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**OBG MANAGEMENT
Board of Editors**

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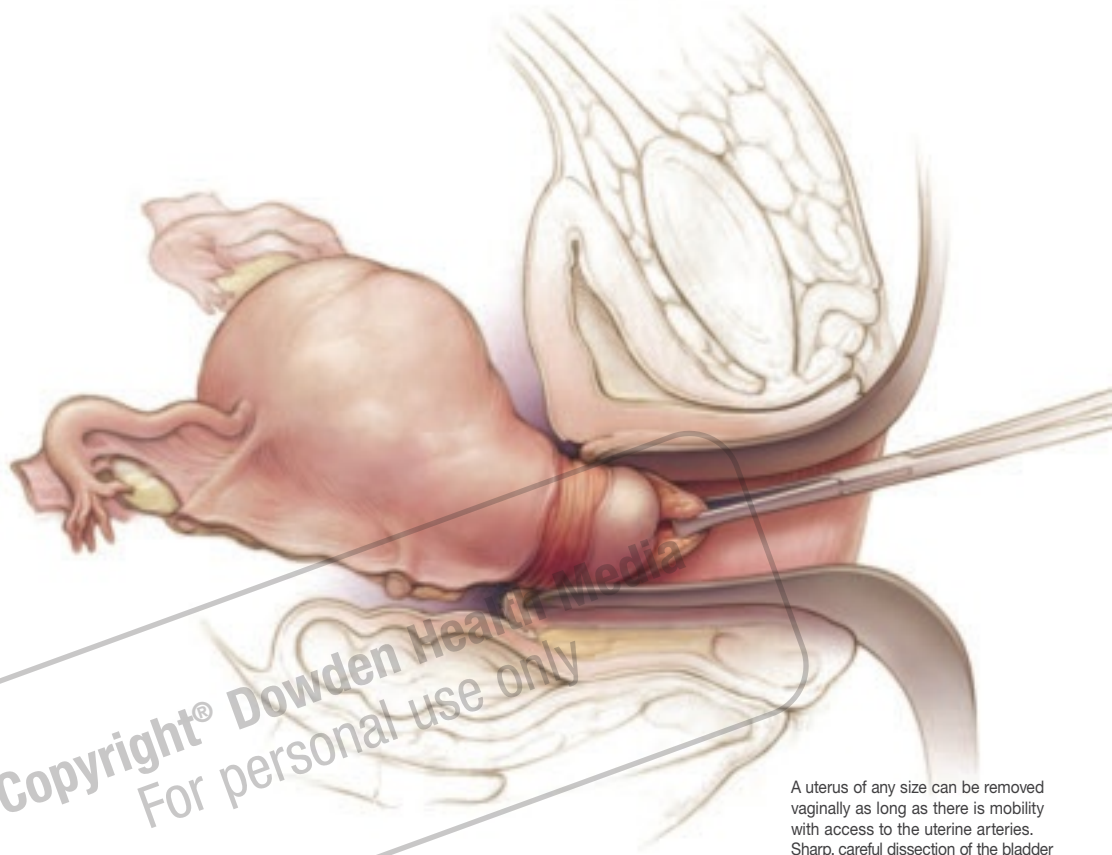
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REMEMBER

Newer codes for vaginal
hysterectomy capture the
work of removing larger
uteri without laparoscopy



A uterus of any size can be removed vaginally as long as there is mobility with access to the uterine arteries. Sharp, careful dissection of the bladder off the lower uterine section and the avoidance of finger dissection keep injuries to a minimum

Vaginal hysterectomy 6 challenges, an arsenal of solutions

Obesity, fibroids, previous surgeries and other obstacles usually give way to targeted tactics

T **True or false:** When it comes to hysterectomy, surgeons tend to use the route that is safest, least invasive, and most economical.

Sadly, the statement is false. Although vaginal hysterectomy tops all 3 categories, it is the least utilized of surgical routes. The number of vaginal hysterectomies may have increased slightly over the past decade, likely due to the incorporation of laparoscopically assisted vaginal hysterectomy into the mainstream and increased practice with the vaginal component, but fewer than 30% of hysterectomies are performed vaginally.

