

# The Gynecologic Examination

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The complete gynecologic examination screens for infection as well as breast, cervical, uterine, ovarian, and colon cancer. Symptoms commonly evaluated with the gynecologic examination include breast lumps or pain, changes in menstrual bleeding patterns, vaginal discharge, lower abdominal pain, dyspareunia, and urinary incontinence. Essential elements include a careful history, preparation, and the breast and pelvic examinations. Each will be discussed, with particular emphasis on the pelvic examination.

## Gynecologic History

The complete gynecologic history addresses issues that the patient may consider deeply personal (Box 1-1). Discussion can trigger emotional reactions that may lead the patient to withhold information (1). Therefore, ideally, the gynecologic history should be obtained without observers and while the patient is still dressed.

The initial reproductive history includes the patient's menstrual pattern, history of all previous pregnancies, results of any recent Pap smear, and the initial day of the most recent

### Box 1-1 Elements of the Gynecologic History

- Presenting problem
- Medical and surgical history
- Medications and allergies
- Menstrual history
- Sexual history
- Obstetric history
- Last Pap smear/History of abnormal Pap smears
- Intimate partner violence screening
- Family history (i.e., breast and gynecologic cancers)
- Vaccine history (i.e., HPV, hepatitis B, MMR, varicella)
- Urinary and rectal symptoms

menses. A review of the patient's usual menstrual pattern should include the interval between menses, duration of menses, and any menstrual problems such as midcycle pain, intermenstrual bleeding, or dysmenorrhea. The physician should ask about abnormal vaginal discharge and should also inquire about past gynecologic problems such as abnormal Pap smears, fibroids, endometriosis, sexually transmitted diseases, and pelvic infections. For adolescents and women younger than 27 years, one should offer the human papilloma virus (HPV) vaccine series.

An understanding of the patient's current and past sexual activity aids in assessment of sexually transmitted disease risk and contraceptive needs. The physician should strive to avoid assumptions about a patient's sexuality. One way is to ask, "Are you sexually active with men, women, or both?" Similarly, inquiring whether the patient is interested in contraception rather than assuming a patient is only choosing between birth control methods will lead to a more productive interaction. Current and prior expression of sexual identity may vary.

The obstetric history includes live births as well as spontaneous or elective abortions. The standard shorthand for tallying the patient's obstetric history begins with gravidity, which represents the total number of pregnancies. Parity is next recorded as four sequential numbers representing the number of full-term infants, premature infants, abortions (gestational age less than 20 weeks), and living children. Information about previous deliveries would include pregnancy complications, infants' birth date and weight, mode of delivery, gestational age, and health.

Including urinary issues in the gynecologic evaluation is helpful. Urinary tract infections (UTIs) are one of the most common reasons to seek medical care and are sometimes triggered by sexual activity. Urinary incontinence is an increasingly recognized health problem (see Chapter 10).

Finally, because domestic violence is common (2), screening for current or previous physical, emotional, or sexual abuse is an important part of the patient's history and in some states is mandatory. Women who have experienced intimate partner violence report a preference for direct questioning in private by the examining physician (3). It is helpful to first broach the topic with a statement such as "Because violence is so common, I ask all of my patients about it." A potential exploratory question is "Have you ever experienced physical, emotional, or sexual violence?" An affirmative response requires appropriate follow-up (see Chapter 21).

## Gynecologic Examination

A complete gynecologic examination includes the breast and pelvic examinations. Abdominal and inguinal examinations also usually precede the pelvic

examination but will not be discussed in this chapter. Most physicians begin with the breast examination.

## Breast Examination

The breast examination has both visual and tactile components. The visual examination of the anterior chest wall and axilla is aided by the patient sitting with arms lifted overhead and then leaning forward while she places her hands on her waist. These positions allow optimum assessment of pigmentation changes and surface irregularities suggesting a mass or adenopathy. However, for reasons of modesty, inspection is commonly performed in the recumbent position.

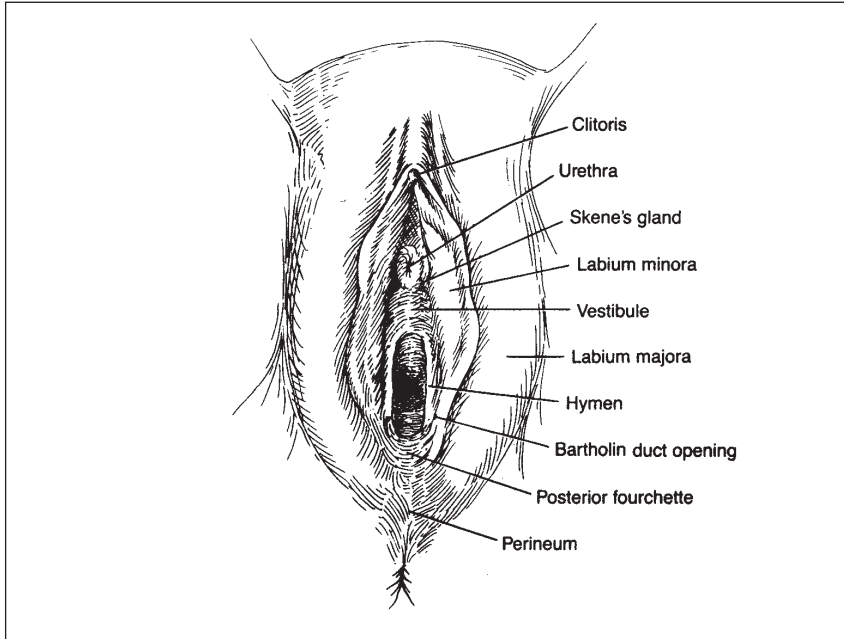
The tactile examination of the breast is best performed with the patient recumbent with her arm raised above her head. A small pillow under her upper back can further distribute the breast tissue over the chest wall. Palpation is performed using the base of the fingertips in small circular motions with variable depth. Recall that breast tissue extends beyond the region usually defined by a bra cup. Different methods to cover all the potential breast tissue include moving in vertical stripes, following imaginary lines in and out like the spokes of a wheel, and making concentric circles of increasing size. In a study of the effectiveness of different methods among young women, the vertical stripe method resulted in the most complete breast self-examination (4). Each nipple should be gently squeezed to assess for nipple discharge. The physician should also palpate all sides of the pyramidal-shaped axillae. Examination is aided when the patient sits with her arm to her side, while the examiner gently pulls the arm downwards at the elbow. The infraclavicular and supraclavicular areas should be palpated for lymphadenopathy as well.

