


	<h2 style="text-align: center;">Myths and Mimics of Child Abuse</h2> <p style="text-align: center;">Alicia Pekarsky, MD Assistant Professor of Pediatrics Child Abuse Referral and Evaluation Team Upstate Golisano Children's Hospital</p> <p style="text-align: center;">March 4, 2010</p> 

	<h2>Objectives</h2>
	<ul style="list-style-type: none">■ Differentiate between myths and findings that mimic abuse and findings that are suspicious for abuse.■ Discuss steps to improve the documentation of cases in order to facilitate review of the case by an expert.

	<h2>Myth</h2>
	<ul style="list-style-type: none">■ You can accurately date a bruise based on its color

	Truth
	<ul style="list-style-type: none"> ■ As a bruise heals it may exhibit many colors <ul style="list-style-type: none"> – Red, violet, black, yellow, green, brown ■ No predictable order or chronology of color progression

	Truth (in 1991)
	<ul style="list-style-type: none"> ■ A bruise with yellow in it is > 18 hrs ■ The other colors may appear from 1 hr after the injury until the resolution of the bruise ■ Bruises of identical cause and age on the same person may not appear the same <p style="font-size: small; margin-top: 10px;">Langlos and Bresham, 1991</p>

	Truth (today)
	<ul style="list-style-type: none"> ■ Timing of yellow bruising is unclear ■ Accuracy of physician determination is < 40% ■ Interobserver reliability is poor ■ Do NOT use color to date a bruise <p style="font-size: small; margin-top: 10px;">Maguire, et.al., 2005</p>

	<h3>Factors that affect the rate of bruise resolution</h3>
	<ul style="list-style-type: none"> ■ Amount of <ul style="list-style-type: none"> - extravasated blood - applied force - tissue damage ■ Vascularity and location of the tissue ■ Patient factors <ul style="list-style-type: none"> - Age - Skin color
	<small>Stephenson, 1997</small>

	<h3>Myth</h3>
	<ul style="list-style-type: none"> ■ The skin overlying a fracture is typically bruised in cases of abuse

	<h3>Truth</h3>
	<ul style="list-style-type: none"> ■ Peters, et.al. identified 192 children with inflicted skeletal fractures ■ Main outcome measure was presence of bruising and fracture in a single body region or extremity ■ 43.3% of children with skull fractures had associated bruising ■ 3.8% of children with tibia fractures → 16.7% of children with fibula fractures
	<small>Peters, et..al., 2008</small>

	<p>Bruising associated with fractures in child abuse</p>
	<ul style="list-style-type: none"> ■ Skull bone fractures are most frequently associated with bruising ■ Extremity and rib fractures are least associated with bruising ■ The absence of a bruise overlying a fracture does not decrease the likelihood of abuse <p><small>Peters, et..al., 2008</small></p>

	<p>Myth</p>
	<ul style="list-style-type: none"> ■ Sexual abuse is a common cause of genital bleeding

	<p>Truth</p>
	<ul style="list-style-type: none"> ■ Differential diagnosis of genital bleeding in a pre-pubertal child <ul style="list-style-type: none"> - Trauma - Genitourinary tract - Gastrointestinal tract - Dermatologic conditions - Infectious diseases - Oncologic processes

	Straddle Injuries
	<ul style="list-style-type: none">■ Accidental injury to the midline ano-genital structures■ Occur when a child straddles a firm object as he/she falls■ Compression of soft tissues against bones in pelvic outlet

	Straddle Injuries
	<ul style="list-style-type: none">■ Most cause damage to the soft tissues overlying the pubic symphysis, the labia, as well as the posterior fourchette and perineum.■ Compared with injuries caused by abuse, straddle injuries are often unilateral.■ They usually only cause damage to the external genitalia.

	Straddle Injuries
	<ul style="list-style-type: none">■ Because the hymen is recessed within the labia, accidental hymenal injury generally requires an object to penetrate through the labia to the more internally located hymen.■ Scrutinize the child and the caregiver's history in this type of case.

Suspicious Straddle Injuries

- Extensive trauma
- Non-ambulatory child
- Coexisting non-genital trauma
- Lack of correlation between history and physical findings

Dowd, et.al., 1994

Lichen Sclerosus et Atrophicus

- Initial lesions are white or yellow papules
- Lesions coalesce to form plaques
- Skin becomes atrophic
 - Predisposition to hemorrhage after minor trauma

Lichen Sclerosus et Atrophicus

- Typically occurs on the vulva and perianal region, producing a characteristic hourglass or "figure of 8" appearance.
- Might not be as apparent in very fair skinned individuals, which makes the diagnosis difficult.

