

*Key Clinical Decision*



*Determining  
the Route and  
Method of  
Hysterectomy*




*Key Clinical Decision:*

# *Determining the Route and Method of Hysterectomy*

## *Table of Contents*

<i>Ethicon Endo-Surgery, Inc.</i> .....	3
<i>Foreword from the Editor</i> .....	4
<i>Introduction</i> .....	5
<i>Background</i> .....	6
<i>Route of Hysterectomy Flow Chart</i> .....	8
<i>Uterus Accessible Transvaginally</i> .....	9
<i>Uterine Size &lt; 280 grams (&lt; 12 weeks)</i> .....	11
<i>Table 1</i> .....	11
<i>Pathology Confined to the Uterus</i> .....	13
<i>Table 2</i> .....	13
<i>Table 3</i> .....	13
<i>Laparoscopic Examination</i> .....	15
<i>Operative Laparoscopy</i> .....	17
<i>Synopsis</i> .....	17
<i>References</i> .....	18
<i>Contributors</i> .....	19
<i>Self-Assessment</i> .....	20-21
<i>Self-Assessment Answers</i> .....	22



Ethicon Endo-Surgery, Inc., has produced this Key Clinical Decision document in an effort to facilitate the application of the latest medical and scientific evidence into day-to-day clinical practice. This document may be used by:

- professional societies,
- organized health systems including managed care organizations,
- accrediting bodies, and
- other groups and individuals involved with the development of practice, utilization management, and other patient care guidelines.

*Determining the Route and Method of Hysterectomy presents an organized and convenient compilation of some of the peer-reviewed published literature that physicians and health care organizations can use to develop their own guidelines for choosing routes and methods of hysterectomy for their patients. Ethicon Endo-Surgery, Inc., does not take any position on the appropriateness of any guideline that a doctor or organization may choose to implement based on this compilation. In addition, it does not endorse any particular procedure or route of hysterectomy and has no opinion as to how any individual patient should be treated. Ethicon Endo-Surgery, Inc. does not engage in the practice of medicine.*

**Ethicon Endo-Surgery, Inc.,**  
4545 Creek Road,  
Cincinnati, Ohio 45242-2839  
(513) 337-7889  
Fax: (513) 786-7283

© 1999 Ethicon Endo-Surgery, Inc.,  
ISBN 0-9673302-0-3

All rights reserved



## *Determining the Route and Method of Hysterectomy*

### **Foreword From The Editor**

There is an abundance of evidence demonstrating that the vaginal approach to hysterectomy is associated with less pain, fewer complications, lower hospital charges, a shorter length of hospital stay, and more rapid convalescence when compared with abdominal hysterectomy. Yet, abdominal hysterectomy remains the predominant route. The introduction of laparoscopic hysterectomy by Reich and colleagues in 1989 and laparoscopically assisted vaginal hysterectomy by myself in 1990, which provided a third option for uterine removal, made it even more difficult for physicians to select the appropriate route of hysterectomy for their patients.

*Key Clinical Decision: Determining the Route and Method of Hysterectomy* presents a formal decision process physicians can use when choosing between abdominal, vaginal, and laparoscopically assisted vaginal hysterectomy in patients with benign disease. This process begins once the decision has been made to perform a hysterectomy for a benign condition.

Inherent in this document is the assumption that appropriate alternatives to hysterectomy, including conservative pharmacological therapy, ablative procedures, and hysteroscopic surgery have been considered and discussed, and that the patient has made an informed decision to undergo a hysterectomy.

Good patient care dictates that physicians practice within the scope of their training and experience. As Dr. Charles Mayo stated, "An operation should fit the patient not the patient fit an operation". This comment is particularly relevant as it relates to the selection of an abdominal, vaginal, or laparoscopic approach to surgery. In certain cases, referral to a colleague who is more experienced in vaginal or laparoscopic surgery may be necessary in order to ensure that patients receive the surgery that they need based on their clinical characteristics.

The controversy continues over the appropriate use of vaginal, abdominal, and laparoscopically assisted vaginal hysterectomy. The development of clinical guidelines is the first step in ensuring that patients will receive appropriate surgical treatment that is cost-effective and meets the standard of quality care.

**S. Robert Kovac, M.D.**

Professor of Obstetrics and Gynecology  
and Pelvic Reconstructive Surgery  
Wright State University School of Medicine  
April, 1999

### **Introduction**

*Key Clinical Decision: Determining the Route and Method of Hysterectomy* has been developed to provide information that physicians can use when choosing between abdominal and vaginal hysterectomy with or without laparoscopic assistance. This document is a compilation of some of the evidence regarding the selection of the route and method of hysterectomy for patients with benign disease and includes criteria physicians can apply to individual patients who need hysterectomies. By incorporating the evidence into their clinical decision making, practitioners can develop personal or organizational guidelines that will assist in choosing the route of hysterectomy that is best for each patient. Throughout this document, vignettes illustrate key points in the decision process.