The accurate identification of breast abnormalities has been correlated with a longer breast examination time. Chapter 18 reviews management of breast problems. Although practice varies widely and is often influenced by staff availability, for medicolegal purposes many recommend that another member of the medical team be present during the breast examination as well as for the pelvic and rectal examinations. The rationale is to prevent sexual misconduct by the examiner or charges of the same.

## Pelvic Examination

### *Anatomy Review*

Familiarity with pelvic anatomy is essential for performing the pelvic examination. The vulva consists of the labia majora, the labia minora, the clitoris, the hymen, and the vulvar vestibule (Figure 1-1). Substantial variation occurs in the size and shape of the labia. The hymen may or may not be intact, irrespective of the patient's previous sexual activity. In women of reproductive



**Figure 1-1** Vulva and perineum. (From Berek SJ, ed. Novak's Gynecology. Baltimore: Williams & Wilkins; 1988:110; with permission.)

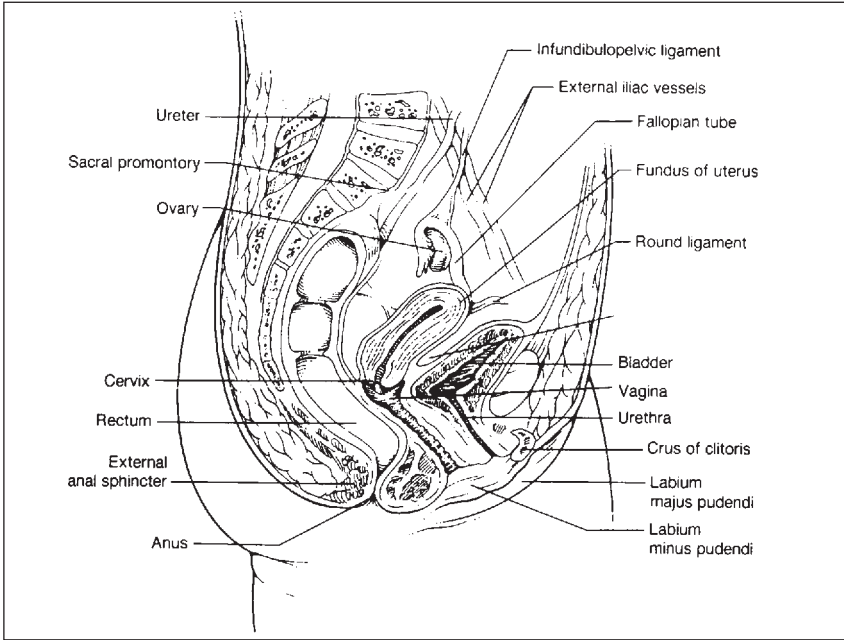
age, the vaginal mucosa is thick and folded into rugae. A small-to-moderate amount of vaginal discharge may be normal. The vaginal mucosa and its secretions are influenced by estrogen levels and therefore vary through the lifespan and each menstrual cycle.

The cervix is the inferior external surface of the uterus that extends into the vaginal vault (Figure 1-2). The endocervix is that portion of the cervix comprising the cervical canal, while the ectocervix is the surface of the cervix visible in the vagina. The transformation zone is the area surrounding the junction where the squamous and columnar epithelia meet; it most often lies just inside the cervical os (the opening of the cervix).

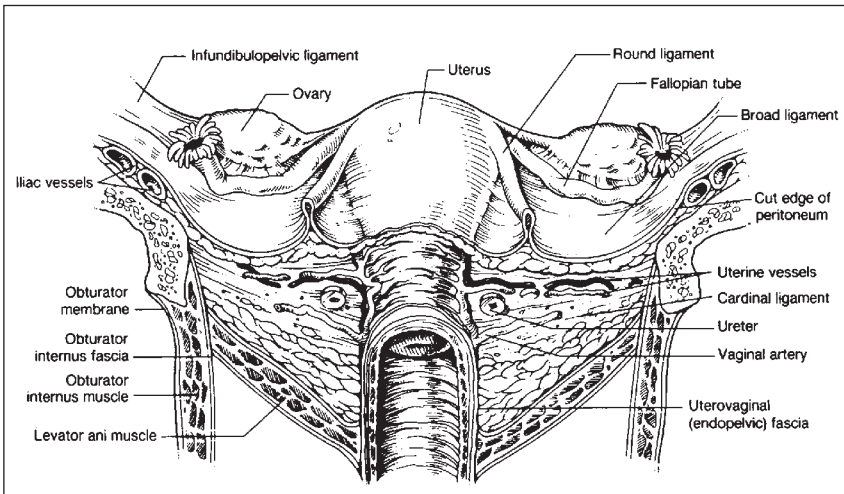
The uterus is primarily supported by the pelvic diaphragm and the urogenital diaphragm. Secondarily, it is supported by ligaments and the peritoneum (broad ligament of uterus) (Figure 1-3). Uterine size varies throughout the life cycle. A woman who has borne children may have a larger uterus than a nulliparous woman, because



*A parous woman may have a larger uterus than a nulliparous woman because uterine size increases with each pregnancy and does not fully return to its pregravid size.*



**Figure 1-2** Lateral view of the pelvic viscera. (From Danforth D. Danforth's Obstetrics and Gynecology. Philadelphia: Lippincott Williams & Wilkins; 1999:21; with permission.)