This article addresses 6 common challenges at vaginal hysterectomy and offers strategies to overcome them.

Laparoscopic strategies ease vaginal hysterectomy, too

Laparoscopic hysterectomy became widely accepted when surgical instruments were developed to overcome the technical challenges inherent in operating with limited access. By incorporating some of the techniques we routinely use for laparoscopic surgery, we can overcome many of the challenges faced during difficult vaginal surgery.

IMAGE: SCOTT BODELL

6 omnipresent obstacles

1 Obesity

Entry into the cul-de-sac is easier with proper patient positioning, strategic use of retractors and clamps, awareness of a few essential anatomical facts, and an array of tools to improve mobility and visualization.

2 Nulliparity

Access issues are less pronounced than you might think—and not as challenging as in morbidly obese, multiparous women.

3 Previous cesarean section

Some physicians consider a history of cesarean section an indication for the laparoscopic route, but vaginal hysterectomy is often achievable. There are simple ways to determine its feasibility

and increase the likelihood of success in these situations.

4 Previous abdominal/pelvic surgery

Adhesions from prior surgery tend to arise between the anterior abdominal wall and the omentum or small bowel, making laparoscopic or open hysterectomy riskier than the vaginal route.

5 Large myomatous uterus

A uterus of any size can be removed vaginally as long as there is adequate mobility with access to the uterine arteries.

6 Risk of complications

Bleeding, infection, and bladder injury can be minimized with basic strategies and new surgical technologies.

VAGINAL HYSTERECTOMY CHALLENGE 1

Obesity

Unfortunately, our population is increasingly rotund. This is not only a significant risk factor for the patient's health in general, but it poses some unique challenges for surgeons. I must say that, as tough as it may be to complete a hysterectomy vaginally in a morbidly obese woman, I would much rather approach her pelvic organs through the cul-de-sac, which contains no fat cells, than through the abdominal wall—either laparoscopically or abdominally! The trick is gaining access to the posterior cul-de-sac.

How to enter the cul-de-sac

It seems to be a perverse rule of nature, but a tight upper vaginal ring seems almost universal in obese women. Added to the redundant sidewalls and the large buttocks, this tightness makes entry into the anterior or posterior cul-de-sac problematic. Several tricks make peritoneal access possible:

Position the patient to increase access, with the buttocks well over the edge of the operating table. This brings the operative field a bit closer to the surgeon, and permits the use of long-handled retractors posteriorly.

Use candy-cane stirrups to allow assistants better access to the operative field. Adequate assistance is essential in attempting vaginal surgery in the morbidly obese.

Avoid the Trendelenburg position. Although it might seem that this position would facilitate visualization and placement of a posterior weighted speculum, all it does is allow the patient to slide up on the table, making placement of alternate retractors difficult.

Use the right tools. If the posterior weighted speculum will not stay in place or does not afford access to the cul-de-sac due to an upper vaginal ring, use a narrow Deaver retractor posteriorly (without sidewall or anterior retraction). Use a Jacob's tenaculum on the posterior lip of the cervix and have

FAST TRACK

Multiparous, morbidly obese women tend to have little or no apical prolapse but lots of vaginal wall redundancy

your assistant pull straight up on the tenaculum while using the Deaver retractor to see the area between the uterosacral ligaments.

Use the uterosacral ligaments as a guide.

Another perversity in morbidly obese women: Despite multiparity, they seem to have little or no apical prolapse but lots of vaginal wall redundancy. The cervix is often elongated, but the uterosacral ligaments are sky high.

I palpate these ligaments, injecting them with a combination of vasopressin diluted 1:5 with bupivacaine and epinephrine (for enhanced hemostasis and preemptive analgesia), then use a pencil electrosurgical electrode to rapidly open the vaginal epithelium between the ligaments.

I then use a long, toothed tissue forceps to tent the peritoneum at 90 degrees to the plane of the posterior cul-de-sac and use Mayo scissors to enter the peritoneal cavity. Usually there is a spurt of fluid to mark appropriate entry into the peritoneum.

