OBG MANAGEMENT

Secrets to successful vaginal hysterectomy

Challenges such as an enlarged uterus or history of pelvic surgery need not precipitate a switch to the abdominal route

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CASE 1 Problems entering the cul-de-sac

M.K. is a 43-year-old gravida 2 para 2 who is undergoing a vaginal hysterectomy for menorrhagia. A preoperative pelvic exam and ultrasound suggested a 12-week-size uterus with several small leiomyomata. Her gynecologist estimates the uterine weight at 240 g and notes that the uterus is mobile. M.K. asks that her ovaries be removed at the time of hysterectomy because of a family history of ovarian cancer.

During the initial dissection, the surgeon is unable to enter the anterior cul-de-sac due to distortion created by an anterior fibroid. The surgeon has entered the posterior cul-de-sac, but the uterus is too large to manipulate a finger around anteriorly to identify the peritoneal fold. Although he feels confident that the bladder has been adequately mobilized from the cervix, the surgeon is strongly considering abandoning the vaginal approach and completing the hysterectomy abdominally.

How should he proceed?

Entry into the peritoneal cavity through the anterior or posterior cul-de-sac can sometimes be challenging, as this case illustrates. However, there is no need for the surgeon to abandon the vaginal approach just yet. In my experience, the anterior peritoneal fold can be high or distorted by fibroids in some women. The key to successful surgery is a pause in activity to consider the case at hand and determine whether additional progress can be made safely without changing the approach.

Avoid blind entry at all costs

No less an authority than Heaney[1] advised against blind attempts to enter the anterior cul-de-sac. Such attempts are often frustrating, can involve bleeding, and raise the risk of injury to the bladder. However, once the surgeon is confident that the bladder is free and retracted out of the way, he or she can proceed without intraperitoneal entry. This is especially true if the posterior cul-de-sac has been entered safely.

The "climb up" technique

In some cases, the surgeon may safely proceed extraperitoneally even if neither cul-de-sac has been opened. Krige[2] coined the term "climb up" to describe the extraperitoneal approach to the inaccessible posterior cul-de-sac. He performed extensive extraperitoneal dissection that, if necessary, included both uterosacral and cardinal ligaments as well as uterine vessels. A surgeon may carry a total extraperitoneal dissection completely to the uterine fundus as long as the bladder and rectum are free.[3]

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It is essential that the uterine vessels be ligated before morcellation begins

In M.K.'s case, the surgeon should proceed to take the uterosacral and cardinal ligaments posteriorly without swinging the clamps around to the anterior aspect of the cervix, if possible. Once these ligaments are taken, the uterus often descends enough that the anterior peritoneal fold becomes accessible. Once it is identified, the anterior cul-de-sac can be entered safely.

If safe entry still is not possible, the surgeon can take the uterine vessels if he or she is confident that the bladder is out of harm's way. If the fold still cannot be identified after this bite, proceed with broad-ligament clamps, which usually lead to eventual opening of the peritoneal fold.

CASE 1 Some progress, then surgery stalls

The surgeon proceeds to operate extraperitoneally, as described above, and successfully enters the anterior cul-de-sac after the uterine vessels are ligated. However, after several additional bites of broad ligament on each side, progress stalls because of uterine size. The surgeon seems to be stuck and is growing increasingly frustrated.

What is the best way around this impasse?

Morcellation can involve a range of techniques

Whenever a large uterus prevents further progress, and the uterine vessels have been ligated, uterine morcellation can be performed. Morcellation techniques originated when vaginal hysterectomy was the archetypal gynecologic operation,[4–7] and include uterine bisection,[8–11] Lash intramyometrial coring,[6,8,9] myomectomy,[10,11] and wedge debulking.[9] Although every surgeon has a favorite, some or all of these procedures may be necessary in the same patient.[12–15] In all cases it is mandatory that the uterine vessels be ligated before any morcellation procedure is initiated.

In my experience, a uterus in the range of 240 g usually lends itself very nicely to Lash intramyometrial coring. This technique is a nearly bloodless procedure that does not violate the endometrial cavity when it is performed properly. In addition, any intramyometrial fibroids can be easily removed.