**Figure 1-3** Ligamentous, fascial, and muscular support of the pelvic viscera. (From Danforth D. Danforth's Obstetrics and Gynecology. Philadelphia: Lippincott Williams & Wilkins; 1999:21; with permission.)

uterine size increases with each pregnancy. Uterine size gradually decreases after menopause. Uterine fibroids, adenomyosis, and uterine cancer are pathologic causes of uterine enlargement.

The pelvic adnexae include the ovaries and fallopian tubes. In general, ovaries increase in size throughout childhood, plateau in adulthood, then decrease in size in the postmenopausal period (5). Postmenopausal ovary size is affected by the number of years since menopause and the quantity of prior pregnancies (6); however, ovaries should not be palpable in a woman who is two or more years beyond menopause, and such a finding should prompt further evaluation with transvaginal ultrasound. Ovaries may also vary in size during the menstrual cycle, ranging from the size of a small almond to that of a golf ball. An ovary with a volume of more than twice that of its companion ovary should be regarded with concern (7). However, a follicular or corpus luteum cyst is a common benign cause of adnexal enlargement or fullness on pelvic examination (see Chapter 13).

Symmetric enlargement of the ovaries is often palpable in women with polycystic ovary syndrome (PCOS); however, bilateral ovarian enlargement can also signal ovarian cancer. The appendix, which can vary in location, may be close to the right ovary and fallopian tube, and is rightly considered a pelvic structure.



*The appendix, which can vary in location, may be close to the right ovary and fallopian tube.*

### *Preparation for the Examination*

#### DISCUSSION WITH PATIENT

A frank discussion alone with the patient before the examination provides opportunity to discuss any sexual symptoms or concerns without another person present. Common reasons for fearing or avoiding pelvic examinations include embarrassment, lack of information, cultural or language barriers, pain with previous examinations, or post-traumatic stress related to sexual abuse. Each of these circumstances requires additional sensitivity and efforts to minimize emotional or physical discomfort. Often, given an opportunity, patients can articulate ways to decrease personal discomfort. Using a small, well-lubricated speculum and only one digit during the bimanual exam can minimize examination discomfort.

Women about to have their fist pelvic examination benefit from a full description of the process, including seeing the speculum and having the testing procedures explained. It may be helpful to have the patient make a fist to approximate the size of her uterus and to define the cervix as the entry site within the curvature of the second digit with illustration of speculum entry and specimen collection.

## CHAPERONES

Chaperones are recommended; however, surveys demonstrate wide variation in their use. In addition to providing medicolegal protection, staff chaperones may help prepare the patient and assist in specimen processing. Adequate staffing is problematic at many clinical sites, and lack of available staff may create a barrier to examination.

## GOWNING

Before the patient undresses she should be asked to empty her bladder in order to decrease possible discomfort during the examination and to make the pelvic


organs more easily palpable. Patient privacy is best maintained when the gown is closed posteriorly. A sheet placed over the gown can provide additional draping.

## SUPPLIES

All supplies required should be gathered before beginning the pelvic examination (Box 1-2). It is poor practice to begin searching for this equipment after the speculum is in the patient's vagina.

In general, the smallest speculum that will allow adequate visualization of the cervix should be used. A small pediatric speculum is appropriate for virgins and women who are post-menopausal for years without multiple births. The Pedersen speculum is narrow and is most often used for nulliparous women. A large speculum is often necessary to examine multiparous women, especially those who are obese. Involution of the vaginal folds into lateral spaces around the large speculum can prevent visualization of the cervix. In

such cases, a condom with its tip cut off and then placed over the speculum may provide cervix visualization by holding back the vaginal walls. Specula

 *Voiding prior to the pelvic exam helps to decrease possible discomfort and make the pelvic organs more easily palpable.*

### Box 1-2 Supplies for the Pelvic Examination

- Light source
- Gloves
- Speculum
- Lubricant
- Cervical cytology collection supplies (including broom and liquid medium; or spatula, cytobrush, glass slides, and fixative)
- Glass slides and cover slips
- Saline and KOH 10% solution for wet mount and KOH slides
- Transport medium for *Chlamydia* and gonorrhea testing
- Proctoswabs or cotton swabs
- Transport medium for HPV testing (if desired for use alongside conventional Pap smear testing)
- Narrow-range pH paper (if desired)

are made of either metal or plastic and available in many different sizes. Metal specula can be reused after proper processing; plastic transparent specula are intended for single use with greater visualization of the vaginal walls. However, plastic specula may lack adequate strength for some obese women and may be difficult to adjust once they are in an open locked position.

Supplies for specimen collection of vaginal secretions, gonorrhea and *Chlamydia* screening, and cervical cytology sampling should also be easily accessible.

### *Performing the Examination*

A pelvic examination that minimizes pain triggers less muscular guarding and therefore can more effectively define anatomy. It is helpful to tell the patient what is being done to her and why in language that is easily understandable. Apprising the patient of each upcoming action also helps to demystify the examination. The pelvic examination has three components: the external examination, the speculum examination, and the bimanual examination.