## *Determining the Route and Method of Hysterectomy*

### **Background**

Every year more than 590,000 American women undergo hysterectomies,<sup>1</sup> making the procedure the second most common surgery among reproductive-aged women in the United States,<sup>2</sup> resulting in an estimated annual cost exceeding \$5 billion.<sup>3</sup> The vast majority of these surgeries are performed for benign conditions.<sup>3</sup> Studies of hysterectomy practice show that in the past, surgeons performed approximately 75% of these procedures abdominally<sup>2, 4, 5</sup> despite well-documented evidence that, when compared with unassisted vaginal hysterectomy, abdominal hysterectomy was reported to have a higher incidence of complications,<sup>4, 6</sup> a longer length of hospital stay and convalescence,<sup>4, 6, 7</sup> and greater hospital charges.<sup>6, 7</sup> The advantages of vaginal hysterectomy over abdominal hysterectomy have prompted numerous investigators to recommend vaginal hysterectomy for women whose conditions permit the approach.<sup>4, 6, 8, 9, 10</sup> Data obtained from hysterectomy surveillance studies show that during the early 1990s, there was a 10% to 15% decline in the percentage of abdominal hysterectomies performed.<sup>7, 11</sup>

Until recently, most physicians limited the use of vaginal hysterectomy for benign

conditions confined to the uterus to the following indications:

- uterine prolapse,
- small symptomatic leiomyomata,
- recurrent or severe dysfunctional uterine bleeding, and
- carcinoma *in situ* of the cervix.<sup>12</sup>

Traditionally, vaginal hysterectomy was contraindicated when the vaginal route was presumed inaccessible or when more serious pathologic conditions were thought to exist, such as:<sup>12, 13, 14</sup>

- endometriosis,
- pelvic adhesive disease,
- adnexal pathology,
- chronic pelvic pain, and
- chronic pelvic inflammatory disease.

In addition, many physicians hesitated to perform vaginal hysterectomy in cases of nulliparity, previous pelvic surgery (including one or more cesarean sections), a moderately enlarged uterus, or when an oophorectomy was necessary.<sup>13, 14, 15</sup>

There is significant overlap in reported indications for both abdominal and vaginal hysterectomies,<sup>16</sup> making it clear that physicians do not always select the route of hysterectomy based on the severity of the patient's pathologic condition. It has been suggested that historical indications for abdominal hysterectomy may no longer be valid and

that the direct observation of the severity of the pathology, rather than the mere suspicion of the pathology, should determine the best choice for the route of hysterectomy.<sup>6, 17</sup>

The question arises as to why vaginal hysterectomies are not the predominant procedure. Even when the vaginal route is not contraindicated, several factors presumably limit the use of vaginal hysterectomy, including:

- the absence of formal practice guidelines that clearly identify appropriate candidates for vaginal hysterectomy, abdominal hysterectomy, and laparoscopically assisted vaginal hysterectomy,<sup>6, 14</sup>
- a lack of training and experience in vaginal and laparoscopic techniques,<sup>6, 9, 14, 15, 16</sup>
- a reluctance to perform vaginal surgery when the uterus is significantly enlarged,<sup>13</sup> in nulliparous women, or in the absence of uterine prolapse,<sup>15</sup> and
- physician practice style, which includes physician values, attitudes, and habits.<sup>6, 14, 16</sup>

The results of two outcome-based studies show that by prospectively using a formal decision process, such as the one presented on Page 8, to determine the route of hysterectomy in patients with benign disease,<sup>18</sup> physicians can perform vaginal hysterectomy in approximately

77-89% of their patients.<sup>6, 9</sup> Increasing the number of vaginal hysterectomies performed will have distinct health and economic benefits for patients, including less pain,<sup>19</sup> fewer complications,<sup>4, 6, 7</sup> faster recuperation,<sup>6, 19</sup> and a quicker return to work and daily activities.<sup>6, 19</sup>

When selecting the surgical route of hysterectomy for patients with benign disease, physicians are faced with three critical decisions:

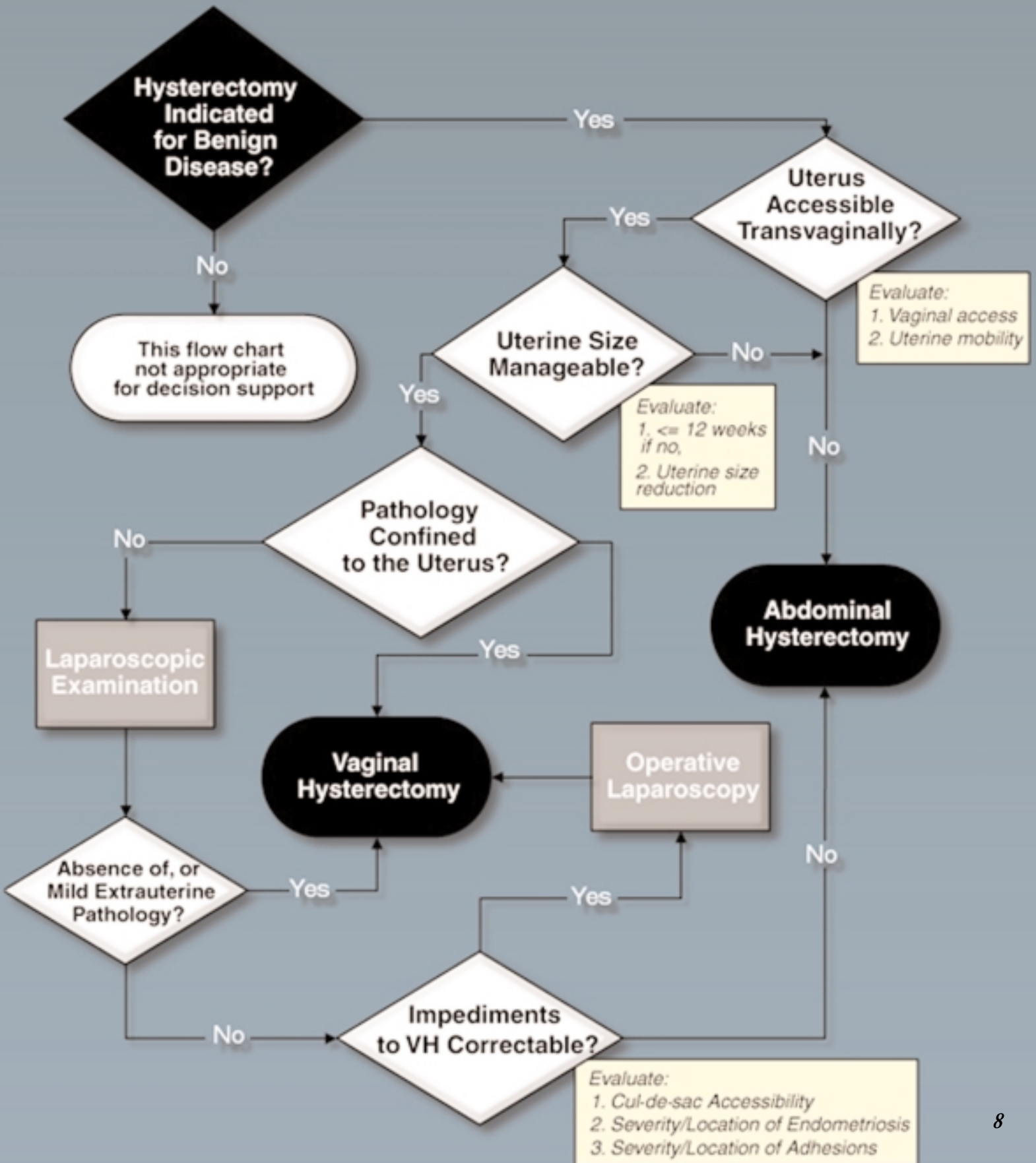
1. Can the uterus be removed transvaginally?
2. Is the pathology confined to the uterus or does it extend beyond the confines of the uterus?
3. Is laparoscopic assistance required to facilitate vaginal removal of the uterus?

