



## Step by step: Obliterating the vaginal canal to correct pelvic organ prolapse

Very elderly age, comorbidity, and disinterest in maintaining sexual function make a woman an ideal candidate for having POP corrected by surgery to close the vaginal canal, detailed here

Mickey Karram, MD, and Janelle Evans, MD

As women live longer, on average, pelvic floor disorders are, as a whole, becoming more prevalent and a greater health and social problem. Many women entering the eighth and ninth decades of life display symptomatic pelvic organ prolapse (POP)—often after an unsuccessful trial of a pessary or even surgery.

These elderly patients often have other concomitant medical issues and are not sexually active, making extensive surgery

for them less than an ideal solution. Instead, **surgical procedures that obliterate the vaginal canal can alleviate their symptoms of POP.**

In this article, we provide a step-by-step description of:

- **LeFort partial colpocleisis** in a woman who still has her uterus in place
- **partial or complete colectomy and colpocleisis** in a woman who has post-hysterectomy prolapse
- **levator plication and perineorrhaphy**, as essential concluding steps in these procedures.

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### ON THE WEB

**Dr. Karram shares his techniques in 3 videos, at**  
[obgmanagement.com](http://obgmanagement.com)



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### LeFort partial colpocleisis

An obliterative procedure in the form of a LeFort partial colpocleisis is an option when a patient **1)** has her uterus and **2)** is no longer sexually active. Because the uterus is retained in this procedure, however, keep in mind that it will be difficult to evaluate any uterine bleeding or cervical pathology in the future. Endovaginal ultrasonography or an endometrial biopsy, and a Pap smear, must be done before LeFort surgery.

The ideal candidate for LeFort partial colpocleisis is a woman who has **complete uterine prolapse**, or procidentia (**FIGURE 1**), which is characterized by symmetric eversion of the anterior and posterior vaginal walls.

## LeFort partial colpocleisis: Key step by key step

**1** Begin by placing the cervix on traction to evert the vagina. Inject the vaginal mucosa with either bupivacaine or 2% lidocaine with 1:200,000 epinephrine, just below the vaginal epithelium. Place a Foley catheter with a 5-mm balloon into the bladder so that you can identify the bladder neck.

**2** Use a marking pen to mark out the rectangular areas of the vaginal epithelium that are to be removed anteriorly and posteriorly. Extend the anterior rectangle from approximately 2 cm from the tip of the cervix to 4 or 5 cm below the external urethral meatus. Mark out a mirror image on the posterior aspect of the cervix and vagina. Extend the rectangle on the posterior vaginal wall from approximately 2 cm below the level of the tip of the cervix to 4 or 5 cm inside the posterior fourchette.

**3** Incise the previously marked areas and utilize sharp dissection to remove the vaginal epithelium from both the anterior and posterior vaginal walls. Leave the maximum amount possible of vaginal muscularis on the underlying bladder and the rectum. Hemostasis is *an absolute must*. When you remove the posterior vaginal flap, avoid entering the peritoneum; if you do enter it inadvertently, close the defect with interrupted delayed absorbable suture.

**4** Sew together the cut edges of the anterior and posterior vaginal walls with interrupted delayed absorbable sutures. When possible, turn the knot into the epithelium-lined tunnels that you have created bilaterally. Turn the uterus and vaginal apex gradually inward. After the vagina has been inverted, suture the superior and inferior margins of the rectangle together.

**5** Our opinion is that a **support procedure**—at either the bladder neck (Kelly plication) or midurethra (synthetic midurethral sling)—should be performed on all patients,

## FIGURE 1 Pelvic organ prolapse, preoperatively



**Top:** Uterine procidentia. A patient who has this condition is an ideal candidate for LeFort partial colpocleisis. **Bottom:** Asymmetric anterior vaginal prolapse.

based on preoperative assessment for potential or occult urinary stress incontinence. For more discussion, see **QUESTION 7** in “Questions we’re asked (and answers we give)” about obliterative surgery,” page 40.

**6** Perform levator plication and perineorrhaphy as a matter of routine. Key steps in these procedures are provided in the final section of the article (page 35).

