Child Abuse

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Objectives

- common patterns of Child Abuse
- Need for Early Diagnosis, Management and Reporting of cases
- Look at the practitioner's role as patient advocate in such cases

What is Child Abuse?

- **Physical child abuse** may be broadly defined as **injury inflicted on a child by a parent or caretaker**.
- Specific definitions vary widely among countries, different ethnic and religious groups

What is Child Abuse?

- The US Child Abuse Prevention and Treatment Act (**CAPTA**), defines child abuse as any act or failure to act:
  - Resulting in death, physical or emotional harm, sexual abuse, or exploitation; or imminent risk of serious harm
  - Involving a child under the age of 18 years
  - By a parent or caretaker responsible for the child's welfare

Types of Child Abuse – 1995 Study

- Neglect 52%
- Physical abuse 25%
- Sexual abuse 13%
- Emotional disconnect 5%
- Medical neglect 3%

Recognizing NAT

- Easy to recognize child with NAT **Myth**
- Unrecognized and discharge to home – 25% risk of serious injury, 5% risk of death

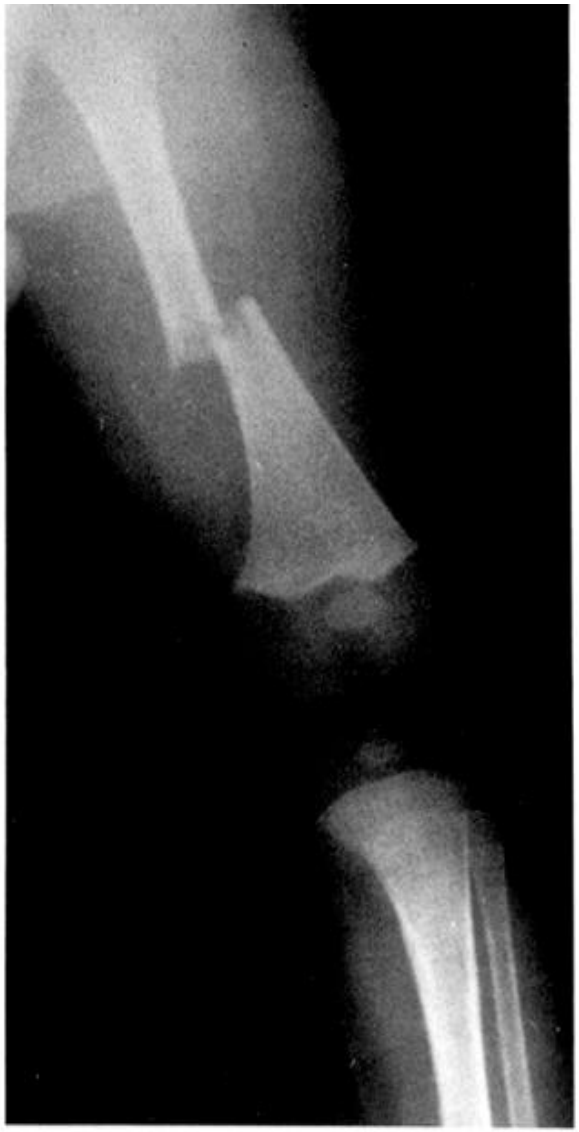


FIG. 3. Third most common type: femur, transverse, middle third.

Child Abuse – Epidemiology

- >1 million victims/year
- >1,200 deaths/year
- # 2nd most common presentation
- **50% < 7 yrs old, 26% < 4 yrs old**
- Most maltreated children abused by birth parents
- 50% involve substance abuse

Case Study 1: “Unresponsive”

- 9 Mo girl found “unresponsive at home”
- The pregnancy and delivery uncomplicated.
- Divorced working Mother of 2 children aged 8 years and 9 months
- Was with Maid. When the mother returned from work, she found the infant unresponsive in the crib.
- The infant had been irritable in the afternoon, according to the maid.