To answer these questions, proceed through the flow chart found on Page 8 from top to bottom and review each decision point individually.

\* For the purposes of this document, the term *laparoscopically assisted vaginal hysterectomy (LAVH)* indicates any procedure that uses the laparoscope as a tool to confirm the severity of the patient's condition or to resolve intra-abdominal pathology before proceeding with a vaginal hysterectomy.

The terms *laparoscopic hysterectomy*, *laparoscopically directed hysterectomy*, *laparoscopically assisted hysterectomy* and *laparoscopically assisted vaginal hysterectomy* are used inconsistently in clinical practice and throughout the literature to describe the many uses of the laparoscope in hysterectomy. For a more complete discussion, refer to the following authors: Karpen M. *J Clin Laser Med Surg*. 1992;10:381-383; Kovac et al. *Gynecol Surg*. 1990;6:185-193; Munro and Parker. *Obstet Gynecol*. 1993;82:624-629. Reich et al. *JGynecol Surg*. 1989;5:213-216; Shwayder J. *Obstet Gynecol Clin North Am*. 1999;26:169-187; Summitt et al. *Obstet Gynecol*. 1992;80:895-901.

# Determining the Route and Method of Hysterectomy





# Determining the Route and Method of Hysterectomy

## Uterus Accessible Transvaginally

An important issue in determining the route of hysterectomy is the transvaginal accessibility of the uterus. Inadequate accessibility due to a narrowed vagina at the vaginal apex makes vaginal hysterectomy technically challenging and may contraindicate vaginal hysterectomy, especially by surgeons less experienced in this procedure. However, inaccessibility is a rare concern. In one study of 617 women, inaccessibility was found in only 1% of patients.<sup>6</sup>

Two factors limit accessibility:<sup>14, 20</sup>

- an undescended and immobile uterus, and
- a vagina narrower than 2 fingerbreadths, especially at the apex.

Physicians should be alert for these indicators when examining patients.

Nulliparity is not an absolute contraindication to vaginal hysterectomy. Although access to the vaginal vault may be restricted in some nulliparous women, inaccessibility cannot be assumed in all cases of nulliparity.<sup>21</sup>

Physicians can evaluate accessibility by taking a careful clinical history and performing a pelvic examination.\* If necessary, an ultrasound of the uterus can help assess the size and position of large leiomyomata.<sup>21</sup> If accessibility appears adequate, the woman may be a candidate for a vaginal hysterectomy with or without laparoscopic assistance.

The need for oophorectomy no longer contraindicates vaginal hysterectomy.<sup>†</sup> Although physicians historically believed that transvaginal oophorectomy was difficult, if not impossible, recent evidence shows that the ovaries can be removed transvaginally in most women undergoing vaginal hysterectomy.<sup>6, 22, 23</sup> In one study of 740 women, prophylactic vaginal oophorectomy

\* Physicians should be aware that during the pelvic examination, patients may contract certain pelvic muscles making the pelvic examination inadequate and preventing the physician from accurately assessing accessibility

† For a discussion of other authors who support transvaginal oophorectomy, refer to Davies et al. *Br J Obstet Gynaecol.* 1996;103:915-920; Kammerer-Doak et al. *J Pelvic Surg.* 1996;2:304-309; Smale et al. *Am J Obstet Gynecol.* 1978;131:122-128; Wright RC. *Am J Obstet Gynecol.* 1974;120:759-763.

without laparoscopic assistance was possible in 95% of the patients.<sup>22</sup> In another study of 966 women undergoing hysterectomy, the ovaries were removed vaginally without laparoscopic assistance in more than 80% of the patients undergoing oophorectomy.<sup>23</sup> These authors state that most ovaries are visible and accessible for transvaginal removal if they show some descent into the vagina when the infundibulopelvic ligament is stretched.<sup>23</sup>

