Gynecologic Clinical Examination of the Child and Adolescent

Alaa Cheikhelardb,c · Zeina Chaktourac,d · Elisabeth Thibauda,c

aUnité de Endocrinologie et Gynécologie Pédatrique, bService de Chirurgie Pédiatrique et
Centre de Référence des Pathologies Gynecologiques Rares, Hôpital Necker-Enfants Malades, et
dService d’Endocrinologie et Médecine de la Reproduction, Hôpital Pitié-Salpêtrière, Paris, France

Abstract
Pediatric gynecological examination is very simple, but usually unrecognized by physicians without a specific experience in pediatric gynecology. It is always necessary and most of the time sufficient in children and adolescents consulting for gynecological complaints, endocrine problems, or sexual abuse. However, accurate evidence-based data on its normality is poor in the literature, because of bias represented by the inclusion of abused patients in these studies. Our aim was to describe the preparation to a full gynecological examination, the adequate positions, and the sequence and technique required for a well-accepted and nontraumatic clinical examination. Normal findings are described depending on the age of the patient (child, newborn, adolescent), and are based on evidence from the literature. Indications for vaginoscopy and bacterial sampling are discussed according to the age of the patient. The most important factors in the achievement of a full gynecological examination and a trusting patient-physician relationship are a good anatomical and physiological knowledge of the genital system in children, and the learning of nonaggressive examination technical skills associated with good communication skills. Clinical examination is always necessary and most of the time is sufficient together with the medical history to diagnose and treat the child’s gynecological problems. Evidence-based data on normal genital findings is poor in the literature, because many studies include abused children or present bias in the methods of recruitment and assessment of normal girls [1].

Evidence Leading to Gynecological Examination in Children and Adolescents

Reasons for undertaking a gynecological examination include:

- Gynecological complaints: Vaginal discharge or bleeding, pruritus, vulvar or abdominal pain, indicating that there may be underlying infection, tumor or malformation.
- Endocrine reasons: Abnormal course of puberty, abnormal signs of virilization, abnormal menstrual cycle, evaluation of abnormal genitalia in the context of a disorder of sexual development.
• Suspected or confirmed sexual abuse: The physician may be asked to look for and describe objective evidence of abuse.

**Preparation for the Examination**

A gynecological examination of the child is very simple and painless if performed properly, but is not trivial and needs the child’s confidence. The gynecologist must be very familiar with the anatomy and physiology of genitalia before and during puberty. The child must be reassured to be calm and cooperative, which is usually possible with a good preparation of the examination and attention focused on both her and her mother [2–4]. When old enough to answer, the child should be asked to explain in her own words the reason of the visit. If, as in most cases, the mother or the accompanying adult begins to speak in the child’s place, the physician must make sure the child listens, understands and nods to what is being said regarding her problem. The prerequisite for a well-accepted, nontraumatic and even therapeutic gynecological examination is the respect shown to the child by choosing her as the privileged and active interlocutor. During the examination, the mother is usually asked to stay when the child is very young. Between the ages of 10 and 13 the child’s wish should be respected. Beyond 13 years of age, the teenager is usually seen firstly with her mother, then alone, and her approach should in the first place be nonjudgmental and supportive to respect her autonomy and modesty. This private consultation (sometimes with a nurse attending) is also essential to detect hidden information that is important for medical evaluation, and that the adolescent will be reluctant to provide in front of her parents [5].

**Clinical Examination**

Complete pediatric assessment must precede the gynecologic examination itself. Care should be given to assess height and weight, puberty course using Tanner stages [6], pilosity examination, and palpation of the breasts and the abdomen.

**Gynecological Examination of a Prepubertal Child**

A full gynecologic examination of the child mainly includes inspection of external genitalia and in some cases rectal examination. Performing vaginoscopy and obtaining samples are limited to certain cases [2].

The child must be comfortable. Many positions were described, but the best one is the ‘frog-leg’ position: the child is in a supine position, her legs flexed, with her knees apart and her feet touching (fig. 1). The physician is sitting facing the child, a lamp
providing ample light from behind his/her shoulder. Children under 2 years of age may sometimes be frightened by the table and may instead be examined in the same position on the mother’s lap.

The inguinal areas and labia majora are first inspected. Existence of pubic hair is assessed. The labia are then gently separated either by pulling their inferior part downward and laterally (fig. 2) or by pulling them anteriorly (fig. 3). The clinician must absolutely avoid a solely lateral maneuver, which puts a painful strain on the posterior fourchette and may split it, thus provoking a defensive reaction from the child hindering further examination. The size of the clitoris is measured by inspecting and pulling up the clitoral hood. This will help differentiate a true clitoromegaly from a hood skin redundancy. In the prepubertal child, a normal clitoris glans is on average 5 mm in length and 3 mm in transverse diameter and shows little variation after puberty [7] (fig. 4). The labia minora are usually thin and sometimes short. They edge the vulva vestibulum at the bottom of which the urethra and vagina open. On
each side of the urethra a Skene’s duct can be seen. Without estrogenization the vulvar mucosa appears thin and red and the perihymeneal tissue may look erythematous [2]. The white thick substance noted in the anterior labia folds is called smegma, not to be mistaken for leucorrhea.

