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Pediatric and Adolescent Patients

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Introduction

The field of pediatric and adolescent gynecology (PAG) encompasses a host of clinical conditions spanning a variety of disciplines and specialties. Primary care providers including obstetricians and gynecologists are often called upon to diagnose and treat problems of the genitourinary system that occur in children and adolescents, especially when a subspecialist is not available. Even in centers where there is PAG expertise, a working knowledge and understanding of the common clinical problems can be very useful in determining if and when a referral is necessary. Table 2.1 lists those scenarios under the pediatric and adolescent gynecology umbrella and it will serve as a framework for this chapter.

Prepubertal Vulvovaginitis

Vulvovaginitis is a somewhat descriptive term used often to imply any combination of genital irritation or pruritis, vaginal discharge or odor, and vulvar erythema or inflammation. It is probably better to use the term vulvitis when there are complaints or findings isolated to the external genitalia and the term vaginitis when referring to vaginal discharge or odor and to reserve the term vulvovaginitis when there is a combination of both (Fig. 2.1).

Table 2.1. Clinical scenarios in pediatric and adolescent gynecology.

Vulvovaginitis	The first gynecologic examination
Genital bleeding in childhood	Menstrual dysfunction
Abnormal/ambiguous genitalia	Amenorrhea
Childhood sexual abuse	Androgen disorders
Pubertal aberrancy	Pelvic pain
Müllerian anomalies	Adolescent sexuality
Breast abnormalities	Contraception
Pelvic masses	Adolescent pregnancy
	Sexually transmitted infections



Fig. 2.1. Chronic vulvovaginitis.

Vulvitis

External genital irritation often accompanied by erythema or inflammation (vulvitis) is most often a consequence of irritants or allergens, but infection and dermatopathy should also be considered. Identifying the underlying cause or contributor(s) is paramount to proper treatment and obtaining a meticulous history cannot be overstated. Once identified, irritants or allergens should be eliminated and plain water tub soaks (three times per day initially) should be reinforced. Some advocate bath products such as oatmeal colloidal "Aveeno[®]" to soothe, but plain water is often all that is necessary. Very rarely a mild corticosteroid ointment used sparingly will be necessary to facilitate resolution, but conservative strategies should be maintained to prevent recurrence.

There are very few organisms that cause vulvitis without vaginitis. Group A streptococcus would be one example. Often there is a history of coexisting or preceding strep throat or impetigo and a penicillin agent would be indicated. Finally, dermatopathies such as lichen sclerosis and eczema can exist on the vulva necessitating mild to moderate potency corticosteroid ointments used sparingly. Conservative strategies such as plain water soaks and avoidance of irritants and allergens are paramount with these conditions too.

Vaginitis

Vaginitis is most often caused by colonization of the vagina with fecal or upper respiratory tract (URT) flora. The anatomy of the prepubertal child is such that there is easy access of bacteria into the vagina because of its close proximity to the anus. There is often a history of fecal soiling in undergarments from inadequate wiping or a history of wiping back to front. Similarly, chronic rhinitis or nose-picking would raise suspicion of colonization with upper respiratory infection (URI) flora. The discharge from vaginitis can create a secondary vulvitis (vulvovaginitis). If swabs are to be taken from the vagina, gentle labial traction allowing the hymen to gape open will facilitate passage of a calgiswab without contact with the hymenal edge. While a calgiswab is often used, some clinicians prefer a nasal dropper filled with saline to gently irrigate the vagina and collect a specimen. Using labial traction is the only acceptable way to perform vaginal sampling without causing pain or discomfort and every effort should be made to accomplish this assuming a culture is considered necessary even if it requires an assistant. Treatment involves increased attention to hygiene and toileting along with plain water tub soaks. Occasionally a broad-spectrum antibiotic such as clavulanate potassium/amoxicillin trihydrate is necessary for 7 days to clear up the current problem, but diligent soaks, good hand-washing, and wiping front to back should be encouraged to prevent recurrence. In the event that the discharge clears up while on antibiotics then recurs almost immediately or in the event that the discharge is bloody or particularly malodorous, consideration should be given to a vaginal foreign body (Fig. 2.2C) and vaginoscopy

