What’s New and What’s Old in Child Sexual Abuse

I have nothing to disclose.

Objectives

• Describe the highlights of a timeline of the literature regarding physical findings in child sexual abuse.

• Identify how recent articles affect how findings should be interpreted and documented.
"Why is sexual molestation of children the last frontier in child abuse? What are the major obstacles to identifying child sexual abuse?".

Suzanne Sgroi, MD

The 1975 and 2011 Answers:

- Lack of recognition of child sexual abuse
- Failure to obtain adequate medical corroboration
- Reluctance to report

PLUS:
- Need for education of medical providers
- Confusion and misunderstanding/misinterpretation of findings
- Confusion over the medical provider role

“Medical examiners should avoid being relegated to the role of a genital-check technician, only examining the child after the history by the forensic interviewer.”

Astrid Hager, MD
### History
- **1970s**
  - Medical provider does a "forensic interview"
  - OR Medical provider avoids taking a history
- **1990s**
  - Forensic interviewers
  - "Genital technicians"
- **2011**
  - Extended Forensic Evaluations
  - Medical History
  - Behavioral history

### Physical
- **1970s**
  - Genital examination mainstream in medical education
  - Limited resources for evidence collection or STI testing
- **1990s**
  - Papscopy
  - Standardization of terminology
  - Improved methods to decrease "trauma" of the exam
- **2011**
  - Spermicide more widespread use
  - Vaginal imaging
  - DNA testing
  - STI testing improvements (CLIA vs. NADP)

### Standardization of terminology
- Many terms were invented to describe the findings
- Interpretations were varied and dependent on examiner
- Misinterpretation could not be guaranteed
- Protocols were being written before scientific research was done
- Pressure to interpret findings
- No "certification" for providers or guidelines for expertise
Woodling (1981)

**Findings of Acute Molestation:**
- Perineal, perianal or rectal contusions or ecchymoses
- Perihymenal erythema
- Spasm of the pubococcygeus muscle
- Seminal products
- Tense rectal sphincter
- Anal fissures

**Findings of Chronic Molestation:**
- Multiple hymenial transections, healed
- Rounded hymenal remnants
- Spacious introitus
- Healed primary laceration at 6 o’clock
- Capacity to relax pubococcygeus muscle
- Leukorrhea, cervicitis
- Reflex relaxation of the anal sphincter

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Post-traumatic Changes

- Hymenal opening size (Cantwell, 1983, Hilton, 1988)
- Attenuated hymen (Emans, 1987)
- Hymenal height or volume (Kerns, 1992)
- Anal relaxation (Hobbs & Wynne, 1990)
- Labial fusion (McCann, 1988)
- Increased friability of the posterior fourchette (McCann, 1988, Emans, 1987, Kerns, 1992)
- Synechiae from hymenal ring to the labia (Emans, 1987)
- Vaginal discharge

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Anal Relaxation

- Stool
- Sedation
- Death
- Neurologic problem
- Prolonged exam
- Voluntary?
Obsolete Historical Terms

- Hymenal concavities
- Angular or irregular features
- Irregular edges
- Hymenal carunculae
- Virgo intacto
- Hymenal clefts (?)
- Hymenal thickening (?)
- Attenuated hymen
- Gaping hymen

Approach to Interpretation

- Findings documented in newborns or commonly seen in nonabused children.
  - Normal variants
  - Commonly caused by other medical conditions
  - Indeterminate findings: insufficient or conflicting data from research studies
    - Physical exam findings
    - STI diagnosis (e.g., warts and Herpes)
  - Findings diagnostic of trauma
    - Acute injury to areas other than the hymen or anus
    - Residual (healing injury)
    - Blunt force trauma (acute or healed injury to hymen)
    - Infections
    - Pregnancy or sperm

“New” Terms

- Notch
- Transection
- Bump
- Perforation
- Hymen depth
- Female Genital Mutilation
• Normal: Shallow or superficial in the inferior rim of the hymen
• Indeterminate: Deep notches
• Diagnostic: Transection or missing hymen

How accurate is this?

• Indeterminate findings:

Deep notches or clefts in the posterior/inferior rim of hymen, between 4 and 8 o’clock, in contrast to transections.

• The accuracy of most genital findings to predict abuse is poor.
• Because the number of prepubertal girls with genital findings is low ("extremely infrequent findings"), there is a large Confidence Interval and therefore the absence of a finding (notch, transection, perforation) in the posterior hymen has little impact on the likelihood that a child has been abused.
• The presence of these findings supports the disclosure of sexual abuse but the rarity of the findings limits the ability to use the findings alone to make a diagnosis of abuse.

Non-acute examinations
What can we say based on research?

- Posterior hymenal findings are rare in prepubertal girls (abused and more rare in non-abused).
- The presence of posterior hymenal findings is consistent with a history of sexual abuse.

<table>
<thead>
<tr>
<th>Hymen Diameter: Then and Now</th>
<th>Berenson, 2000</th>
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</thead>
<tbody>
<tr>
<td>Cantwell, 1983</td>
<td>Case control study; Tanner staging</td>
</tr>
<tr>
<td>• Case series of 247 girls</td>
<td>• Transhyral diameters from slides</td>
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<tr>
<td>• &gt; 4mm diameter= abuse</td>
<td>• Tissue between edge of hymen and vestibule at 6, 3 and 9 o’clock measured</td>
</tr>
<tr>
<td>• Doubled the number of identified cases due to physical findings</td>
<td>• Less than 1.0mm of hymenal tissue was detected at 6 o’clock only in those with a hx of penetration (100% specificity, 1-2% sensitivity)</td>
</tr>
<tr>
<td>White, 1989</td>
<td></td>
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<tr>
<td>• 242 girls divided by risk</td>
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<tr>
<td>• 88% w/hx of penile-vaginal penetration had a diameter &gt;4 mm compared to 18% of children with no hx of penetration (p &lt; .001)</td>
<td></td>
</tr>
</tbody>
</table>

How Was the Hymen Measured?

