

The role of vaginal hysterectomy in the treatment of endometrial carcinoma

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Between 1964 and 1991, vaginal hysterectomy was performed in 60 patients with clinical stage I endometrial carcinoma, who were not considered candidates for the conventional surgical approach. Of these patients, 66.7% were obese with a median weight of 235 pounds. Other risk factors included hypertension (63%), diabetes mellitus (34%), cardiac disease (28%) and pulmonary disease (12%). Operative mortality was 0%. The complication rate was 14%, with four patients requiring transfusions and four patients developing vaginal cuff cellulitis. Forty per cent of patients received adjuvant pre- or postoperative radiation therapy. Crude survival at 5 and 10 years was 91.1% and 87.1%, respectively. However, only one patient died from disease 6 years after primary treatment. Although we consider surgical staging as the standard of care for the treatment of endometrial cancer, vaginal hysterectomy has a definite place in the management of patients with good prognostic criteria who are at high operative risk for the standard surgical approach.

KEYWORDS: complications, endometrial cancer, risk factors, survival, vaginal hysterectomy.

Vaginal hysterectomy used to be the treatment of choice for endometrial carcinoma in Europe⁽¹⁻³⁾ as well as an acceptable treatment option in the USA⁽⁴⁾. Today, however, the attitude towards the vaginal approach has changed dramatically, and surgery through the abdominal route is considered the standard of care. This is illustrated by the fact that, in a recently published textbook, Park *et al.*⁽⁵⁾ do not discuss vaginal hysterectomy as a treatment option for patients with endometrial cancer.

In 1983, Peters *et al.*⁽⁶⁾ reported their experience with the use of vaginal hysterectomy in the treatment of endometrial carcinoma at the University of Michigan Medical Center and at the University of Virginia

School of Medicine, USA. At the time of Peters' report, staging of endometrial cancer was done clinically, and abdominal hysterectomy and bilateral salpingo-oophorectomy with or without postoperative radiation was considered the treatment of choice for endometrial cancer. In 1988, the FIGO adopted surgical staging for carcinoma of the endometrium⁽⁷⁾, and peritoneal cytology as well as pelvic and para-aortic lymph node sampling became part of routine treatment. Consequently, if vaginal hysterectomy is to be considered as an alternative treatment, strict selection criteria must be applied, and treatment results have to be surveyed critically.

The following report represents our experience with 60 patients at the University of Michigan Medical Center, USA. It encompasses and updates the previously published data. In addition, 24 new patients are included in the study. It is the intention of the authors to revive the discussion of vaginal

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hysterectomy as treatment for endometrial cancer and to demonstrate that it is an acceptable treatment alternative for patients who are not candidates for standard abdominal surgery.

Patients and methods

Through the University of Michigan Tumor Registry, records of all patients were obtained who had been treated by vaginal hysterectomy for endometrial carcinoma between 1 January 1964 and 31 December 1991. Patients who underwent vaginal hysterectomy at an outside institution and were referred to the University of Michigan for further therapy were not included. Results from patients treated between 1964 and 1981 had been reported previously by Peters *et al.*⁽⁶⁾ All charts were reviewed with regards to the medical history at the time of presentation, the treatment and hospital course as well as visits at the Gynecologic Tumor Clinic. Further follow-up data were obtained through the Michigan Tumor Registry. If outside slides were available, they were reviewed by a gynecologic pathologist at the University of Michigan. Statistical analysis was performed using the SPSSX program.

Results

Between 1964 and 1991, vaginal hysterectomy for endometrial cancer was performed on 60 patients. One to six patients were treated by vaginal surgery every year.

The clinical characteristics of the patients are summarized in Table 1. The median age was 59.5 years. The youngest patient treated was 27 years old and the oldest patient 82 years. The median parity was three and the median weight 235 pounds, with a range of 118–422 pounds. The majority of patients had numerous medical problems. Hypertension (63%),

Table 1. Patient characteristics

Median age	59.5 years	(27–82 years)
Median parity	3	(0–12)
Median weight	235 pounds	(118–422 pounds)
Additional diagnoses	<i>n</i>	%
Hypertension	38	63
Diabetes mellitus	20	34
Cardiac disease	17	28
Pulmonary disease	7	12
Symptomatic pelvic relaxation	10	17

diabetes mellitus (34%) and cardiac disease (28%) were the most frequent diagnoses. Furthermore, symptomatic pelvic relaxation was present in 10 patients (17%).

As the abdominal approach was considered the standard of care for the time frame studied, the patients' charts state the specific indications for the vaginal surgery. These indications are listed in Table 2. Two-thirds of the patients were considered obese and, in 31.7% of cases, morbid obesity was the predominant determinant for the vaginal surgery. Frequently, the indication was based on the presence of several risk factors for abdominal surgery, including obesity, diabetes mellitus and cardiac disease.