Case Study 1: “Unresponsive”

- A: Unresponsive to voice, eyes staring, decreased muscle tone, weak cry to pain
- B: Shallow respirations, grunting,
- C: Pink, good pulse

Vital signs:

- HR 156, RR 20, BP 74/56, T 36.4°C, O_2 sat 94%

- **PAT:?**

Question

What is your general impression of this patient?

- Primary CNS dysfunction
- Signs of respiratory distress
- ? Signs of shock

Initial Assessment

A: Blood drooling from mouth; no stridor

B: Shallow, good air entry

C: Capillary refill <2 sec

D: Unresponsive, pupils 5 mm, nonreactive, extremities flaccid

E: Bruises noted on cheeks, buttocks, and left thigh

General Impression

What is your Differential Diagnosis?
What are your initial management priorities?

Differential Diagnosis?

- Seizure disorder
- Hypoglycemia
- Sepsis
- Poisoning
- Other brain injury:
  - AV malformation
  - Tumor
  - Metabolic insult
- Non-Accidental Trauma

Management Priorities?

Initial Management Priorities
(1 of 2)

- Follow ABC's of Resuscitation : Focus on Neuro-Resuscitation

Diagnostic Studies?

Diagnostic Studies (1 of 2)

- Laboratory:
  - CBC, differential, smear
  - Consider blood culture if concerned about sepsis
  - Electrolytes, glucose
  - Liver functions (AST, ALT, lipase, amylase)
  - PT, PTT, bleeding time
  - pCO_2
  - Urinalysis

Diagnostic Studies (2 of 2)

- Radiology:
  - CT scan head +/- MRI
  - CT scan of abdomen if suspicious of abdominal trauma
  - Chest X-ray to verify position of ETT and to identify rib fractures
  - Skeletal survey
- Bone Scan
- MRI/MRA of the Head and Neck
- Ophthalmology Exam
- Genetics/Dysmorphology Consult

Case Progression/Outcome

- Initial stabilization
- CT scan of head shows subdural and subarachnoid bleed with multiple small intraparenchymal bleeds and significant cerebral edema.
- Neurosurgery consulted.
- Child transferred to PICU.
- Child protection authorities notified.
- Child died 48 hrs following admission to PICU.
- Maid charged with manslaughter

