prepubertal girls more sensitive to a variety of chemical, physical, and microbiologic irritants. The normal hymen looks thin, with an average opening of about 4 mm. However, there is great variability in normal hymenal shape, ranging from imperforate to multiple small fenestrations to oval, round, or stellate openings (Fig. 21.1). Abnormal findings that may correlate with vaginal penetration include lacerations of the hymen or a thickened hymen with rolled edges. These findings are extremely difficult to differentiate from normal variations, and photos should always be taken if sexual abuse is suspected. Neonates have swollen labia and thick, moist vaginal epithelium for several weeks after birth, but most prepubertal girls have smooth pink vaginal mucosa and a pale vulva that barely covers the clitoris.

**PRESENTING SIGNS AND SYMPTOMS**

The chief complaints of children with gynecologic problems include vaginal discharge or bleeding, itching or rubbing of the genitals, dysuria or refusal to void, or a foul genital odor noted by caregivers. The initial differential diagnosis can be guided by the predominant complaints (Box 21.1). A calm, professional, thoughtful approach is essential to allow parents to discuss their concerns, enable a physical examination, and appropriately treat the patient. Vulvovaginitis, for example, can cause vaginal discharge or bleeding, itching or pain, urinary retention, abnormal appearance noted by caregivers, and concerns about possible sexual abuse.

The approach to pediatric gynecologic problems must take into account the developmental and psychologic state of the patient. Children zealously guard autonomy over their bodies. In addition, little girls are socialized to hide their genitals and will resist examination for various reasons throughout developmental stages—it is important to help them overcome their fear, embarrassment, or anxiety. It is helpful, when attempting to make the child comfortable with the examination, to speak directly to the child in language appropriate for her age (see the Tips and Tricks box). In teaching hospitals, try to coordinate care so that the examination is performed only once.
Promoting Body Safety While Accomplishing the Necessary Genital Examination
State to the child that you are a doctor or nurse. Perform the nonthreatening aspects of the physical examination first (listen to the heart and palpate the abdomen). Review and respect privacy and safe-touching rules. Stand back and let the parent or other caregiver help the child with undressing.

Sample Conversation
“Hi, my name is Dr. Smith. I need to check you.” (Begin with nonthreatening parts of the physical examination [even if not necessary]—listen to the heart and palpate the abdomen.) “Has anybody talked to you about your private parts? Most of the time, no one is allowed to look at or touch your private parts. But your parents or doctor can look if you need help. This is a time when a doctor needs to check because you are hurting.” “Mommy is going to be right here with you. Mommy will help you take your pants off, and then I will look at the outside.”

ED evaluation of possible sexual abuse should focus on identifying patients who require urgent treatment, urgent collection of evidence, or protective custody (Fig. 21.2). Open-ended questions by the emergency practitioner (EP) will allow the parents to voice their concerns about possible molestation (this should be done away from the child). When interviewing the patient, history taking should be limited to open-ended questions phrased in child-appropriate language, such as “How did you get this ouchie?” Do not make suggestions that the child may follow in an attempt to please. Do not direct, lead, or ask questions with embedded information because such information can appear in the child’s later responses. Formal interviewing and complete examination are best minimized in the ED and instead carried out by trained personnel. ED providers should be aware of local resources and if possible refer children to a designated child sexual abuse evaluation center.

If abuse is alleged within the past 72 hours, collection of evidence should be undertaken as soon as possible. In studies of forensic evidence collection in prepubertal sexual assault cases, the majority of usable evidence is found on clothing and linen. In one large study of prepubertal sexual assault victims, no swabs were positive for blood after 13 hours or for semen or sperm after 9 hours.

A brief physical examination of the vulva, vagina, and anal area should be undertaken, as described previously. The chief
by applying labial traction in two directions—both apart and apart and down (Fig. 21.4). Some children may be more comfortable hugging their knees to their chest (knee-chest position); labial traction will also be necessary when using this position. In a variation of the knee-chest position, the child rises on her hands and knees and then puts her head down on the examination table (see Fig. 21.3, B).

If the child is uncooperative, it is a matter of clinical judgment whether the importance of the examination is worth the stress caused by it. Referral to a child sexual abuse center or examination under anesthesia should be considered.

The EP should avoid directly touching the sensitive mucosa.

**GENITAL EXAMINATION**

Infants and young toddlers can usually be examined easily if positioned supine in the frog leg position (Fig. 21.3). Prepubertal girls can be examined in either the supine or the prone position. If the child is cooperative, she can lie in the supine position with the feet together and the knees bent and placed apart in the frog-leg position. Visualization can be improved by applying labial traction in two directions—both apart and apart and down (Fig. 21.4).

