

A Normal Ano-genital Exam: Sexual Abuse or Not?

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ABSTRACT

Sexual abuse is a problem of epidemic proportions in the United States. Pediatric nurse practitioners (PNPs) are at the forefront of providing care to children and families. The PNP is in a unique position to educate patients and families regarding sexual abuse and dispel common myths associated with sexual abuse. One such myth is that a normal ano-genital examination is synonymous with the absence of sexual abuse. This article will provide primary care providers, including PNPs, with a framework for understanding why a normal ano-genital examination does not negate the possibility of sexual abuse/assault. Normal ano-genital anatomy, changes that occur with puberty, and physical properties related to the genitalia and anus will be discussed. Photos will provide visualization of both normal variants of the prepubertal hymen and genitalia as well as changes that occur with puberty. Implications for practice for PNPs will be discussed. *J Pediatr Health Care.* (2010) 24, 145-151.

KEY WORDS

Sexual abuse, normal ano-genital examination

Sexual abuse is a significant problem in the United States. According to the [U.S. Department of Health and Human Services \(2008\)](#), nearly 80,000 American children were substantiated by Child Protective Services to be victims of sexual abuse in 2006. This number reflects only a small proportion of children who are sexually abused. Based on retrospective studies of adults, it

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is known that most sexual abuse is never disclosed and/or reported ([Kellogg, 2005](#)).

Sexual abuse is defined as engaging a child in sexual activities that the child cannot understand, for which the child is developmentally unprepared and therefore cannot give informed consent, and/or that violate societal taboos ([Leder, Knight, & Emans, 2001](#)). Sexual abuse involves a wide spectrum of sexual activity including both touching and non-touching behaviors. Non-touching behaviors include voyeurism, exposure to pornography, exposure to adult sexual activity, or taking pornographic images of a child. Touching behaviors range from fondling to penetration. Less invasive acts are easier to commit than are more invasive acts. Non-invasive touching offenses such as fondling of the genitalia or genital to genital contact without penetration occur much more frequently than does sexual intercourse ([Cohen & Galynker, 2002](#)).

Pediatric nurse practitioners (PNPs) are at the forefront of providing care to children and families. PNPs are in a unique position to educate patients, families, and the community about sexual abuse and dispel common myths related to sexual abuse.

One common myth related to sexual abuse is that a normal ano-genital examination is synonymous with the absence of sexual abuse/assault or consensual sexual activity. It is vital for health care providers, including PNPs, to not only understand that a normal ano-genital examination does not negate the possibility of sexual abuse/assault but also

to understand the anatomic explanations for this phenomenon. Understanding normal ano-genital anatomy, changes that occur with puberty, and physical properties

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related to the genitalia and anus can assist the PNP in dispelling the myth of the normal ano-genital examination.

A small number of children who give a history of sexual abuse have an abnormal ano-genital examination. Only 4% of children referred for a medical examination for sexual abuse have a physical finding that is abnormal and highly suggestive of sexual abuse (Heger, Ticson, Velasquez, & Bernier, 2002). The number of children with abnormal ano-genital examinations increases to 5.5% when you only consider children who give a history of more invasive abuse such as vaginal or anal penetration. By far the majority of children who have been sexually abused, including penetration of the vagina or anus, have normal ano-genital examinations.

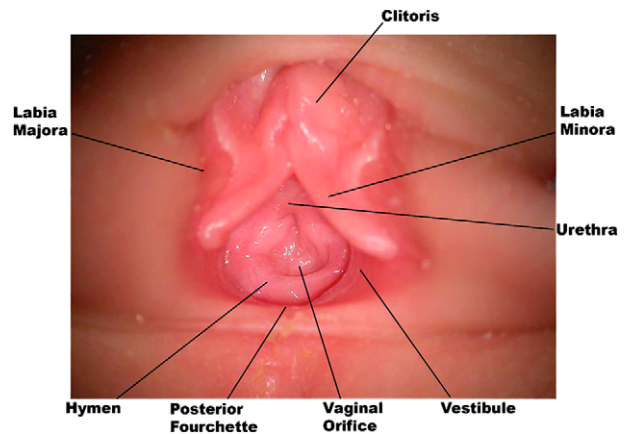
KNOWLEDGE OF GENITAL ANATOMY

Knowledge of normal ano-genital anatomy is crucial for all pediatric medical providers, including PNPs. This knowledge will provide a framework for understanding that a normal ano-genital examination does not negate the possibility of sexual abuse and most importantly will allow the PNP to recognize deviations from normal that may be concerning for sexual abuse.