Final Diagnosis

- Shaken Infant Syndrome
- Shaken Infant Impact Syndrome

Background

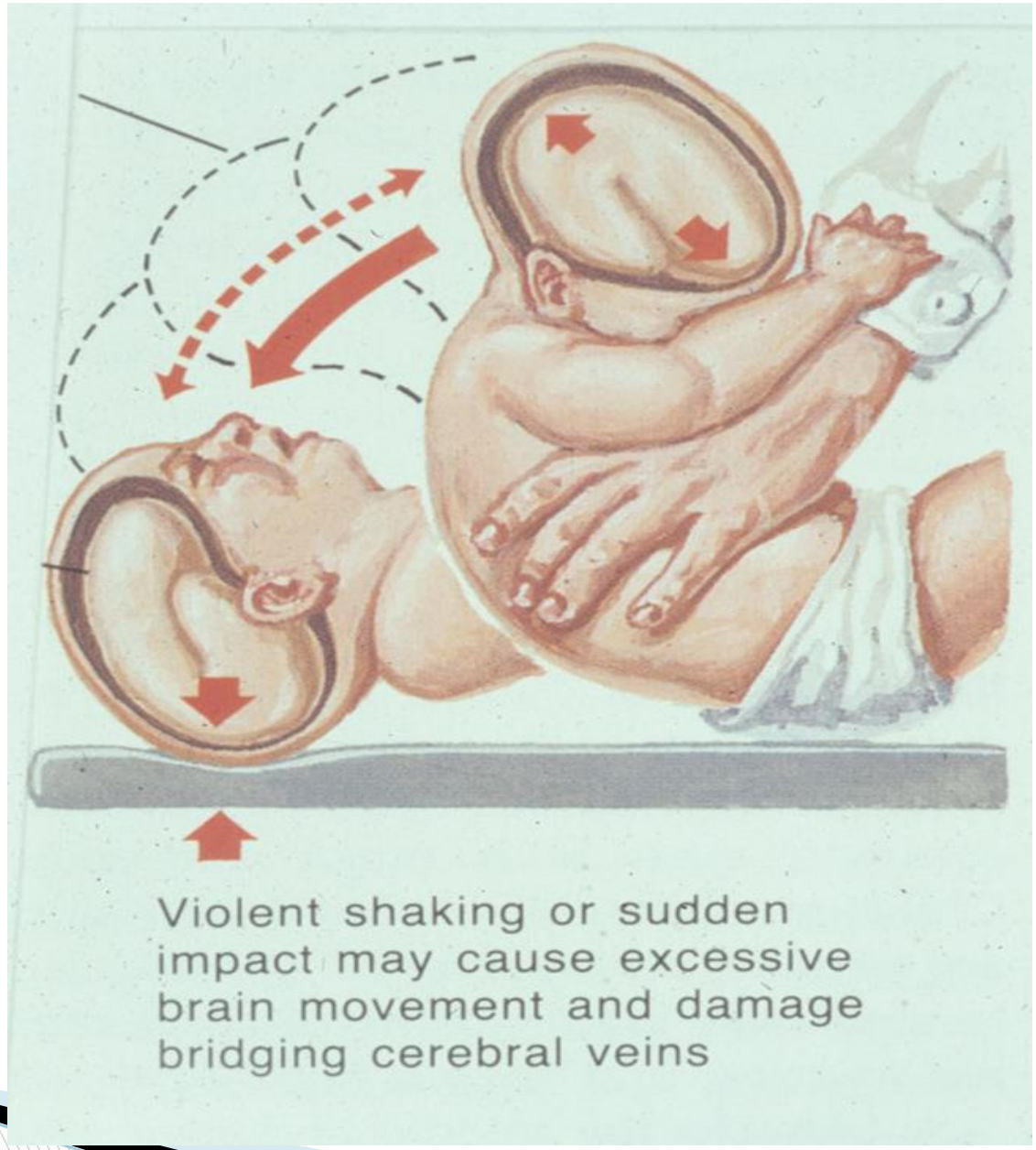
- Head injury is the commonest cause of death of pediatric abuse.
- Average age of abusive head trauma is 5-10 months.

