

■ BY JOHN P. A. GEORGE, MD

Laparoscopic evaluation of the pelvis: refocusing on the basics

When a systematic approach is utilized, pelvic laparoscopy can aid clinicians in diagnosing a range of common conditions. Here, the author offers techniques for ensuring accurate findings, and reviews snapshots of various abnormalities.

Gynecologic laparoscopy offers clinicians the unique opportunity to effectively identify and treat such common conditions as endometriosis, ectopic pregnancy, ovarian cysts, and uterine fibroids. But, as with any procedure, a thorough and systematic approach is needed to ensure all pathologies are identified and all normal and abnormal findings are accurately documented. Here, for clinicians who are new to pelvic laparoscopy or those just looking to brush up

on their skills, I share my recommended techniques—based on having performed approximately 1,500 laparoscopic procedures in the past 10 years. (See “7 tips for successful laparoscopy” on page 35.) I have found this systematic approach to aid not only in the identification of subtle and unanticipated pathology, but also in later recall of events and findings.

Preparing the patient

Place the patient in a modified lithotomy position in Allen stirrups, with thighs parallel to the floor, knees comfortably flexed (130°), and with the weight of the lower extremities concentrated at the soles of the feet. Ensure that the buttocks are at the edge of the table. Tuck the right arm safely on the patient’s right side so that the right-handed operator on the right side of the table can have full range of motion and not be restricted by an arm board. Maintain the left arm on an arm board, but be sure to avoid hyperextension to minimize brachial plexus injury. Place the patient’s head on a sponge doughnut to

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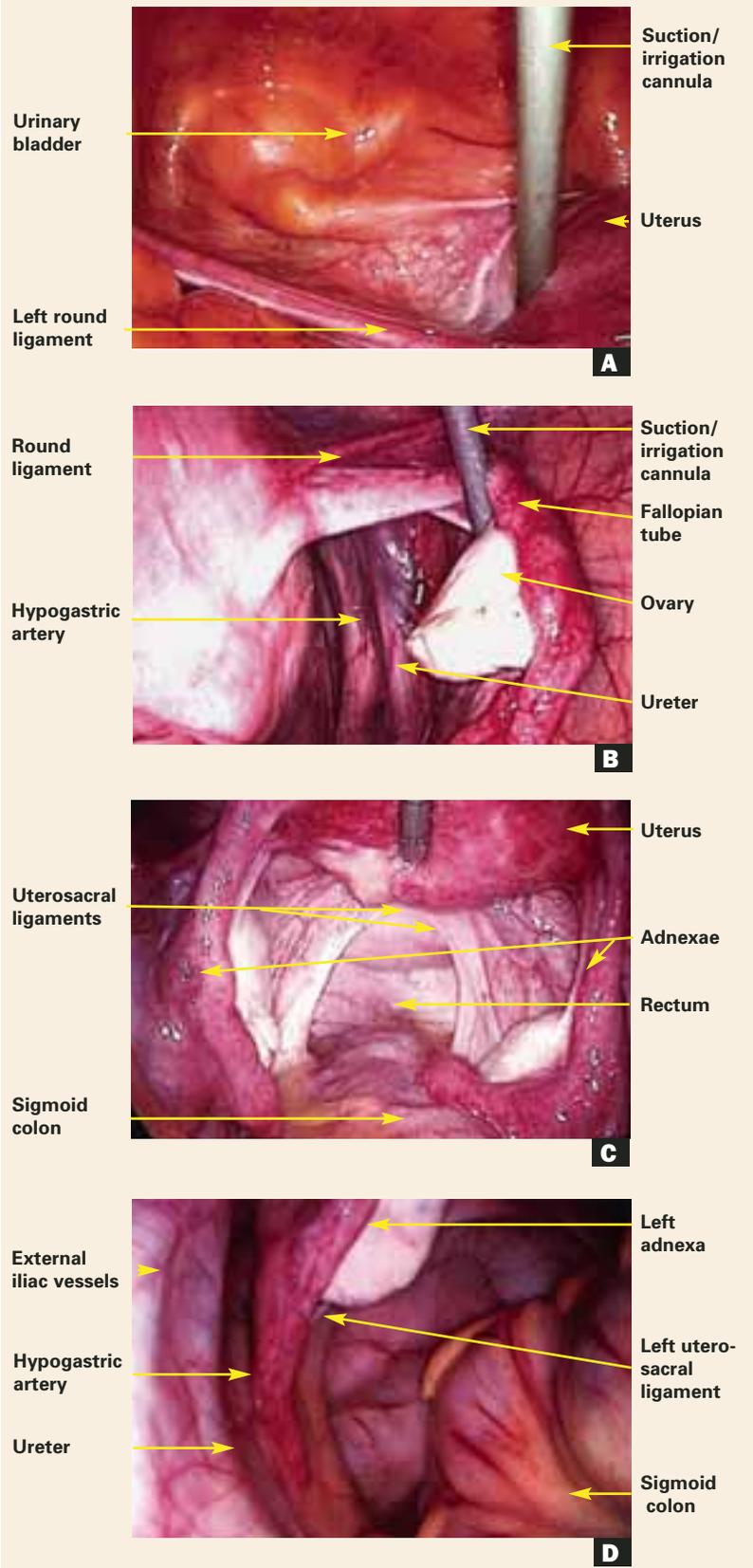
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KEY POINTS