#### EXTERNAL EXAMINATION

The pelvic examination begins with a visual inspection of the external genitalia using the assistance of a good light source. Although skin cancer is rare in this region, it is often diagnosed late. Vulvar cancer can be hyperpigmented, erythematous, or hypopigmented, and any such lesions require careful evaluation and often biopsy (see Chapter 17). Lichen sclerosus is a relatively common condition in which the vulvar skin may appear like parchment. It is more common in postmenopausal women, but occurs in all ages, and can be associated with cancer. Significant enlargement of the clitoris may signify excess androgens and a likely adrenal or ovarian tumor. After childbirth, prolapse or scarring from an episiotomy may be present. Bartholin's glands may swell and become palpable from a retention cyst, infection, or trauma. In elderly patients, a swollen Bartholin's gland should raise the possibility of an underlying cancer. After menopause, atrophic changes may include a urethral caruncle, which appears as a cherry red polypoid mass extending from the urethral opening and represents prolapse of the urethral mucosa.

Bladder, uterine, and rectal prolapse are common sequelae of childbirth. Sometimes bulging is obvious on initial inspection, but other times it may only be evident when the patient bears down as if she were attempting to void and then defecate. The examiner should be appropriately positioned before undertaking this evaluation, because some women will lose urine with this maneuver. For many women with prolapse, diagnosis is only possible after a more detailed gynecologic examination (see Chapters 10 and 14).



### SPECULUM EXAMINATION

The speculum examination includes entry, positioning, opening, use, and removal. The metal speculum should be warmed; both metal and plastic speculums should be examined before use to ensure normal functioning. Lubricating the speculum with anything but water was previously discouraged due to concern that it could potentially interfere with testing. However, recent randomized controlled trials have demonstrated that lubricant has no effect on either traditional Pap smear interpretation or the

results of gonorrhea and *Chlamydia* DNA probes (8-10). Thus, the speculum should be lubricated with water-based lubricant to maximize patient comfort. Water-based lubricants feel cold, and, if not warmed before use, the patient should be warned of the cool sensation before initial contact.

Before inserting the speculum, an initial light touch on the inner thigh, rather than the genitalia, helps to decrease patient guarding. After warning the patient, the speculum is inserted. One technique is to insert a gloved index finger slowly into the introitus and then apply gentle pressure posteriorly. By doing so, the examiner can sense when the patient has relaxed, at



*Since recent studies have demonstrated that water-based lubricants do not interfere with either Pap smear or STD testing, the speculum should be lubricated to minimize patient discomfort.*



*If the cervix is not easily located, the speculum should be partially withdrawn and redirected more posteriorly. If the patient's uterus is retroflexed, however, the cervix will often be located more anteriorly.*

which time the speculum is inserted directly over the finger.

When inserting, positioning, and removing the speculum, minimal pressure should be exerted on the urethra. This is achieved with slight downward pressure on the speculum, by positioning the speculum so that the blades are at a 30-deg angle from the vertical

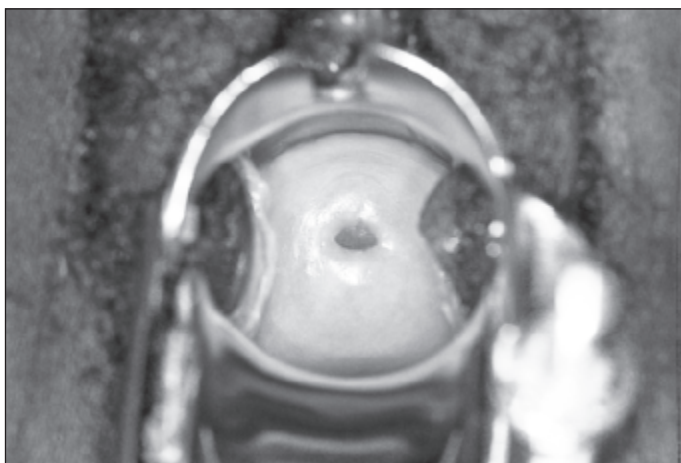
axis, and by pointing the speculum directly toward the sacrum. Once the speculum is placed deep in the vagina, the blades are rotated to the horizontal position. Next, the speculum is withdrawn slightly as the blades are slowly opened, allowing the cervix to fall between the two blades. If the cervix is not easily observed, the speculum should be partially withdrawn and redirected (usually more posteriorly). If a patient's uterus is retroflexed, the cervix will often be located more anteriorly.

If the examiner has difficulty finding the cervix, the speculum should be removed. The location of the cervix can be identified with a single lubricated,

gloved finger. Some clinicians routinely locate the cervix before the initial speculum insertion.

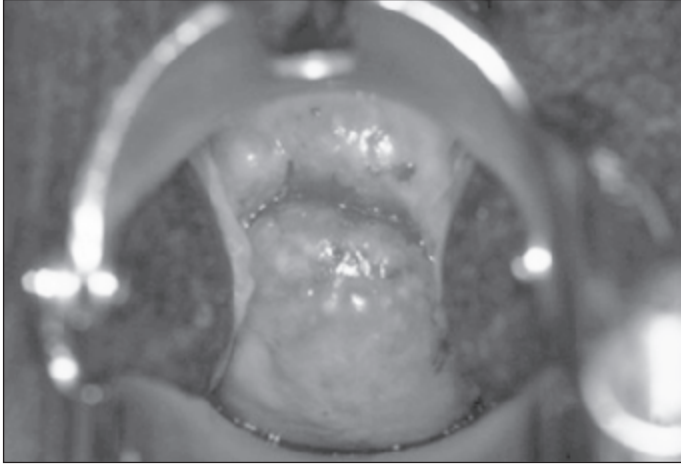
If a patient has previously undergone a hysterectomy, the cervix is usually no longer present and only a vaginal cuff remains. If the pathology was benign, then the patient no longer requires Pap smears (11). However, if the hysterectomy was performed for cervical cancer or dysplasia, cervical cancer screening on the vaginal cuff should continue since remnants of cervical tissue may be present. These women are also at higher risk for vaginal intraepithelial neoplasia (VAIN) and vaginal cancer. If the hysterectomy was performed for benign causes, yet the patient has had documented HPV infection or multiple sexual partners, she is at slightly higher risk for vaginal cancer, and some physicians would still screen for vaginal cancer using cervical cytology methods (12). Following a supracervical hysterectomy, the cervix remains in situ, and such women require continued routine screening for cervical cancer.