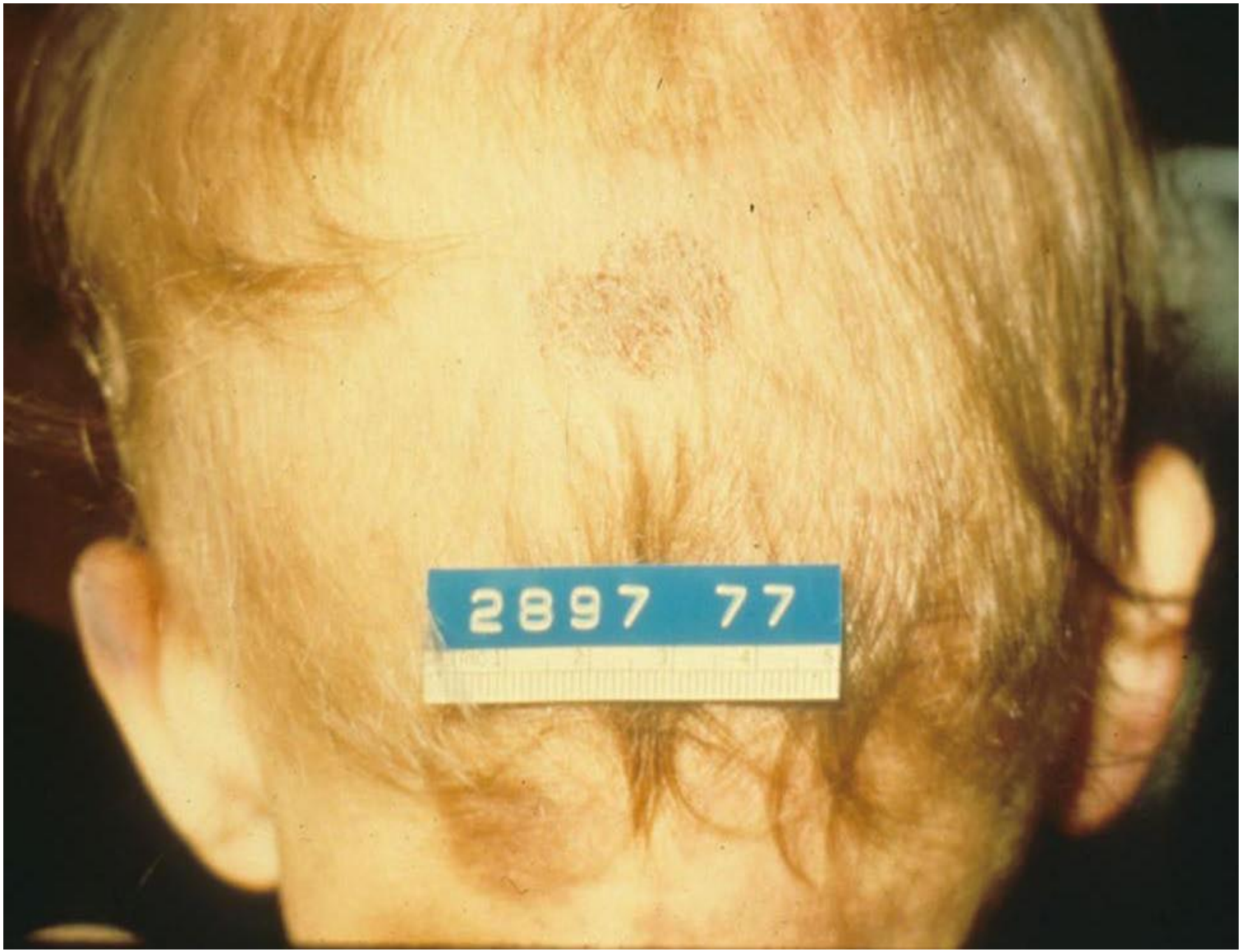
Clinical Features: First Clue

- Nonspecific symptoms: Respiratory complaints, poor feeding, vomiting, irritability, lethargy, seizures, or minor trauma
- Severity of Trauma is inconsistent with accidental injury
  - Short falls – local deformity of the skull and linear skull fractures with small underlying epidural or subdural collections.
- Complex skull fractures, severe brain injury, or death suspicious

Mechanisms of Injury

- “Whiplash” shaking head movement
  - Shearing forces to brain parenchyma and intracranial vessels bridging the subdural space
- Violent impact of infant’s head on firm surface
  - Abrupt deceleration of the head
  - External evidence of the impact is usually absent