### *Vignette 1*

*A 40-year-old woman, gravida 1, para 0, presents with a history of recurrent abnormal bleeding and a uterus that was found on ultrasound to be enlarged to approximately 12 weeks' gestational size (about 280 grams) with multiple leiomyomata. Her past history is remarkable for a laparoscopic cholecystectomy. A pelvic examination reveals a 12-week size (about 280 grams) irregularly shaped uterus consistent with leiomyomata. The vaginal passageway is quite narrow at the vaginal apex, admitting less than two fingerbreadths. Based on these findings, an abdominal hysterectomy is likely indicated.*

# Determining the Route and Method of Hysterectomy

Uterus < 280g  
(<12 weeks)

Gynecological surgeons have long considered an enlarged uterus a contraindication to vaginal hysterectomy, but what constitutes enlarged? A normal-sized uterus weighs approximately 70 to 125 grams.<sup>24</sup> (See Table 1.) The American College of Obstetricians and Gynecologists (ACOG) and other investigators assert that vaginal hysterectomy is best performed in women with mobile uteri no larger than 12-weeks' gestational size (approximately 280 grams),<sup>6, 25, 26</sup> although other authors suggest that a uterus as large as 16-weeks' gestational size (approximately 400 grams) can be safely approached vaginally.<sup>27</sup>

Studies show that between 80% and 90% of all uteri removed for various indications weigh 280 grams or less.<sup>6, 31</sup> When the surgeon is experienced in uterine size-reduction techniques, such as coring, bivalving, and morcellation, larger uteri can be safely removed vaginally.<sup>6, 21</sup> Even though they do extend operative time, these size-reduction techniques are well-

Type of Uterus	Weight (grams)
Normal Uterus	
Nulliparous	70
Multiparous	75-125
Enlarged Uterus (gestational size)	
8 weeks	125-150
12 weeks	280-320
24 weeks	580-620
Term	1000-1100

accepted methods of reducing an enlarged uterus and removing it transvaginally.\*

Several authors report using pharmacological agents to reduce the size of the uterus preoperatively. In clinical studies of patients with pretreatment uterine sizes ranging from 14 to 18 weeks, the administration of these agents reduced the size of symptomatic uterine leiomyomata by 30% to 50% and decreased uterine volume

\* Editor's Note: In certain cases of uterine enlargement due to myomas, surgeons may be concerned that the location of the myoma might limit access to the uterine artery, thus precluding uterine size-reduction techniques. In my experience with over 10,000 cases, access to the uterine artery has never been problematic regardless of the location of the myoma.

by approximately one-third before hysterectomy, allowing physicians to perform vaginal hysterectomy in patients with enlarged uteri who would have been candidates for abdominal hysterectomy.<sup>28, 29</sup>

It is possible to measure the size of the uterus *in vivo* by conducting a physical examination. If there is a question about uterine size, physicians can also use transvaginal ultrasound and apply an algebraic formula to determine the uterine size, expressed in weights and measurements.<sup>30</sup> By multiplying the three dimensions of the uterus in centimeters (length x width x anteroposterior diameter at the fundus) by 0.52, physicians can estimate the volume of the uterus in grams in order to obtain a more accurate preoperative estimate of uterine size.\* (Example: 6 cm x 6 cm x 8 cm x 0.52 = 149 grams) Physicians can also use this formula to estimate ovarian size.

\* Editor's Note: This is a mathematical simplification of the prolate ellipsoid formula used by Kung and Chang (*Gynecol Obstet Invest.* 1996;42:35-38) to estimate the volume and weight of the uterus. For an additional discussion of the use of a formula to estimate uterine weight by ultrasound measurements, refer to Cantuaria et al. *Obstet Gynecol.* 1998;92:109-112; Flickinger et al. *Obstet Gynecol.* 1986;68:855-858.

### *Vignette 2*

*A 36-year-old woman, gravida 3, para 2, presents with a palpable abdominal mass. She complains of heavy menstrual flow and has a hemoglobin level of 9.8. Abdominal bloating and pressure associated with urinary urgency are also present. Her past history is unremarkable without prior pelvic surgery or sexually transmitted disease. A pelvic examination reveals a mobile and irregularly enlarged uterus approximately 14 weeks' gestational size (about 340 grams). The vaginal passage is spacious. Based on these findings, a vaginal hysterectomy may be indicated if size-reduction techniques are employed.*

# Determining the Route and Method of Hysterectomy

## Pathology Confined to the Uterus

Determining whether the pathology is confined to the uterus or extends beyond the confines of the uterus is critical to selecting the most appropriate route of hysterectomy for patients. According to the decision tree, a vaginal hysterectomy is indicated when pathology is confined to the uterus. When the preoperative diagnosis suggests that pathologic conditions extend beyond the confines of the uterus, further laparoscopic evaluation can help in determining the severity of the condition before deciding whether to remove the uterus via the vaginal or abdominal route.<sup>6, 34</sup>

Table 2 identifies those conditions confined to the uterus. Table 3 shows those conditions that might extend beyond the confines of the uterus.

In order to identify patients whose pathology extends beyond the confines of the uterus and might prohibit vaginal hysterectomy, the surgeon should determine the location and severity of the pathologic

**Table 2**  
**Conditions Confined to the Uterus**

Leiomyomata  
Uterine prolapse  
Adenomyosis  
Abnormal uterine bleeding  
Carcinoma *in situ* of the cervix

**Table 3**  
**Conditions That Might Extend Beyond the Confines of the Uterus**

Endometriosis  
Adnexal pathology  
Pelvic adhesive disease  
Chronic pelvic pain  
Chronic pelvic inflammatory disease

condition. Traditionally, physicians used the results of the history, physical examination, and imaging techniques, such as ultrasound and x-ray studies, to determine whether pathology extended beyond the uterus. However, several investigators have proven that these techniques are not sufficiently

accurate to adequately document the severity of those conditions that might extend beyond the confines of the uterus, especially endometriosis, adnexal pathology, chronic pelvic pain, and pelvic inflammatory disease.<sup>14, 17, 32</sup> When physicians based their decision to perform an abdominal hysterectomy on the clinical history and pelvic examination, without further intraoperative documentation of the severity of the patient's condition, their surgical findings often did not support the abdominal route.<sup>14, 32</sup>