Lichen Sclerosus et Atrophicus

- Most common symptoms
 - pruritus and soreness
- Fissures can cause pain or become infected
- Can cause labial adhesions in girls and phimosis in boys

Poindexter and Morrell, 2007

Urethral Prolapse

- Protrusion of the urethra through the external meatus
- Bleeding, pain, dysuria
- Most common in pre-pubertal black girls

Urethral Prolapse

- Use a cotton-tipped swab to elevate the potentially prolapsed urethra to expose the hymen in order to confirm that the rest of the anatomy is normal.

	<h2 style="margin: 0;">GABHS Anogenital Infections</h2>
	<ul style="list-style-type: none"> ■ Auto-inoculate by manual transfer ■ Vaginitis/Balanitis: erythema, edema, discharge ■ Perianal: erythema, edema, pruritus ■ Usually no fever <p style="font-size: small; margin-top: 10px;">Kokx, et.al., 1987</p>

	<h2 style="margin: 0;">Perianal GABHS</h2>
	<ul style="list-style-type: none"> ■ Group A Strep that is transmitted to the perianal area can cause extreme pruritus, which can cause more erythema and edema.

	<h2 style="margin: 0;">Myth</h2>
	<ul style="list-style-type: none"> ■ A colposcope is necessary for a sexual assault examination

	Colposcope
	<ul style="list-style-type: none">■ A colposcope is a piece of equipment that is used for illumination and magnification.■ It is usually attached to a computer where digital images can be stored for documentation purposes.

	Truth
	<ul style="list-style-type: none">■ A colposcope is helpful, but not necessary■ Can use other light sources<ul style="list-style-type: none">– Otoscope or flashlight■ Need to document your findings<ul style="list-style-type: none">– Camera or drawing

	Myth
	<ul style="list-style-type: none">■ Victims of sexual abuse usually have physical exam findings

	Truth
	<ul style="list-style-type: none">■ Findings are extremely rare<ul style="list-style-type: none">– Elasticity of the tissue– Duration of time since abuse– Many acts of abuse are not physically traumatic <p>Kellogg, 2005</p>

	Myth
	<ul style="list-style-type: none">■ Some girls are born without hymens

	Truth
	<ul style="list-style-type: none">■ 1,131 female neonates were examined prior to discharge from the nursery■ All had hymens <p>Jenny, et.al., 1987</p>

	Myth
	<ul style="list-style-type: none">■ Females are born with an “intact” hymen

	Truth
	<ul style="list-style-type: none">■ The hymen is a ring of tissue at the orifice of the vagina■ Various configurations:<ul style="list-style-type: none">– Annular, crescent, fimbriated, septate, cribriform and imperforate

	Annular Hymen
	<ul style="list-style-type: none">■ An annular hymen is hymenal tissue in a complete annular ring around the vaginal opening.

	Crescent Hymen
	<ul style="list-style-type: none"> ■ In the supine position, the anterior portion of a crescent hymen lacks tissue, while the posterior portion has a thin crescent rim of tissue. ■ The main difference between this and an annular hymen is that a crescent hymen lacks tissue under the urethra.

	Fimbriated Hymen
	<ul style="list-style-type: none"> ■ Fimbriated hymens are seen in pubescent girls and older, secondary to the effects of estrogen. ■ Fully fimbriated hymens have lots of redundant tissue.

	Septate Hymen
	<ul style="list-style-type: none"> ■ With a septate hymen there a thin band of tissue extending across the vaginal opening. ■ Passing a q-tip from side to side behind the band of tissue can confirm that it is a septate hymen, not a vaginal septum, which could indicate a duplicated GU system.

	Cribiform Hymen
	<ul style="list-style-type: none"> ■ A cribiform hymen has multiple, small perforations. ■ This type of the hymen is much less common than the other variants.

	Imperforate Hymen
	<ul style="list-style-type: none"> ■ At birth, the central portion of the hymenal membrane is typically absent. This is a consequence of normal embryology. ■ Persistence of the central portion of the hymen results in an imperforate hymen.