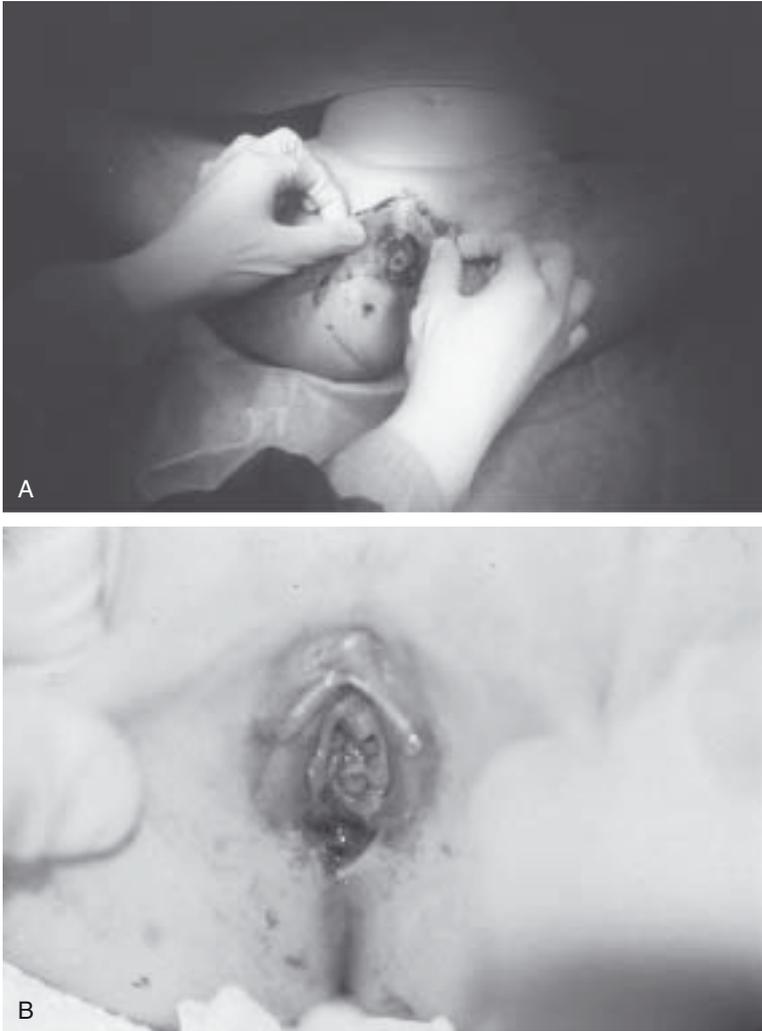
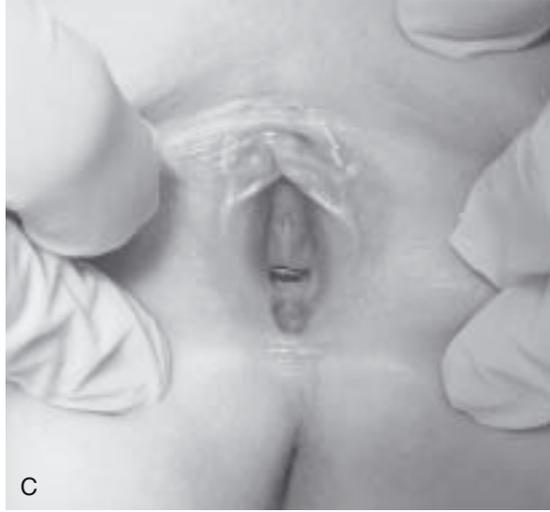


Fig. 2.2. (A) Straddle injury sparing hymen. (B) Deliberate penetrating genital injury (hymen transected).

Fig. 2.2. (C) Vaginal foreign body seen with labial separation. (D) Heman-
gioma (of scalp). (E) Diaper from 10-day-old female: neonatal estrogen-withdrawal bleed.



should be performed. Various techniques are used for vaginoscopy including pediatric speculums and hysteroscopes with warmed saline to visualize the vagina, but anesthetics may be necessary and these procedures should be performed by qualified providers.

Table 2.2 lists the most common underlying etiologies for vulvitis, vaginitis, and the combination vulvovaginitis. Of particular importance is the recognition that *Candida* is usually not the “culprit” unless the child is still in diapers, is diabetic, is immunocompromised, or has received recent antibiotics. Pinworms predominantly present with extreme pruritis that can awaken the child from sleep. Scratching can, in turn, cause genital soreness. Fortunately, while sexual child abuse must always be considered, sexually transmitted infections (STIs) account for very few cases of vulvitis, vaginitis, or vulvovaginitis. Table 2.3 can be used as a handout for children and their caregivers to address good genital care.

Table 2.2. Vulvitis in childhood.

Irritants/allergens
Bath products
Urine
Chlorine
Trapped moisture and heat (noncotton undergarments, leotards, sports equipment)
Laundry product residue
Topical products
Trauma/friction
Infections
Fecal flora
Upper respiratory flora
Group A streptococcus
Pinworms
Foreign body: toilet paper, small toys, etc.
<i>Candida</i> ^a
Sexually transmitted organisms ^a
Dermopathy
Lichen sclerosis
Eczema, psoriasis

^aSee text.

Table 2.3. Genital care in childhood.

