateral side of the infundibolopelvic ligament

- Ureter course visualization at pelvic edge
- Ligation and section of the infundibolopelvic ligament
- Closure with a loop of the proximal tract of tubes
- Identification of the umbilical obliterated artery and preparation of the paravesical fossae.

- Craniocaudal removal of the lymphatic tissue as a whole in the medial and lateral side of the external iliac vessel

- Removal of the lymph nodes located near the external iliac vessels and hypogastric artery (interiliac nodes)
- Localization of the obturator nerve
- Removal of the superficial and deep obturator lymph-nodes
- Coagulation and section of the round ligament

2. Laparoscopic-assisted vaginal (LAVH) or laparoscopic (LH) hysterectomy

In LAVH, a circular incision of the vaginal mucosa is performed with subsequent opening of the posterior cul-de-sac. Uterosacral and cardinal ligaments are subsequently sectioned, vesicouterine peritoneum is opened and uterine vessels are closed and sectioned. After vaginal vault suture, the operative field is laparoscopically inspected.

In LH, uterine vessels are closed and sectioned by suture or bipolarly. Circular incision of the superior third of the vaginal wall and removal of the uterus and adnexa through the vaginal route are performed, and then the vaginal vault is sutured laparoscopically. The peritoneum is not sutured with the aim of draining lymphatic fluid into the abdomen.

The traditional transabdominal (TAH) approach consists of an umbilical-pubic incision and the other surgical steps are the same as the laparoscopic approach, except for clamping of the iliac lymphatic ducts and suturing of the visceral peritoneum.

Data were statistically analysed using the Student's *t*-test and $p < 0.05$ was considered as statistically significant.

Results

Fifty-nine patients with low-risk endometrial cancer were treated between January 1996 and April 2002: 30 abdominally and 39 laparoscopically (26 LAVH and 3 LH) with pelvic systemic lymphadenectomy. The two groups were homogeneous for mean age (59.3 ± 9.5 years) and for risk factors (hypertension, menopausal age, body mass index).

Fifty-two cases (87.9%) had endometrioid histotype with grade G1/G2 in 45 (86.5%) cases and G3 in seven cases, while the seven (12.1%) cases with adenosquamous histotype had grade G3 in two cases and G1/G2 in five cases.

In 38 (73.1%) cases of endometrioid histotype and in two (28.6%) of the adenosquamous group a myometrial invasion of $> 50\%$ was observed, while myometrial invasion $< 50\%$ was present in 14 (26.9%) and in five (71.4%), respectively (Table 1).

The mean number of removed lymph nodes was 13.4 ± 6.5 (range 5-33) in the laparotomic group and 14.2 ± 5.4 (range 5-32) in the laparoscopic group. Most lymph nodes were negative; three positive cases (laparotomic group) were characterized by two endometrioid histoty-

Table 1. — Anatomical and pathological stadiation.

	Histologic Type			
	Endometrioid		Adenosquamous	
	no.	%	no.	%
G1/G2	45	86.5	5	71.4
G3	7	13.5	2	28.6
M $< 50\%$	14	26.9	5	71.4
M $> 50\%$	38	73.1	2	28.6
N-	50	96.2	6	85.7
N+	2	3.8	1	14.3

M: myometrial invasion; G: grade; N+: lymph-node involvement

pes (one G3 and one myometrial invasion > 50%) and by one adenosquamous histotype (Tables 2 and 3).

The mean operating time was 152.4 ± 38.1 minutes (range 70'-240') for the laparotomic group and 186.4 ± 36.9 minutes (range 100'-280') for the laparoscopic group and the difference was statistically significant ($p < 0.001$) (Table 4).

Blood loss was 152.7 ± 139.3 ml (range 50-600 ml) for the first group and 125.4 ± 94.8 ml (range 50-400 ml) for the second group ($p < 0.05$).

Only in two patients (3.39%) in the laparotomic group were temperatures > 38°C observed.

Mean recovery time in the laparotomic group was 6.4 ± 2.3 days (range 4-11), while it was 2.5 ± 0.9 days (range 2-6) in laparoscopic group ($p < 0.001$) (Table 4).

No intra- or postoperative complications were observed in either group.

Discussion

Most cases of endometrial tumors present as early-stage disease. In differentiated tumors with myometrial invasion less than 50% the 5-year survival rate is 85%, while in undifferentiated tumors and in those with more than 50% of myometrial invasion the high frequency of positive lymph nodes sensitively decreases the survival rate (58%) [8].

The standard approach to surgical management of early endometrial carcinoma has been total abdominal hysterectomy, bilateral salpingo-oophorectomy and dissection of pelvic and/or paraortic lymphnodes.

Vaginal hysterectomy has been suggested by some authors in the management of endometrial carcinoma, but this approach was criticized for its inadequate staging [18].

Table 2. — Lymph-node involvement in endometrioid type.