Hornor & McCleery (2000) studied PNP knowledge of sexual abuse. A 33-item questionnaire was sent to 213 PNPs in the state of Ohio. One third of PNP participants stated that a child cannot have a normal genital examination following penile penetration of the vagina. PNPs were asked to identify the anatomical parts of the genitalia from a photo of a normal prepubescent genital examination (Figure 1). Two anatomic parts were correctly identified by less than 60% of the PNP participants: hymen (58.8%) and vaginal opening (57.6%). Sixty-seven percent of PNPs stated that they check the genitalia of prepubescent females at routine physical examinations more than 50% of the time, and 7.1% did this check less than 10% of the time. This examination should be performed by all PNPs at every routine examination for both sexes to increase diagnostic skills, provide a baseline for future examinations, and to improve patient and parent compliance with the examination (Lentsch & Johnson, 1999).

Provider anxiety with the ano-genital examination can decrease compliance with completing the exami-

FIGURE 1. Normal prepubescent female genitalia. This figure is available in color online at www.jpeds.org.



nation as well as the quality of the examination. Most (80%) of the PNPs surveyed by Hornor and McCleery (2000) stated that they did not believe they were adequately trained in recognizing normal prepubescent female anatomy. Utilizing proper technique can greatly improve the effectiveness of the ano-genital examination (Box 1) (Hornor, 2007). The posterior rim of the hymen should be inspected from 3 to 9 o'clock with an understanding of normal variants.

NORMAL GENITAL ANATOMY

There can be significant variation in hymenal configuration, making the hymen more difficult to recognize. The three most common hymenal configurations are: annular (hymenal tissue present from 12 to 12 o'clock) (Figure 2); crescentic (hymenal tissue absent from 11 to 1 o'clock) (Figure 3); or redundant (hymenal tissue that folds onto self; opening may be difficult to visualize) (Figure 4) (Berenson, Hayes, Bailey, Heger, & Emans, 1992; Heger, Ticson, Guerra, et al., 2002). Another normal variant for hymenal configuration is the septate hymen where bands of tissue bisect the orifice, creating two or more openings (Figure 5).

BOX. Techniques for inspecting the hymen

1. When inspecting the external female genitalia, it may be difficult to view the hymenal opening
2. Gently apply traction on the labia, pulling toward the examiner
3. Prepubertal hymen is very sensitive to touch; avoid touching with an applicator
4. If the hymenal opening cannot be visualized, flush the area with a small amount of water or saline solution, using a syringe or angiocatheter to float the hymen open
5. Begin examination with the patient in the supine frog-leg position; place the patient in the knee-chest position if visualization is inadequate in the supine position
6. The pubertal hymen may be palpated with a cotton applicator to aide in visualizing the hymen and the hymenal opening

Adapted from Hornor, 2007.

