



Anne Smith

The prepubertal hymen

Not so long ago, some doctors believed that they could determine, on the basis of examination of a girl's genitals, whether or not the girl had engaged in sexual intercourse. Even today, 'virginity checks' are conducted by doctors in some countries. Some Australian doctors still believe that it should be possible to determine, on the basis of examination findings, whether a child has been sexually abused. This article sets out to describe some of the common variations in hymenal anatomy in order to dispel myths and misperceptions surrounding genital examination findings in young girls.

Keywords: physical examination, medicolegal/jurisprudence, child abuse

Most general practitioners would immediately refer any prepubertal child who they suspected may be the victim of sexual abuse to a specialist centre for assessment and support. Given the consequences for doctors and patients when mistakes occur in the medicolegal arena and the potential risk of secondary trauma, this cautious approach seems wise. However, there are several other presentations in young girls that would appropriately prompt the GP to conduct a genital examination. For example, in the absence of an allegation or suspicion of sexual abuse, symptoms of genital itch, redness, pain or discharge would usually warrant examination.

There are two distinct challenges for GPs in conducting genital examinations in prepubertal girls. The first is ensuring that the girl and her caregiver are relaxed and comfortable during the examination so that the process does not create unnecessary anxiety. The second challenge is understanding what is and isn't normal so that the GP knows exactly what they are looking at.

Tips for conducting the examination can be found elsewhere.¹ This article aims to inform GPs about common variants in hymenal anatomy and offers advice for interpretation of examination findings. This may reduce incorrect attribution of normal findings to trauma or sexual abuse. This is important as the

consequences of an incorrect diagnosis of sexual abuse can be as serious as a missed diagnosis.

Do all prepubertal girls have a hymen?

Yes, with very rare exception. Population based cohort studies of newborn girls support the contention that all girls are born with a hymen.²⁻⁴ Intersex conditions occasionally cause confusion about gender and rare congenital abnormalities of the genital tract can also alter the appearance of external genitalia.

What does the normal prepubertal hymen look like?

The shape of the prepubertal hymen can change over time.⁵ It is a structure with a width and depth. The width is the distance from the hymenal edge (which defines the hole which forms the entrance to the vaginal vault) and the vaginal rim. The depth is the distance from the outer surface facing the observer to the inner surface inside the vaginal vault.

By convention, most girls are examined in the supine frog leg position (lying on their backs with legs flexed, hips abducted and feet opposed or placed apart). The hymen is described with reference to a clockface, 12 o'clock being the most anterior aspect nearest the urethra and 6 o'clock being the most posterior aspect nearest the anus.

In most newborn girls, the hymen has an annular appearance (*Figure 1*). The ring shape extends all of the way around the vaginal rim. Oestrogen can cause the hymen to thicken (increase in depth) and also to increase in width. It can become folded and fimbriated; taking on a 'frilly' appearance that often obscures the hymenal opening. Typically there are two stages in a girl's life when the hymen is affected by oestrogen; the first phase occurs from birth through the first year or so of life, and the second phase occurs when puberty commences and

continues throughout the reproductive years.

Clefts (areas of hymen that appeared to be of lesser width than surrounding hymen) were noted in Berensen's 1993 study in the anterior half of the hymens of newborn girls, but not in the posterior half.³

During the preschool and early primary school years the hymen is commonly observed to have a crescentic shape (*Figure 2*). The reduction in hymenal width is usually seen in the anterior hymen, sometimes to the extent that the hymen appears to be absent between 11 o'clock and 1 o'clock.

The literature abounds with reports and opinions about the possible significance of hymenal bumps, clefts, vasculature and hymenal opening size.⁶ Findings that were previously believed to have been caused by injury, such as adhesions, clefts and hymenal thickenings or bumps, are now known to have no forensic significance.

Bumps (local thickenings of the hymen) in prepubertal girls are often the hymenal continuation of intravaginal ridges caused by underlying longitudinal muscle. Some girls have

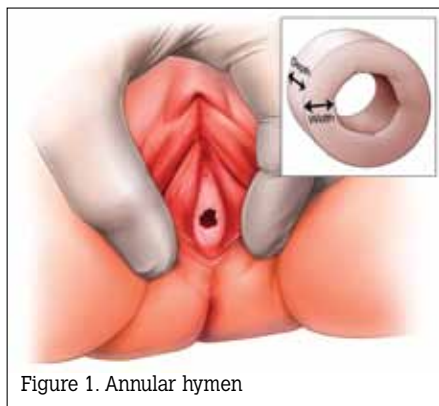


Figure 1. Annular hymen

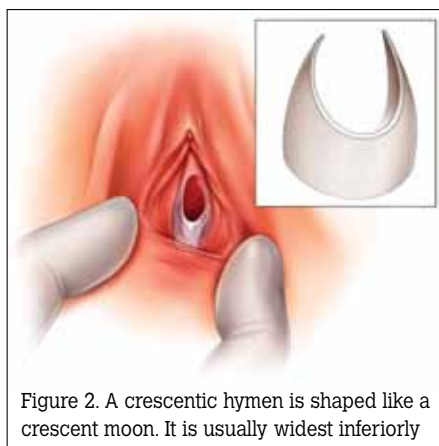


Figure 2. A crescentic hymen is shaped like a crescent moon. It is usually widest inferiorly

septal remnants forming hymenal bumps or tags. These findings are not caused by sexual abuse.

What does it mean if I cannot see the hymen?

The most common reason for the hymen and vaginal vestibule to be obscured from view is the presence of labial adhesions. These can extend almost the entire length of the labia or they can be relatively localised. They are not of forensic significance.

Is a large hymenal opening evidence of previous penetration?