### *Vignette 3*

*A 39-year-old woman, gravida 2, para 2, presents with chronic menorrhagia and anemia. Previous pharmacological treatment was unsuccessful at reducing the menorrhagia. Her past history reveals no prior pelvic surgery or sexually transmitted disease. A pelvic examination reveals a large, irregularly shaped uterus of approximately 8 weeks' gestational size (approximately 180 grams). The uterus is mobile and the vaginal passageway is unrestricted. Based on these findings, with no indication of extrauterine pathology and a uterus weighing less than 280 grams, a vaginal hysterectomy is most likely indicated.*

### *Vignette 4*

*A 48-year-old woman, gravida 1, para 1, presents with a history of chronic dysmenorrhea and severe and recurrent abnormal uterine bleeding. Hormonal therapy, dilatation and curettage, and endometrial ablation have failed to resolve the bleeding. Her hemoglobin level is maintained at 9.0 on iron therapy. Her past history includes a conservative procedure, 20 years previous, for endometriosis that included the removal of one ovary. A pelvic examination reveals a normal-sized, mobile uterus and a normal, mobile ovary with an adequate vaginal passage. Based on these findings, including the past history of previous pelvic surgery for endometriosis that might have created pelvic adhesive disease, a laparoscopic examination may be indicated before selecting the route of hysterectomy.*

## *Determining the Route and Method of Hysterectomy*

### **Laparoscopic Examination**

When the physician suspects that the patient's pathologic condition is severe enough for an intra-abdominal operative intervention, a laparoscopic examination at this point can confirm the extent of the pathology and allow more accurate decision-making.<sup>9, 14</sup> Not only is the laparoscope useful for accurately assessing the extent and characteristics of the disease, it is also valuable in determining the mobility of the uterus and adnexal structures.<sup>17</sup> Laparoscopic examination provides a panoramic view of the pelvis and allows physicians to directly examine the degree of pathology and note the presence of any conditions that might contraindicate vaginal hysterectomy.

Although the American College of Obstetricians and Gynecologists acknowledges that laparoscopically assisted vaginal hysterectomy is an acceptable alternative to abdominal hysterectomy,<sup>33</sup> physicians continue to question how much laparoscopic assistance is appropriate

before removing the uterus transvaginally.<sup>34</sup> Several experts advocate using the laparoscope especially in cases of pelvic pain,<sup>35</sup> or suspected adnexal masses and/or pelvic abnormalities due to endometriosis, infection, or previous surgery.<sup>8, 9, 13, 34</sup>

It is important to accurately determine the severity of the pathology during laparoscopy. Several investigators use a laparoscopic scoring system to numerically determine the severity of the disease based on uterine size, adnexal accessibility, and the presence or absence of adhesions, endometriosis, and other pelvic abnormalities.<sup>17, 36</sup>

The three critical variables inherent in this scoring system, which should be assessed during the laparoscopic examination, include:

- accessibility of the cul-de-sac,
- severity of adhesions, and
- severity of endometriosis.



Following the flow chart shown in this document, when extrauterine pathology is absent or minimal upon laparoscopic examination, a vaginal hysterectomy may be indicated. It is important to emphasize that previous pelvic surgery, including cesarean section, does not preclude a vaginal hysterectomy unless extensive surgical adhesions are observed during laparoscopy as limiting accessibility, particularly to the cul-de-sac.<sup>8, 21</sup> Patients with minimal pathology display few or no adhesions, little or no endometriosis, and an accessible cul-de-sac. If laparoscopic assessment reveals moderate pathology, including moderate adhesions or endometriosis but an accessible cul-de-sac, it is necessary to determine whether the impediments can be removed laparoscopically before proceeding to a vaginal hysterectomy. If severe endometriosis is present or the cul-de-sac is obliterated by severe adhesions, an abdominal hysterectomy is indicated.

### *Vignette 5*

*A 38-year-old woman, gravida 2, para 2, presents with marked, acquired dysmenorrhea and chronic pelvic pain unrelieved by NSAIDs and hormonal therapy. Her past history includes two laparoscopies and ablation of endometriosis. A pelvic examination reveals a uterus that is symmetrically enlarged to approximately 6 weeks' gestational size (approximately 150 grams) and tender to palpation. The vaginal passageway is unrestricted. On rectal examination there is some thickening and tenderness of the uterosacral ligaments. Based on these findings, with a history of endometriosis and chronic pelvic pain, a laparoscopic examination may be indicated before selecting the route of hysterectomy.*



# Determining the Route and Method of Hysterectomy

## Operative Laparoscopy

Operative laparoscopy allows the physician to correct or remove impediments before removing the uterus transvaginally. Operative laparoscopy is appropriate for patients with moderate extrauterine pathology, especially those with varying degrees of adhesions and endometriosis. When using the laparoscope physicians can perform adhesiolysis or fulguration of endometriosis in order to remove the intra-abdominal pathology before proceeding with a vaginal hysterectomy.

If operative laparoscopy is indicated, it is beneficial to convert to a vaginal hysterectomy as early as possible in the procedure, for example, after adhesiolysis. Several studies have suggested that nothing is gained by continuing the laparoscopic dissection once a vaginal hysterectomy can be performed safely, as it does little more than prolong surgery, increase costs, and increase the risk of morbidity.<sup>8, 19</sup>

## Synopsis

Physicians perform more than half a million hysterectomies each year, using the abdominal approach for a large majority of these surgeries, despite evidence indicating the advantages of vaginal hysterectomy when either the vaginal or abdominal approach is appropriate. Increasing the number of vaginal hysterectomies performed each year has distinct health and economic benefits.