The prepubertal hymenal edge may be smooth and delicate or have shallow notches (Figure 6) or bumps (Figure 7), which are variants of normal (Myhre, Berntzen, & Bratlid, 2003). Partial/shallow notches occur in 360 degrees of the hymenal rim (Heger, Ticson, Guerra, et al., 2002). Complete (extending entirely through the hymen) and deep (extending deep into the hymen but not entirely through the hymen) clefts or notches normally are found in the anterior rim, but complete/deep clefts normally do not occur in the posterior rim. To assist in defining the anterior versus posterior rim of the hymen, consider the patient lying in a supine position and think of the hymen as the face of a clock. The anterior rim is from 9 o'clock to 12 o'clock to 3 o'clock and the posterior rim is from 3 o'clock to 6 o'clock to 9 o'clock. A deep cleft or notch in the posterior hymenal rim is an indeterminate finding of sexual abuse (Adams et al., 2007). A deep notch or cleft in the posterior hymenal rim may support a child's history of sexual abuse but, without a history of sexual abuse, the finding should be interpreted with caution. The PNP noting a deep notch/cleft in the posterior hymenal rim should strongly consider obtaining a second opinion examination by a skilled child sexual abuse examiner and consider reporting to Child Protective Services. A complete notch/cleft in the posterior hymenal rim is more accurately referred to as a transaction and is highly suspicious of sexual abuse and must be reported to Child Protective Services (Figure 8).

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Historically it was thought that the size of the hymenal orifice (vaginal opening) could be used as an indicator of sexual abuse; however, neither horizontal nor vertical hymenal orifice measurements have any relationship to sexual abuse (Berenson et al., 2002; Ingram, Everett, & Ingram, 2001). Narrowing of the posterior hymenal rim less than 1 mm also was thought to be suspicious for sexual abuse (Adams, Harper, Knudson, & Revilla, 1994). However, subsequent studies (Berenson et al., 2001; Heger, Ticson, & Velasquez, et al., 2002) have found narrowing of the hymenal rim posteriorly to be difficult to measure accurately, and this narrowing can be found in more than 20% of girls who have not been sexually abused as well as those who have been sexually abused. (Figure 9).

Take a moment to study the photo (Figure 1) and anatomic parts with the understanding that the prepubes-

cent hymen is very sensitive to touch, and when touched even gently with a tiny applicator during examination the child will indicate discomfort. Consider a prepubescent girl who is giving a history of penile or digital penetration of the vagina. Note that the hymen is recessed and protected by the labia majora and minora. The labia must be penetrated in order to touch the hymen. Labial penetration does not cause discomfort to the child. It is possible for labial penetration to occur without full or even partial penetration of the hymen. If the child is not disclosing pain or discomfort with the sexual abuse, it is possible that labial penetration occurred without touching the hymen. If the child is disclosing pain/discomfort with the penetration yet denying any bleeding, a likely explanation is labial penetration with touching the hymen yet not penetrating the hymen. Note that the hymen is elastic and will stretch to allow penetration, or at least partial penetration, without evidence of trauma. It is impossible to determine whether the penetration was only through the labia or partially into the vagina without a videotaped event or a third-party witness (Adams et al., 1994).

PUBERTAL CHANGES

Estrogen released with puberty results in breast budding, estrogenization of the vaginal mucosa, and leukorrhea—the physiologic vaginal discharge of puberty (Gordan & Laufer, 2005). The hymen and peri-hymenal tissue becomes thickened, redundant, moist, and dull or pale in color (Figure 10) (Hornor, 2007). The estrogenized hymen is no longer sensitive to touch, and it is much more elastic than the prepubertal hymen. The body is preparing itself for sexual activity/penetration. Therefore, the adolescent is unlikely to have physical findings of sexual abuse. Kellogg, Menard, & Santos (2004) studied 36 pregnant adolescent females who presented for sexual abuse evaluations, and only two of the girls had definite physical findings of penetration on examination. However, sexual contact obviously had occurred because the girls were pregnant. The pubertal hymen can be palpated with an applicator during examination to determine if any cleft/notches or transections are present without causing patient discomfort.

NORMAL ANAL ANATOMY

Anal findings of sexual abuse are less likely to be detected than are genital findings. Adams and colleagues (1994), in a study of 236 children with perpetrator conviction of sexual abuse, found 9% of genital examinations to have a finding diagnostic of sexual abuse compared with 1% of anal examinations. The anus is designed to open or dilate to allow stool to pass out of the body without damaging tissues; it also will dilate to allow an object to enter without tissue injury (Adams et al., 2007). Variables that affect tissue damage associated with anal penetration include the size of the

FIGURE 2. Annular hymen. This figure is available in color online at www.jpedhc.org.