Some children may be more comfortable hugging their knees to their chest (knee-chest position); labial traction will also be necessary when using this position. In a variation of the knee-chest position, the child rises on her hands and knees and then puts her head down on the examination table (see Fig. 21.3, B).

If the child is uncooperative, it is a matter of clinical judgment whether the importance of the examination is worth the stress caused by it. Referral to a child sexual abuse center or examination under anesthesia should be considered.

The EP should avoid directly touching the sensitive mucosa.

**DIFFERENTIAL DIAGNOSIS AND MEDICAL DECISION MAKING**

**LABIAL ADHESIONS**

In prepubertal girls, a small section or the entire labia majora may be fused in the midline (Fig. 21.5). Labial adhesions is a self-limited condition and the labia will open with estrogenization at puberty. Though usually asymptomatic, some girls with labial adhesions may have an increased propensity for urinary tract infections. Occasionally, labial adhesions will
SECTION II  SPECIAL CONSIDERATIONS IN THE PEDIATRIC PATIENT

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Fig. 21.4 Examination of the vulva, hymen, and anterior vagina by gentle lateral retraction (above) and gentle gripping of the labia and pulling anteriorly (below). (From Emans SJ. Office evaluation of the child and adolescent. In: Emans SJ, Lauffer MR, Goldstein DP, editors. Pediatric and adolescent gynecology. 4th ed. Philadelphia: Lippincott-Raven; 1998.)

Fig. 21.5 A, Labial adhesions in a 2½-year-old girl. Two tiny openings exist—one beneath the clitoris and another near the middle line of fusion. B, Appearance of the same child after 10 days of local application of estrogen ointment. (From Dewhurst CJ. Gynaecological disorders of infants and children. Philadelphia: Davis; 1963.)

Fig. 21.6 Imperforate hymen distended by hematocolpos. (From Baramki TA. Treatment of congenital anomalies in girls and women. J Reprod Med 1984;29:376.)

IMPERFORATE HYMEN

Imperforate hymen is a rare condition and may be encountered at any age. Neonates and prepubertal girls may have a bulging hymen noted during diaper changing or bathing. More classically, pubertal or postpubertal girls are evaluated for abdominal pain and absence of menses despite the development of breasts and pubic hair. Findings on physical examination may be normal, or a bulging hymen with a dark (bloody) fluid collection behind it may be seen (Fig. 21-6). Ultrasonography will confirm the diagnosis of hydrometrocolpos (a fluid- and blood-filled uterus and vagina). A similar finding may be present with a transverse vaginal septum, but in this condition the hymen is patent.

VAGINAL DISCHARGE WITHOUT ASSOCIATED SYMPTOMS

Physiologic leukorrhea is a manifestation of the effect of estrogen on the vaginal mucosa. Otherwise asymptomatic discharge may be seen in neonates and begins again 1 to 2 years before menarche. Many girls or their parents will complain of a white or yellowish discharge found on the girl’s underwear. Unlike vulvovaginitis, no irritation or pain is present. In sexually active girls, wet preparations and cultures may be necessary to rule out sexually transmitted infection. After infancy and before early puberty, the EP should consider the possibility of a foreign body in girls with a complaint of vaginal discharge, even without other symptoms.

VULVOVAGINITIS

Vulvovaginitis (vaginal discharge with irritation and itching) is a common condition in prepubertal girls. Common complaints include vaginal discharge, itching, redness, dysuria, and bleeding (Fig. 21-7). The prepubertal vaginal mucosa is thin, dry, and very sensitive to minor irritants. Poor hygiene, tight clothing, perfumes and bubble baths, and overzealous wiping are common causes of vulvar irritation and inflammation.

In addition, a variety of infectious agents can cause vulvo-vaginitis. Pinworm (Enterobius vermicularis) infestation

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Fig. 21.7 Algorithm showing critical questions and priority actions for pediatric vaginitis. HPV, Human papillomavirus; OR, operating room.
should be suspected in girls with pronounced itching, particularly at night. Vulvovaginitis may be caused by group A β-hemolytic streptococcal infection and should be suspected when the vulvar area is beefy red or if the patient has systemic signs of streptococcal infection (fever, scarlatina rash). A retrospective study found that 21% of prepubertal girls with vulvovaginitis were culture positive for group A streptococcal infection.² Streptococcal infection is more likely in older girls (school age) and in those with recent exposure to other children with streptococcal pharyngitis. Rarely, Shigella can cause a similar infectious vaginitis. Yeast does not thrive in the dry mucosa of prepubertal girls, and vaginal candidiasis is extremely rare.