If coring does not decompress the uterus enough for safe delivery, the core can be cut off and the remaining uterus can be further morcellated by removing wedges of myometrium or by bivalving the uterus. Since there is usually more room in the posterior vagina than in the anterior vagina, as much of the wedge morcellation as possible should be done posteriorly.

CASE 1 Ovaries appear out of reach

After Lash intramyometrial coring, the surgeon successfully removes the uterus. He then turns his attention to the bilateral adnexectomy. Unfortunately, the ovaries are higher than anticipated, and he once again considers switching to the abdominal route to remove them.

Is a change in route the best option?

Focus on the round ligaments

The key to safe removal of the adnexa, especially in difficult cases, is the separate transection and ligation of the round ligaments. Many authors have reported high success rates for vaginal oophorectomy using this technique, especially in premenopausal women.[16–19]

Separate transection of the round ligament allows the surgeon to accomplish 2 very important tasks:

- develop a secure vascular infundibulopelvic pedicle of sufficient length for ligation and
- adequately mobilize the adnexa for removal.

Once the round ligament is ligated and transected, I like to keep it on stretch so that the broad-ligament peritoneum can be opened parallel to the ovarian vessels, much as it is done in the abdominal approach. This allows the ovary to descend; it also isolates the infundibu-

lopelvic ligament with the ovarian vessels, thus enabling more secure ligation of the vessels and reducing the risk of ureteral injury.

In many hysterectomy cases when oophorectomy is planned, this maneuver can be carried out prior to removal of the uterus. Once the round ligaments have been reached, the surgeon can deliver the uterine fundus anteriorly, allowing the round ligaments to be clamped and cut. It is not uncommon to be able to remove the uterus with both adnexa still attached.

With a large uterus, it may be necessary to clamp and transect the round ligament after the uterus is out. This does not preclude identification and transection of the round ligament to carry out the maneuvers described above.

Consider your tools

In very difficult cases, specialized clamps or sutures may be necessary. I find long, sturdy, right-angle clamps to be most useful. In addition, endoloop-type sutures often facilitate ligation of the vascular pedicle. The use of newer specialized bipolar electrosurgical instruments may be helpful, although I have no personal experience using them in vaginal surgery.

CASE 1 At closure, concerns about injury

After successful removal of both adnexa using the round-ligament technique, the surgeon is satisfied that he has achieved hemostasis and proceeds with his usual closure. However, he has nagging concerns about the possibility of undetected complications, because this case turned out to be more of a challenge than he had expected. He wonders if there is anything else he can do to ensure that everything is OK.

What would you do?

Besides ensuring satisfactory hemostasis, confirming the integrity of the urinary tract is the most important goal to achieve before leaving the operating room. Unrecognized injuries to the bladder or ureters are unacceptable and will lead to significant morbidity for the patient. I would certainly recommend that the surgeon in M.K.'s case perform cystoscopy after giving the patient intravenous indigo carmine to assure both ureteral patency and integrity of the bladder. I perform cystoscopy after all vaginal hysterectomies.

CASE 2 History of cesarean delivery

C.S. is a 38-year-old gravida 3 para 3 who presents with menometrorrhagia and dysmenorrhea unresponsive to medical therapy. Her first pregnancy resulted in vaginal delivery of a full-term infant without complications. Her second child was delivered via low-segment transverse cesarean section due to a persistent breech presentation at term. Her last child was delivered vaginally, also at term. Two years later C.S. underwent a laparoscopic tubal ligation without complications. That was 4 years ago. She began seeing her current gynecologist 2 years ago, when she moved to a new community.

Pelvic examination reveals a 6-week–size uterus and normal adnexa. Her uterus is mobile, and there does not appear to be any ventral fixation of the uterus to the abdominal wall from the cesarean section. Endometrial biopsy reveals proliferative endometrium only. Saline ultrasound demonstrates a 2-cm submucosal leiomyoma.

C.S. refuses hysteroscopic resection of the myoma and prefers hysterectomy as definitive therapy. She is the business manager for her family's construction business, and she would like to be able to return to work as soon as possible after her surgery. She requests vaginal hysterectomy with conservation of her ovaries.

What is the best way to proceed at this point?