FIGURE 5. Septate hymen. This figure is available in color online at www.jpedhc.org.



FIGURE 3. Crescentic hymen. This figure is available in color online at www.jpedhc.org.



FIGURE 6. Prepubescent hymen with shallow notch at 7 to 8 o'clock. This figure is available in color online at www.jpedhc.org.

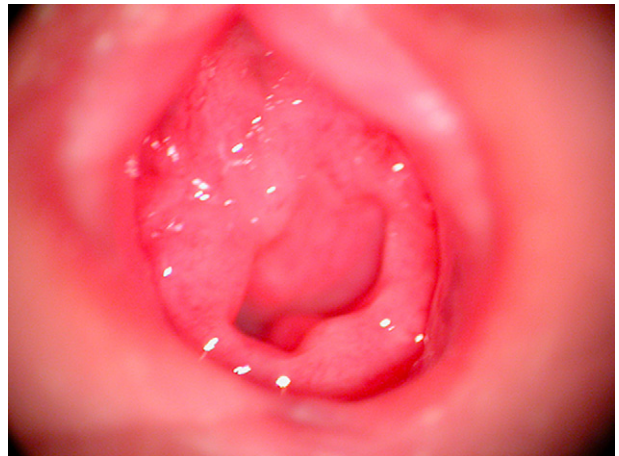


FIGURE 4. Redundant hymen floated with normal saline solution. This figure is available in color online at www.jpedhc.org.



FIGURE 7. Prepubescent hymen with bump at 6 o'clock. This figure is available in color online at www.jpedhc.org.

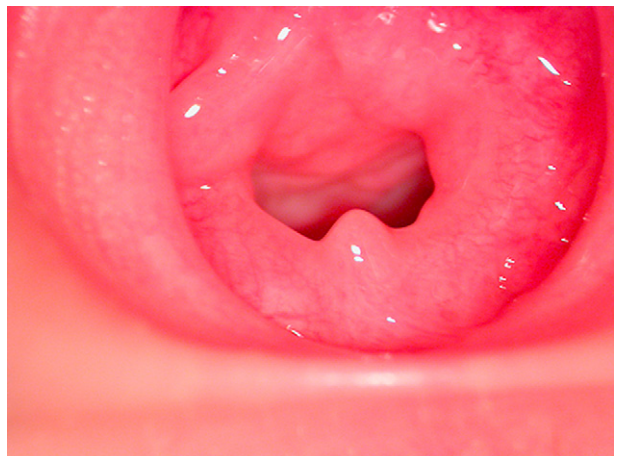


FIGURE 8. Prepubescent hymen with complete cleft at 6 o'clock; 6-year-old gave no history of sexual abuse; vaginal culture positive for gonorrhea. This figure is available in color online at www.jpedhc.org.



FIGURE 9. Narrow hymen on prepubescent examination. This figure is available in color online at www.jpedhc.org.