Once the cervix is visualized, its surface and any adherent secretions should be carefully assessed. The nulliparous os is small and round (Figure 1-4/Color Plate 1 at back of the book). Following vaginal delivery, the cervical os normally increases in size and becomes more horizontal and irregular in contour. Previous cryosurgery for cellular abnormalities can lead to scarring and a stenotic appearance of the os. Nabothian cysts are a common, normal finding in reproductive age women. The cysts often appear in clusters over

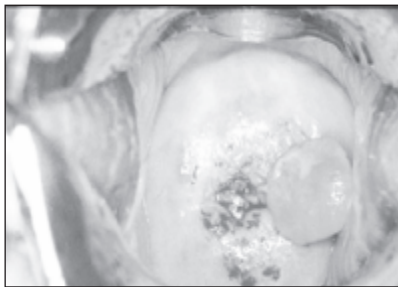


**Figure 1-4** Nulliparous cervix. The nulliparous os is smooth and round. Childbirth or abortion results in a more irregular, “worn” cervix. With close inspection, the squamocolumnar junction can be seen just inside the os. (From Atlas of Visual Inspection of the Cervix with Acetic Acid. Baltimore: JHPIEGO Corporation; 1999; with permission.) (For color reproduction, see Plate 1.)

the surface of the cervix with only a section of the cyst visible above the cervical surface (Figure 1-5/Color Plate 2). Cervical or endometrial polyps can protrude from the cervix, and sometimes are a cause of bleeding or dysmenorrhea (Figure 1-6/Color Plate 3). A minimal amount of mucoid discharge within the cervical os may be normal; a significant volume of purulent discharge from



**Figure 1-5** Nabothian cysts form when glandular tissue is folded over and covered by squamous epithelium. Nabothian cysts are common, may become quite large, and should not be confused with pathologic lesions. (From *Atlas of Visual Inspection of the Cervix with Acetic Acid*. Baltimore: JHPIEGO Corporation; 1999; with permission.) (For color reproduction, see Plate 2.)




**Figure 1-6** A cervical polyp appears as a finger-like projection in the cervical os and may emanate from cervical or endometrial tissue. Polyps may cause menorrhagia and post-coital bleeding. Although almost always benign, they are usually removed and sent for pathologic evaluation. In postmenopausal women polyps occasionally signal underlying endometrial hyperplasia. (From *Atlas of Visual Inspection of the Cervix with Acetic Acid*. Baltimore: JHPIEGO Corporation; 1999; with permission.) (For color reproduction, see Plate 3.)

the os can signify cervical infection or upper reproductive tract infection (pelvic inflammatory disease).

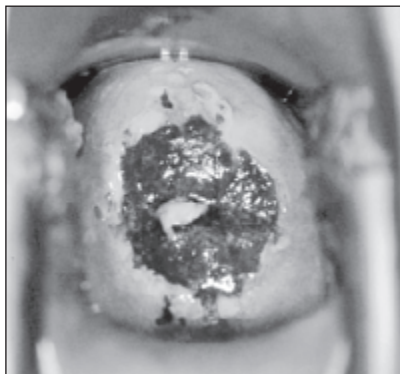
The ectocervix is typically covered by squamous epithelium, whereas the endocervix is lined with columnar epithelium. The junction between the pale pink of the squamous epithelium and the red color of the columnar epithelium is most commonly located just inside the cervical os (see Figure 1-4/Color Plate 1). In some young women the columnar epithelium may extend from the cervical canal well onto the ectocervix (an “ectropion” or “cervical ectopy”) and appear as a red and beefy area (Figure 1-7; see Color Plate 4 for another example). This normal variant is sometimes difficult to distinguish from chronic cervicitis because both appear dark red and can be associated with an adherent discharge. In the case of ectopy, however, close inspection easily reveals the demarcation where the squamous epithelium begins. After menopause the transition zone recedes from the surface of the cervix and deeper into the endocervical canal (12). Another possible finding is cervical warts (Figure 1-8/Color Plate 5), which result from infection with the HPV.

The cervix should be examined for gross abnormalities of the epithelium, such as ulcers, leukoplakia or polyps (Figure 1-9/Color Plate 6). If these are present, the patient should be referred for further assessment by a gynecologist, regardless of cervical cancer screening results.