The following suggestions may be helpful in reducing or eliminating genital itch or irritation with or without a vaginal discharge in the female child:

1. Tub soaks with warm water (nothing added ____X per day including after each bowel movement. After tub soaks, air dry–blow dry
2. Cotton underwear only
3. Avoid use of nylon tights, leotards or other tight clothing
4. Don't sleep in restrictive garments that cause sweating
5. Rinse underwear after washing/drying to remove any detergent or fabric softener residues
6. Hypoallergenic soap (if necessary), rinsed well
7. Eliminate any potential irritants or allergens such as bubble bath, lotions or creams, panty liners, colored or fragranced toilet paper
8. Don't stay long in wet bathing suits
9. In the context of urinary incontinence (wetting), change to dry underwear frequently
10. Improve urinary incontinence by encouraging regular voiding at least six times per day (including before bed and first thing in the morning)
11. Encourage thorough hand washing BEFORE and AFTER washroom use
12. Eliminate constipation by using fruits, vegetables, plenty of fluids, and fiber in the diet. Regular daily BMs must be encouraged
13. Continue these measures even after the problem has resolved

Genital Bleeding in Childhood

Any of the vulvovaginitis conditions discussed previously can cause inflammation and irritation that results in a minor amount of bleeding. Repeated scratching can cause small fissures and excoriation and in addition to the treatment strategies mentioned above, it may be necessary to add a medication such as hydroxyzine hydrochloride (“Atarax[®]”), especially at bedtime, if nighttime scratching is a problem. Unfortunately, drowsiness can often result from antihistamine-type medications limiting their use during the day. Other causes of genital bleeding in childhood include hymenal/vaginal polyps, inadvertent trauma (straddle injuries, rarely penetrating injuries), deliberate trauma (abuse), a vaginal foreign body, urethral prolapse, hemangiomas, premature menarche, and a neonatal estrogen withdrawal bleed (Fig. 2.2). Sinister malignancies such as rhabdomyosarcoma are fortunately very rare, but vaginoscopy with or without anesthetic would be indicated if unexplained vaginal bleeding occurs or recurs.

With estrogen exposure *in utero*, *hymenal/vaginal tags and polyps* may grow such that they protrude from the introitus in the neonate. While a genital examination should be performed with labial traction to determine the etiology and origin of any introital mass in a child, reassurance is often all that is needed once the diagnosis has been made. As the estrogen environment is withdrawn, the polyp regresses and seldom requires any intervention. Caregivers should be aware that occasionally the polyp will lose its smooth resilient surface (a consequence of estrogen) before it retracts to within the confines and shelter of the labia. This can lead to ulceration and bleeding, albeit scant.

Straddle injuries (Fig. 2.2A), involve a clear, consistent, and plausible history or mechanism of injury. The child need only be taken for EUA, etc., if the child cannot void, there is ongoing bleeding, there is an expanding or large hematoma that needs to be evacuated, anal sphincter integrity may have been compromised, or a penetrating injury is suspected and the upper vagina must be inspected. Soaks should be encouraged and the child may even need to void in water to avoid stinging. Intermittent ice packs to reduce swelling are useful, analgesics should be provided, and follow-up arranged. Inadvertent straddle-type injuries very rarely tear the hymen or lower vagina. If the hymen has been compromised (Fig. 2.2B), an assessment for abuse by experienced and skilled care provider(s) should be undertaken.

Urethral prolapse presents with either blood in the undergarments, dysuria, or hematuria. There will be a beefy red and somewhat friable ring of tissue around the urethral meatus. There is often a history of repeated valsalva either from constipation, urinary tract infection, or chronic cough. This condition occurs in hypoenestrogenic females such as the prepubertal child or the postmenopausal woman. It is not a condition of the neonate because of maternal and placental estrogen exposure. Treatment involves resolving the repeated valsalva problem and using topical estrogen. The urethral mucosa will often then regress over a few days to a few weeks. Excision, may be necessary if conservative treatment fails or if the problem is recurrent.

Premature menarche can occur in isolation, but most often will coexist with thelarche as evidence of estrogen exposure. It is important to look for and stage other signs of puberty as discussed later in this chapter (pubertal aberrancy).

A *neonatal estrogen-withdrawal bleed* (Fig. 2.2E) presents as a small self-limited episode of vaginal bleeding that occurs between 1 and 3 weeks of life as the result of *in utero* exposure to maternal and placental estrogens. Reassurance is all that is needed.

Abnormal Genitalia

Hymenal Variations

There are a number of variants of hymenal shape. Most commonly, the hymenal shape is circular/annular, horseshoe/crescentic, or fimbriated (Fig. 2.3). These are considered normal variants, whereas other configurations such as sleeve-

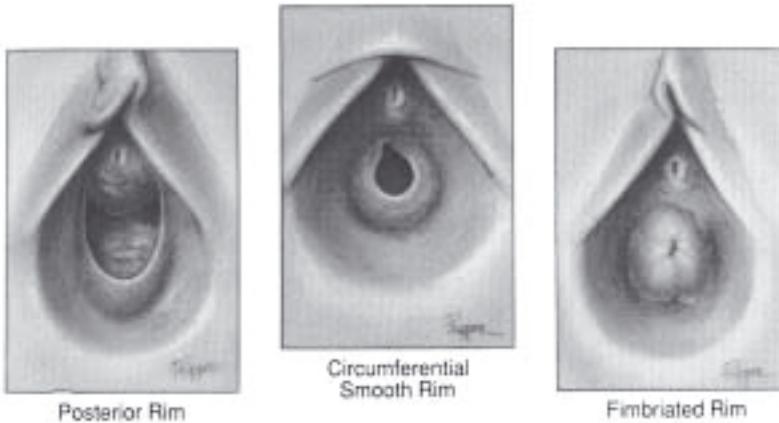


Fig. 2.3. Hymenal variants. (Reprinted from Pokorny SF: Configurations of the prepubertal hymen. *Am J Obstet Gynecol* 1987;157:950–56, Copyright 1987, with permission from Elsevier.)