	Hematocolpos
	<ul style="list-style-type: none"> ■ Patients with imperforate hymens must undergo surgical incision. ■ If they don't, they will develop hematocolpos, which is an accumulation of menstrual blood behind the hymen. ■ Some girls will report symptoms of cyclic, crampy abdominal pain that is consistent with menses.

	<p>Cutaneous Mimics of Child Abuse</p>
	<ul style="list-style-type: none"> ■ Non-inflammatory conditions ■ Inflammatory conditions ■ Cultural practices

	<p>Dermal Melanosis</p>
	<ul style="list-style-type: none"> ■ Slate grey or blue macules/patches ■ Typically over the lumbo-sacral spine and buttocks ■ Predominantly in black, Asian and Hispanic babies

	<p>Patient KA</p>
	<ul style="list-style-type: none"> ■ Document all skin findings, including normal variants, during routine exams. ■ The finding looked like Mongolian spots. However, it could have been bruising from inflicted trauma. ■ Upon review of her medical records, we found a note that had identified these same lesions several months prior.

	Patient KA
	<ul style="list-style-type: none"> ■ Having this documentation is extremely important in order to provide timely information to Child Protective Services. ■ In the absence of documentation of Mongolian spots on a prior visit, you might have to wait a couple of weeks to see if the lesions resolve. ■ If the lesions were inflicted, the child may be abused again before you make a determination and report this to CPS.

	Nevus Flammeus
	<ul style="list-style-type: none"> ■ Vascular cutaneous markings create discrete areas of erythema. ■ These marks occur on the head and are highly visible. ■ They have a very classic appearance. ■ The color changes with Valsalva maneuver. ■ They blanch if stretched.

	Striae
	<ul style="list-style-type: none"> ■ Striae can be distinguished by their orientation along Langer lines and their symmetrical distribution. ■ Langer lines mean that the long axis of the lesion is parallel to the lines of skin tension.

	Striae
	<ul style="list-style-type: none"> ■ Newer striae that are still pink to erythematous can be even more difficult to differentiate from inflicted trauma. ■ A characteristic location for boys is the lower back.

	Impetigo
	<ul style="list-style-type: none"> ■ The most frequent mimic of child physical abuse ■ Honey-colored crust ■ <i>Streptococcus pyogenes</i> and <i>Staphylococcus aureus</i> ■ Spreads if untreated <p>■ Wheeler and Hobbs, 1988</p>

	Impetigo
	<ul style="list-style-type: none"> ■ Lesions have a thin yellow crust and can be different sizes. ■ If the same cigarette is used "on end" to burn someone's skin, the lesions will be the same size or close to the same size every time.

	<h3>Cigarette Burns</h3>
	<ul style="list-style-type: none"> ■ Vary from circular bullae to deep, punched out craters with raised edges ■ Center of the burn typically the deepest ■ 8 mm in diameter ■ Document the dimensions of the lesions using a tape measure. ■ Photo document the lesions or draw with dimensions

	<h3>Laxative Induced Dermatitis</h3>
	<ul style="list-style-type: none"> ■ Child ingests laxative ■ Laxative produces diarrhea ■ Senna in diarrhea causes the dermatitis <p style="font-size: small; margin-top: 10px;">Leventhal, et.al., 2001</p>

	<h3>Laxative Induced Dermatitis</h3>
	<ul style="list-style-type: none"> ■ Desquamating lesions over the buttocks with some sparing over the perianal area ■ Creates the appearance of an intentional immersion burn ■ Diagnosis is based upon a careful history

	<h2 style="margin: 0;">Phytophotodermatitis</h2>
	<ul style="list-style-type: none"> ■ Inflammation of the skin caused by the interaction of UV light and psoralens ■ Limes, lemons, oranges, figs, celery, parsley, carrots and several flowers <p style="font-size: small; margin-top: 10px;">Hill, et.al., 1997</p>

	<h2 style="margin: 0;">Phytophotodermatitis</h2>
	<ul style="list-style-type: none"> ■ Erythematous skin or even bullous lesions in the shape of the contact ■ While handprints and other patterned lesions are suspicious for child abuse, it is extremely unlikely that a contact burn in the shape of hand could be inflicted.

	<h2 style="margin: 0;">Phytophotodermatitis</h2>
	<ul style="list-style-type: none"> ■ Several days prior girl had tried on perfume that had Bergamot in it. ■ One day prior to presentation, her mother noticed bullae on either side of her neck. ■ On the day of presentation, the skin had begun to ulcerate.