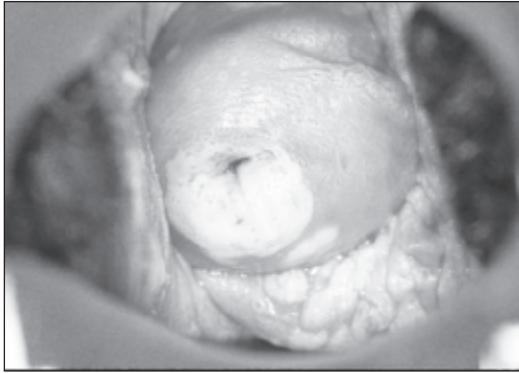
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 *If gross abnormalities are visible on the cervix, the patient should be referred for further assessment by a gynecologist, regardless of Pap smear results.*

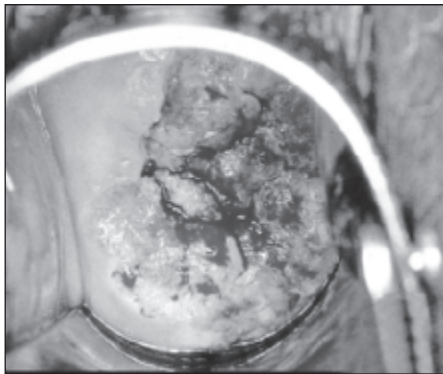
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**Figure 1-7** Cervical ectopy (or “ectropion”), defined as the presence of columnar epithelium on the ectocervix, is a normal variant. Here the squamocolumnar junction is obvious at first inspection, at the color change. (From Atlas of Visual Inspection of the Cervix with Acetic Acid. Baltimore: JHPIEGO Corporation; 1999; with permission.) (See Plate 4 for another example of cervical ectopy.)



**Figure 1-8** Cervical warts. On the cervix warts are more readily seen after application of dilute acetic acid (vinegar solution) and appear as markedly thickened, marginated areas of aceto-whitened epithelium. Here warty disease involves most of the lower half of the cervix and a small island as well. In addition, warts are visible on the vagina below. (From *Atlas of Visual Inspection of the Cervix with Acetic Acid*. Baltimore: JHPIEGO Corporation; 1999; with permission) (For color reproduction, see Plate 5.)



**Figure 1-9** Invasive cancer of the cervix can assume a variety of appearances. Here a dark mass appears on the ectocervix, but at other times a mass may protrude from the cervical os or the cervix may appear densely white. Bimanual examination reveals an enlarged, hard cervix that may or may not be mobile. (From *Atlas of Visual Inspection of the Cervix with Acetic Acid*. Baltimore: JHPIEGO Corporation; 1999; with permission.) (For color reproduction, see Plate 6.)

The secretions present in the vagina may vary individually and physiologically throughout the menstrual cycle. Clear or white secretions are expected. If the amount is profuse, possibilities include a vaginal infection or hormone exposure. In the setting of a yeast infection, the vaginal mucosa usually has a most pronounced beefy-red and inflamed appearance. A similar presentation can sometimes result from irritant or allergic vaginitis.

Because there is significant variation and overlap in the appearance of different etiologies of vaginitis, objective testing should always be undertaken. Any symptomatic, colored, or foul-smelling discharge should be sampled from the lateral vaginal wall for microscopic examination. Such specimens usually are obtained before other testing to decrease the presence of red blood cells. Secretions are mixed with a small amount of normal saline either in a test tube or on a slide with a protective cover slip to prevent air-drying. The saline wet mount is examined under the microscope for trichomonas, excess leukocytes, and “clue cells.” A similar specimen is prepared using KOH 10% solution, which aids in diagnosis of bacterial vaginosis and *Candida*. If bacterial vaginosis is present, an amine (fishy) odor is released. The KOH also disrupts surrounding cellular material but not the yeast, allowing for easier identification upon microscopic examination. If narrow-range pH paper is available, the vaginal secretions can be placed on the paper to assess vaginal discharge pH (see Chapter 8). When an abnormal vaginal discharge is present, cervical testing for *Chlamydia* and gonorrhea is obtained. Sometimes the specimen is ultimately discarded, but when office microscopy reveals the cause of vaginitis to be *Trichomonas*, testing for the other sexually transmitted infections is warranted.

It was previously held that the performance of the Pap smear was influenced by the order of specimen collection when more than one cervical sample is obtained. However, a recent study refutes this (13). Because the presence of blood can sometimes interfere with cervical infection testing, however, this specimen should be obtained first.

Rates of both gonorrhea and *Chlamydia* infection have been noted to be inversely related to age, with the highest risk below age 17 (14). Universal annual screening is advocated for all sexually active women under 25; asymptomatic older women are screened if considered to be at risk. Although either infection may sometimes be completely asymptomatic, substantial sequelae may nonetheless ensue. The proper techniques for obtaining samples for liquid cytology and the conventional Pap smear are reviewed in Box 1-3. For a more detailed discussion, see Chapter 7.

The speculum should gradually partially close upon withdrawal. Before the metal speculum is removed, the screw should be loosened so the speculum blades can partially close. The examiner should take care to keep a finger between the two metal blades to prevent complete apposition, which could pinch the patient’s mucosa. Plastic specula are designed to not to completely occlude; however, the patient should be warned that there is a loud clicking



*Because the presence of blood may interfere with testing for cervical infection, this specimen should be collected first, before the Pap smear.*

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### Box 1-3 Obtaining the Pap Smear

The speculum should be carefully positioned so the entire cervix is seen. If excess mucus or other secretions obscure the cervix, they should be gently removed using a proctoswab without disturbing the epithelium. Small amounts of blood will not interfere with cytologic evaluation, but large amounts, as occurs during menses, preclude cytologic interpretation by conventional Pap smear. This is considerably less of a problem when liquid based cytology is used. Gross abnormalities of the cervical epithelium (especially friability, plaque-like or cauliflower lesions, or significant ulceration) should prompt referral for colposcopy, regardless of cytology results, because cytology may be unreliable in the setting of carcinoma. Nabothian cysts (Figure 1-5) and cervical ectopy (or “ectropion”) (Figure 1-7) are common and should be recognized as normal variants.