- Pugno (1999): Width between 3-9 o’clock, labial separation just enough to permit visualization with and without traction in lateral recumbent and knee-chest, precision millimeter scale and comparison scale |
- Berenson (2000): Labial traction, stirrups, photographs, when a light reflex was observed at 6 o’clock it was used to estimate the lower border |
- Ingram (2001): As much labial traction as could be applied, the measurement was made with a measuring device, which consisted of a circular transparency 1 cm in diameter marked in 2 mm increments or the ocular grid of the colposcope.
## Ingram (2001)

- Low risk group, high risk group, penetration group-no significant difference
- Conclusion: we do not recommend measuring the hymens of young girls being evaluated for sexual abuse by the method we have used.
- Nonpredictive (method) of nearly all markers of sexual abuse except for three markers of potential genital trauma:
  - hymenal tears or lacerations,
  - hymenal clefts 5 to 7 o’clock,
  - narrowing of the posterior hymenal rim.

## Myhre (2003)

- Normal variants in 195 preschool non-abused girls
- New terms: Transitional, tulip, keyhole, fossa navicularis pallor
- 32 girls had an outward folding hymenal edge
- The history provides the single most important finding when diagnosing sexual abuse
  
  **Tulip**

## Narrow Hymenal Rim

Hymenal diameter is affected by age, circulating estrogen, size of child, genetics, relaxation, technique, position, and probably also sexual abuse.
Perpetuating Virgo Intacto

- Underhill (1978): “Virginity was confirmed by the finding of a complete hymenal ring in only 16 of the 28 patients (60%)”
- Woodling (1981): “A glass pipette, French catheter, or Glaister rod may be introduced into the hymenal orifice to deduce the extent of hymenal dilatation, which in most virgo intacto girls is considerably less than the circumference of the erect penis. Some women are born with a congenitally incomplete hymen.”

Mythbusters:

- Jenny: 1987
  - 1131 infants; all were born with hymens
- Moe: (1988)
  - >25,000 newborns, all born with hymens
- Adams: (1999)
  - “It’s normal to be normal”
- Kellogg: 2004
  - Pregnant adolescents; “normal does not mean nothing happened”
- Kellogg: 2009
  - Repetitive penile penetration often have no evidence

Anderst (2009)

- The number of reported penetrative events does not correlate with findings.
- 506 patients included in the study, expert review and agreement included in the methods
- History of bleeding associated with hymenal findings, but majority who reported bleeding did not have findings diagnostic of penetrative trauma.
Timing of the Exam: Then and Now

1990s
- Focus on collection of evidence in prepubertal children
- Studies used microscopic and trace evidence and acid phosphatase (Christian 2000) or p30 Antigen (Young 2006)
- Forensic evidence collection unlikely to yield positive results after 24 hours.

2011
- Focus on the timing of the examination
- Findings like bruising or other trauma to the genital area resolves quickly
- The medical exam is a reassuring event that begins the healing process

Watkeys (2008)
- No child should have to wait more than 12 h for an examination following a disclosure of alleged abuse within the previous 7 days.
- Post-pubertal girls are more likely to have significant genital signs if they are examined within 7 days of the last episode of sexual abuse.
- Anal findings are more likely to be seen if patients are examined within 7 days of the last episode of abuse.

Labial Fusion: Then and Now

1980's
- A marker for sexual abuse? (Berkowitz 1987, McCann 1988, Muram 1988)
- Treatment was often the rapid "bandaid" approach—manual separation

2011
- Re-epithelialization of vulvar skin secondary to:
  - Lichen sclerosus
  - Graft vs host
  - FG cutting
  - Infection (herpes, other)
  - Sexual abuse
- Treatment with estrogen cream or emollients and improved hygiene (Van Eyk 2009) vs. betamethasone (Mayooglou 2009)
Labial Fusion Treatment

- Risks for use of either estrogen or steroids topically
  - Short-term side effects of topical estrogens:
    - Breast budling, rash or irritation, and vaginal bleeding.
  - Short-term side effects of betamethasone:
    - Erythema, folliculitis, pruritus, vesiculation, fine hair growth, and skin atrophy.
  - Chronic pharmacological treatment of labial fusion using either estrogens or betamethasone has unknown but potentially serious side effects:
    - Adrenal suppression, growth suppression, and possibly cancer in chronic steroid use.
    - Risk of cancer in chronic estrogen use.

Colposcope

Photodocumentation Pros
- Reduces need for repeat exams.
- Enables peer review (therefore potentially improving interpretation).
- Teaching purpose.
- Provides "evidence" for court.
- Enables provider to show the child she is "normal."
- Aid for visualization.

Photodocumentation Cons
- Patient perception of the photos.
- Usually demonstrates "no physical evidence."
- "Magic Machine" perception of investigators.

Other issues

- UTI and sexual abuse
- Genital warts and sexual abuse
- Urethral prolapse
- Gardnerella
- Other STIs
Take Home Points

- What’s old is old!
- Use newer terminology in documentation.
- Recognize literature that can be used as a mythbuster.
- Hymenal diameters might eventually be useful as a screening tool.
- Earlier exams are important but exams beyond 72/96 hours are just as important for documenting physical findings.
- The history is the key!

Thank you!