- Inspect the pelvis in 2 concentric circles—inner and outer—around the uterus.
- Manipulate the ovaries for inspection of all surfaces, as endometriosis will frequently be located on the inferior surface and may result in subtle adherence of the ovary to the posterior leaf of the broad ligament.
- Close the peritoneum and fascia—with a reliable device, under direct laparoscopic visualization—at all trocar sites greater than 5 mm in order to avoid trocar site hernias.
- Complete the pelvic examination before performing any subsequent procedures, since blood and peritoneal trauma may make abnormal findings difficult to perceive.

FIGURE 1

Inner concentric circle



minimize occipital pressure.

After standard prepping and draping, insert an appropriate uterine manipulator. For the small uterus, a disposable manipulator may be placed transcervically with the distal tip close to the fundus of the uterus. For the larger uterus—in excess of 12 weeks' gestational size—a reusable metal manipulator may be more reliable. Place a Foley catheter to avoid distension of the urinary bladder and to facilitate better pelvic inspection.

Abdominal entry. In a low-risk patient, you may safely place a primary trocar at or near the umbilicus, then insert a 10-mm, 0° laparoscope into the channel of a 10-12 transparent, bladeless trocar. Once successful atraumatic entry is confirmed, insufflate carbon dioxide into the abdomen with the electronic insufflator set at a pressure of 15 mm Hg.

For high-risk patients, you may need to modify the preparation, including site of entry and techniques utilized. For example, in patients with a previous low abdominal scar, establish pneumoperitoneum with a Veress needle in the left upper quadrant prior to trocar placement. Landmarks are the left subcostal margin in the mid-clavicular line. Once pneumoperitoneum is established, use a 10-cc syringe containing 2 cc of saline to aspirate carbon dioxide at the intended site of trocar entry. Use a 2-inch, 22-gauge needle as the radius of a circle traced during aspiration. If free flow of carbon dioxide is not achieved, suspect adhesions and consider a separate site of entry.

With the patient supine, first inspect the upper and mid abdomen

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and take pictures to accurately demonstrate normal and pathologic findings. Then turn your attention to the pelvis. Under direct laparoscopic visualization, place a 5-mm trocar above the symphysis pubis at an appropriate level above the uterine fundus such that a probe inserted through a cannula at that site can easily be advanced into the posterior cul-de-sac. (A suction/irrigation cannula can serve several functions during the procedure, including manipulating and palpating organs, suctioning blood, irrigating peritoneal surfaces, and cleansing the laparoscopic lens.)

Proceed by placing the patient in a Trendelenburg position, steep enough so that you will later be able to retract the small bowel from the posterior cul-de-sac, and keep it in the lower abdomen near the bifurcation of the aorta. Alert the anesthesiologist at this point to observe cardiorespiratory function, especially in the at-risk patient. Decrease the angle of the Trendelenburg position when necessary. Use the uterine manipulator to displace the uterus in all directions to confirm that the instrument is properly located. Identify any obvious pelvic pathology prior to the detailed examination.