I then use the blades of my scissors to stretch the peritoneum between the ligaments and place a moistened 4x4 sponge into the incision.

At the onset of the procedure, inject indigo carmine dye intravenously so that any injury to the bladder will be immediately recognized. I have the circulating nurse empty the bladder while she is prepping the patient, but do not leave an indwelling catheter in place during the operation. I find it cumbersome to work around the catheter.

Problematic entries

When entry into the posterior cul-de-sac is difficult, I stop dissection, place a 4x4 sponge into the incision to reduce bleeding from the vagina, and proceed to attempt anterior entry.

I place the Deaver retractor into the anterior space and move the tenaculum to the anterior lip of the cervix. This gives maximal space for downward traction on the cervix while anterior entry is attempted.

Once again, I inject the tissue with the bupivacaine solution before incising the vaginal epithelium at the level of the inter-

nal os. I use sharp dissection only when creating a plane between the lower uterine segment and the bladder.

■ Ensuring room to move and good visualization

If neither the anterior nor the posterior cul-de-sac can be accessed, it may be time to rethink the vaginal approach—but there is no harm in taking the uterosacral and cardinal ligaments extraperitoneally in an effort to gain some mobility. Hugging the uterus and leaving the anterior retractor in place to lift the bladder superiorly are essential steps to protect the ureters. The cervix can then be split in the midline (12 to 6 o'clock) to easily identify the peritoneal reflections.

Other tips

Sidewall retractors are rarely needed. They significantly impair placement of clamps and sutures by creating a long, narrow, parallel passageway. An alternative trick is to use the suction tip to retract the vaginal sidewall as the surgeon is working.

A disposable, fiberoptic, lighted suction irrigator is another option. The light can be directed precisely where it is needed, and the irrigation helps keep the field clean and tidy, simplifying identification of anatomy.

Skip the sutures whenever possible. Because it is difficult to place sutures with precision in a tight, poorly illuminated space, I use a vessel sealer for all pedicles above the uterosacral ligaments. Some of these instruments were designed specifically for vaginal hysterectomy in the same shape and size as Heaney clamps. They are remarkably efficient and permit the completion of a vaginal procedure when suture placement is difficult.

Use a Heaney needleholder, with the suture loaded precisely in the center of the needle curve, along with the lighted suction irrigator to retract redundant tissue away from the track of the needle, to facilitate suturing high in the pelvis.

FAST TRACK

A spurt of fluid usually marks appropriate entry into the peritoneum

CONTINUED

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► Vaginal hysterectomy

VAGINAL HYSTERECTOMY CHALLENGE 2

Nulliparity

Many of us are reluctant to attempt vaginal hysterectomy in a woman who has never had children. Although this situation can be challenging at times, in my experience, the access issues tend to be more difficult in obese, multiparous women.

The same tricks and techniques addressed above will permit the vaginal approach in almost all nulliparous women.

VAGINAL HYSTERECTOMY CHALLENGE 3

Previous cesarean section

A prior cesarean delivery is sometimes considered an indication for laparoscopic hysterectomy. There are 2 concerns here: The patient may have a small pelvis, and there may be significant scar tissue and difficulty gaining access to the anterior cul-de-sac, as a result of repeated dissection between the lower uterine segment and the bladder. Several tricks may be useful:

Examine the patient under anesthesia to ensure that the fundus is not stuck to the anterior abdominal wall. This can occur if the peritoneum was not closed during the last cesarean section.

Empty the bladder before beginning the hysterectomy, and inject indigo carmine dye intravenously with the induction of anesthesia.

Use careful sharp dissection between the bladder and lower uterine segment using fine Metzenbaum scissors, with the tips pointed toward the uterus. Dissect only as far as you can easily see.

Secure the uterosacral, cardinal, and broad ligaments, if necessary, before pursuing

entry into the anterior cul-de-sac. It is not essential to gain anterior access before taking these pedicles. The additional mobility and descensus enable safe sharp dissection. **If pedicles have been secured** up to the fundus, and the anterior cul-de-sac

remains difficult to assess, flip the fundus through the posterior cul-de-sac and reach your finger or an instrument around the top of the fundus to identify the peritoneum anteriorly, then incise it under direct vision.