#### A. For liquid-based cytology (*ThinPrep* or *SurePath*):

2. The center of the broom should be inserted in the cervical os, then the brush should be rotated five revolutions in the same direction to simultaneously sample the endocervix and ectocervix. The broom is then rinsed in the liquid medium to immediately fix the cells. Alternatively, a detachable plastic spatula/cytobrush may be used. Note that a wooden spatula cannot be used. The same laboratory specimen can also be used for high-risk HPV testing when this is indicated, although at present *SurePath* does not have FDA approval for this indication.

#### B. Conventional Pap smear testing:

2. The Ayres spatula is placed in the cervical os and rotated 360 deg to sample the entire ectocervix. This specimen is then smeared on a glass slide. When cervical ectopy is present, the red endocervical lining extends to the ectocervix, and an additional circumferential scraping at this transition is sometimes necessary to ensure that the squamocolumnar junction is sampled.
3. The cytobrush is next inserted into the cervical os and rotated 360 deg. The brush is then rolled onto the slide, ensuring that the entire circumference of the brush makes contact with the slide. A cotton applicator moistened with saline is an alternative that is less effective in retrieving cells.
4. The slide must be immediately sprayed with fixative to prevent desiccation of the cells, which begins to occur in as quickly as 15 sec.
5. If desired, a separate cervical specimen may be obtained and placed in specific transport medium for HPV testing.

*N.B. The patient should be instructed to anticipate vaginal spotting within 24 hours of cervical sampling and be assured that this does not indicate a problem.*

noise as the plastic speculum is released from the open locked position. As the speculum is withdrawn, the vaginal vault mucosa should be carefully inspected. It is normally pink but may be erythematous if the vaginal mucosa is inflamed, as seen with a yeast infection. Atrophic mucosa usually appears pale, unless there is associated inflammation.

### BIMANUAL EXAMINATION

The head of the examining table should be slightly raised so that the patient is partially upright and her internal organs move nearer the perineum. This is especially important when examining obese woman. Positioning the patient so she can abduct her flexed knees away from her perineum increases the examiner's access. The examiner may also benefit from placing one foot on the examining table step to bring his or her body nearer to the patient. Adequate lubrication during the bimanual examination serves both to improve tactile sensitivity for the examiner and to minimize patient discomfort.

If the examiner describes to the patient what to expect and how she may cooperate throughout the bimanual examination, the examiner's accuracy and patient's comfort will both be maximized. Again, an initial light touch on the thigh, rather than the genitalia, helps to decrease patient guarding. After verbal cueing, one or two fingers are placed at the perineum, followed by slow entrance into the introitus. The examiner begins by assessing the cervix. The surface of the nonpregnant cervix is usually firm like the tip of a nose and nontender. Movement of the cervix from side to side between the examiner's fingers is usually possible without discomfort, although some patients experience a mild pressure sensation. Cervical motion tenderness is defined as discomfort that occurs with lateral movement. This finding signifies a localized peritonitis, which can occur with tubo-ovarian infections, ectopic pregnancy, and other causes of adnexal or uterine pathology.

The examiner next determines the location, shape, and size of the uterus. One or two fingers are inserted posterior to the cervix and gently pushed upward while the fingers of the abdominal hand are placed on the lower abdominal wall to feel the upward movement of the uterus. Physicians may choose to brace their elbow against their hip in order to create greater leverage for the bimanual examination. The uterus may normally be deviated from the mid-line. The uterine fundus will be most accessible when the uterus is anteverted (fundus tipped anteriorly). If the uterus is retroverted (fundus tipped posteriorly), the fundus may be more difficult to assess, even with the rectovaginal examination. The uterine contours may be irregular if fibroids are present. Normally, the uterus is fairly mobile; limited mobility can result from scarring related to surgery or endometriosis. Palpation of the uterus may feel odd to the patient but only elicits significant tenderness with infection, degenerating or bleeding fibroids, or adnexal masses.

Sizing of the uterus is more accurate if the patient has voided within 30 minutes of the examination (15,16). For the nulliparous woman without abnormalities, the uterus is approximately the size of a closed fist. Increases in uterine size are recorded using descriptors associated with pregnancy (Table 1-1).



**Table 1-1 Uterine Sizing**

	Weeks Since Last Menstrual Period			
	6	8	10	12
Length (cm)	7.3	8.8	10.2	11.7
Fruit model (diameter in cm)	Small orange (7.8)	Large orange (9.0)	Grapefruit (10.2)	Cantaloupe (13.7)
Balls (diameter in cm)	Hardball (7.6)	Softball (9.8)	...	...

Adapted from Fox GN. Teaching first trimester uterine sizing. *J Fam Pract.* 1985;21:400–1.



*A patient can aid in the examination of her ovaries by informing the physician when she feels a slight tenderness.*

Examination of the ovaries is enhanced with patient education and cooperation. The physician should first explain that ovaries have innervation similar to a man's testicles, meaning that the ovaries are delicate and sensitive to pressure. If a woman pays close attention, she can often tell when the ovaries are being palpated, and inform the physician when she feels a slight tenderness. The examiner should remember that tenderness will also be elicited when the ureter is tugged; however, this also produces the sensation of needing to void. To palpate the ovaries, the physician uses the abdominal hand to apply downward pressure. The internal hand focuses on tactile sensation and sweeps from the highest level by the fundus inferiorly, causing the adnexae to slip between the two examining hands. Often the observant examiner and patient will concur when the ovary was felt. Focusing on the activity together decreases the patient's guarding and improves the physician's ability to appreciate the ovary.