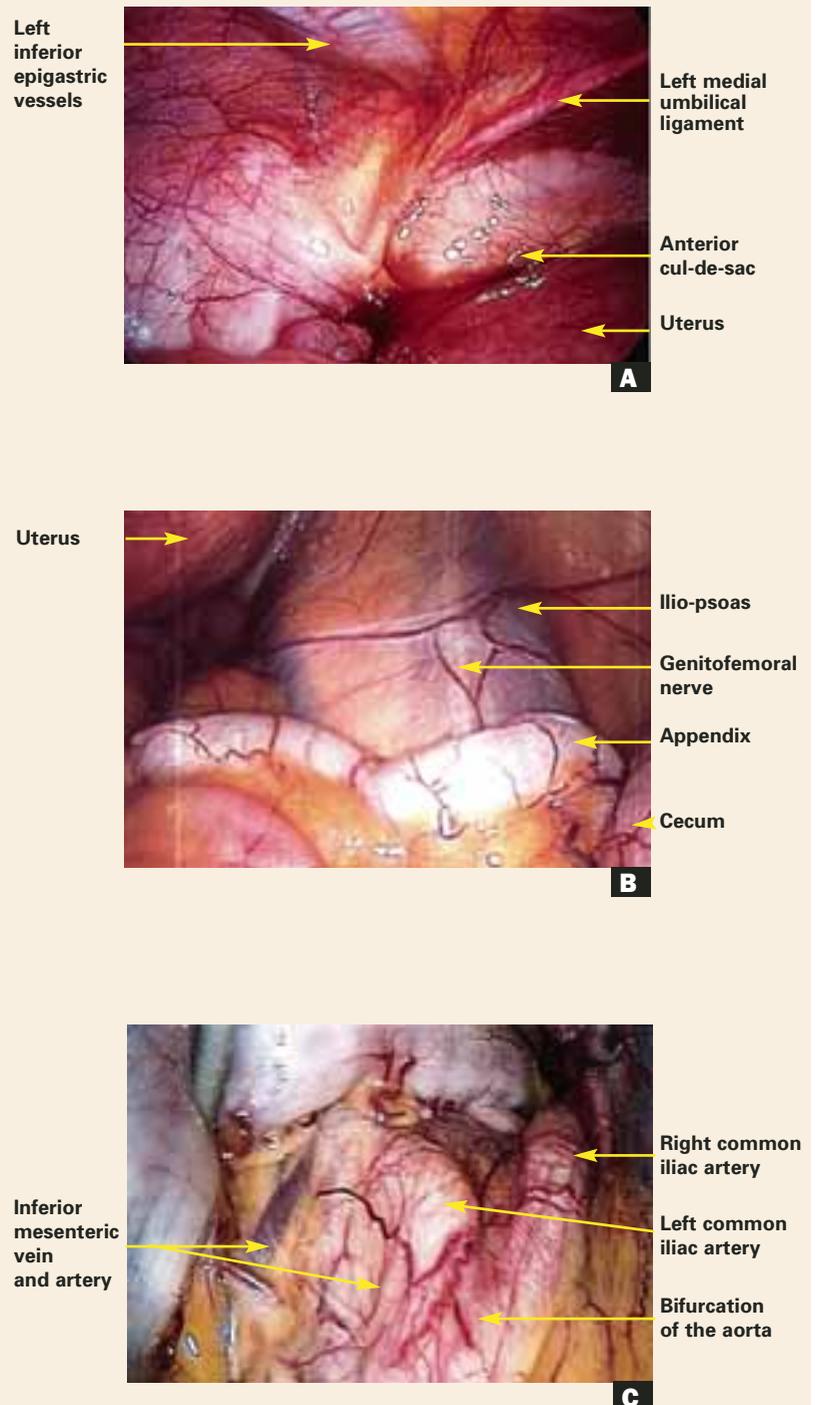
Technique

The key to conducting a successful examination of the pelvis is to utilize a technique that enhances meticulous and

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FIGURE 2

Outer concentric circle



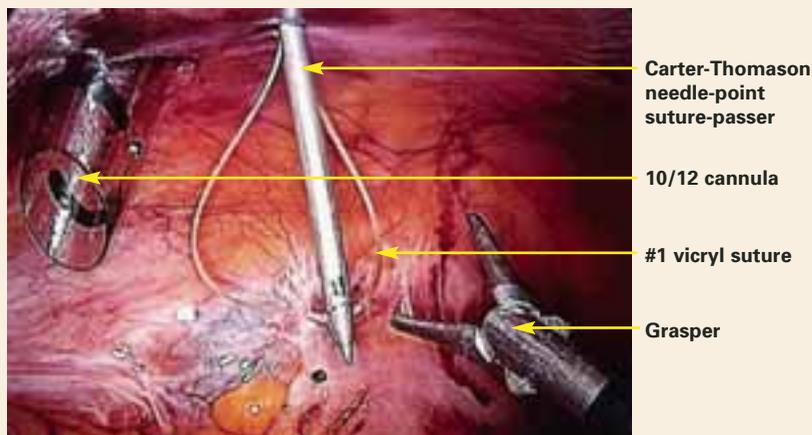


FIGURE 3

Continue to the fossa ovarica, checking for endometriosis. Also, identify retroperitoneal structures. (Of note, the ureter may run an aberrant course, especially when midpelvic endometriosis is present.) The uterosacral ligament, hypogastric artery, ureter, and infundibulo-pelvic ligament should be noted from medial to lateral just beyond the pelvic inlet.

complete evaluation. To achieve this, inspect the pelvis in 2 concentric circles—inner and outer—around the uterus. Be sure to maintain the laparoscope at an optimal distance from the target at all times, and keep the lens clean and the instrument well focused to ensure as clear a view as possible.

