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Committee on Adolescent Health Care

This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Adolescent Health Care in collaboration with committee members Sloane W. Berger-Chen, MD, and Anne-Marie E. Amies Oelschlager, MD.

Diagnosis and Management of Hymenal Variants

ABSTRACT: At puberty, a patient with an imperforate hymen typically presents with a vaginal bulge of thin hymenal tissue with a dark or bluish hue caused by the hematocolpos behind it. Other findings that may be present include an abdominal mass, urinary retention, dysuria, constipation, and dyschezia. On evaluation, the goal is to differentiate an imperforate hymen from other obstructing anatomic etiologies, such as labial adhesions, urogenital sinus, transverse vaginal septum, or distal vaginal atresia. Surgical intervention is necessary only in symptomatic prepubertal patients. After confirmation of the diagnosis, surgical intervention usually is deferred until pubertal estrogenization has occurred because the imperforate hymen may open spontaneously at puberty. It is important to complete an abdominal and a perineal examination. If the physical examination reveals a bulging hymen and ultrasonography reveals hematocolpos, further imaging is not required. However, if the diagnosis is not certain or there is a concern for a distal vaginal atresia, cervical atresia, an obstructed uterine horn, or transverse or longitudinal vaginal septum, magnetic resonance imaging is recommended. The ideal time for surgical intervention on hymenal tissue is before the onset of pain and after onset of pubertal development, when the vaginal tissue is estrogenized. Surgical management of clinically significant hymenal variations involves excision of the hymenal tissue and rarely is associated with long-term sequelae. If there is concern that the patient has a distal vaginal atresia or a transverse vaginal septum, the patient should be referred to a center with expertise in the management of these conditions.

Recommendations and Conclusions

The American College of Obstetricians and Gynecologists makes the following recommendations and conclusions:

- The presentation and management of clinically significant hymenal variations differs depending on the age of the patient at onset of symptoms and associated complications.
- On evaluation, the goal is to differentiate an imperforate hymen from other obstructing anatomic etiologies, such as labial adhesions, urogenital sinus, transverse vaginal septum, or distal vaginal atresia.
- Typically, an imperforate hymen is an isolated issue and does not have long-term effects on fertility, sexual function, or obstetric outcomes.
- Obstetrician-gynecologists should be aware that families may need education about the hymen and its role in sexual function.

- Simple incision and drainage of an imperforate hymen in a patient with hematocolpos should be avoided because of the increased risk of ascending infection and sepsis.
- If there is concern that the patient has a distal vaginal atresia or a transverse vaginal septum, the patient should be referred to a center with expertise in the management of these conditions.

Background

The hymen is a squamous tissue structure that invaginates from the perineum (urogenital sinus) to meet the longitudinal vaginal canal (a müllerian structure). With this juncture, there is usually complete canalization of the vaginal canal, and this membrane retracts with only a small remnant of circumferential, redundant tissue around the vaginal introitus. However, during this canalization process, the membrane can vary in its resolution,

leaving a complete obstruction, imperforate hymen, or any number of partial remnants, such as the microperforate and septated hymen (Fig. 1). The presentation and management of clinically significant hymenal variations differs depending on the age of the patient at onset of symptoms and associated complications.

Imperforate Hymen

The imperforate hymen may present in the neonatal period as a hydrocolpos or mucocolpos. On examination, a bulging, translucent, or yellow mass is noted at the introitus. This situation rarely leads to obstruction of ureters, which can result in urinary tract infection or hydronephrosis, and respiratory distress. Surgical intervention is necessary only in symptomatic prepubertal patients. After confirmation of the diagnosis, surgical intervention usually is deferred until pubertal estrogenization has occurred because the imperforate hymen may open spontaneously at puberty (1).

At puberty, a patient with an imperforate hymen typically presents with a vaginal bulge of thin hymenal tissue with a dark or bluish hue caused by the hematocolpos behind it. This bulge will distend further with the Valsalva maneuver. Pain may be pelvic or abdominal, cyclic or acute. A vaginal bulge, although common, may not be present. Other findings that may be present include an abdominal mass, urinary retention, dysuria, constipation, and dyschezia.

Microperforate or Septate Hymen

It is important to note that a microperforate hymen or septate hymen may not present as an obstruction. Often there will be menstrual efflux; however, depending on the degree of perforation or efflux, there may be retained menstrual blood with malodorous discharge, particularly with a microperforate hymen. Most often, the patient with a microperforate or septate hymen will present when she has difficulty placing tampons, has a retained tampon, or is unable to have penetrative vaginal sexual activity.

Physical Examination

On evaluation, the goal is to differentiate an imperforate hymen from other obstructing anatomic etiologies,

such as labial adhesions, urogenital sinus, transverse vaginal septum, or distal vaginal atresia. It is important to complete an abdominal and a perineal examination. If there is a palpable abdominal mass, this finding is significant and often is consistent with a proximal obstruction, such as with a transverse vaginal septum and a resulting hematometra.