**7** Postoperatively, the patient is mobilized early, although she should avoid heavy lifting for at least 6 weeks to prevent recurrence of

## WATCH THE VIDEO

**LeFort partial colpocleisis**  
by Mickey Karram, MD



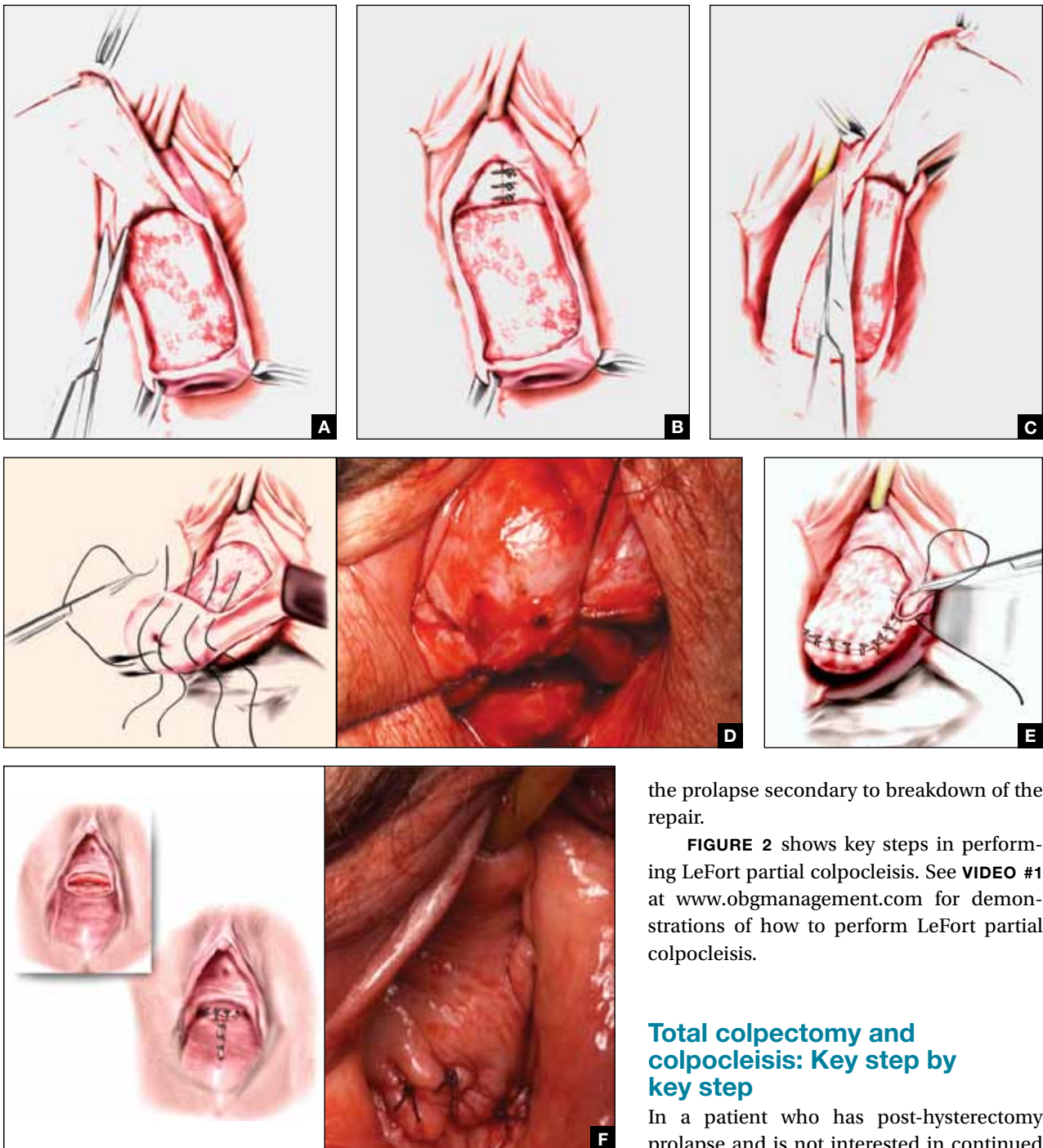
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**FIGURE 2** Steps: LeFort partial colpocleisis



**A** Denude the anterior vaginal epithelium. **B** Plicate the neck of the bladder. **C** Next, denude the posterior vaginal epithelium. **D** Approximate most proximal surfaces. **E** Place lateral sutures to allow for drainage canals. **F** The uterus has been replaced and most of the distal incisions closed.

the prolapse secondary to breakdown of the repair.