	<h3>Cold (Popsicle) Panniculitis</h3>
	<ul style="list-style-type: none"> ■ Characterized by inflammation of the subcutaneous fat after exposure to cold ■ Most often seen in infants and young children who suck ice or popsicles

	<h3>Constriction Bands</h3>
	<ul style="list-style-type: none"> ■ Marks on the legs of a 2-month-old infant looked like ligature marks. ■ Evaluation of the baby's clothing revealed tight elastic socks that matched the location of the lesions exactly.

	<h3>Cultural Practices</h3>
	<ul style="list-style-type: none"> ■ Some are treated as child abuse in our culture <ul style="list-style-type: none"> – Female genital mutilation ■ Some are considered acceptable treatment in our culture ■ Must know how the community has treated prior cases
	<small>Look and Look, 1997</small>

	<h2>Female Genital Mutilation</h2>
	<ul style="list-style-type: none">■ Considered to be a form of abuse in the US■ Procedures that alter female genital organs for non-medical reasons■ Practiced globally■ Important issue here due to immigration
	<small>WHO Categories for Female Genital Mutilation, 1995</small>

	<h2>Female Genital Mutilation</h2>
	<ul style="list-style-type: none">■ Type 1: clitoridectomy■ Type 2: excision■ Type 3: infibulation■ Type 4: other
	<small>WHO Categories for Female Genital Mutilation, 1995</small>

	<h2>Coin Rubbing (Cao Gio)</h2>
	<ul style="list-style-type: none">■ Warm oil is applied to the skin■ Coin is vigorously rubbed on skin■ Stripes of petechiae in a geometric pattern
	<small>Hulewicz, 1994</small>

Coin Rubbing

- Practiced widely throughout SE Asia.
- If you see a pattern such as this one in an individual who is NOT from this region, at least consider abuse.

Cupping

- Heated cup is placed against skin
- Trapped air cools and contracts
- Suction creates a confluence of petechiae

Look and Look, 1997

Moxibustion

- Chinese medical practice
- Burn small amounts of herbs near acupuncture points
- Direct vs Indirect

Look and Look, 1997

	<h2 style="margin: 0;">Moxibustion</h2>
	<ul style="list-style-type: none"> ■ In one form of indirect moxibustion, a needle is inserted into an acupoint. ■ Tip of the needle is wrapped in moxa and ignited. ■ After the desired effect is achieved, the moxa is extinguished and the needle(s) removed. ■ Currently the more popular form since there is a much lower risk of pain and burning.

	<h2 style="margin: 0;">Failure of Midline Fusion</h2>
	<ul style="list-style-type: none"> ■ Congenital midline defect ■ Failure of fusion <ul style="list-style-type: none"> – Can extend from fossa navicularis to anus – Isolated defects of the anal verge are most often confused with abuse ■ Skin bordering the defect is smooth <p style="font-size: small; margin-top: 10px;">Adams and Horton, 1989</p>

	<h2 style="margin: 0;">Pseudoverrucous Papules</h2>
	<ul style="list-style-type: none"> ■ Moist, round, flat topped lesions ■ Multiple, each < 1 cm in diameter, located in the urogenital region ■ Related to prolonged contact of skin with urine or stool <p style="font-size: small; margin-top: 10px;">Marton and Haney, 2008</p>

	<h3 style="margin: 0;">Pseudoverrucous Papules</h3>
	<ul style="list-style-type: none"> ■ Tend to be approximately the same size. ■ HPV lesions vary in size. ■ Pseudoverrucous papules present with pain. ■ HPV tends to present more frequently with pruritus.

	<h3 style="margin: 0;">Key Points</h3>
	<ul style="list-style-type: none"> ■ Bruises cannot be dated accurately ■ Skin overlying extremity/rib fractures is usually not bruised in abuse ■ PE findings are rare in sexual abuse ■ All females are born with a hymen ■ Hymens have a variety of normal configurations, but should not be referred to as "intact"

	<h3 style="margin: 0;">Take Home Messages</h3>
	<ul style="list-style-type: none"> ■ Document your exam, including normal findings ■ Consider the mimics of physical and sexual abuse ■ If unsure, ask for a child abuse consultation (and consider calling Child Protective Services)

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	<p>Child abuse is the largest hidden epidemic in our country.</p>