The perineum is best examined in either the dorsal lithotomy or frog-legged position. When examining the patient, downward labial traction can open and separate the labia majora and minora sufficiently to visualize the distal introitus. A moist cotton or nasopharyngeal swab is useful to assess whether the hymen is perforate. The swab can be placed through a perforation and then gently tented to the introitus to confirm the diagnosis (Fig. 2). If the swab cannot be passed behind a band of hymenal tissue, a longitudinal vaginal septum is likely, and ultrasonography is recommended.

An imperforate hymen with hematocolpos will reveal a dark-colored or bluish-tinged bulge without hymenal fringe. Distal vaginal atresia will appear as pink mucosa without discoloration (Fig. 3, Fig. 4). If the patient can tolerate a digital examination, a shortened vaginal canal without a palpable cervix may be consistent with a transverse vaginal septum, cervical atresia, or vaginal agenesis. There may or may not be a bulging proximal vagina if there has been a spontaneous perforation. A speculum rarely is helpful or necessary for evaluation. A digital rectal examination can be less painful than a vaginal examination for adolescents and may be particularly helpful to confirm the presence of the cervix or to assess the distance from the hematocolpos to the perineum. For more information on the embryologic origins of the female reproductive tract, see ACOG Committee Opinion No. 779, *Management of Acute Obstructive Uterovaginal Anomalies* (2).

Management

The ideal time for surgical intervention on hymenal tissue is before the onset of pain and after onset of pubertal development, when the vaginal tissue is

Figure 1. Anatomic variations of the normal hymen. (A) normal, (B) imperforate, (C) microperforate, (D) cribriform, and (E) septate. (Reprinted from Laufer MR. Office Evaluation of the Child and Adolescent. In: Emans SJ, Laufer MR, editors. Pediatric and adolescent gynecology. 6th ed. Philadelphia [PA]: Wolters Kluwer/Lippincott Williams & Wilkins; 2012. p. 5.)

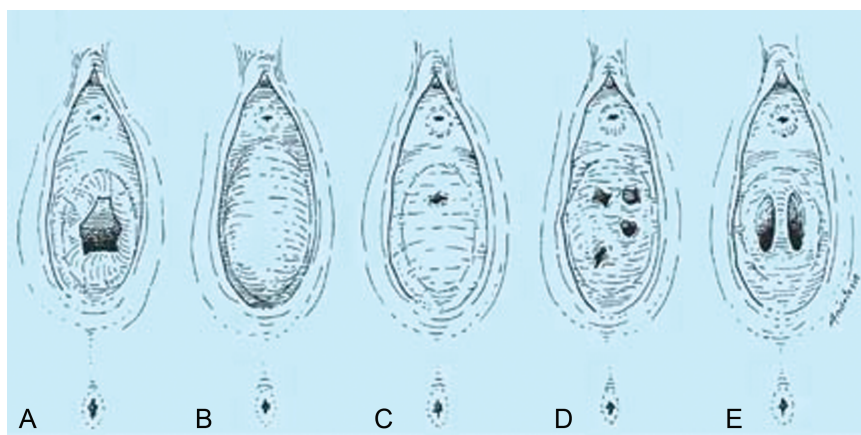




Figure 2. The septate hymen can be identified by tenting the tissue with a cotton swab. (Image courtesy of Anne-Marie E. Amies Oelschlager, MD, University of Washington, Seattle, Washington.)

estrogenized. However, many patients with an imperforate hymen will present after puberty with acute onset pelvic pain or acute urinary retention. The obstetrician-gynecologist should start with a physical examination. If the physical examination reveals a bulging hymen and ultrasonography reveals hematocolpos, further imaging is not required. However, if the diagnosis is not certain or there is a concern for a distal vaginal atresia, cervical atresia, an obstructed uterine horn, or transverse or longitudinal vaginal septum, magnetic resonance imaging is recommended (2). During pelvic magnetic resonance imaging, a marker at the perineal body, such as a vitamin E capsule or a water-soluble lubricant gel in the distal vagina, can help determine the length from the distal aspect of the obstructed vagina to the perineum.



Figure 3. Imperforate hymen. Downward labial traction allows adequate visualization of the hymen. A bulging imperforate hymen has a bluish discoloration with hematocolpos. (Image courtesy of Anne-Marie E. Amies Oelschlager, MD, University of Washington, Seattle, Washington.)

Surgical Management

Surgical management should include preoperative and postoperative counseling for the patient and her family. The surgical technique used depends on the type of variation. If there is concern that the patient has a distal vaginal atresia or a transverse vaginal septum, the patient should be referred to a center with expertise in the management of these conditions.