Pelvic inspection should include the lower anterior and lateral abdominal walls, anterior cul-de-sac, uterus and supporting ligaments, adnexae, pelvic sidewalls, posterior cul-de-sac, rectosigmoid, and posterior abdominal wall up to the bifurcation of the aorta.

Inner concentric circle. First, inspect the uterus, noting the size, contour, and consistency, as well as the presence of any abnormalities. Then examine the left round ligament (FIGURE 1A). Proceed in a clockwise fashion through the anterior cul-de-sac to the right round ligament. Zoom in and pan out with the laparoscope, performing suction and irrigation as needed for better inspection of all peritoneal surfaces.

Mobilize the right adnexa with the suprapubic probe and examine the fallopian tube and ovary completely (FIGURE 1B). Manipulate the adnexa out of the true pelvis and assess the right lateral pelvic sidewall.

With the patient in a steep Trendelenburg position and the small bowel displaced into the lumbar area, evaluate the posterior cul-de-sac including the rectum and pararectal areas (FIGURE 1C). Suction excess fluid as needed for better visualization. Palpate and examine the uterosacral ligaments from the uterus to the sacral attachment. By manipulating the sigmoid colon and adnexae, you will better expose the ovarian fossa and pararectal areas.

Displace the sigmoid colon to the right and appraise the left pelvic sidewall (FIGURE 1D). A good initial reference point in identifying the midpelvic ureter is the hypogastric artery, readily identified in pulsation just beyond the pelvic inlet. You may note the ureter in peristalsis superior and lateral to the vessel. Trace the ureter distally by manipulating the left adnexa. The external iliac vessels are now superior and lateral to the ureter, and the uterosacral ligament is inferior and medial.

Complete the inner concentric circle evaluation by checking the left adnexa and anterior leaf of the broad ligament up to the round ligament. Manipulate the left ovary for inspection of all surfaces, as endometriosis will frequently be located on the inferior surface and may result in sub-

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Abnormal findings

Pelvic laparoscopy can uncover a wide range of abnormalities. Here's a look at a few you may encounter:



In some patients, you may need to lyse adhesions of the bowel, as pictured above, or omentum prior to pelvic inspection.



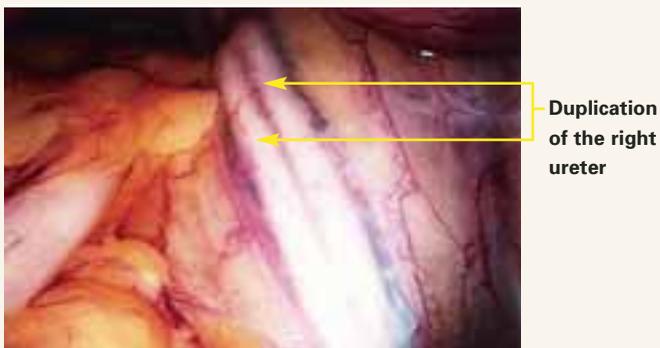
Perihepatic adhesions, a common finding in the upper abdomen, may be predictive of prior inflammatory disease in the pelvis.



This mass, originally thought to be ovarian in origin, was ultimately found to be a small bowel leiomyosarcoma.



Anterior cul-de-sac endometrial implants may be subtle, requiring close inspection and refocusing of the laparoscope for identification.



Though casual inspection of the pelvic inlet showed nothing abnormal, closer examination revealed a duplication of the right ureter.



This patient, who presented with chronic pelvic pain, suffered from a torsion of the left adnexa through a window in the left broad ligament.

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the adherence of the ovary to the posterior leaf of the broad ligament.

Outer concentric circle. Begin with the left medial umbilical ligament and continue clockwise through the low anterior abdominal wall to the right medial umbilical ligament (FIGURE 2A). Identify both inferior epigastric vessels prior to inserting low lateral trocars. Low-abdominal trocars may be placed during inspection, especially if pathology is identified preoperatively. However, trocar size, location, and number is dependent on the location and nature of the pathology encountered.