Because abdominal hysterectomy is associated with less favorable medical outcomes, studies support its use only when pathologic conditions preclude the vaginal route. Some physicians remain reluctant to perform a vaginal hysterectomy in patients for whom the vaginal route may be a more appropriate alternative, due to the absence of formal guidelines and a lack of training in vaginal and laparoscopic techniques.

The use of a formal decision process, similar to the one presented on Page 8, can ensure that patients receive the most appropriate route of hysterectomy based on their clinical needs. Before selecting the route and method of hysterectomy, it is helpful to:

1. Estimate uterine size accurately and determine whether it is manageable transvaginally,
2. Evaluate uterine accessibility,
3. Determine whether the pathology is confined to the uterus or extends beyond the confines of the uterus,
4. Assess the severity of the pathology laparoscopically, if there is a suspicion that the pathology extends beyond the confines of the uterus, and
5. Remove extrauterine impediments laparoscopically, when doing so allows vaginal extraction.

By incorporating this information into clinical practice, physicians will have additional tools they can use to determine the route and method of hysterectomy that is best for each patient.

## References

1. Graves EJ, Kozak LJ. *National Hospital Discharge Survey: Annual Summary, 1996*. Hyattsville, MD: National Center for Health Statistics; January 1999: Series 13, No. 140.
2. Lepine IA, Hillis SC, Marchbank PA, et al. *Hysterectomy surveillance – United States, 1980-1993*. MMWR CDC Surveillance Summaries. 1997;46:5-12.
3. Carlson KJ, Nichols DH, Schiff I. Indications for hysterectomy. *New Engl J Med*. 1993;328:856-860.
4. Dicker RC, Greenspan JR, Strauss IT, et al. Complications of abdominal and vaginal hysterectomy among women of reproductive age in the United States. The Collaborative Review of Sterilization. *Am J Obstet Gynecol*. 1982;144:841-846.
5. Wilcox LS, Koonin LM, Pokras R, et al. Hysterectomy in the United States 1988-1990. *Obstet Gynecol*. 1994;83:549-555.
6. Kovac SR. Guidelines to determine the route of hysterectomy. *Obstet Gynecol*. 1995;85:18-23.
7. Harris MB, Olive DL. Changing hysterectomy patterns after introduction of laparoscopically assisted vaginal hysterectomy. *Am J Obstet Gynecol*. 1994;171:340-344.
8. Richardson RE, Bournas N, Magos A. Is laparoscopic hysterectomy a waste of time? *Lancet*. 1995;345:36-41.
9. Querleu D, Cosson M, Parmentier D, Debodinance P. The impact of laparoscopic surgery on vaginal hysterectomy. *Gynecol Endosc*. 1993;2:89-91.
10. Shwayder JM. Laparoscopically assisted vaginal hysterectomy. *Obstet Gynecol Clin North Am*. 1999;26:169-187.
11. Weber AM, Lee J-C. Use of alternative techniques of hysterectomy in Ohio, 1988-1994. *N Engl J Med*. 1996;335:483-489.
12. Thompson JD, Warshaw J. Hysterectomy. In: Rock JA, Thompson JD, eds. *TeLinde's Operative Gynecology*. 8th ed. Philadelphia, PA: Lippincott-Raven; 1997:chap 33.
13. Boike GM, Elfstrand EP, DelPriore G, et al. Laparoscopically assisted vaginal hysterectomy in a university hospital: report of 82 cases and comparison with abdominal and vaginal hysterectomy. *Am J Obstet Gynecol*. 1993;168:1690-1701.
14. Kovac SR. Vaginal hysterectomy. *Baillière's Clin Obstet Gynaecol*. 1997;11:95-110.
15. Davies A, Vizza E, Bournas N, et al. How to increase the proportion of hysterectomies performed vaginally. *Am J Obstet Gynecol*. 1998;179:1008-1012.
16. Kovac SR, Christie SJ, Bindbeutel GA. Abdominal versus vaginal hysterectomy: a statistical model for determining physician decision making and patient outcome. *Med Decis Making*. 1991;11:19-28.
17. Kovac SR, Cruikshank SH, Retto HF. Laparoscopy-assisted vaginal hysterectomy. *Gynecol Surg*. 1990;6:185-193.
18. Kovac SR. Vaginal Hysterectomy in High-Risk Women. In: Sheth S, Studd J, eds. *Vaginal Hysterectomy*. Oxford, England: Isis Medical Media Limited; in press.
19. Van Den Eeden SK, Glasser M, Mathias SD, et al. Quality of life, health care utilization, and costs among women undergoing hysterectomy in a managed-care setting. *Am J Obstet Gynecol*. 1998;178:91-100.
20. Kovac SR. Which route for hysterectomy? Evidence-based outcomes guide selection. *Postgrad Med*. 1997;102:153-158.
21. Magos A, Bournas N, Sinha R, et al. Vaginal hysterectomy for the large uterus. *Br J Obstet Gynecol*. 1996;103:246-251.
22. Sheth SS. The place of oophorectomy at vaginal hysterectomy. *Br J Obstet Gynecol*. 1991;98:662-666.
23. Kovac SR, Cruikshank SH. Guidelines to determine the route of oophorectomy with hysterectomy. *Am J Obstet Gynecol*. 1996;175:1483-1488.
24. American College of Obstetricians and Gynecologists. *Quality Assurance in Obstetrics and Gynecology*. Washington: The College;1989:103.
25. American College of Obstetricians and Gynecologists. *Precis IV: An Update in Obstetrics and Gynecology*. Washington, DC: The College;1990: page 197.
26. Dorsey JH, Steinberg EP, Holtz PM. Clinical indications for hysterectomy route: patient characteristics or physician preference? *Am J Obstet Gynecol*. 1995;173:1452-1460.
27. Summitt RL, Stovall TG, Steege JF, Lipscomb GH. A multicenter randomized comparison of laparoscopically assisted vaginal hysterectomy and abdominal hysterectomy in abdominal hysterectomy candidates. *Obstet Gynecol*. 1998;92:321-326.
28. Stovall TG, Summitt RL, Washburn SA, Ling FW. Gonadotropin-releasing hormone agonist use before hysterectomy. *Am J Obstet Gynecol*. 1994;170:1744-1748.
29. Vercellini P, Crosignani P, Imperato E, et al. Treatment with a gonadotrophin releasing hormone agonist before hysterectomy for leiomyomas: results of a multicentre, randomized controlled trial. *Br J Obstet Gynecol*. 1998;105:1148-1154.
30. Kung F, Chang S. The relationship between ultrasonic volume and actual weight of pathologic uterus. *Gynecol Obstet Invest*. 1996;42:35-38.
31. Carlson KJ, Miller BA, Fowler FJ. The Maine women's health study: I. Outcomes of hysterectomy. *Obstet Gynecol*. 1994;83:556-565.
32. Lee NC, Dicker RC, Rubin GL, et al. Confirmation of the preoperative diagnosis for hysterectomy. *Am J Obstet Gynecol*. 1984;150:283-287.
33. American College of Obstetricians and Gynecologists. Operative laparoscopy. *ACOG Educational Bulletin*. Number 239, August, 1997.
34. Kovac SR. Guidelines to determine the role of laparoscopically assisted vaginal hysterectomy. *Am J Obstet Gynecol*. 1998;178:1257-1263.
35. Kresh AJ, Seifer DB, Sachs LB, Barrese I. Laparoscopy in 100 women with chronic pelvic pain. *Obstet Gynecol*. 1984;64:672-674.
36. Howard FM, Sanchez R. A comparison of laparoscopically assisted vaginal hysterectomy and abdominal hysterectomy. *J Gynecol Surg*. 1993;9:83-90.