The vaginal orifice is edged by the hymen, which varies in size and shape. The hymen will often gape open if the child is asked to take a deep breath or cough, and will allow visualization of the distal vagina. If not, the best maneuver consists of gently pulling the labia anteriorly and laterally. The most often observed types of hymens are as follows [8] (fig. 5):

- The annular hymen with a hymeneal edge varying in size, and a regular annular orifice.
• The crescentic hymen which posterior rim looks like a crescent, and which ends are attached on the lateral vaginal wall, without any hymeneal suburethral tissue.

• The redundant hymen has large and fimbriated hymeneal edges.

The first two types of hymens are the most common from the age of 3 years to the beginning of puberty, while the third is most commonly found below the age of 3 years. Superficial notches are normal findings, but not a complete transection in the inferior rim [1].

On average, the vaginal orifice measures 4–5 mm in girls until the age of 5 and remains under 10 mm until the beginning of puberty. These figures are given as an indication, as the diameter of the vaginal orifice varies a lot with the position of the child, the degree of perineal relaxation, shape of the hymen and the level of estrogenization [9, 10]. It is important to note that the hymen opening size is not a good indicator for trauma, and unhelpful in the diagnosis of abuse, as normal hymens sometimes allow a wide visualization of the vagina, and also because in case of trauma, hymen healing is rapid and sometimes complete without scarring [1].

A narrow and thin hymen does not completely cover the vaginal orifice enabling visualization of the distal half or two-thirds of the vagina without resorting to endoscopy. The most appropriate maneuver is the one described above, which consists of gently pulling the labia majora anteriorly and laterally: the hymen opens and the vaginal axis is corrected. This maneuver is painless and usually easily accepted by the child. It may sometimes be difficult to visualize the free edge of the hymen and the vagina with certain types of hymens, e.g. redundant hymens, microperforate hymens with a suburethral orifice, or septated hymens. The physician can then use a small

**Fig. 5.** Configuration of hymen in prepubertal girls.  
**a** Annular hymen.  
**b** Crescendic hymen.  
**c** Redundant hymen. According to Pokorny and Kozinetz [8].
supple urethral catheter (No. 4–6) to unfold the hymeneal edge and assess hymeneal integrity as the existence of an opening (fig. 6).

The genupectoral position allows good visualization of the vagina, sometimes up to the cervix, and can be useful in case of vulvovaginitis or if a foreign body is present [11]. However, in our personal experience, we do favor the frog-leg position.

Rectal examination is the following and last but not systematic step. It is performed with the little finger until the age of 6 years. It may be used to determine the existence and volume of the cervix that can be palpated on a small midline structure. A normal cervix measures 5 mm in transverse diameter on the average. The ovaries are too small to be felt, thus, any pelvic mass must evoke a cyst or a tumor. The vagina can also be palpated through this rectal exam, allowing to note any foreign body (or tumor) or any vaginal discharge.

Normal vaginal length in prepubertal girls is 3–6 cm at birth, 4–7 cm at age 4 years, and 5.5–8 cm at age 10 years [12]. The vaginal mucosa appears red, thin and folded. It is very sensitive, and petechial lesions may be caused if a vaginoscope is used. The cervix is small, with a centered opening and flush with the vaginal vault, thus making it difficult to visualize.

When the rest of the perineum and rectum are inspected, the clinical examination is complete.

Gynecologic Examination of a Newborn

The examination is conducted as described above. The genitalia are submitted to maternal estrogen effects. Estrogenization signs start to decrease from the 2nd week of life and usually disappear within 6–8 weeks. However, they can persist physiologically
until the age of 2 years [10]. The vulva is edematous, and the labia minora are thick and protruding, sometimes beyond the labia majora. The mucosa is pink and covered with physiologic leukorrhea. The clitoral hood may also be relatively thick and the size of the clitoris must be assessed by palpation, after pulling up the clitoral hood. The hymen is frequently thick, pouting out of the introits, and fimbriated. The vaginal orifice is sometimes difficult to visualize, and the physician should then use a small urethral catheter to assert the existence of an opening. The vagina measures between 3 and 6 cm in length [12]. The vaginal mucosa is thick, covered with pH-acid white physiologic secretions including Lactobacilli. Over the first 10 days of life (seldom later), there may be neonatal vaginal bleeding.

