The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

COMMITTEE OPINION

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Committee on Gynecologic Practice

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Gynecologic Practice in collaboration with committee members Kristen A. Matteson, MD, MPH and Samantha F. Butts, MD, MSCE.

Choosing the Route of Hysterectomy for Benign Disease

ABSTRACT: Hysterectomy is one of the most frequently performed surgical procedures in the United States. Selection of the route of hysterectomy for benign causes can be influenced by the size and shape of the vagina and uterus; accessibility to the uterus; extent of extrauterine disease; the need for concurrent procedures; surgeon training and experience; average case volume; available hospital technology, devices, and support; whether the case is emergent or scheduled; and preference of the informed patient. Vaginal and laparoscopic procedures are considered "minimally invasive" surgical approaches because they do not require a large abdominal incision and, thus, typically are associated with shortened hospitalization and postoperative recovery times compared with open abdominal hysterectomy. Minimally invasive approaches to hysterectomy should be performed, whenever feasible, based on their well-documented advantages over abdominal hysterectomy. The vaginal approach is preferred among the minimally invasive approaches. Laparoscopic hysterectomy is a preferable alternative to open abdominal hysterectomy for those patients in whom a vaginal hysterectomy is not indicated or feasible. Although minimally invasive approaches to hysterectomy are the preferred route, open abdominal hysterectomy remains an important surgical option for some patients. The obstetrician–gynecologist should discuss the options with patients and make clear recommendations on which route of hysterectomy will maximize benefits and minimize risks given the specific clinical situation. The relative advantages and disadvantages of the approaches to hysterectomy should be discussed in the context of the patient's values and preferences, and the patient and health care provider should together determine the best course of action after this discussion.

Recommendations and Conclusions

The American College of Obstetricians and Gynecologists makes the following conclusions and recommendations:

- Vaginal hysterectomy is the approach of choice whenever feasible. Evidence demonstrates that it is associated with better outcomes when compared with other approaches to hysterectomy.
- Laparoscopic hysterectomy is a preferable alternative to open abdominal hysterectomy for those patients in whom a vaginal hysterectomy is not indicated or feasible.
- For an individual patient, the surgeon should account for clinical factors and determine which route of hysterectomy will most safely facilitate removal of the uterus and optimize patient outcomes, given the clinical situation and surgeon training and experience.
- Selection of the route of hysterectomy for benign causes can be influenced by the size and shape of the vagina and uterus; accessibility to the uterus (eg, descensus, pelvic adhesions); extent of extrauterine disease; the need for concurrent procedures; surgeon training and experience; average case volume; available hospital technology, devices, and support; whether the case is emergent or scheduled; and preference of the informed patient.
- The obstetrician–gynecologist should discuss the options with the patient and make clear recommendations on which route of hysterectomy will maximize benefits and minimize risks given the specific clinical situation.
- The relative advantages and disadvantages of the approaches to hysterectomy should be discussed in the context of the patient's values and preferences

and the patient and health care provider should together determine the best course of action after this discussion.

- Opportunistic salpingectomy usually can be safely accomplished at the time of vaginal hysterectomy.
- The role of robotic assistance for execution of laparoscopic hysterectomy has not been clearly determined and more data are necessary to determine the most appropriate evidence-based applications for this technology.

This updated Committee Opinion provides additional information about the following two items: 1) the feasibility of opportunistic salpingectomy (the removal of the fallopian tubes for the prevention of cancer in an average-risk woman undergoing pelvic surgery for another indication; this is distinct from risk-reducing salpingectomy for women at high-risk of cancer) at the time of vaginal hysterectomy and 2) the debate regarding the use of power morcellation during hysterectomy to facilitate a minimally invasive approach. For this document, vaginal and laparoscopic procedures (including laparoscopic-assisted vaginal hysterectomy) are considered "minimally invasive" surgical approaches.