Advance toward the right ilio-psoas muscle and note the genitofemoral nerve through the transparent peritoneum running longitudinally along the middle of the muscle (FIGURE 2B). Trace the right common iliac artery proximally to the bifurcation of the aorta (FIGURE 2C). Progress to the left common iliac. Identify the inferior mesenteric vessels and ureter lateral to the common iliac artery by manipulating and inspecting the sigmoid colon and mesentery. Finally, examine the left psoas muscle and adjoining structures.

Completing the pelvic evaluation. At the end of every laparoscopic procedure, close the peritoneum and fascia—with a reliable device, under direct laparoscopic visualization—at all trocar sites greater than 5 mm, in order to avoid trocar site hernias (FIGURE 3). Then remove all instruments and cannulas and expel carbon dioxide under laparoscopic observation. Lastly, withdraw the laparoscope slowly while viewing the tract of the trocar.

Laparoscopic procedures. It may sometimes be appropriate to perform surgical therapy during a pelvic evaluation. For example, most ectopic pregnancies can be treated laparoscopically, as can many cases of endometriosis. It is desirable, however, to complete the pelvic examination before performing any subsequent procedures, includ-

7 tips for successful laparoscopy

1. Use the same technique for evaluating every case. The time taken for the examination will decrease with each surgery.
2. Always maintain a clean lens and well-focused laparoscope.
3. Try to determine the optimal distance to hold the laparoscope from the target for the best view of the operative field.
4. Do not view the target with the laparoscope partially visualizing the interior of the cannula. Instead, slightly withdraw the cannula from the abdomen to obtain a wider field.
5. Maintain the target in the center of the field, whether taking pictures or performing operative procedures.
6. Use the uterine manipulator and second puncture probe to enhance exposure.
7. Review pictures or videotapes to help you recall events and findings. This may be particularly helpful if dictation of the operative report is delayed or if a report is being prepared for a third party.

ing the removal of ovarian cysts, ovaries, fibroids, or the uterus, since blood and peritoneal trauma may make abnormal findings difficult to perceive.

Avoiding complications

Laparoscopic complications can be minimized by using safe techniques during patient preparation, abdominal entry and exit, and while conducting operative procedures. Prior to some pelvic inspections, it may be necessary to lyse adhesions of the omentum or bowel to minimize injury to those organs and to get a better view of the pelvis. In these cases, use atraumatic forceps to achieve a better plane for dissection. Consider using ultrasonic shears to minimize thermal injury to the bowel.

In addition to closing the peritoneum and fascia at all sites greater than 5 mm, you can prevent trocar site hernias by avoiding

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extensive manipulation, carbon dioxide leakage during the course of surgery, and repeated replacement of the cannula, all of which can contribute to trocar site dilatation.

Trocar sites may be associated not only with hernias—which cause acute and severe symptoms requiring immediate intervention—but also with adhesions resulting in chronic pelvic pain.

When patients postoperatively complain of pain, nausea, and vomiting, and a mass is palpable at the trocar site, a port site hernia should be suspected. Plain abdominal x-rays usually indicate a partial small bowel obstruction. In such cases, promptly obtain a computed tomography (CT) scan, which will confirm the diagnosis. This condition can be managed laparoscopically if it is diagnosed early, but the operator must take extra care when making the initial abdominal entry.

Proper documentation

Create an accurate record of the laparoscopy, including normal and abnormal findings, by either videotaping the procedure or creating prints or slides. Compose pictures with a clear anatomic frame of reference. Also, be sure to precede close-up images with a panoramic view, so that all anatomic relationships will be clear.

Both the methodical approach to the laparoscopy itself and the visual documentation you've created will help you produce a complete and accurate operative report. It is much easier to recall details when a systematic method has been used. Pictures or videos will further serve to refresh the memory. ■

RECOMMENDED READING

1. Hulka JF, Reich H, eds. *Textbook of Laparoscopy*. 3rd ed. Philadelphia: WB. Saunders; 1998.
2. Sutton C, Diamond M, eds. *Endoscopic Surgery for Gynecologists*. 2nd ed. Philadelphia: WB. Saunders; 1998.
3. Nezhat CR, Nezhat CH, Nezhat F, Luciano AA, Siegler AM, Metzger DA. *Operative Gynecologic Laparoscopy*. New York: McGraw-Hill; 1995.
4. Council on Resident Education in Obstetrics and Gynecology. *Advanced Surgical Techniques for Residency Training Programs in Obstetrics and Gynecology. CREOG Training Guidelines*. Washington, DC: CREOG; 1994.

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