like, septated, cribriform or fenestrated, microperforate, and imperforate may cause symptoms or sequelae. The cribriform, microperforate, and imperforate hymens must be surgically corrected (hymenotomy or modified hymenotomy) to allow adequate drainage of menstrual blood, prevent or treat hematocolpos, and allow for tampon insertion or intercourse. Essentially a square introitus is created and reabsorbable sutures are placed around the perimeter for hemostasis. This requires an anesthetic. The patient with a septate hymen may present with difficulty inserting or removing tampons, difficulty with intercourse, or even postcoital bleeding. The latter occurs when this band gets torn. Bleeding is often self-limited but occasionally will require a few reabsorbable sutures for hemostasis. The remnant can be removed, but a ligature/suture should be placed for hemostasis at the point(s) of attachment to the vaginal or hymenal mucosa. Often this type of procedure can be performed on a post-pubertal patient in the office setting with or without local anesthetic.

Hymenal/Vaginal Polyps or Tags

See the section on Genital Bleeding.

Labial Agglutination (Fig. 2.4)

Labial adhesions form between the labia minora of prepubertal girls when the labia are allowed to lie in apposition for extended periods of time. There may be an episode of inflammation that serves as a precipitant, but that is not a prerequisite. Urine may become trapped behind the wall of the labia causing post-void dribbling after the child stands up from the toilet. Trapped secretions and urine can cause a secondary inflammation that leads to genital irritation. In the



Fig. 2.4. (A) Labial agglutination. (B) Posttopical estrogen therapy with successful separation.



worst case scenario, the child may present with urinary retention or incomplete emptying with or without a urinary tract infection. The examination is diagnostic revealing a translucent or gray line running from somewhere under the clitoral hood posteriorly to the perineal body (Fig. 2.4A). Efforts at gentle labial traction fail to reveal the introitus/hymen or urethral meatus. There will be no scrotalization of the labia and no clitoromegaly in contrast to ambiguous genitalia with congenital labial fusion. The condition of labial adhesions is acquired as opposed to congenital, but often the caregiver assumes the child was born with the fusion, especially if genital care has not often involved labial separation. Treatment depends on the urgency of the situation. Unless there is concern over a coexisting urinary tract infection (UTI) or urinary retention, topical estrogen cream can be applied with gentle traction to the line of agglutination every night. The adhesions should separate within 3 weeks (Fig. 2.4). Follow-up is recommended. Occasionally, manual separation is required and this does necessitate some form of sedation, but can be accomplished with flavored midazolam in the clinic setting (Table 2.4) although some clinicians prefer more complete anaesthesia in the operating room. Recurrence is a problem with this condition unless the caregiver is educated and diligently inspects the introitus with labial separation at least twice per week. The principle is to avoid prolonged episodes in which the labia lie in apposition to one another and have the opportunity to reagglutinate. After puberty, the problem should not recur.

Ambiguous Genitalia (Fig. 2.5)

The birth of an infant with ambiguous genitalia can be a devastating experience for parents and a challenge to all caregivers. It is essential to have a logical approach to determining the underlying etiology and to gathering data in a timely

Table 2.4. Sedation in clinic with midazolam.

Chocolate flavored mixture 3 mg/ml
 0.75 mg/kg to maximum dose of 20 mg
 If child weighs more than 27 kg, then results not optimal

Alternatively:

Acetaminophen elixir 80 mg/ml or 160 mg/5 ml
 15–20 mg/kg
 mixed with 0.5–1.0 mg/kg of injectable midazolam

Administer midazolam 30–45 minutes prior to procedure
 Child should be supervised \pm O₂ saturation monitor

Topical lidocaine/prilocaine (EMLA) cream 30 minutes prior to procedure
 when indicated

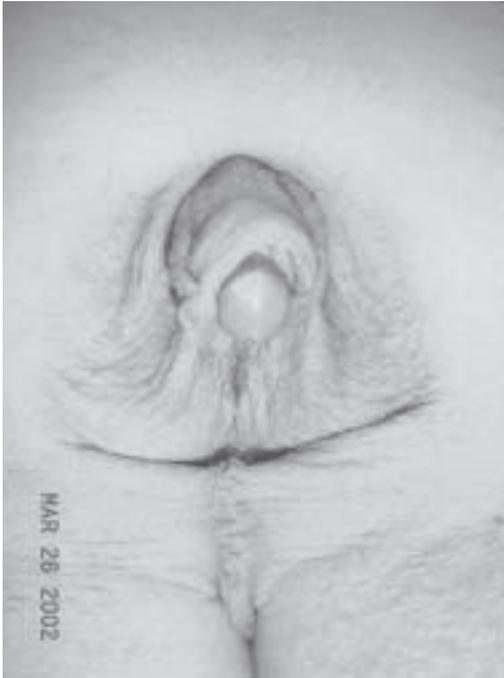


Fig. 2.5. Ambiguous genitalia.