Hysterectomy is one of the most frequently performed surgical procedures in the United States. The most common indications for hysterectomy (some indications are overlapping) are symptomatic uterine leiomyomas (51.4%), abnormal uterine bleeding (41.7%), endometriosis (30%), and prolapse (18.2%) (1, 2). Hysterectomies are performed vaginally, laparoscopically (total laparoscopic hysterectomy [with or without robotic assistance] or laparoscopically assisted vaginal hysterectomy), or abdominally. Vaginal and laparoscopic procedures are considered minimally invasive surgical approaches because they do not require a large abdominal incision and, thus, typically are associated with shortened hospitalization and postoperative recovery times compared with open abdominal hysterectomy. Analysis of U.S. surgical data between 1998 and 2010 sheds light on evolving practice patterns in this area and underscores a trend of the decreasing number of hysterectomies performed through the abdominal route—from 65% to 54% during this period—in favor of minimally invasive techniques. The minimally invasive procedure with the greatest increase in overall use has been the robot-assisted laparoscopic hysterectomy. The use of this approach rose sharply from 0.9% in 2008 to 8.2% of all procedures in 2010. During a similar period, use of the laparoscopic approach without robotic assistance peaked at 15.5% of all hysterectomies in 2006, decreasing thereafter to 8.6% of cases in 2010. Of all minimally invasive hysterectomy procedures, the vaginal approach has been the only one demonstrating a consistent decrease in use from 25% of cases in 1998 to 17% of cases in 2010 (2). In contrast to this trend, evidence supports the opinion that (when feasible) vaginal hysterectomy is associated with better outcomes and is the most cost-effective method by which to remove the uterus (3–6).

Factors That Influence the Route of Hysterectomy

Minimally invasive approaches to hysterectomy (vaginal or laparoscopic, including robot-assisted laparoscopy) should be performed, whenever feasible, based on their well-documented advantages over abdominal hysterectomy. The vaginal approach is preferred among the minimally invasive approaches. Selection of the route of hysterectomy for benign causes can be influenced by the size and shape of the vagina and uterus; accessibility to the uterus (eg, descensus, pelvic adhesions); extent of extrauterine disease; the need for concurrent procedures; surgeon training and experience; average case volume; available hospital technology, devices, and support; whether the case is emergent or scheduled; and preference of the informed patient.

Training, experience, and technical difficulty have been proposed as potential barriers to performing a laparoscopic hysterectomy (7). However, none of these factors is an absolute contraindication to a minimally invasive approach. For an individual patient, the surgeon should account for clinical factors and determine which route of hysterectomy will most safely facilitate removal of the uterus and optimize patient outcomes, given the clinical situation and surgeon training and experience. The obstetrician–gynecologist should discuss the options with the patient and make clear recommendations on which route of hysterectomy will maximize benefits and minimize risks given the specific clinical situation. The relative advantages and disadvantages of the approaches to hysterectomy should be discussed in the context of the patient's values and preferences, and the patient and health care provider should together determine the best course of action after this discussion. In some circumstances, the best course of action could be referral to another surgeon capable of providing the patient with the desired approach to hysterectomy.

Hysterectomy usually can be safely performed using the vaginal approach in nulliparous women and women with a history of one or more prior cesarean deliveries. A study showed that 92% of vaginal hysterectomies planned for a cohort of women with no prior vaginal deliveries could be successfully completed with that approach (8). If the vagina will allow access to divide the uterosacral and cardinal ligaments, uterine mobility usually is improved enough to allow vaginal hysterectomy, even in cases where there is minimal uterine descent (9). Guidelines developed by the Society of Pelvic Reconstructive Surgeons that incorporate uterine size, mobility, accessibility, and pathology confined to the uterus (no adnexal pathology or known or suspected adhesions) have been proposed as selection criteria to determine the most appropriate route of hysterectomy (10–12). In a randomized trial during

which residents applied these guidelines to the selection and performance of hysterectomy, the percentage of vaginal hysterectomies for benign conditions was greater than 90%. Techniques to reduce the uterine size intraoperatively were necessary in 11% of cases and laparoscopic assistance was incorporated in one quarter of patients with extrauterine pathology (10).