The EP should inquire about contact with individuals who have infectious pharyngitis or diarrhea and send culture swabs from the vagina for analysis when suspicion exists. The swabs should be moistened with nonbacteriostatic saline before sampling to reduce the patient’s discomfort.

Rarely, vulvovaginitis may be caused by sexual abuse or sexually transmitted infection. If a sexually transmitted infection is suspected, culture specimens for gonorrhea (plated on chocolate agar) and Chlamydia (Dacron swab in viral transport medium) should be obtained, in addition to DNA probe testing if warranted (in many areas, DNA probe testing is not admissible in court).

Vulvar itching and bleeding can be caused by genital warts. If warts are seen on examination, it may be an indication of sexual abuse, but genital warts could result from nonsexual contact with common warts. Vertical transmission of genital human papillomavirus infection from the birth canal may give rise to condyloma acuminatum after a period of several months.

Lichen sclerosus et atrophicus is an autoimmune condition marked by thinned and bleeding labia. The classic finding is a figure-of-eight pattern of hypopigmentation and skin breakdown around the labia and anus. Often mistaken for trauma from sexual abuse, this condition is potentially disfiguring. The patient should be referred to a dermatologist for evaluation and initiation of treatment, which usually consists of potent topical steroids or testosterone cream.

**VAGINAL FOREIGN BODIES**

Patients with vaginal foreign bodies may have complaints of itching, pain, and bloody or foul-smelling vaginal discharge. Toilet paper is overwhelmingly the most common type of a vaginal foreign body. Insertion of other objects may be the result of exploratory play in very young, developmentally delayed, or sexually abused girls. The possibility of sexual abuse should be considered in girls with vaginal foreign bodies other than toilet paper.³⁴

**VAGINAL BLEEDING WITHOUT IRRITATION**

Precocious menarche is defined as cyclic bleeding before the age of 8 years. Precocious puberty should be suspected when vaginal bleeding is accompanied by breast swelling or growth of pubic hair. Most precocious puberty is idiopathic but may occasionally be a sign of hormone production by ovarian or pituitary tumors.

Urethral prolapse is characterized by dysuria and blood in the patient’s underwear or on toilet paper. It is most commonly seen in prepubertal African American girls. Examination reveals a doughnut-shaped eversion of dark red mucosa at the urethral meatus, which may cover the vaginal introitus.

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**SECTION II**

**SPECIAL CONSIDERATIONS IN THE PEDIATRIC PATIENT**

**LABIAL ADHESIONS**

If treatment of labial adhesion is necessary, an estrogen-containing cream may be applied to the fused area. In more than 90% of cases, the adhesions will be released within a few weeks of treatment; however, fusion often recurs. After release of adhesions, a barrier cream such as Vaseline or zinc oxide should be applied to the labia several times a day to prevent recurrence. Parents should be told that topical estrogen is easily absorbed and may cause vaginal hyperpigmentation or breast swelling, which should resolve after discontinuation of the cream.

**IMPERFORATE HYMEN**

Referral should be made to a gynecologist for incision of an imperforate hymen or resection of a transverse septum.

**VULVOVAGINITIS**

Treatment of vulvovaginitis should be tailored to the underlying cause. For the majority of girls with nonspecific vulvovaginitis, sitz baths and education about hygiene will suffice. Girls with severe dysuria or urinary retention may be able to urinate in the tub during a sitz bath (see the Patient Teaching Tips box). Streptococcal infection can be treated with oral penicillin, clindamycin, or a macrolide antibiotic for 10 days. Shigella infection can be treated with amoxicillin or trimethoprim-sulfamethoxazole. Pinworm infestation is easily treated with chewable mebendazole and a repeat dose in 2 weeks. Children with genital warts should be referred to dermatology or pediatric gynecology services for treatment.

**VAGINAL FOREIGN BODIES**

Vaginal foreign bodies will often be visible on physical examination without the use of a speculum and can be removed under direct visualization or by irrigation. To perform irrigation, instruct the patient to sit on a bedpan or an absorbent pad. Insert a small catheter or feeding tube several centimeters into the vagina and flush warm saline solution through a large syringe until confident that no further foreign body remains. If unable to remove the foreign body by irrigation in the ED or if a speculum examination is required, it is advisable to schedule an examination under anesthesia and treatment by a pediatric gynecologist.

**VAGINAL BLEEDING OR DISCHARGE WITHOUT IRRITATION**

Treatment of physiologic leukorrhea consists of only reassurance.