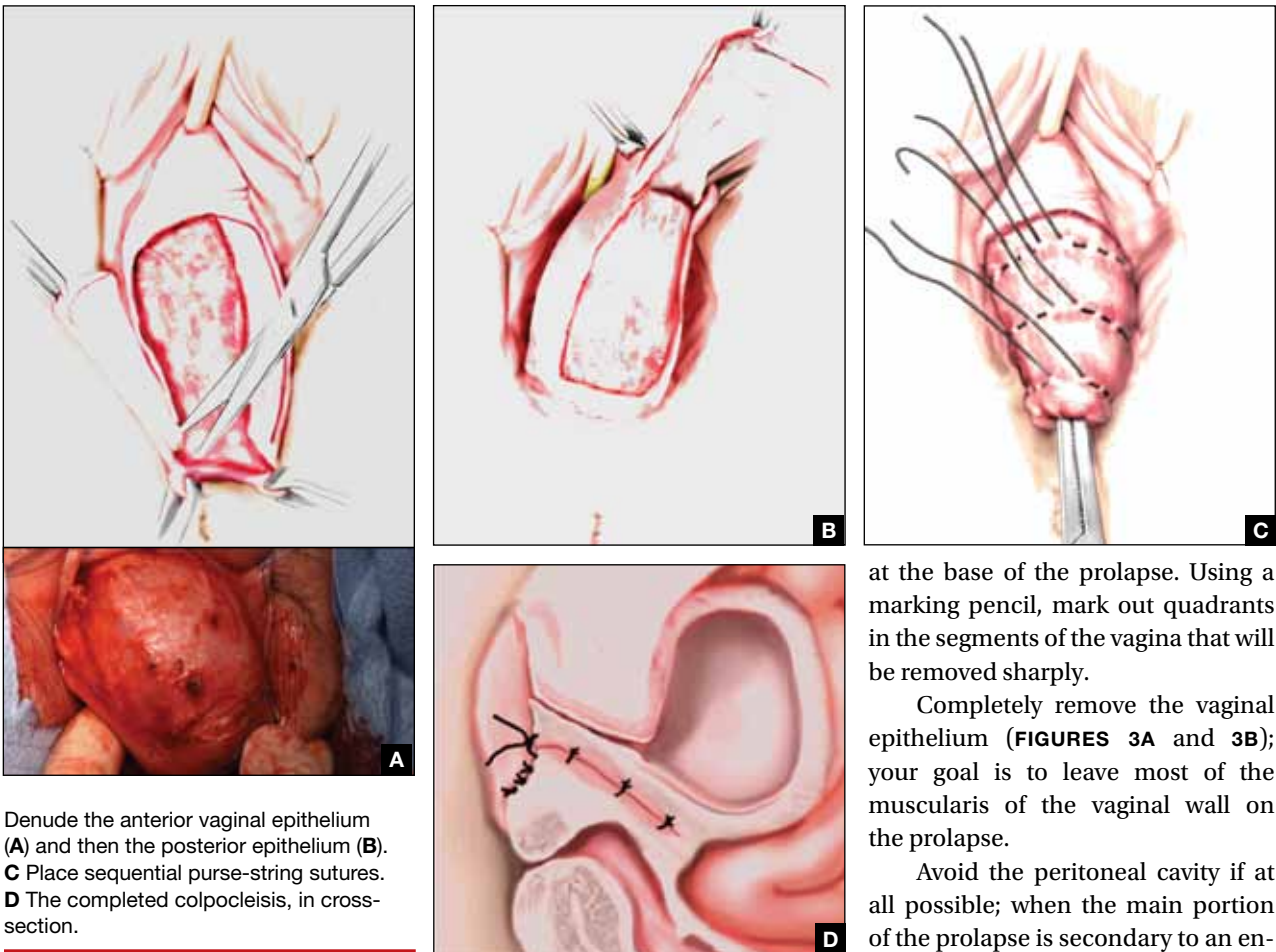
**FIGURE 2** shows key steps in performing LeFort partial colpocleisis. See **VIDEO #1** at [www.obgmanagement.com](http://www.obgmanagement.com) for demonstrations of how to perform LeFort partial colpocleisis.