fashion so as to manage the child medically and/or surgically and counsel the family insightfully. Fortunately the birth of a child with ambiguous genitalia is rare. The workup and management of the newborn with ambiguous genitalia should be performed by a multidisciplinary team and should involve specialists in neonatology, genetics, pediatric gynecology and/or pediatric urology, social work, and nursing. Ethicists may even be necessary when sex of rearing is being addressed. Any primary care physician who encounters this clinical scenario should be supportive toward the parents but refrain from speculating about the gender of the infant until all facts have been gathered. It is often helpful to emphasize to the parents that they have a “beautiful (and healthy) baby but that the genitals have not properly formed which is making it difficult at this time to tell whether the child is male or female.” The infant may be an overvirilized female (female pseudohermaphrodite), an undervirilized male (male pseudohermaphrodite), a true hermaphrodite or have more complex gonadal dysgenesis. Salt-wasting 21-hydroxylase deficiency congenital adrenal hyperplasia is one of the most important diagnoses to be considered and is the diagnosis that accounts for the largest number of ambiguous genitalia cases. These newborns can be lacking in both glucocorticoids and mineralocorticoids, which can lead to sodium and potassium imbalance and life-threatening cortisol deficiency. In this context the child will be an overvirilized female with internal female organs but can present with a spectrum of labial fusion, clitoromegaly, and urethral/vaginal malformations.

Vaginal Agenesis (Fig. 2.6)

Patients born without a vagina are most often going to have a condition known as Mayer–Rokitansky Kuster Hauser (MRKH) syndrome. In this condition, the patient has a normal 46,XX karyotype, normal ovaries, and normal pubertal development but presents with primary amenorrhea. A Müllerian remnant may be present and it may contain endometrium. If there is a trapped nidus of endometrium, the patient may complain of intermittent lower abdominal cramps very similar in character to dysmenorrhea but without coexisting flow. This is termed cryptomenorrhea, “hidden menses,” and if the patient is ovulating regularly, there will be a monthly pattern to her complaints. Even when the uterus has a focus of endometrium within its cavity, there is often cervical hypoplasia and it is extremely rare to be able to surgically create anatomy capable of reproduction. Specialist involvement is essential in the care of these patients. Having said that, surgical vaginoplasty has become second-line and the preferred method of creating a vagina, if only for sexual function, is through



Fig. 2.6. Vaginal agenesis.

patient-centered dilators. These patients need their renal anatomy and their spine imaged for well-recognized coexisting anomalies.

When a patient is found to have a blind-ended or absent vagina, the two other conditions to be considered are imperforate hymen and an androgen action disorder such as androgen insensitivity syndrome (AIS) (testicular feminization). An imperforate hymen may be recognized by a conscientious care provider who includes a mini-genital examination with childhood visits. Most often, however, the peripubertal young woman presents with pain or urinary retention approximately 1–2 years after thelarche when menstrual blood has accumulated within the vagina. Genital inspection reveals a bulging introitus and rectal examination confirms a mass anteriorly (hematocolpos). Assuming an imperforate hymen has been ruled out, a physical examination showing normal axillary and pubic hair usually discriminates MRKH syndrome from AIS. In contrast to patients with Mayer–Rokitansky syndrome who have normal pubic and axillary hair, patients with AIS do not (although they may have some). Other distinguishing features include male level serum testosterone and male karyotype found in AIS patients. AIS patients need to have their gonads removed after puberty because of the risk of malignancy. Patients with partial AIS can present with ambiguous genitalia (see above) but patients with complete AIS appear phenotypically female. Both acquire breasts at puberty and experience primary amenorrhea because they do not have a uterus.

Labial Hypertrophy

Labia minora are seldom the exact same size and shape. Patients who present with concerns over the appearance of the labia often only need reassurance. Patients in whom the labia minora are significantly redundant can present with problematic genital irritation, problems with athletic activities, and/or problems with intercourse. In the former, secretions accumulate in the redundant genital folds and cause irritation or pruritis. Bathtub soaks daily may be all that is required. Some patients find the hypertrophied labia particularly bothersome as it/they get(s) caught in the elastic of undergarments or get(s) drawn up into the vagina with intercourse or tampon insertion. In these patients, surgical resection of the hypertrophied labia whether unilateral or bilateral is effective but is best performed under anesthetic and with appropriate pre-surgical discussion of risks and benefits.