Extrauterine disease such as adnexal pathology, severe endometriosis, adhesions, or an enlarged uterus may preclude vaginal hysterectomy. However, in these cases, another minimally invasive approach, rather than an open abdominal approach, still may be possible. Laparoscopic assessment of the pelvis can be performed at the beginning of the procedure to assess the feasibility of proceeding with a minimally invasive approach to hysterectomy.

Plans to perform an opportunistic salpingectomy should not alter the intended route of hysterectomy. The success of performing a bilateral salpingo-oophorectomy at the time of vaginal hysterectomy varies greatly and is reported to range from 65% to 97.5% (13–15). In a randomized trial that made a comparison between vaginal hysterectomy with bilateral salpingo-oophorectomy and laparoscopic vaginal hysterectomy with bilateral salpingo-oophorectomy, there were more complications and increased operating time with the laparoscopic approach (16). Opportunistic salpingectomy usually can be safely accomplished at the time of vaginal hysterectomy. A 2015 study demonstrated that opportunistic salpingectomy at the time of vaginal hysterectomy was successful in 88% of cases in which it was planned (17). Based on these studies and other studies that showed advantages of the vaginal approach to hysterectomy, a laparoscopic approach to hysterectomy does not need to supplant a vaginal approach in order to perform an opportunistic salpingectomy (18). It should be noted that prophylactic bilateral salpingo-oophorectomy in the setting of a genetic mutation represents a different surgical circumstance. In contrast to elective salpingo-oophorectomy and salpingectomy, prophylactic procedures require a laparoscopic or abdominal approach in order to obtain necessary tissue margins and proper inspection of peritoneal surfaces and the abdominal cavity (19).

Despite the evidence that there is no clinically significant difference in complications (eg, infection; blood loss; urinary tract, bowel, or vascular injury) and there is uncertain benefit in terms of patient outcomes (eg, sexual function, urinary function, or bowel function) between a supracervical hysterectomy and a total hysterectomy, some patients may choose a supracervical hysterectomy (20). In these cases, a laparoscopic or open abdominal approach is most appropriate.

For hysterectomy performed laparoscopically, the uterus can be removed intact or in smaller pieces after scalpel or power morcellation. Power morcellation in gynecologic surgery has come under recent scrutiny because of concern about the risk of intraperitoneal dissemination of malignant tissue, particularly uterine sarcoma (21). However, it is well established that minimally invasive surgical techniques for hysterectomy reduce the risk of surgical morbidity, and the risk of death from disseminated cancer associated with laparoscopic hysterectomy with power morcellation must be weighed against the increased risk of morbidity and hysterectomy-related deaths associated with open abdominal hysterectomy (22, 23). Although alternative technologies and techniques for uterine removal, including scalpel morcellation and contained power morcellation (performing morcellation within a bag device), that may reduce this risk of tissue dissemination are being rapidly developed and assessed, the lack of power morcellation as an option may result in fewer patients being offered a minimally invasive approach to hysterectomy (24–27). Women should share in the decision making if morcellation is being considered to facilitate a minimally invasive approach to hysterectomy. As part of informed consent, the patient should understand that morcellation (by any method) of an occult malignancy may worsen the cancer prognosis.

Outcomes and Complication Rates

Vaginal hysterectomy is the approach of choice whenever feasible. Evidence demonstrates that it is associated with better outcomes when compared with other approaches to hysterectomy. A Cochrane review of 47 studies of abdominal hysterectomy, laparoscopic hysterectomy, and vaginal hysterectomy (5,102 patients) reported that compared with abdominal hysterectomy, vaginal hysterectomy was associated with faster return to normal activities and better quality of life. Compared with laparoscopic hysterectomy, vaginal hysterectomy was associated with shorter operating time and hospital stay (Box 1). The systematic review concluded that vaginal hysterectomy has the best outcomes of these three routes (3).