### Total colpectomy and colpocleisis: Key step by key step

In a patient who has post-hysterectomy prolapse and is not interested in continued sexual function, total colpectomy and colpocleisis provide a highly minimally invasive, durable option to correct her prolapse.

If there is complete eversion of the vagina then, truly, total colpectomy and colpocleisis is the procedure of choice. If there is

ILLUSTRATIONS, FIGURES 2-4; JOE CHOYAN. REPRINTED FROM ATLAS OF PELVIC ANATOMY AND GYNECOLOGIC SURGERY (3RD EDITION, 2011; SAUNDERS/ELSEVIER) WITH PERMISSION OF THE PUBLISHER

**FIGURE 3** Steps: Total colectomy and colpocleisis

Denude the anterior vaginal epithelium (A) and then the posterior epithelium (B). C Place sequential purse-string sutures. D The completed colpocleisis, in cross-section.

significant prolapse of only one segment of the pelvic floor, however—for example, the anterior vaginal wall (FIGURE 1)—then aggressive repair of this variant with a narrowing down of the genital hiatus accomplishes the same result *without* requiring complete removal of what appears to be fairly well supported vaginal mucosa.

Here are key steps for performing partial or complete colectomy and colpocleisis.

**1** Grasp the most prominent portion of the prolapse with two Allis clamps. Inject the vaginal mucosa with either bupivacaine or 2% lidocaine with 1:200,000 epinephrine, just below the vaginal epithelium.

**2** Circumscribe the vagina with an incision several centimeters from the hymen

at the base of the prolapse. Using a marking pencil, mark out quadrants in the segments of the vagina that will be removed sharply.

Completely remove the vaginal epithelium (FIGURES 3A and 3B); your goal is to leave most of the muscularis of the vaginal wall on the prolapse.

Avoid the peritoneal cavity if at all possible; when the main portion of the prolapse is secondary to an enterocele and the vaginal epithelium is

very thin, however, formal excision of the enterocele sac, with closing of the defect, may be required.

**3** Subsequently, place a series of 2-0 delayed absorbable sutures in purse-string fashion, inverting the vagina by sequentially tying down the sutures (FIGURE 3C). Ideally, you should take these sutures through the vaginal muscularis that has been left on the prolapse.

If at all possible, avoid the peritoneum and the wall of the viscera, whether bladder or bowel. Invert the apex of the soft tissue, using the tip of forceps, as each purse-string suture is tied.

There is a variation of this procedure: Perform a separate anterior and posterior colporrhaphy, with two purse-string sutures

used to approximate the anterior and posterior segments, thus obliterating any dead space.

**4** Perform distal levatoroplasty and extensive perineorrhaphy (described in the next section of the text).

**5** The patient is usually kept overnight. She is discharged with instructions similar to what are given to patients who have had a LeFort partial colpocleisis: Early mobilization but no heavy lifting for at least 6 weeks—again, to prevent recurrence of the prolapse secondary to breakdown of the repair.

See **VIDEO #2** and **VIDEO #3** for a demonstration of how to perform a complete colpectomy and colpocleisis. **FIGURE 3D** shows the completed colpocleisis.