Table 2. Indications for vaginal hysterectomy

	<i>n</i>	%
Obese patients	40	66.7
Morbid obesity alone	19	31.7
Diabetes mellitus	7	11.7
Cardiac disease	5	8.3
Cardiac disease and diabetes	3	5.0
Pelvic relaxation	3	5.0
Sarcoidosis with renal damage	1	1.7
Recurrent ventral hernia	1	1.7
Previous anesthesia complication	1	1.7
Non-obese patients	20	33.3
Premalignant lesion on D&C	6	10.0
Pelvic relaxation and unexpected or early invasive disease	5	8.3
Early invasive disease	2	3.3
Severe cardiac disease	2	3.3
Diabetes and pelvic relaxation	1	1.7
Parkinson's and severe cardiac disease	1	1.7
Liver metastasis from other primary	1	1.7
Indication not mentioned	2	3.3

Twenty patients (33.3%) undergoing vaginal hysterectomy for endometrial cancer were not considered overweight. Thirteen of the 20 patients were diagnosed either with a premalignant lesion, such as endometrial hyperplasia with atypia or early invasive disease such as a well-differentiated carcinoma developing in an endometrial polyp but without invasion. In five of these cases, patients were asymptomatic and the diagnosis of malignancy was established only as an incidental finding after hysterectomy and vaginal repair for pelvic relaxation.

Severe cardiac disease was present in three patients. In one patient with liver metastases from colon cancer the hysterectomy was also performed vaginally.

The median operative time was 1 h and 44 min, with a median blood loss of 250 cc (Table 3). Both operative time and blood loss were significantly correlated with the patients' weight.

Table 3. Surgery

Median operative time*	104 min (50–170 min)	
Median intraoperative blood loss†	250 cc (100–1200 cc)	
Additional surgical procedures	<i>n</i>	%
Anterior/posterior repair	10	17
Bilateral salpingo-oophorectomy	7	12
Unilateral salpingo-oophorectomy	6	10
Morcellation	4	7
Schuchardt incision	2	3

*Correlated with patients' weight: $r=0.56$; $P=0.004$.

†Correlated with patients' weight: $r=0.46$; $P=0.011$.

An anterior and posterior repair was done in 10 cases (17%). Removal of both ovaries and tubes was attempted in all patients, but was feasible in only seven cases for technical reasons. In another six cases, only a unilateral salpingo-oophorectomy could be performed. Morcellation and the Schuchardt incision were used in four and two cases, respectively.

The complication rate was low (Table 4). None of the 60 hysterectomies had to be completed abdominally. Intraoperative bleeding requiring transfusion was encountered in four patients (7%) and vaginal cuff cellulitis occurred in four patients. There were no bladder or rectal injuries and no pulmonary embolization occurred. Operative mortality was 0%. Hospital stay was short, with a median duration of 6 days and a range of 2–16 days.

Table 4. Complications

	<i>n</i>	%
Bleeding requiring transfusion	4	7
Postoperative infection (vaginal cuff cellulitis)	4	7

Histologic evaluation showed 90% of cancers to be adenocarcinomas (Fig. 1). Three of the patients with adenocarcinomas also had squamous differentiation (5.0%), one had an adenosquamous lesion, one a clear cell carcinoma and one a carcinosarcoma. The majority of tumors were well differentiated (68%); 18% were

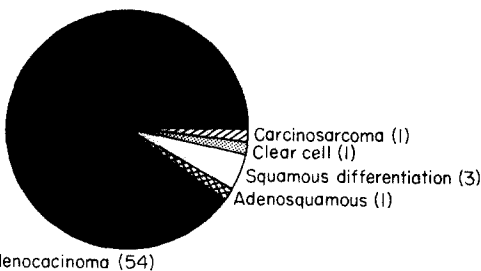


Fig. 1. Histologic type. $n=60$.

moderately differentiated; and 7% poorly differentiated (Fig. 2). In four instances, pathology slides were not available for review; however, all had documented invasive disease.

In 41%, there was no myometrial invasion (Fig. 3). In 43% of the specimens there was invasion to the inner one-third of the myometrial thickness. Cervical involvement was present in three patients. In no case was there serosal involvement of the uterus.