Preoperative Counseling

Obstetrician-gynecologists should be aware that families may need education about the hymen and its role in sexual function. Typically, an imperforate hymen is an isolated issue and it does not have long-term effects on fertility, sexual function, or obstetric outcomes. The hymen needs to be open to permit egress of menses. There is a longstanding common misperception that the hymen is an obstructive barrier that must be present for virginity. However, virginity is not a medical diagnosis and is a part of an individual's sociocultural belief system. A hymenectomy is a surgical procedure for a medical indication and is unrelated to the patient's decision for future sexual activity. Families may need to be reassured that virginity is not affected by hymenal surgery.

Surgical Technique for Imperforate Hymen and Microperforate Hymen

Simple incision and drainage of an imperforate hymen in a patient with hematocolpos should be avoided because of the increased risk of ascending infection and sepsis (1). A urethral catheter should be placed preoperatively or intraoperatively to confirm the exact location of the urethra (1). To avoid the urethra, an initial cruciate or U-shaped incision is made using sharp dissection or



Figure 4. Distal vaginal atresia. (Image courtesy of Anne-Marie E. Amies Oelschlager MD, University of Washington, Seattle, Washington.)

needlepoint cautery (Fig. 5, Fig. 6). The redundant hymenal mucosa should be excised, and the mucosal edges may be reapproximated using a 3-0 or 4-0 absorbable suture in an interrupted fashion for hemostasis. Aggressive irrigation of the dilated vagina should be avoided secondary to the risk of ascending infection (3).

Surgical Technique for Septate Hymen

A hymenal septum may be managed in the office with topical anesthesia if the patient is able to tolerate the examination and agrees to the procedure. Application of a topical anesthetic cream, such as 4% lidocaine cream, often is sufficient. A rapidly absorbable suture or free tie can be placed at the anterior and posterior aspects of the septal tissue, and the septum is resected between the two sutures. Topical emollient then may be applied.

Postoperative Care and Counseling

A topical emollient, such as zinc-based diaper cream, silver sulfadiazine, petroleum jelly, or coconut oil can be used several times a day during the recovery process. In the rare occasion the procedure is performed in a prepubertal patient, application of a short course of topical estrogen cream to the surgical site may be given to enhance healing and decrease the likelihood of stricture formation and subsequent stenosis (4).

Patients should be counseled to keep the introitus clean and dry. Pain management with nonsteroidal antiinflammatory drugs or a topical anesthetic jelly typically is sufficient. Most patients will have little to no pain. After the hematometocolpos has been drained, the patient can expect to have an extended bleeding cycle of approximately 2 weeks, which will allow for the involution of the uterus. Patients are at risk of ascending infection and pelvic inflammatory disease, and they should be advised to call their obstetrician–gynecologist or other gynecologic care provider if pain worsens or



Figure 5. The initial cruciate incision of the imperforate hymen is made with care to avoid the urethra. (Image courtesy of Anne-Marie E. Amies Oelschlagler MD, University of Washington, Seattle, Washington.)

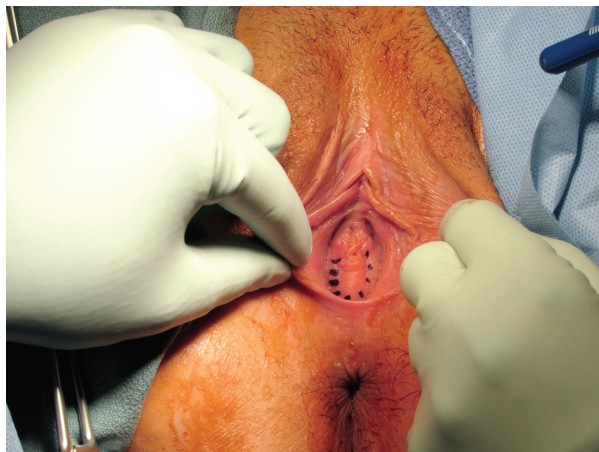


Figure 6. The location of the U-shaped incision for an imperforate or microperforate hymen is indicated by the dots. (Image courtesy of Anne-Marie E. Amies Oelschlagler MD, University of Washington, Seattle, Washington.)

fever is present. Tampon use and sexual activity should be avoided until vaginal distention and the initial bleeding and discharge have resolved.

Most patients will have resolution of pain after hymenectomy. Imperforate hymen is not associated with concomitant uterine anomalies (3), and, therefore, in the absence of symptoms, postoperative uterine imaging usually is not required. Although stenosis and adhesions have been reported after hymenectomy, these complications are extremely rare. In these situations, dilator therapy may be considered (5). If an adolescent is doing well after the procedure, she may not need additional care; however, because of the risk of endometriosis after hematometocolpos, she should be encouraged to return if she experiences significant dysmenorrhea (6).

Conclusion

An adolescent with atypical hymenal anatomy may present with abdominal and pelvic pain, difficulty placing tampons, a retained tampon, or inability to have penetrative vaginal intercourse. Surgical management of clinically significant hymenal variations involves excision of the hymenal tissue and rarely is associated with long-term sequelae. For more information, see ACOG Committee Opinion No. 779, *Management of Acute Obstructive Uterovaginal Anomalies* (2).

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