Pubertal Aberrancy

Puberty is now considered delayed in a girl if there has been no sign of secondary sexual characteristics by the age of 14 years. Similarly, any secondary sexual characteristics before the age of 8 is still considered precocious, but we now recognize that up to 15% of “normal” African-American girls will have breast development and/or early pubic hair at age 7–8. Specifically, based on odds ratios, menarche occurs earlier in Mexican-American girls than in white or African-American girls. However, African-American girls experienced men-

arce on average 3 months earlier than white girls, i.e., 12.3 versus 12.6 years of age respectively. These findings were part of the Bogalusa, Louisiana Heart Study, which evaluated a semirural community. Furthermore, less than 10% of American girls reach menarche before 11 years of age and 90% menstruate by 13.75 years, with a median age of 12.43. Figure 2.7 is a useful tool in guiding

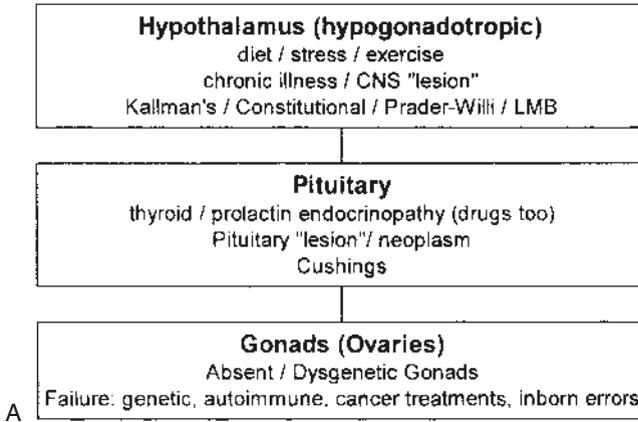


Fig. 2.7A. Delayed puberty—HPO axis. LMB, Laurence–Moon–Biedl.

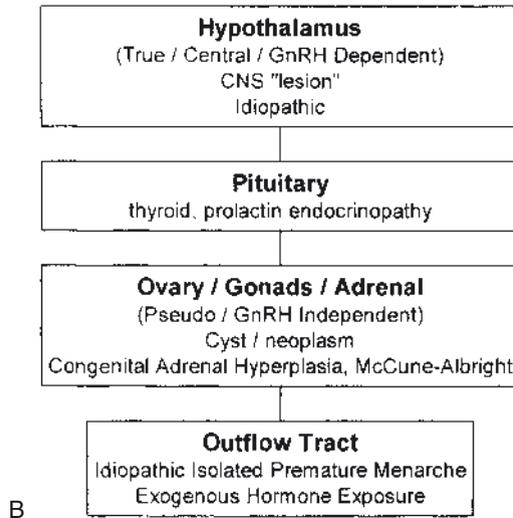


Fig. 2.7B. Precocious puberty—HPO axis.

Table 2.5. Basic Workup.^a**For delayed puberty**

CBC, FSH, LH, TSH, estradiol

Ultrasound pelvis

Bone age

When indicated: CT or MRI head, karyotype, bone density, autoimmune workup, MRI pelvis

For precocious puberty

CBC, FSH, LH (+/- GnRH stimulation test), TSH, prolactin, estradiol

Ultrasound pelvis

Bone age

When indicated: CT or MRI head, imaging adrenals, serum androgens

^aCBC, complete blood count; FSH, follicle-stimulating hormone; LH, luteinizing hormone; TSH, thyroid-stimulating hormone; GnRH, gonadotropin-releasing hormone.

the history and physical examination (H&P) and laboratory investigations when trying to sort out the patient with delayed or precocious puberty. Note that there are several underlying etiologies and conditions that are common to both. Table 2.5 provides a basic set of guidelines for investigating delayed and precocious puberty. Accessory testing will depend on the findings of the H&P and laboratory investigations and might include a computed tomography (CT) scan or magnetic resonance imaging (MRI) of the brain, imaging of the adrenals, karyotype, bone density, and serum androgens. The basic principles of therapy include identifying and treating the underlying cause, searching for and treating comorbidities, normalizing the pubertal stage and progress, preserving the final stature/height, optimizing bone density, and educating the patient and her family.

Menstrual Dysfunction

The most common menstrual disturbance in an adolescent is menometrorrhagia (heavy and irregular menses) occurring as a consequence of hypothalamic/pituitary/ovarian (HPO) axis immaturity. The average female takes 1–2 years after menarche to establish regular ovulatory cycles. Some remain anovulatory or oligoovulatory and this may be idiopathic or due to a variant

of polycystic ovarian syndrome (PCOS). Often care providers need only provide reassurance and communicate expectations, especially if the young woman has just begun to menstruate within the past few years. If, however, the young woman is finding unpredictable or heavy flow to be dysfunctional, then intervention is warranted, if only temporarily, until the physiologic maturation process is complete. Combined oral contraceptives (OCPs) are an excellent and safe medical option to regulate cycles and decrease flow. Alternatives include progestins, nonsteroidal antiinflammatory drugs (NSAIDs), and even antifibrinolytics. When the primary complaint is menorrhagia (heavy but regular flow), and it is severe enough to cause anemia, then coagulopathy should be ruled out. Von Willebrand's disease, idiopathic or immune thrombocytopenia, and even medications/drugs can cause a bleeding disorder. Even in the context of coagulopathy, however, OCPs are often effective at reducing flow.

Dysmenorrhea can be problematic for the adolescent causing her to miss school or activities. NSAIDs and OCPs are very useful in the treatment of primary/physiologic dysmenorrhea. If the combination of OCPs and aggressively administered NSAIDs fails to treat dysmenorrhea, consideration should be given to the possibility of endometriosis, Müllerian anomalies, or even chronic pelvic adhesions. In fact, it is estimated that 50% of adolescents with dysmenorrhea or chronic pelvic pain failing to respond to conventional therapy will have endometriosis. Table 2.6 lists a complete differential diagnosis for dysmenorrhea and pelvic pain in adolescent females.