No. The size of the opening in the hymen can be affected by a number of factors including the tension within the surrounding musculature, the examination position and the examination technique. The size of the hymenal opening has no forensic significance.⁷

Common hymenal variants⁸

A hymenal septum is noted in approximately 5% of genital examinations of prepubertal girls (*Figure 3*). The septum of hymenal tissue is typically (but not always) oriented anteroposteriorly. The hymenal openings can be eccentric, uneven in size and located in asymmetric positions. If a hymenal septum is present, it is important to inspect for a vaginal septum, although this is uncommon.

Less commonly, in some girls the hymenal opening is located more anteriorly than average, resulting in a vase-like shape (the hymen is thickened and wider than average at 6 o'clock). Sometimes the hymen protrudes forward as a sleeve might protrude forward over a hand (sleeve-like hymen) and some hymens appear to roll inward into the vaginal vault.

Some girls have hymens that appear to have tiny openings (microperforate hymen) or (rarely) more than two openings (cribriform or 'pepper pot' shape).

What does the hymen of a sexually abused girl look like?

Most sexually abused girls have normal hymens. Normal genital examination findings such as those described have been found in girls who have clearly described penetrative sexual assault.^{9,10} There appears to be no correlation

between the shape of a girl's hymen and the likelihood of conviction of an alleged perpetrator of child sexual assault.

What rare hymenal abnormalities might raise suspicion about child sexual abuse?

One finding that may indicate possible sexual abuse (specifically, repeated penetrative trauma to the hymen) is a very narrow rim of hymen between 3 o'clock and 9 o'clock.¹¹ This 'narrow posterior rim' must be present when the girl is examined in the prone knee chest position (buttocks in the air, knees beneath her buttocks and chest on the bed). In many situations, an apparently narrow posterior rim hymen 'unrolls' or 'falls down' under the influence of gravity, appearing to have a much greater width when the girl is examined in the prone position. It is not appropriate to diagnose a 'narrow posterior rim hymen' unless the girl is examined in the prone knee chest position.

Repeated traumatic hymenal penetration is a possible cause of a narrow posterior hymenal rim, but it is not the only possible cause.

In rare circumstances a laceration (tear) or transection (laceration of the entire width of the hymen) might be seen following penetrative hymenal trauma. Deep clefts or defects around the 6 o'clock position (inferior hymen) should arouse suspicion regarding possible sexual abuse, although rarely, accidental penetrative hymenal trauma may result in a transection or deep hymenal cleft.

Petechiae, bruises, abrasions and lacerations might be seen following recent sexual assault.

Unexplained genital injury, hymenal laceration, deep cleft in the inferior hymen, or the presence of a narrow posterior rim hymen warrant referral to a specialist centre for assessment regarding possible sexual abuse.

Do small red dots on the hymen indicate injury?

Probably. The most common cause of small red dots on the hymen are petechiae. Petechiae are pinpoint bruises usually caused by mechanical forces (often penetrative trauma). Other causes of small red hymenal dots include congenital naevi and inflammation. A specialist opinion from a forensic expert is recommended as this finding could have forensic importance.

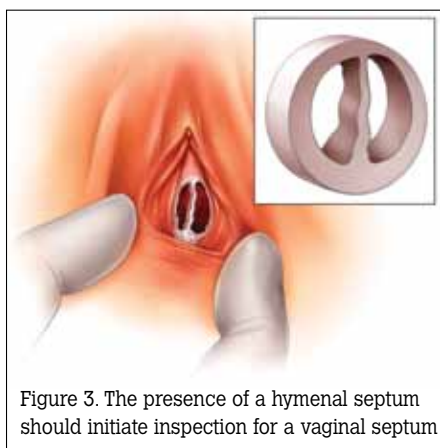


Figure 3. The presence of a hymenal septum should initiate inspection for a vaginal septum

Does the hymen scar following trauma?

Probably not. Recent studies in the United States of America confirm current beliefs that although the hymen can tear (a hymenal laceration extending through the width of the hymen is called a transection), hymenal tissue itself does not scar.¹² Hymenal lacerations heal so well that after days to weeks it is often impossible to tell whether or not the hymen has been injured. The shape of a hymenal cleft (u or v shape) does not discriminate between congenital and traumatic origins. Genital tissues adjacent to the hymen usually heal very quickly by regeneration rather than repair, but scarring is possible following significant injury to deeper structures.

Can the hymen be injured during a fall astride?

Usually not. Because the hymen is located relatively internally and it is so well protected by labia, it is highly unlikely to be injured during a fall astride. In very rare circumstances, accidental penetrative trauma has been reported to have caused injury to the vaginal vestibule and hymen.¹³ In exceptionally rare circumstances, a crushing genital injury associated with a fall astride has damaged the hymen but this type of event is extraordinarily rare.

Terminology

The phrase 'intact hymen' has no scientific validity and must be avoided. Similarly words such as 'virgo intacta', 'virginal status', 'virginal hymen', 'ruptured hymen', 'absent hymen', 'deflowered hymen' and 'marital hymen' should be avoided.

Summary of important points

- If there is any suspicion of sexual abuse, GPs should refer to a specialist centre for assessment and support.
- GPs may need to examine the genitalia of prepubertal girls for other clinical presentations and should understand the normal anatomical variants.
- There is significant variation in the appearance of the normal prepubertal hymen.
- The majority of girls who have been sexually abused have a normal looking hymen.
- It is impossible to determine if a girl has experienced prior penetration based on the shape of her hymen or the diameter of the hymenal opening.
- Outdated terminology such as 'intact hymen' should be avoided.
- Unexplained genital injury, hymenal laceration, a deep cleft in the inferior hymen, or the presence of a narrow posterior rim hymen may be markers of sexual abuse. These findings warrant referral to a specialist centre for assessment and support.

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