# *Determining the Route and Method of Hysterectomy*

## **Contributors**

### **MEDICAL EDITOR**

#### **S. Robert Kovac, M.D.**

Professor of Obstetrics and Gynecology and Pelvic  
Reconstructive Surgery  
Wright State University School of Medicine  
Dayton, OH

### **MEDICAL WRITER**

#### **Cynthia L. Kryder, M.S.**

### **CLINICAL ADVISORY REVIEW PANEL**

#### **Raymond A. Lee, M.D.**

Professor, Department of Obstetrics and Gynecology  
Division of Gynecologic Surgery  
Mayo Clinic  
Rochester, MN

#### **Barbara S. Levy, M.D.**

Director, Women's Health Center  
Franciscan Health System  
Federal Way, WA  
Assistant Clinical Professor  
Department of Obstetrics and Gynecology  
Yale University School of Medicine  
New Haven, CT

#### **Steven D. McCarus, M.D.**

Chief of Gynecologic Endoscopy  
Department of Gynecology  
St. Francis Hospital and Health Center  
Medical Director  
Chicago Institute for Minimally Invasive Surgery  
St. Francis Hospital and Health Center  
Blue Island, IL

#### **Valerie Montgomery Rice, M.D.**

Associate Professor and Director  
Department of Obstetrics and Gynecology  
Division of Reproductive Endocrinology  
University of Kansas School of Medicine  
Kansas City, KS

#### **David L. Olive, M.D.**

Professor and Chief  
Reproductive Endocrinology and Infertility  
Department of Obstetrics and Gynecology  
Yale University School of Medicine  
New Haven, CT

#### **James M. Shwayder, M.D.**

Director of Gynecology and Gynecologic Ultrasound  
Denver Health Medical Center  
Assistant Professor Department of OB/GYN  
University of Colorado Health Science Center  
Denver, CO

#### **Anne M. Weber, M.D.**

Director of Clinical Research  
Department of Gynecology and Obstetrics  
Cleveland Clinic Foundation  
Cleveland, OH

### **CENTER FOR CLINICAL DECISION SUPPORT DEVELOPMENT TEAM FOR THIS DOCUMENT**

#### **Robert A. Ameo, Ph.D.**

Project Leader

#### **Carol J. Sprinkle, B.S.N., R.N.**

Clinical Research

#### **Frank Fleming, Ed.D.**

Senior Consultant UM/QA

#### **Shannon Sagaser, M.Ed., M.B.A.**

Quality Assurance

#### **Michael Suer, M.H.A.**

Healthcare Analyst

#### **Howard Y. Meisner, B.S.**

Information Systems

Design and Production

**Metaphor Inc.**  
Sparta, NJ 07871

## Self-Assessment

**Try to complete this test from memory then review the reading material to check your responses. Refer to the flow chart on Page 8 to answer the application questions, 12-20. The answers to this self-assessment appear on page 22.**

1. In the United States, the percentage of hysterectomies surgeons have traditionally performed abdominally was:
  - a. 20%
  - b. 35%
  - c. 50%
  - d. 75%
  
2. From the list below, select one possible reason surgeons perform so few vaginal hysterectomies.
  - a. Absence of formal practice guidelines that identify candidates for abdominal, vaginal, and laparoscopically assisted vaginal hysterectomy
  - b. Experience in laparoscopic techniques
  - c. Experience in vaginal techniques
  - d. Superiority of the abdominal route
  