Figure 2.8 represents a revised hypothalamic/pituitary/ovary/outflow tract (HPOO) axis to assist in the assessment of an adolescent with menstrual dysfunction. Very few of the etiologies listed in Fig. 2.8 will present the same way in all patients and in fact many of the items listed also appear in Fig. 2.7. The spectrum of clinical presentation will depend on when the disorder is acquired and how severe it becomes. For example, an anorexic patient early in the course of her disordered eating may present with irregular menses only if the onset is postmenarche, or she may present with delayed puberty and primary amenorrhea if she begins the eating disorder behavior prior to puberty. The exceptions include Female Kallman's syndrome and ovarian agenesis or dysgenesis, which will, with very rare exception, always present with delayed puberty and primary amenorrhea. Similarly, vaginal agenesis and androgen insensitivity will always present as primary amenorrhea. Recall that the first menses is expected within 4 years of thelarche or by the age of 16, and when these criteria are not met, the patient should be considered to have *primary amenorrhea* and assessed as appropriate.

The key to diagnosing and treating menstrual dysfunction in teens is a focused history and physical examination taking into consideration the HPOO axis schematic in Fig. 2.8. Key features are outlined in Table 2.7.

Table 2.6. Causes of recurrent pelvic pain and dysmenorrhea in adolescence.

Genitourinary

- Primary dysmenorrhea
- Mittelschmerz
- Ovarian cyst/neoplasm: torsion/hemorrhage/rupture/infection
- Endometriosis
- Pelvic inflammatory disease/chronic pelvic adhesions
- Müllerian anomalies and outflow obstruction
- Pregnancy-related complications
- Urinary tract infection or calculus
- Pelvic kidney
- Interstitial cystitis

Gastrointestinal

- Constipation
- Inflammatory bowel disease
- Irritable bowel syndrome, lactose intolerance
- Meckel's diverticulum, volvulus, intestinal obstruction
- Infectious diarrhea disorder or gastroenteritis
- Appendicitis
- Mesenteric adenitis
- Hernia

Musculoskeletal system

- Myofascial pain syndromes
- Pelvic, hip, and low back: strain/malalignment/fracture/inflammation/infection

Miscellaneous

- Psychosomatic/stress/drug seeking
 - “Migraine-equivalent”
 - Sickle crisis
 - Porphyria
 - Lupus
-

Fig. 2.8. Menstrual disorders/amenorrhea—HPOO axis. AI, androgen insensitivity; PCOS, polycystic ovarian syndrome; FB, foreign body.

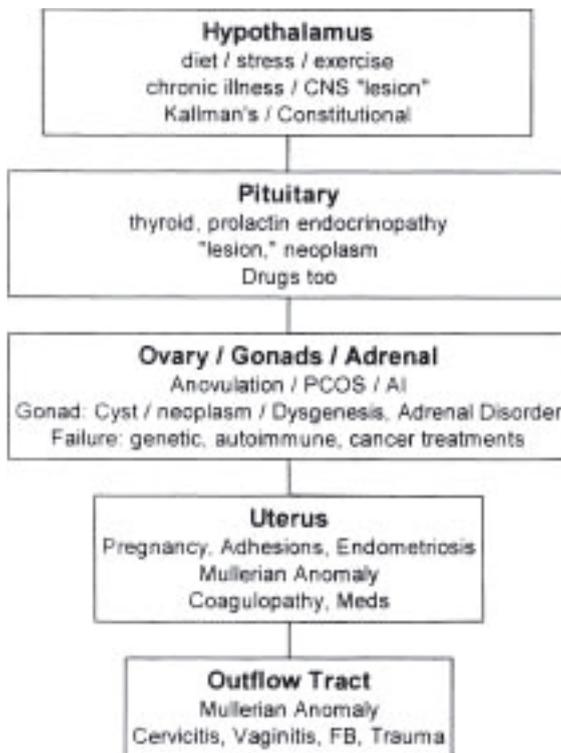


Table 2.7. Basic principles for menstrual dysfunction and amenorrhea.^a

History	Physical Examination
Specific complaint	Stature and Tanner staging
Age of menarche	Stigmata—use HPO(O)
PMS molimina?	Abdominal examination
Puberty/growth/development	Individualize re: gynecologic examination
PMH and medications	Evidence for Estrogenization of the vagina
Sexual hx and risk-taking	
R of S—use HPO(O)	

^a PMS, premenstrual syndrome; PMH, past medical history; R of S, review of systems; HPO(O), hypothalamic/pituitary/ovary (outflow).