### Distal levatoroplasty with high perineorrhaphy: Key step by key step

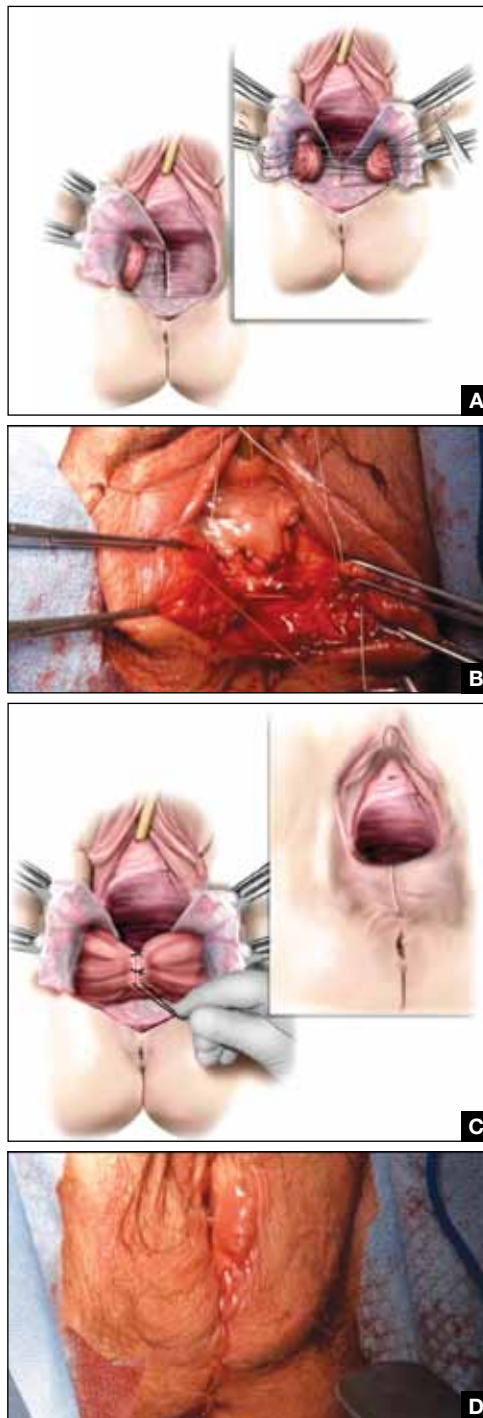
**1** Place two Allis clamps superiorly on the genital hiatus to demarcate the lateral edges of the extent of tissue that is to be removed from the posterior fourchette.

**2** Mark out a diamond-shaped flap of epithelium over the distal posterior vaginal wall, proximally, and the perineal skin, distally. Sharply, remove the marked perineal skin and vaginal epithelium.

**3** Mobilize the distal posterior vaginal wall laterally to obtain access to the distal levator ani muscle (**FIGURE 4A**). Use a CT-1 needle (Ethicon) to plicate two or three 0-Vicryl sutures on the levator muscles across the midline (**FIGURES 4B** and **4C**). Doing so will significantly diminish the caliber of the distal vaginal canal.

**4** Reconstruct the perineal body using a series of 2-0 Vicryl sutures, which greatly reduces the size of the genital hiatus. Close the vaginal and perineal skin with interrupted or running 3-0 Vicryl sutures (**FIGURE 4D**).

**FIGURE 4** Steps: Distal levatoroplasty with high perineorrhaphy



**A** Lateral dissection to the levator ani muscles. *Inset:* levator ani plicated with sequential sutures.  
**B** Place three sutures to plicate the levator ani.  
**C** Secure the plication sutures. *Inset C,* and  
**D:** Completed levatoroplasty.

**FAST  
TRACK**

If at all possible, avoid the peritoneum and the wall of the viscera, whether bladder or bowel

CONTINUED ON PAGE 40



## Questions we're often asked (and answers we give) about obliterative surgery

**Q1** How satisfied are women with the outcome of these procedures—do many regret having their vaginal canal obliterated?

**A** Overall, studies indicate that 85% to 100% of patients are “satisfied” or “very satisfied” with the outcomes of obliterative procedures.<sup>1</sup> There are rare reports of regret after colpocleisis over loss of coital ability; in one study of a series of procedures,<sup>2</sup> 5% of subjects expressed regret postoperatively.