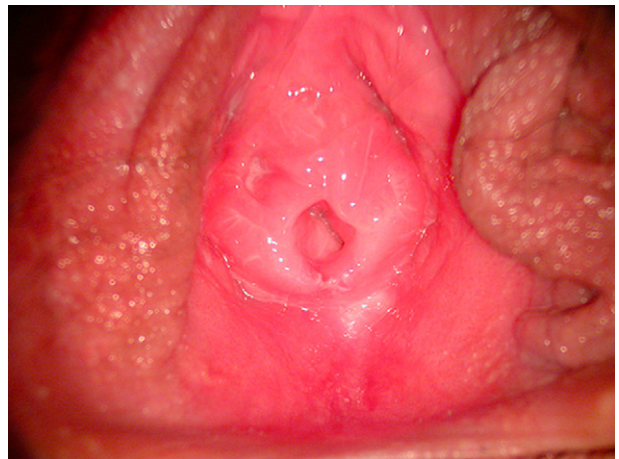


penetrating object, the presence or absence of force, the use of lubricants, the degree of “cooperativeness” of the victim, the number of times penetration occurred, and the time interval since last penetration (Finkel & DeJong, 2001). The anus typically does not dilate except when passing stool; however, chronic constipation, sedation, anesthesia, neuromuscular conditions, and death can cause anal dilatation (Adams, 2005). Marked, immediate anal dilatation to a diameter of 2 cm or more is a rare finding in both abused and nonabused children. Currently there is no consensus regarding the significance of anal dilatation in a child who has not given a history of anal penetration.

FIGURE 10. Estrogenized adolescent hymen. This figure is available in color online at www.jpedhc.org.



FIGURE 11. Acute genital injuries: 10-year-old girl (Tanner II). This figure is available in color online at www.jpedhc.org.



HEALING OF ANO-GENITAL INJURIES

Ano-genital injuries heal quickly and most often leave no residual injuries (Heger et al., 2003; McCann, Voris, & Simon, 1992). Frequently there is a lapse of weeks, months, or even years between the occurrence of the sexual abuse and the disclosure of the sexual abuse. The child's disclosure of sexual abuse typically is the stimulus for the ano-genital examination, hence another explanation for the lack of physical findings on examination.

Superficial genital injuries, such as abrasions, bruises, and transections, usually progress through a process of regeneration that involves four stages (Finkel, 1989; McCann et al., 1992). These stages include thrombosis and inflammation, regeneration of epithelium over the denuded surface, multiplication of new cells, and

differentiation of the new epithelium. Wound healing may be complete in 48 to 72 hours, while further differentiation of new epithelium may take 5 to 7 days (McCann et al., 1992). Complete restoration of normal tissue may take up to 6 weeks. The injuries heal without scar formation. Note Figure 11 for an example of acute genital injuries. This is the genital photo of a 10-year-old Tanner II girl who gave a history of penile penetration of her vagina with bleeding 72 hours prior to the examination. Note the bruising and healing transection at 6 o'clock. The hymen already has begun repairing itself, and it has only been 3 days since penetration. There is no longer any bleeding, the hymenal tear is well-approximated, and healing is progressing. Within days the hymen will heal without evidence of injury.

McCann and colleagues (1992) state that deeper injuries usually involve the process of repair, which includes the formation of granulation tissue and the subsequent development of scar tissue. The majority of ano-genital injuries do not result in scarring (Beren-son et al., 2000; Finkel, 1989; Kellogg et al., 2004; McCann et al., 2005).

IMPLICATIONS FOR PNPS

PNPs must understand that the majority of children who are sexually abused will have a normal anogenital examination. Adams and colleagues (2007) describe three primary explanations for the absence of physical findings of sexual abuse: no injury was sustained due to the nature of the sexual abuse (touching, fondling, oral-genital contact); the abuse involved penetration of tissues that stretched without being injured; or the abuse resulted in injuries that healed by the time of the examination. It is vital for PNPs to examine the anus and genitalia of all of their patients at well-child examinations; this will increase PNP comfort and competence with ano-genital examinations and assist them in recognizing normal variants and abnormal examination findings. If a PNP is uncertain of a finding noted on ano-genital examination, a second opinion by an examiner with expertise in child sexual abuse examination should be solicited in a timely manner. However, PNPs must never forget their obligation to report suspected sexual abuse if they believe that an ano-genital examination finding is abnormal and concerning for sexual abuse. Protection of the child must always be the first priority of the PNP. Children's hospitals and Child Advocacy Centers are excellent resources for the PNP regarding sexual abuse examinations.

The most reliable criteria on which to make the diagnosis of sexual abuse is a history of sexual abuse disclosed by the child. Any disclosure of sexual abuse should be reported to Child Protective Services. The myth must be dispelled: Your patients and their families as well as other professionals working with children should be educated that a normal ano-genital exami-

nation does not negate the possibility of sexual abuse/assault.

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