VAGINAL HYSTERECTOMY CHALLENGE 4

Previous abdominal/pelvic surgery

This history is another often-cited rationale for avoiding the vaginal approach. In reality, the adhesions created from prior surgery tend to arise between the anterior abdominal wall and the omentum or small bowel. This situation makes laparoscopic or open abdominal entry riskier than vaginal peritoneal access through the cul-de-sac.

Two possible exceptions: a patient who has had surgery for deeply infiltrating endometriosis in the cul-de-sac or a

woman who has undergone myomectomies with posterior incisions. These patients may have dense scarring in the cul-de-sac, which would preclude a vaginal approach. Whatever the surgical route, appropriate bowel preparation is necessary to permit simple closure of any intestinal injury at the time of hysterectomy. Why not begin vaginally if the exam under anesthesia demonstrates an accessible and reasonably free cul-de-sac?

VAGINAL HYSTERECTOMY CHALLENGE 5

Large myomatous uterus

A uterus of any size can be removed vaginally as long as there is mobility with access to the uterine arteries. The one exception: a patient with a small, normal uterus and a massive pedunculated myoma arising from the top of the fundus. If the fibroid cannot be pulled into the true pelvis for morcellation, it cannot be removed transvaginally. Fortunately, this situation is quite rare.

Tips for safe morcellation

Keep the uterine serosa intact to maintain orientation.

Split the uterus from 12 to 6 o'clock (bivalving). Protect the bladder with a Deaver retractor anteriorly, and protect the posterior vaginal epithelium with the weighted speculum posteriorly.

Remove chunks of tissue from the inside of the specimen. Orient your scalpel blade so

that you are always cutting toward the center of the specimen. That way, if the blade slips, you will not accidentally injure tissue on the pelvic sidewall.

Use Lahey thyroid clamps to place the tissue you plan to remove under tension. Finding the capsule of each myoma and gently separating it from the surrounding myometrium facilitates delivery of larger fibroids into the endometrial cavity. Some myomas require morcellation themselves for removal.

Replace the scalpel blade periodically to keep it sharp. Calcified fibroids can dull the blade rapidly.

Work systematically to remove as much central tissue as possible. Try to keep a clean, sharp margin of tissue around the edges for easy grasping. Torn, irregular tissue is very difficult to grab and may cause significant frustration.

FAST TRACK

Avoid tissue injury during morcellation by always cutting toward the center

CONTINUED

If access becomes limited, try clamping additional pedicles on each side of the specimen. A tiny amount of additional descensus can make a huge difference.

Do not administer GnRH agonists prior to surgery. The uterus may shrink, but the myomas tend to become quite soft and difficult to remove. If the patient is seriously anemic, give norethindrone acetate, 5 to 20 mg daily, to stop bleeding and allow the patient's red blood cell volume to improve before elective surgery.

Use a vessel-sealing instrument to control the pedicles. This strategy produces optimal hemostasis to permit a dry field during morcellation. Moreover, the seals do not get disrupted when the large uterus is pulled past them. Placing suture around pedicles when there is a large, bulky uterus in the pelvis is

challenging at best, and it is frustrating to see significant bleeding after removal of the specimen. This problem does not seem to occur with the sealing devices.

Know when to quit! We should not promise any patient a minimally invasive operation. If there is uncontrolled bleeding or no progress after 5 to 10 minutes, convert to a laparoscopic or abdominal approach.

I schedule cases I know will be challenging as "possible" laparoscopic or open hysterectomy. This alerts the OR staff to have additional equipment ready and nearby should we need it. It is not a surgical failure or complication to convert a minimally invasive hysterectomy to a more invasive technique when appropriate. Better to have tried and failed than never to have tried at all!