**Q2** Why is levatoroplasty and perineorrhaphy such an important part of both the LeFort partial colpocleisis and colpectomy and colpocleisis?

**A** The aim of both these procedures is to reduce prolapsed tissue. The true durability of repair comes from significantly decreasing the caliber of the genital hiatus, with the hope of closing off the bulk of the distal vaginal canal. This can really only be accomplished by utilizing an aggressive levatoroplasty and perineorrhaphy, described in the text.

**Q3** How often do patients develop de novo stress incontinence or significant voiding dysfunction, or both, after an obliterative procedure?

**A** The risk of developing urinary incontinence after an obliterative procedure is difficult to ascertain. In general, patients who had retention or a high postvoid residual volume preoperatively have a good outcome in regard to correcting their voiding dysfunction. This is because, in most cases, the voiding dysfunction is directly related to the anatomic distortion created by the prolapse.

**Q4** What is the rate of prolapse recurrence after these procedures, and how is a recurrence managed?

**A** Multiple studies have documented an excellent anatomic outcome after these procedures, with a prolapse recurrence rate of only 1% to 8%.<sup>3</sup> Very little has been written about how to best manage recurrent prolapse after an obliterative procedure. Most surgeons would, most likely, recommend repeat colpocleisis or aggressive levatoroplasty and perineorrhaphy. (Note: The patient whose colpectomy and colpocleisis is shown in Video #3 failed two previous colpectomy and colpocleisis procedures.)

**Q5** Can these procedures be performed under local anesthesia, with some intravenous sedation, or under regional anesthesia—thereby avoiding intubation?

**A** Yes. We have utilized IV sedation and bilateral block successfully to perform these procedures. (Note: VIDEO #3 of LeFort partial colpocleisis shows the procedure performed under local anesthesia.)

**Q6** What does the literature say about common complications after these procedures?

**A** Postoperative morbidity and mortality in the elderly surgical population is a considerable concern. Significant postoperative complications occur in approximately 5% of patients

in modern series<sup>4</sup>—often attributed to the effects of age and to the frail condition of patients who are commonly selected for colpocleisis.

Specifically, approximately 5% of patients experience a postoperative cardiac, thromboembolic, pulmonary, or cerebrovascular event. Transfusion is the most commonly reported major complication related to the procedure itself. Other complications include:

- fever and its associated morbidity
- pneumonia
- ongoing vaginal bleeding
- pyelonephritis
- hematoma
- cystotomy
- ureteral occlusion.

Minor surgical complications occur at a rate of approximately 15%. Surgical mortality is about 1 in 400 cases.

**Q7** Do you routinely undertake urodynamic study of patients who are scheduled to undergo an obliterative procedure?

**A** At minimum, a lower urinary tract evaluation should include a postvoid residual volume study and, we believe, some kind of a filling study and stress test, with reduction of the prolapse. Beyond that, we recommend that you conduct more detailed urodynamic tests on a patient-by-patient basis, when you think that the findings will add to the clinical picture.

**Q8** Would you ever perform a vaginal hysterectomy and then proceed with a colpectomy and colpocleisis?

**A** The principal rationale for performing hysterectomy at the time of colpocleisis is to eliminate the risk of endometrial or cervical carcinoma. Hysterectomy also eliminates the risk of pyometra, a rare but serious complication that can occur when the lateral canals become obstructed after a LeFort procedure.

A recent study<sup>5</sup> looked at **1)** concomitant hysterectomy in conjunction with colpectomy and colpocleisis and **2)** traditional LeFort partial colpocleisis. In this retrospective review, objective and subjective success rates were high, but patients who underwent hysterectomy had a statistically significantly greater decline in postoperative hematocrit and a significant increase in the need for transfusion, compared with patients who did not undergo hysterectomy (35% vs. 13%).

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## Our experience

We are often asked questions about the procedures that we've just described, including patients' satisfaction with the outcome, complications, and the risk that prolapse will recur. In the accompanying box, "Questions we're asked (and answers we give) about obliterative surgery," opposite, we give our responses to eight common inquiries. ❏

## Suggested readings

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