Many gynecologic surgeons regard previous pelvic surgery, including cesarean

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Perform cystoscopy after all vaginal hysterectomies

delivery, as a relative contraindication to vaginal hysterectomy. Although the major concern seems to be a potential for bladder injury during the bladder dissection, other problems such as ventral fixation of the uterus to the previous abdominal incision also are possible.

Vaginal hysterectomy requires a mobile uterus

All patients who will be undergoing vaginal hysterectomy must have demonstrated mobility of the uterus upon pelvic examination. This is particularly important in the case of prior pelvic surgery. In this case, the gynecologist also should make every attempt to obtain her surgical records—especially those from her laparoscopic tubal ligation—to exclude major adhesive disease in the pelvis.

Laparoscopic adhesiolysis may facilitate vaginal hysterectomy

If there is any concern that the uterus is fixed to the abdominal wall, abdominal hysterectomy should be considered. Even more preferable is laparoscopic adhesiolysis, which can make it possible to proceed with vaginal hysterectomy. I have used this approach in women with as many as 5 previous cesarean deliveries and severe ventral fixation of the uterus.[20] After adhesiolysis, the remainder of the hysterectomy can usually be performed solely through the vaginal route.

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Avoid blunt dissection in women with a history of pelvic surgery

CASE 2 Medical records suggest the vaginal route is feasible

The gynecologist obtains C.S.'s previous medical records, which confirm that the cesarean delivery was uncomplicated. They also indicate that, at the time of the sterilization procedure, there was no evidence of ventral fixation of the uterus or other major adhesive disease.

The physician decides to proceed with vaginal hysterectomy, but remains very concerned about the possibility of bladder injury. How can she avoid inadvertent cystotomy?

Difficulty identifying and safely dissecting the bladder—because of distortion of the vesicouterine space from the previous cesarean delivery—is a legitimate concern. However, injury to a scarred and densely adherent bladder is a risk even with abdominal dissection.

The vaginal approach to the distal vesicouterine space has a clear advantage: The vesicouterine space closest to the initial vaginal dissection is unaffected by the previous operation on the lower uterine segment. In contrast, with the abdominal approach, dissection begins in the area of scar, and only after penetrating the scar does one find the unaffected space. With the vaginal approach, dissection begins in the correct surgical plane, which aids in identification of the location of the bladder and cesarean scar.

Sharp dissection is a must to protect the bladder

Once the correct surgical plane is encountered, sharp dissection is necessary to prevent tears of the adherent bladder, which can occur with blunt dissection.

Although sharp dissection is the key to success under these circumstances, other maneuvers may be helpful in some cases.

Nichols[21] suggested performing dissection of the bladder after it has been filled with a dilute indigo carmine solution to stain the bladder tissues and help prevent bladder injury.

Hoffman and Jaeger[22] describe the placement of a bent uterine sound in the posterior cul-de-sac. The sound is then brought around to the anterior cul-de-sac as an aid to dissection of the bladder and the vesicouterine peritoneal fold.

Sheth and Malpani[23] describe developing a lateral "window" through the broad ligament to the bladder dissection when there are dense midline adhesions.

Although these are all valuable suggestions, I have found that they are rarely needed with careful sharp dissection. Remember, it is essential to avoid the temptation of blunt dissection when per-

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forming vaginal hysterectomy in women with a prior cesarean delivery.

CASE 2 Procedure is a success

The vaginal hysterectomy is carried out without incident, and cystoscopy following the hysterectomy is negative for any bladder injury; both ureteral orifices promptly efflux indigo carmine.

The surgeon encountered little difficulty during the bladder dissection, which was performed sharply. In fact, she was surprised at how well she could actually identify the hysterotomy scar and bladder. The patient goes home after 24 hours and is back at work in 2 weeks.

As noted in both cases presented here, the gynecologic surgeon must be certain that the urinary tract is intact and uninjured prior to leaving the operating room. This includes careful inspection of the bladder grossly for any sign of injury, as well as cystoscopy.

Most bladder injuries that occur with hysterectomy—either vaginal or abdominal—are usually well above the trigone and can be carefully repaired by the gynecologic surgeon. Complex injuries to the bladder involving the trigone or ureters usually require urologic intraoperative consultation. ■

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Most bladder injuries during vaginal surgery occur above the trigone and can be repaired by the gynecologic surgeon