In a patient believed to have precocious menarche, the EP should document staging of pubertal development and palpate for abdominal masses. If an abdominal mass is palpated, ultrasonography or abdominal computed tomography should be performed. Girls with signs of precocious puberty should be referred to their primary care physician or a pediatric endocrinologist. Urethral prolapse will generally reduce itself if left alone. Conservative treatment with sitz baths should be initiated in the ED, with primary care follow-up to consider the need for estrogen cream or surgical excision in recalcitrant cases.
TRAUMA

Straddle injuries involving the vulva and vagina result from falls onto playground equipment, bicycles, or furniture. Although straddle injuries require sensitive handling, they are no more likely than other traumatic injuries to be the result of sexual abuse. If the history does not correlate with the findings on physical examination, further investigation for child abuse is indicated. Frequent findings with straddle injury include abrasions or bruising of the labia, lacerations of the labia or posterior fourchette, tears of the vagina and hymen, and vulvar hematomas. If the extent of the internal injury is at all in question, referral to a pediatric gynecologist or pediatric surgeon for examination under anesthesia should be considered. Other indications for referral include tense vulvar hematomas, which may require drainage to avoid tissue necrosis, and lacerations requiring surgical closure. For minor trauma not requiring further referral, ensure that the patient is able to urinate before she is discharged from the ED.

NEWBORN VAGINAL DISCHARGE AND BREAST SWELLING

Maternal estrogen is the cause of most newborn gynecologic complaints. Physiologic leukorrhea appears as a white or cream-colored vaginal discharge. Newborn girls often have a smear of blood on their diaper, the result of endometrial sloughing after withdrawal of maternal estrogen. Parents occasionally mistake a peach-colored smear of urate crystals on the diaper for blood. Urate crystals are commonly seen in the first several days of life, most often in breastfed babies who are mildly dehydrated.

Maternal estrogen can also cause noticeable swelling of the breast buds in both male and female infants. Expression of milk on palpation (witch’s milk) is possible, but manipulation of the swollen tissue should be discouraged because it may cause infection. The swelling should be examined carefully for signs of infection; it should be mobile and without redness, warmth, or undue tenderness.

Neonatal mastitis is a potentially serious bacterial infection that requires aggressive work-up and treatment like any other infection in this age group. Treatment consists of antistaphylococcal antibiotic coverage. Neonatal mastitis can develop into an abscess requiring incision and drainage. Consultation with a pediatric surgeon should be considered if an incision near the breast bud is required because damage to the breast bud can lead to a poor cosmetic outcome of the breast in later life.

BREAST DISORDERS IN OLDER CHILDREN

Both male and female children and adolescents may experience some degree of breast bud swelling in early puberty, before the growth spurt and development of adult body hair. The physical examination should include palpation and a description of the breast swelling, a description of any axillary and pubic hair, and—in male patients—palpation of the testicles.

Normal breast tissue should be rubbery, firm, smooth, mobile, and somewhat tender. Gynecomastia can be exceptionally distressing for boys, who should be told that this is a normal male response to hormonal surges and is not evidence of any developmental or sexual abnormality. In most cases it resolves after sexual maturity. Rarely, boys with marked gynecomastia may need referral for cosmetic surgery.
A breast mass in teenage girls is uncommon but causes considerable psychologic distress. Although breast cancer is extraordinarily rare in adolescents, it is usually the prime concern of young girls with a breast mass. Most adolescent breast masses are cystic and caused by fibrocystic breast disease, as in adults. Fibroadenomas are the most common solid masses seen in teenagers. Most adolescent girls with a breast mass should be referred to their primary physician for reexamination later in the menstrual cycle. Suspected abscesses may be drained by needle aspiration or treated conservatively with antistaphylococcal antibiotics. If imaging is necessary, ultrasonography is most helpful to differentiate cystic from solid masses and support needle aspiration of fibrocystic disease or abscesses.

**FOllow-up, Next Steps in Care, and Patient Education**

Nearly all children with gynecologic and breast problems can be treated as outpatients and referred to their primary care physician for follow-up. Newborns with mastitis and fever may require hospital admission for evaluation of sepsis and intravenous antibiotic administration.

Older children may require admission for treatment under anesthesia for drainage of tense vulvar hematomas, repair of lacerations, incision of an imperforate hymen, or removal of foreign bodies. Available surgical services vary, but care can be provided by pediatric general surgery, gynecology, or rarely urology services. All prepubertal girls requiring internal pelvic examination should be referred to a pediatric specialty center for examination under anesthesia.

Suspicion of child sexual abuse mandates referral to child protective services and an experienced evaluation center. In cases of suspected abuse in which the home environment is not safe, children may require admission to the hospital or discharge to temporary foster care to ensure their safety pending investigation by child protective services.

**References**

References can be found on Expert Consult @ www.expertconsult.com.
REFERENCES