3. From the list below, choose one condition surgeons used historically to contraindicate vaginal hysterectomy.
  - a. Chronic pelvic pain
  - b. Dysfunctional uterine bleeding
  - c. Small leiomyomata
  - d. Uterine prolapse
  
4. From the list below, identify one advantage of vaginal hysterectomy when compared with abdominal hysterectomy.
  - a. Fewer complications
  - b. Higher hospital charges
  - c. Less rapid convalescence
  - d. Longer hospital stay
  
5. A normal-sized uterus weighs:
  - a. 40-55 grams
  - b. 60-65 grams
  - c. 70-125 grams
  - d. 130-150 grams
  
6. Evidence shows that the percentage of uteri removed for various indications weighing 280 grams or less ranges from:
  - a. 20%-30%
  - b. 40%-50%
  - c. 60%-70%
  - d. 80%-90%
  
7. From the list below, identify one factor that always limits vaginal accessibility.
  - a. Cesarean section
  - b. Nulliparity
  - c. Previous pelvic surgery
  - d. Vagina narrower than two fingerbreadths, especially at the apex
  
8. List three pathologic conditions that are confined to the uterus.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  
9. List three pathologic conditions that *might* extend beyond the confines of the uterus.
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  
10. When you are uncertain whether pathology extends beyond the confines of the uterus, what procedure is most likely indicated?
  - a. An abdominal hysterectomy
  - b. A laparoscopically assisted hysterectomy
  - c. A vaginal hysterectomy

**11. List the three critical variables to assess during the laparoscopic examination in order to determine whether the patient is a candidate for a vaginal hysterectomy.**

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

**12. You examine a woman with abnormal uterine bleeding and estimate her uterus to weigh approximately 280 grams. The preoperative examination confirms that the condition is confined to the uterus. If vaginal accessibility is adequate, which surgery is most likely indicated?**

- a. An abdominal hysterectomy
- b. A laparoscopically assisted hysterectomy
- c. A vaginal hysterectomy

**13. You examine a woman who complains of chronic pelvic pain and estimate her uterus to weigh approximately 200 grams. If vaginal accessibility is adequate, according to the flow chart what should you do next?**

- a. Perform an abdominal hysterectomy
- b. Perform a laparoscopic examination
- c. Perform a vaginal hysterectomy

**14. You examine a woman with suspected endometriosis and estimate her uterus to weigh approximately 300 grams. If uterine-size reduction is possible but the cul-de-sac is obliterated, according to the flow chart which surgery is most likely indicated?**

- a. An abdominal hysterectomy
- b. Operative laparoscopy
- c. A vaginal hysterectomy

**15. You examine a woman with a history of chronic pelvic inflammatory disease and estimate her uterus to weigh approximately 310 grams. If uterine-size reduction is possible and vaginal accessibility is adequate, according to the flow chart what should you do next?**

- a. Perform an abdominal hysterectomy
- b. Perform a laparoscopic examination
- c. Perform a vaginal hysterectomy

**16. You examine a woman with presumed pelvic adhesive disease whose uterus weighs approximately 250 grams. Vaginal accessibility is adequate. You perform a laparoscopic examination to determine the location and severity of the pathology and find an absence of extrauterine pathology. According to the flow chart what should you do next?**

- a. Perform an abdominal hysterectomy
- b. Perform operative laparoscopy to ligate the uterine vessels before performing a vaginal hysterectomy
- c. Proceed with a vaginal hysterectomy

**17. You examine a woman with uterine prolapse and estimate her uterus to weigh approximately 325 grams. If vaginal accessibility is adequate and uterine-size reduction is possible, which surgery is most likely indicated?**

- a. An abdominal hysterectomy
- b. A laparoscopically assisted vaginal hysterectomy
- c. A vaginal hysterectomy

**18. You examine a woman with a symptomatic leiomyoma and estimate her uterus to weigh 580 grams. If vaginal accessibility is adequate and uterine-size reduction is not possible, which surgery is most likely indicated?**

- a. An abdominal hysterectomy
- b. A laparoscopically assisted vaginal hysterectomy
- c. A vaginal hysterectomy

**19. You examine a woman with presumed adnexal pathology and estimate her uterus to weigh 180 grams. You perform a laparoscopic examination to confirm the presence of the pathology and document an obliterated cul-de-sac and the presence of severe adhesions that limit uterine mobility. According to the flow chart which surgery is most likely indicated?**

- a. An abdominal hysterectomy
- b. Operative laparoscopy to remove the adhesions before converting to a vaginal hysterectomy
- c. A vaginal hysterectomy

**20. You examine a woman with abnormal uterine bleeding and estimate her uterus to weigh 230 grams. Vaginal accessibility is adequate, but you determine that the woman also needs a bilateral oophorectomy. According to the flow chart which surgery is most likely indicated?**

- a. An abdominal hysterectomy in order to remove the ovaries
- b. A laparoscopically assisted vaginal hysterectomy in order to remove the ovaries laparoscopically and the uterus vaginally
- c. A vaginal hysterectomy in order to remove both the ovaries and the uterus vaginally

### Self-Assessment Answers

1. d.
2. a.
3. a.
4. a.
5. c.
6. d.
7. d.
8. Answers will vary, but include leiomyomata, adenomyosis, uterine prolapse, abnormal uterine bleeding, and carcinoma *in situ* of the cervix.
9. Answers will vary, but include endometriosis, adnexal pathology, pelvic adhesive disease, chronic pelvic pain, and chronic pelvic inflammatory disease.
10. b.
11. Cul-de-sac accessibility, severity of adhesions, and severity of endometriosis
12. c.
13. b.
14. a.
15. b.
16. c.
17. c.
18. a.
19. a.
20. c.