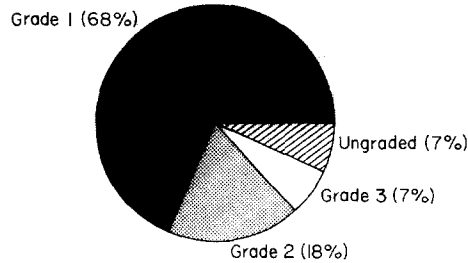
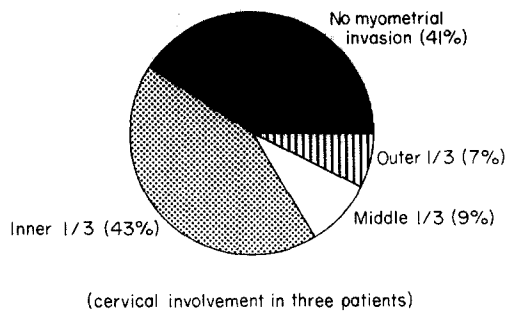


Fig. 2. Grade of differentiation. $n=60$.



(cervical involvement in three patients)
Fig. 3. Depth of invasion. $n=60$.

Preoperative radiation therapy, usually consisting of an intracavitary radium or cesium implant, was given to 15 patients (Table 5). All 15 patients showed residual disease in the uterine specimen. Preoperative radiation was not given after 1981. Postoperative radiation therapy was used in combination with the surgery in nine patients.

The results of follow-up are summarized in Table 6. The median follow-up time was 7 years. Forty-one out

Table 5. Adjuvant radiation therapy

	<i>n</i>	%
Preoperative radiation	15	25.0
Brachytherapy	14	23.3
External radiation	1	1.7
Postoperative radiation	9	15.0
Brachytherapy	4	6.7
External radiation	2	3.3
Both	3	5.0

Table 6. Outcome*

	<i>n</i>	%
Diagnosis at least 5 years ago	45	100
Alive NED at 5 years	41	91.1
Dead NED at 5 years	4	8.9
DOD at 5 years	0	0
Diagnosis at least 10 years ago	31	100
Alive NED at 10 years	27	87.1
Dead NED at 10 years	2	6.5
No information at 10 years	1	3.2
DOD at 10 years	1	3.2

*Median follow-up 7 years (1–24 years). NED, no evidence of disease; DOD, died of disease.

of 45 patients were alive at 5 years (91.1%), and 27 out of 31 (87.1%) at 10 years. Only one patient developed recurrence and subsequently died from metastatic disease. Briefly, this patient was a 73-year-old white female who underwent vaginal hysterectomy because of her morbid obesity (250 pounds) in combination with hypertension and cardiac disease (aortic stenosis). She received a preoperative cesium application. Histologic evaluation showed a grade 3 adenosquamous carcinoma with 60% myometrial invasion and extension to the cervix. The patient then received 40 Gy of external beam radiation to the whole pelvis. At 5 years she was without evidence of disease. Six years and 3 months after the initial surgery she died from lung metastases, presumably arising from the endometrial cancer. No pelvic recurrence was documented at that time. Unfortunately, no autopsy was performed.

Discussion

A GOG study of 621 patients with clinical stage I carcinoma of the endometrium clearly demonstrated that an appreciable number of early stage patients (22%) had disease outside the uterus, with spread to pelvic and/or para-aortic lymph nodes, adnexal disease, intraperitoneal spread or positive pelvic washings⁽⁸⁾. This disease spread cannot be evaluated effectively with our present diagnostic tools, such as lymphangiography, CT scan or MRI. The most accurate assessment is achieved by surgical staging, which requires a laparotomy and removal of the uterus and the adnexa, pelvic washings and selective lymphadenectomy from the pelvic and para-aortic area. As endometrial cancer is frequently associated with older age, morbid obesity, diabetes mellitus, cardiac disease, hypertension, and other risk factors, not all patients are candidates for retroperitoneal node dissections or even abdominal surgery.

An alternative approach would be radiation therapy alone. However, prognosis is not as good as after surgical treatment, as discussed below.

A hysterectomy using the vaginal approach seems to be a suitable alternative, as it is well tolerated with few postoperative complications and a low mortality rate. It is as feasible in obese as in non-obese patients⁽⁹⁾. Although the older literature seems to support this view^(2,10), only part of it holds true today, as anesthesia techniques and postoperative care have been improved significantly. In the past, vaginal hysterectomy for endometrial cancer was justified in all patients with high surgical risk. Today, a low risk of recurrence is also required if this kind of surgery is to be performed⁽¹¹⁾. Although surgical staging provides the best estimate of the risk of recurrence, some information can be obtained preoperatively. For example, the frequency of nodal metastases in the para-aortic nodes is significantly related to clinical stage, histologic type and grade⁽⁶⁾, all of which can be determined prior to hysterectomy.