When it is not feasible to perform a vaginal hysterectomy, the surgeon must choose between laparoscopic or open abdominal hysterectomy. Laparoscopic hysterectomy is a preferable alternative to open abdominal hysterectomy for those patients in whom a vaginal hysterectomy is not indicated or feasible. The 2015 Cochrane review on route of hysterectomy found that when a vaginal hysterectomy is not possible, laparoscopic hysterectomy has advantages, including faster return to normal activity, shorter duration of hospital stays, and fewer wound infections, when compared with open abdominal hysterectomy (3). Studies have not consistently demonstrated an advantage to the single-port laparoscopic approach over the multiple-port laparoscopic approach to hysterectomy (3).

Robot-assisted laparoscopic hysterectomy should be appropriately selected based on the available data and expert opinion, and surgeons should be skilled at abdominal and laparoscopic hysterectomy before undertaking robot-assisted laparoscopy (28). The 2015

Cochrane review that compared various routes of hysterectomy concluded that there is no significant benefit to robot-assisted laparoscopic hysterectomy when compared with conventional laparoscopic hysterectomy (3). Additionally, a 2016 systematic review that specifically compared robot-assisted laparoscopic hysterectomy with laparoscopic hysterectomy for benign disease demonstrated no statistically or clinically meaningful differences in surgical outcomes between these two approaches (29). The proportion of hysterectomies performed through the robot-assisted laparoscopic approach is increasing. However, the role of robotic assistance for execution of laparoscopic hysterectomy has not been clearly determined and more data are necessary to determine the most appropriate evidence-based applications for this technology. Well-designed studies that compare the outcomes of the robot-assisted laparoscopic approach with alternative hysterectomy routes will further elucidate which benefits (eg, cost, mitigation of risk, or quality of life) patients may expect from a robot-assisted approach. Well-designed studies that compare outcomes of the robot-assisted laparoscopic approach with alternative hysterectomy routes are needed to determine if patients may benefit from this approach.

Although minimally invasive approaches to hysterectomy are the preferred route, open abdominal hysterectomy remains an important surgical option for some patients. Open abdominal hysterectomy may be necessary when the vaginal or laparoscopic approach is not appropriate to manage the patient's clinical situation, when facilities cannot support less invasive surgical approaches, or when an attempt at a minimally invasive route to hysterectomy fails intraoperatively.

Box 1. Comparison of Different Approaches to Hysterectomy ⇦

Vaginal Hysterectomy Compared With Abdominal Hysterectomy

- Shorter duration of hospital stay
- Faster return to normal activity
- Better functional capacity and improved pain assessment
- No evidence of difference in satisfaction, intraoperative injury, or complications
- No studies evaluated costs

Vaginal Hysterectomy Compared With Laparoscopic Hysterectomy

- Shorter operating time
- Lower overall costs
- Patients were more satisfied than those who had a laparoscopically assisted vaginal hysterectomy (no difference between vaginal hysterectomy and total laparoscopic hysterectomy)
- No evidence of difference in return to normal activities, urinary tract injury*, complications

Laparoscopic Hysterectomy Compared With Abdominal Hysterectomy

- Faster return to normal activity
- Shorter duration of hospital stay
- Fewer wound or abdominal wall infections
- Longer operating time
- Higher rate of lower urinary tract (bladder and ureter) injuries
- Improved quality of life in the first months and at 4 years postsurgery
- No evidence of difference in satisfaction or major long-term complications
- No evidence of difference in overall cost (limited studies)

Laparoscopic Hysterectomy Compared With Robot-Assisted Laparoscopic Hysterectomy

- No evidence of difference in any of the measured outcomes
- No studies evaluated costs

*These findings may be attributable to limited power to detect a difference given the very low incidence of urinary tract injuries.

Data from Aarts JW, Nieboer TE, Johnson N, Tavender E, Garry R, Mol BW, et al. Surgical approach to hysterectomy for benign gynaecological disease. Cochrane Database of Systematic Reviews 2015, Issue 8. Art. No.: CD003677. DOI: 10.1002/14651858.CD003677.pub5. [PubMed] [Full Text]

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