Contraception

Approximately 1 in 10 American teens conceive per year and this translates into about 800,000 adolescent pregnancies. Twenty-five to fifty percent of these pregnancies will be terminated and certainly parenthood during adolescence costs society billions of dollars per year. While some adolescents actually desire pregnancy, most conceive because contraception failed or was omitted, forgotten, or used incorrectly. While barriers such as condoms should always be reinforced to protect the adolescent from sexually transmitted infections (STIs), the fact remains that adolescents oftentimes do not use condoms properly and consistently. Ongoing reliable family planning must be accessible and acceptable for it to be used. The oral contraceptive pill, the contraceptive patch, and the vaginal ring have many noncontraceptive benefits that can be exploited to increase compliance in teens. These include cycle control, decreased flow, decreased acne, and decreased cramps. Obviously with pills, the teen must adhere to the daily regimen to achieve efficacy. Reminder beepers, stickers, Web and phone hotlines, and 28-day packaging are all intended to increase compliance. If daily pill-taking is too demanding or not acceptable, the weekly contraceptive patch is a useful option and the vaginal ring should also be explored. Similarly, in the adolescent who either cannot or will not take a pill daily but who wishes reliable birth control, depomedroxyprogesterone acetate (DMPA) given as an IM injection every 3 months is often a solution. The side-effect profile is not quite as consistent as with OCPs, causing irregular nuisance bleeding in approximately one-third of patients, but the 60–70% chance of amenorrhea can be an asset if the patient is properly forewarned. Weight gain, while not a problem in all patients using DMPA, is still more likely than with the OCP and bone density issues certainly need to be explained. Proper diet and exercise must be reinforced. Even intrauterine contraceptive devices can be considered in properly selected and counseled adolescents. Finally, while not optimal as a reliable ongoing method of family planning, emergency contraception can prove to be a useful “back-up” method for the adolescent with a “mishap.” Teens need to know that this type of resource exists and can be administered up to 72 hours after an act of unprotected intercourse.

Case Studies

Case 1: A 6-year-old female presents with genital irritation and pruritis. She is toilet trained but her panties have a faint odor of urine each evening. She is frustrated because she seems to dribble as she leaves the bathroom. She loves swimming and is a healthy child.

Guidelines for management: Take a good history trying to identify irritants/allergens, any associated vaginal discharge, bleeding, or odor and eliciting genital care routine. Include routine one on one private time to inquire about the possibility of abuse.

Case 1 (cont.): The child showers daily and swims three times per week. There is no history of vaginal discharge or bleeding. She has “sensitive

skin” and the family is very conscientious about laundry products, bath products, and soaps. The child denies any abuse.

Guidelines for management (cont.): Examine the child using the frog-leg position with gentle bilateral labial traction to expose the introitus. Look for inflammation, excoriation, discharge, labial agglutination, dermatopathy, and the size and shape of the hymen. If discharge is present and using proper technique, swab the lower vaginal canal and be sure that the laboratory knows that this is a vaginal specimen on a prepubertal child.

Case 1 (cont.): There is a thin translucent line where the labia minora are fused in the midline. With labial traction, you can see an opening anteriorly just under the clitoral hood. The external labia are mildly erythematous.

Guidelines for management (cont.): The diagnosis is labial agglutination. The child is probably irritated by postvoid dribbling and urine exposure. Tub soaks daily and estrogen cream applied nightly; along the line of agglutination with gentle traction will usually allow the labia to separate within 3 weeks. The parent must be encouraged to inspect and gently separate the labia minora at least two times per week until puberty to prevent recurrence. This child, because of her “sensitive skin,” should probably be encouraged to include tub soaks in her genital care routine indefinitely and everyone should recognize that chlorine should be rinsed thoroughly after swimming as it is a common irritant.

Case 2: A 12-year-old child presents with severe menstrual cramps that began with menarche 6 months ago. She has regular cycles, has never been sexually active, and has tried (unsuccessfully) prescription NSAIDs taken proactively.

Guidelines for management: It is unusual for primary prostaglandin-mediated dysmenorrhea to occur with menarche as first menses are not usually ovulatory. Having said that, this is still the most likely etiology for her complaint. It is necessary to take a good history exploring the nature of the pain, the treatments tried thus far, and a past medical, surgical, and family history focusing on genitourinary or pelvic problems. Often adolescents are not able to take NSAIDs in a timely fashion while at school and this can lead to treatment failure.

Case 2 (cont.): The girl complains that her pain is predominantly left-sided and occurs despite taking naproxen regularly beginning the day prior to expected menses/pain. She has had a left ectopic ureter reimplanted at the age of 6 years but otherwise has been well.

Guidelines for management (cont.): Unilateral dysmenorrhea occurring immediately with menarche and a previous history of genitourinary anomaly suggests the possibility of Müllerian anomaly. Other considerations include ovarian cyst, endometriosis, pelvic adhesions, and constipation. An examination that focuses on the abdomen, the introitus, and a single-digit vaginal or rectal examination may prove helpful. In this type of scenario, there is a low threshold for imaging the pelvis with an ultrasound (3-D) because

the gynecologic examination may be limited or not tolerated. If the examination and ultrasound assessment are negative, then an OCP would/should be tried in combination with an NSAID. If still suboptimal or ineffective then MRI (or 3-D ultrasound if not yet done) of the pelvis or laparoscopy can be considered depending on the suspicion for Müllerian anomaly (noncommunicating uterine horn) or endometriosis/adhesions respectively.

Suggested Reading

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