In our study, all patients had clinical stage I disease. However, three patients had cervical involvement not detected by fractional D&C. The majority of cases were adenocarcinomas, with only one adenosquamous carcinoma, the latter having an increased risk of developing para-aortic lymph node metastases; and 86% were either well or moderately differentiated.

Another classical indication for the vaginal approach is pelvic relaxation or prolapse with the necessity of an anterior and/or posterior repair. This was done on 10 patients in our series. In a patient with endometrial cancer, this is acceptable only if the patient belongs to the low-risk group.

Nulliparity and previous gynecological surgery are not absolute contraindications against the vaginal approach. With a large uterus which is located high in the pelvis, a Schuchardt incision facilitates the surgical access. This incision, originally developed by Schuchardt for the vaginal radical hysterectomy in cervical cancer⁽¹²⁾, is an incision similar to a mediolateral episiotomy. However, the levator ani muscle is almost completely transected.

Morcellation was done in four patients. Morcellation should be avoided if possible, because of the potential spread of tumor cells upon opening the endometrial cavity. However, none of the four patients in this study appeared to be adversely effected by morcellation, as none of the patients died of disease. Three out of four patients survived more than 5 years. In one patient, the follow-up interval was less than 5 years.

Although adjuvant radiation therapy has not been shown to improve significantly survival from

endometrial cancer⁽¹³⁾, and most patients with clinical stage I disease have a good prognosis anyway, radiation was chosen for patients who were considered to be at high risk for recurrence because of poor tumor differentiation or deep myometrial invasion. Until 1981, patients received preoperative radiation therapy. Interestingly, all of these patients had residual tumor in the uterine specimen at the time of vaginal hysterectomy 4–6 weeks later. After 1981, preoperative radiation was abandoned in favor of the more individualized postoperative radiation therapy.

A complete long-term follow-up for the 60 patients reported in this study is available. Forty-five patients were followed for at least 5 years and 31 patients for at least 10 years. Four patients had died at 5 years and two patients at 10 years of causes other than endometrial cancer. Only one patient with an advanced high-grade adenosquamous carcinoma died of recurrence six years after vaginal hysterectomy for endometrial cancer.

The present study is retrospective and no direct comparisons are possible between the treatment results of vaginal and abdominal surgery or primary radiation therapy at the same institution. Several studies exist, however, that have made an attempt to retrospectively compare abdominal and vaginal hysterectomy as treatment for endometrial cancer. In those institutions, the indication for vaginal surgery was far less restricted than in our study. Scarselli *et al.*⁽¹⁴⁾ compared two consecutive time intervals. From 1977 to 1979, the treatment protocol recommended vaginal hysterectomy, bilateral salpingo-oophorectomy and upper colpectomy. Since 1980, the abdominal route (surgical staging including a selective pelvic but not para-aortic lymphadenectomy) prevailed. There was no significant difference in survival between the two groups (87% versus 88%, respectively). The rate of severe complications was 6.8% for abdominal surgery and only 1.1% for vaginal surgery. No operative mortality was observed for patients operated by the vaginal route, but 2.7% for those operated by the abdominal route.

Candiani *et al.*⁽¹⁵⁾ compared total abdominal hysterectomy with bilateral salpingo-oophorectomy with and without selective pelvic lymphadenectomy with vaginal hysterectomy and found survival rates of 73%, 79% and 76%, respectively. Similar results had already been reported by the same author in 1978⁽¹⁶⁾.

Bloss *et al.*⁽¹⁷⁾ reported on their experience with vaginal hysterectomy in stage I endometrial cancer of 31 medically compromised patients. The incidence of morbid obesity (87%), hypertension (58%), diabetes mellitus (35%) and cardiovascular disease (26%) is

comparable to the present study. The complication rate was also similar (13%). Three-year disease-free survival was 100%.

Carenza *et al.*⁽¹¹⁾ treated 160 patients with vaginal hysterectomy. Sixty-two per cent were obese. The 5-year survival in (clinical) stage I endometrial carcinoma was 85.5%, being related to histologic grade (grade 1: 95%; grade 2: 86.7%; grade 3: 63.3%).

The studies mentioned above demonstrate that the overall prognosis of clinical stage I endometrial cancer is acceptable as long as the uterus is completely removed. The survival rates after surgery are still at least 15–20% higher than after radiation therapy^(2,3,18).

In conclusion, results of treatment of endometrial cancer achieved by vaginal hysterectomy are favorable if patients are carefully selected. Therefore, vaginal hysterectomy can be an intermediate choice between abdominal hysterectomy and primary radiation therapy in patients with medical contraindications to conventional therapy. Although we consider surgical staging as the standard of care for the treatment of endometrial cancer, vaginal hysterectomy has a definite place in the management of patients with good prognostic criteria who are at high operative risk for the standard surgical approach.

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