Endometrioid	G1/G2	G3
M < 50%	—	1
M > 50%	—	1

M: myometrial invasion; G: grade;

Table 3. — Lymph-node involvement in adenosquamous type.

Endometrioid	G1/G2	G3
M < 50%	1	—
M > 50%	—	—

M: myometrial invasion; G: grade;

Table 4. — Laparoscopic vs laparotomic cases.

	Laparoscopic	Laparotomic
Cases	29	30
Operating time (mins)	186 ± 36.9 (100-280)	152.4 ± 38.1 (70-240)
Hospital stay (days)	2.5 ± 0.9 (2-6)	6.4 (4-11)
Blood loss (ml)	125 ± 94.8 (50-400)	152.7 ± 139.3 (50-600)
Lymph-nodes (no.)	14.2 ± 5.4 (5-32)	13.4 (5-33)
Temperature > 38°C	—	2

In 1993 Childers *et al.* concluded that laparoscopically assisted surgical staging is an alternative to the traditional surgical therapy for early stage disease [9]. Recently, Manolitsas and McCartney have suggested also total laparoscopic hysterectomy combined with surgical staging as a good approach and concluded, as others, that this technique offers many advantages compared to the open approach [10] primarily considering the decreased hospital charges and shorter hospital stay as the main benefits.

This study confirms these advantages since the mean hospital recovery was 2.5 days (range 2-6) for the laparoscopic group versus 6.4 days (range 4-11) for the laparotomic group. No differences were observed regarding the number of removed lymph nodes. Intra- and postoperative complications were similar in the two procedures.

Certainly for skilled surgeons the laparoscopic route permits adequate surgical staging and easy dissection of the pelvic and/or paraortic lymphnodes with short hospital stay and low morbidity.

Endometrial cancer spreads by lymphatic and vascular dissemination, direct extension to contiguous organs and transperitoneal and transtubal diffusion. It tends to spread to the pelvic nodes before involving the paraortic lymph nodes. The involvement of the paraortic lymph nodes with negative pelvic nodes is 2% [11]; for most authors paraortic lymphadenectomy is not useful as it increases morbidity, and the adjuvant treatment does not improve survival rate [14].

According to FIGO 1989 [12], the involvement of the pelvic and/or paraortic lymph nodes is the most significant piece of surgical and pathologic staging for prognostic value and for directing further therapy in endometrial cancer patients, but agreement has not yet been reached for lymphadenectomy.

In early stages with >50% myometrial invasion, lymph node involvement is observed in 11% for well-differentiated tumors and 34% for poorly differentiated tumors, while in <50% myometrial invasion and well-differentiated tumors the incidence is 5% [11].

The recommendations of the Centre regional Leon-Berard, Lyon in 2001 suggest that pelvic lymphadenectomy for precise staging should be undertaken if the patient is in good performance status and without bad prognostic factors [13].

Most oncologists limit lymphadenectomy only to patients with deep myometrial invasion, G2/G3, lymphatic and vascular space invasion, cervical involvement or high-risk cell-type.

Descamps suggests that in high-risk Stage I (G3 or deep myometrial invasion) and in Stage II tumors, lymphadenectomy is unnecessary since postoperative pelvic external beam irradiation will be performed in all cases, thus the indications for lymphadenectomy are limited to low-risk early-stage [14]. Other authors assert that in low-risk early-stage it is not necessary to perform pelvic lymphadenectomy because of low the incidence of positive nodes (4.4%) [15].

Studies regarding laparoscopic pelvic and/or paraortic lymph node dissection are still relatively rare and there is

still discussion on the capability of laparoscopic surgery to comply with the standard criteria for staging endometrial cancer [17].

In this study all cases of Stage I endometrial cancer underwent systemic pelvic lymphadenectomy, and in the laparoscopic group (29 cases), no positivity was detected, while only three out of 30 cases of the laparotomic group had lymph node positivity (G3, myometrial invasion or histotype).

These data are in agreement with the literature in showing more frequent lymph-node positivity in high-risk Stage I cases (myometrial invasion >50% and/or G3). Moreover we did not observe differences in lymph-node count in laparoscopy and laparotomy, and actually it is reasonable to say that laparoscopic systemic pelvic lymphadenectomy is a feasible and efficacious procedure.

Conclusions

Anatomical pelvic details in endoscopy are perfectly visible due to the possibility of zooming; moreover Ultracision, with its effective cut and coagulation, keeps the surgical field nearly exsanguinate. The number of lymph nodes and anatomical pieces are similar to those obtained with the laparotomic approach.

The laparoscopic treatment of endometrial cancer is associated with longer operating time but significantly shorter hospitalization, low morbidity and a minor request for analgesic therapy.

On the basis of the reported data, our trend is to perform lymphadenectomy in all cases of endometrial cancer in Stage I with the aim of detecting the five percent of women with lymph-node positivity.

In conclusion, it is important to underline that the laparoscopic approach to endometrial cancer must be carried out only by skilled surgeons with adequate oncologic training.

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