Careful examination of the fornices, the areas of the vagina surrounding the cervix, can provide additional information. Gentle palpation of the anterior fornix allows for assessment of the bladder wall; the patient will feel the pressure as a desire to void. In the patient with acute lower abdominal pain, significant bladder tenderness may suggest a urinary tract infection. The lateral fornices provide access to the intestines as well as to the adnexal structures. Asymmetry between the lateral fornices, especially when fullness is associated with tenderness, may indicate an intra-abdominal process such as appendicitis or diverticulitis. The posterior fornix, below the uterus, is adjacent to the rectum, and the presence of stool can sometimes indicate constipation or mimic a pelvic mass.

The rectovaginal examination is particularly helpful in the assessment of lower abdominal pain, assessing a retroverted uterus or the uterus of a very obese woman, and in the evaluation of a pelvic mass, rectal symptoms or endometriosis. Although not a necessary component of all routine pelvic exams in women younger

than age 40, evaluation for lower abdominal or pelvic pain should always include a rectovaginal examination. For any patient with possible sexually transmitted disease, it is important for the examiner to change gloves between the bimanual and rectovaginal exams to avoid inoculating the rectum.

Following completion of the rectovaginal exam and in the absence of vaginal bleeding, clinicians commonly test any secretions or stool found on the glove for occult blood. This is important when investigating symptoms of abdominal or pelvic pain. Also, although this is a suboptimal screening test for colon cancer and the practice is discouraged by some groups, it may be the only screening received. Importantly, physicians should not discount a positive stool guaiac; a positive result requires investigation with colonoscopy (17). For women over age 50, three serial stool specimens collected at home is felt to be a more sensitive and specific screening method than guaiac testing of a digital rectal exam specimen, but inferior to colonoscopy performed every 10 years.

In suspected appendicitis, right-sided discomfort and possibly fullness, especially in the right lateral or posterior fornix on rectovaginal examination, help to confirm the diagnosis. In patients with endometriosis, pelvic nodules can occasionally be appreciated on deep examination along the uretosacral ligament or rectovaginal septum and are best detected during menstruation (18).

At the conclusion of the pelvic examination the physician should inform the patient that “everything appears healthy” or “normal” when appropriate.

### *Special Considerations*

The most common situations warranting special consideration are the patient undergoing her first pelvic examination and the women with previous negative experiences. These have been reviewed in the Preparation for the Examination section. The care of the lesbian patient is facilitated mostly by avoiding assumptions (see Chapter 22). In this section special considerations regarding the adolescent, geriatric, bedridden, and handicapped patient are reviewed.



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*When the presence of a sexually transmitted disease is suspected, it is important for the examiner to change gloves between the bimanual and rectovaginal exams to avoid inoculating the rectum.*

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### ADOLESCENT PATIENT

In some states information between physicians and adolescents remains confidential, whereas in others parental consent is required for access to medical care. The most common situations warranting pelvic examination are gynecologic symptoms, STD screening, or care during pregnancy. A pelvic examination is not necessary before provision of hormonal contraception or human papillomavirus vaccination.

It is common for adolescents to have limited knowledge and concerns that the examination will be painful. Discussion before the examination including a step-by-step description may be helpful. The adolescent patient may have strong preferences about who is present during her pelvic examination: a staff chaperone, a family member, or a friend. Providing a handheld mirror for the patient to observe the examination provides opportunity for education (19).

Before attempting to insert a speculum, placement of a gloved index finger in the introitus with pressure directed posteriorly can aid the patient in identifying which muscles to relax and allow assessment of whether a speculum can be tolerated. The importance of the information to be gained from the examination must be weighed against the potential discomfort of speculum insertion. Referral to a gynecologist can be considered. For vaginitis symptoms, vaginal secretions can often be sampled without a speculum.

In about one-third of adolescents (20), columnar epithelium is visible on the cervix; this is termed *cervical ectopy* or *ectropion* (see Figure 1-6/Color Plate 3). The columnar epithelium is beefy appearing and has a mucous covering.

### GERIATRIC PATIENT

The older patient should be assessed without assumptions. Sexual issues may include low libido or atrophic changes (21). Exploration of urinary or rectal incontinence or prolapse symptoms aids disclosure. Women who have not undergone cervical cancer screening for years are at increased risk for unidentified cervical cancer (22).

An examination table that can be lowered to stool height is an advantage for the patient with limited mobility. Some women are unable to use the stirrups but can extend their legs laterally. Other women find the lithotomy position impossible, yet tolerate a pelvic examination in the lateral decubitus position.

For a patient who underwent menopause many years ago and is not sexually active, atrophic changes may limit the pelvic examination despite a small speculum. The bimanual examination may be limited to a single lubricated digit. Other atrophic changes include a shift in the vaginal flora from a predominance of lactobacillus to fecal bacteria (23), which is sometimes associated

with inflammation that also contributes to discomfort during the exam. Generous use of lubricant may be helpful.

#### BEDRIDDEN PATIENT

If the patient is in a bed and an examination table is not available, the patient can most easily be examined with a firm object placed under the buttocks, such as an upside-down bedpan.

#### HANDICAPPED OR OVERWEIGHT PATIENT

Recent literature reveals that women with conditions that limit mobility or the ability to follow instructions are less likely to have regular health maintenance examinations such as cervical cancer screening (24). Most accommodations are as discussed for the geriatric patient.



*Recent studies indicate that obese women and women with physical or cognitive limitations are less likely to receive routine health maintenance care such as cervical cancer screening.*

## Conclusion

When performed skillfully, the gynecologic examination can provide an abundance of information about several organ systems. Proper attention to preparation of the patient and to her individual needs helps ensure that the examination is neither unpleasant nor painful.

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