VAGINAL HYSTERECTOMY CHALLENGE 6

Avoiding complications

The most common complications of vaginal hysterectomy are bleeding, infection, and injury to the bladder. Ureteral injury is less common at vaginal hysterectomy than with the abdominal or laparoscopic approaches. Thus, I do not think routine cystoscopy is essential after uncomplicated vaginal hysterectomy, although I recommend intravenous administration of indigo carmine dye at the beginning of the procedure to enable rapid recognition of even a small bladder laceration. Sharp, careful dissection of the bladder off the lower uterine segment and the avoidance of finger dissection (especially with a gauze sponge) keep these injuries to a minimum.

Minimize bleeding by using newer vessel-sealing technologies rather than suture for most of the pedicles. I attach the uterosacral-cardinal ligament pedicles to the vaginal cuff at closure with suture. I suture the first pedicle once I have entered the posterior cul-de-sac and hold that suture to stay oriented.

Pay attention to patient positioning. Careful

positioning will help you avoid neurological injuries. Avoid hyperflexion at the hips, which stretches the femoral nerve. Large nerves have comparatively little blood supply, so stretching them for prolonged periods can cause hypoxic injury. Although such injuries are almost always rapidly reversible, they are disconcerting for both the patient and her surgeon.

When operating on a very thin woman with a bony sacrum, I like to place eggcrate foam beneath the buttocks to provide some cushioning. I am also very careful with these women to keep their legs in a neutral position, and I watch my surgical assistants to be sure they are not leaning on the patient during the procedure.

Prophylactic antibiotics are a must to avoid postoperative vaginal cuff infections and pelvic abscess. Smokers and women with preexisting bacterial vaginosis are at highest risk for infection. I ask women to discontinue smoking at least 2 weeks prior to surgery and inform all smokers that their risk of infection is heightened. I treat anaer-

FAST TRACK

Ureteral injury is less common with vaginal than with abdominal or laparoscopic routes

obscure overgrowth in the vagina prior to surgery to help prevent infections in women with bacterial vaginosis.

The timing of prophylactic antibiotics is important. Intravenous first-generation cephalosporins must be administered within 60 minutes of the initial incision, but it is important to give them early enough for them to adequately disseminate to tissue before the colpotomy incision.

DVT prophylaxis is especially important for women with large uteri. Routine use of sequential compression stockings is both cost-effective and equivalent to the prophylactic use of subcutaneous heparin, so I use them for all patients undergoing vaginal hysterectomy. Early ambulation (usually within 2 hours of surgery) is also helpful in avoiding thromboses.

90% of hysterectomies can be performed vaginally

Using the techniques described in this article, I have been able to perform over 90% of the hysterectomies in my practice vaginally. More than 50% of my patients are either morbidly obese, nulliparous, or have had previous abdominal surgery of some type.

The instruments I find most useful are the lighted suction irrigator and the vessel-sealing Heaney-type clamp.

Establishing a routine and approaching technically challenging cases with a systematic and standardized set of techniques make the vaginal route possible for the vast majority of patients with benign disease. ■

SUGGESTED READING

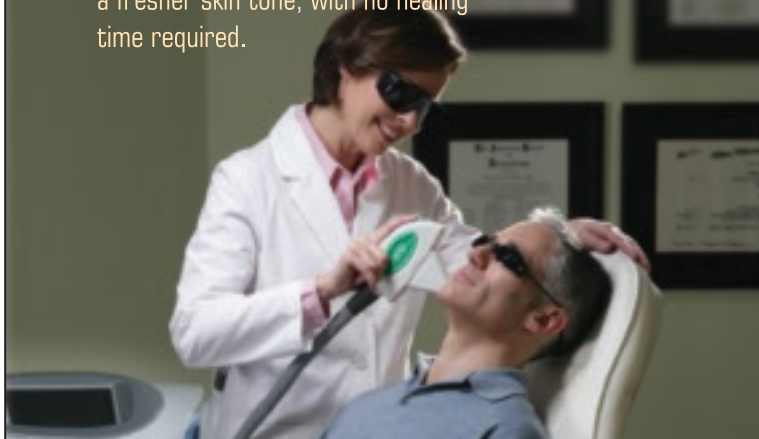
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Dr. Levy has served as a consultant to ValleyLab.

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