**Gynecologic Clinical Examination of the Adolescent**

The gynecologic examination of an adolescent has three aims:

- Clinical assessment.
- Diagnosis and therapy.
- Establishment of an interpersonal confident relationship as the basis for support to those teenage girls who may be facing deeply emotional problems such as puberty, sexuality and fertility. For this purpose, the physician may remind the patient that he/she is bound to medical secret [13].

A gynecological examination is never a routine examination, despite other author’s opinion [4, 5]. The clinician should be prepared to spend time listening to the adolescent’s concerns and gathering information on the personal and family background. The consultation should be simple and interactive when the teenager is healthy, well-informed, and coming for birth control advice or simple menstrual dysfunctions. On the contrary, when the adolescent shows serious chronic pathology, DSD, or has been sexually abused, the consultation will be difficult, critical and fraught with consequences, all the more when these situations are not spoken of, which is often the case.

In any case, the examination principles remain identical:

- It must be preceded by a full medical assessment.
- It must be conducted only after the patient has been given a thorough explanation of the examination as well as of its objectives, and after obtaining her consent.
- Only the least-invasive examination that will be sufficient to assess the problem should be performed.
- The examinations should not be omitted solely because of the age of the patient. However, in some cases, the examination may be postponed to the next appointment if the patient is not comfortable enough to accept it.
- The physician must recognize cultural issues and respect them.

For an adolescent who is not sexually active, the examination is identical to that of a prepubertal child. Vaginoscopy and pelvic examination should not be performed systematically. The vulva is estrogenized and there are physiologic secretions. The
vulva axis has become horizontal, the labia minora have developed and may sometimes have become browner, and the labia majora usually cover the vulva. As in adults, the vagina measures on average 9.6 cm in length (range 6.5–12.5) [14]. Upon rectal examination the uterus is often laterally oriented to the left. One-finger pelvic exam is possible if the teenager is relaxed and her hymen is yielding. A small ‘virgin’ speculum may be used if necessary.

For a sexually active patient, pelvic examination and vaginoscopy with a speculum (with samples if necessary) are also required to look for potential genital infections.

Breast examination is part of the gynecological examination. At the beginning of its development the breast is tender, and the breast bud may be palpated before being seen. It appears as a small, hard mound beneath an enlarged areola. Physiologic breast development is sometimes unequal and asymmetric in its early stage, as there may be a 3- to 12-month difference between the beginnings of the development of each breast. The breast reaches its fully developed size in 2–4 years, but this period may vary. During the development phase, the breast is often firm upon palpation but rarely sensitive. Skin marks are frequent. They are red when they first appear and turn progressively white after a few months. They have no pathological meaning.

Once the examination is over, the physician should sit down with the adolescent to discuss the potential therapy with the help, if necessary, of an anatomical chart. As we said earlier, parents or caregivers should stay in the waiting room during the examination. Information will be subsequently related to them by the adolescent herself or by the physician with her agreement and in her presence. She may ask that some elements of the examination remain confidential and her wish must be respected. A trusty relationship between the physician and the adolescent is absolutely necessary in case of long-term treatment, especially concerning chronic diseases.

Indications for Vaginoscopy and Bacteriological Sampling

In postpubertal sexually active adolescents, indications for vaginoscopy and sampling are the same as in the adult population.

In prepubertal children and nonactive adolescents, vaginoscopy must be limited to the identification of a tumor or foreign body if the clinical examination and ultrasound were not able to provide the origin of a vaginal bleeding (in case of a tumor for example). This examination may need general anesthesia in some cases.

Visualization of a foreign body is not always easy, particularly when important leukorrhea coexist. In this case, vaginal inspection can be facilitated by flushing it with the help of a small urethral catheter and 10–20 ml of saline by manual irrigation.

Samples for bacteriological cultures are sometimes necessary, but limited to cases of true vaginal leukorrhea that are not caused by a foreign body. They are rarely necessary in the case of vulvitis (unless specific and infrequent infections are suspected such as yeast or streptococcus). They can be performed by only touching the fragile mucosa with
a cotton swab without rubbing it to avoid any pain, the swab being impregnated with the leukorrhea by capillarization. Another technique has been described using a small angiocatheter (with the needle removed) introduced into a No. 12 red rubber catheter connected to a small syringe containing saline, slowly introduced through the vaginal opening. The vagina is delicately flushed and the liquid drawn up in the syringe to collect sufficient secretions [15]. In all cases, results need to be interpreted according to the clinical context since the vaginal mucosa and the vulva are the homes of normal flora.

**Conclusion**

Few evidence-based data exist on the normal findings in gynecological examination of children and adolescents. Many established findings that were considered suspicious of abuse are in fact normal. Most important is a deep anatomical and physiological knowledge of the genital system in the child, including the learning of nonaggressive examination technical skills. The training for communication skills is also important [13]. It involves a nonjudgmental approach to the child and adolescent gynecological patient, which will allow the development of a trusting relationship between a confident patient and a supportive physician.

**References**

