The role of vaginal hysterectomy in the treatment of endometrial carcinoma

R. J. LELLÉ*, G. W. MORLEY* & W. A. PETERS†

*Department of Obstetrics and Gynecology, University of Michigan Medical Center, Ann Arbor, Michigan and †Puget Sound Oncology Consortium, Seattle, Washington, USA


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 as well as an acceptable treatment option in the USA. 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. do not discuss vaginal hysterectomy as a treatment option for patients with endometrial cancer.

In 1983, Peters et al. 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, 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
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%),
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
\[\begin{array}{ll}
\text{Obese patients} & 40 \quad 66.7 \\
\text{Morbid obesity alone} & 19 \quad 31.7 \\
\text{Diabetes mellitus} & 7 \quad 11.7 \\
\text{Cardiac disease} & 5 \quad 8.3 \\
\text{Cardiac disease and diabetes} & 3 \quad 5.0 \\
\text{Pelvic relaxation} & 3 \quad 5.0 \\
\text{Sarcoidosis with renal damage} & 1 \quad 1.7 \\
\text{Recurrent ventral hernia} & 1 \quad 1.7 \\
\text{Previous anesthesia complication} & 1 \quad 1.7 \\
\text{Non-obese patients} & 20 \quad 33.3 \\
\text{Premalignant lesion on D&C} & 6 \quad 10.0 \\
\text{Pelvic relaxation and unexpected or early invasive disease} & 5 \quad 8.3 \\
\text{Early invasive disease} & 2 \quad 3.3 \\
\text{Severe cardiac disease} & 2 \quad 3.3 \\
\text{Diabetes and pelvic relaxation} & 1 \quad 1.7 \\
\text{Parkinson's and severe cardiac disease} & 1 \quad 1.7 \\
\text{Liver metastasis from other primary} & 1 \quad 1.7 \\
\text{Indication not mentioned} & 2 \quad 3.3 \\
\end{array}\]

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

<table>
<thead>
<tr>
<th>Additional surgical procedures</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anterior/posterior repair</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>Bilateral salpingo-oophorectomy</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Unilateral salpingo-oophorectomy</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Morcellation</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Schuchardt incision</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

*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

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bleeding requiring transfusion</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Postoperative infection</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>(vaginal cuff cellulitis)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 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. 1. Histologic type. \( n = 60 \).

Fig. 2. Grade of differentiation. \( n = 60 \).

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

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative radiation</td>
<td>15</td>
<td>25.0</td>
</tr>
<tr>
<td>Brachytherapy</td>
<td>14</td>
<td>23.3</td>
</tr>
<tr>
<td>External radiation</td>
<td>1</td>
<td>1.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postoperative radiation</td>
<td>9</td>
<td>15.0</td>
</tr>
<tr>
<td>Brachytherapy</td>
<td>4</td>
<td>6.7</td>
</tr>
<tr>
<td>External radiation</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Both</td>
<td>3</td>
<td>5.0</td>
</tr>
</tbody>
</table>
Table 6. Outcome*

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

*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. 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. Although the older literature seems to support this view, 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. 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, 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, 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 salpingooophorectomy 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 salpingooophorectomy 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.

Acknowledgements
This paper was presented at the Society of Pelvic Surgeons 42nd Annual Meeting in Munich, Germany, 15 September 1992.

References

Accepted for publication 14 December 1993