Violent shaking or sudden
impact may cause excessive
brain movement and damage
bridging cerebral veins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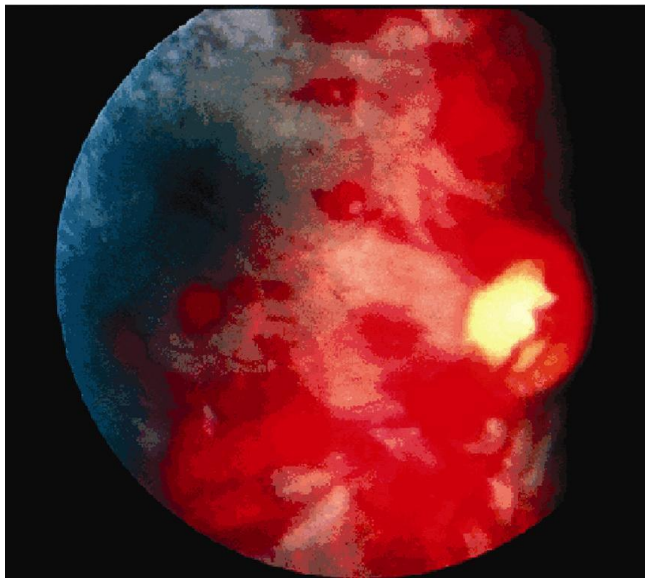
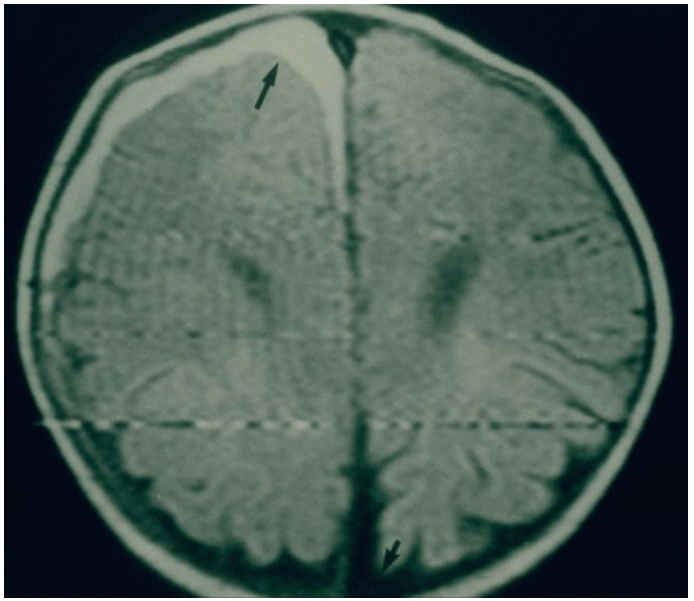
Associated Clinical Features:

- Retinal hemorrhages:
  - Multiple and diffuse
  - Extend to ora serrata
  - Preretinal, vitreous, subretinal
- Pathognomonic for abusive head trauma.



CT Scan Head Findings

- Subdural hematoma
- Subarachnoid hemorrhage
- Intraparenchymal hemorrhage/contusion
- Cerebellar injury



Case Study 2: “Bruises”

- 3-year-old boy brought to ED for Fever
- Nurse in triage notes bruises on face, neck, and left ear
- Parents say child is very active and has frequent falls.
- Previous visits to ED for head trauma and fractured mid-shaft radius.
- Toddler is active, has no increased work of breathing, and skin is pink.

Case History

- Mother explains that bruises occurred one week ago when she was at work and child was left in the care of the father.
- According to father, child had an unwitnessed fall off a tricycle.
- Child says that he does not remember how bruises occurred.

Case History

- Mother explains that bruises occurred one week ago when she was at work and child was left in the care of the father.
- According to father, child had an unwitnessed fall off a tricycle.
- Child says that he does not remember how bruises occurred.

Would you suspect NAI?

Which Children are at Risk of Abuse?

Children at Risk of Abuse

- Infants and preverbal children
- Preterm, First Born
- Children with chronic disease
- Children with disabilities
- Socially isolated infants
- Chemically dependent caregiver
- Domestic violence
- Poverty
- Single Parents
- Broken Homes

Approach-Detailed History

- Name, address, phone number of the child, parent and alleged perpetrator
- Chronologically detailed injury history separately from each caregiver.
- Focus on unusual aspects of history:
  - History inconsistent with physical findings
  - Discrepancy between stories
  - Injuries attributed to young sibling
- General medical history (Past and Present)

Obtain Complete History

- Social History:
  - Identifying household members, domestic violence, substance abuse in the household,
  - prior or current involvement with child protective services and/or police
- Behavioral history:
  - Change in emotional/behavioral status,
  - learning problems, school problems

Historical Red Flags

- Minor mishap associated with major injury
- History inconsistent with developmental capability of child
- Delay in obtaining medical care
- History of inter-generational violence

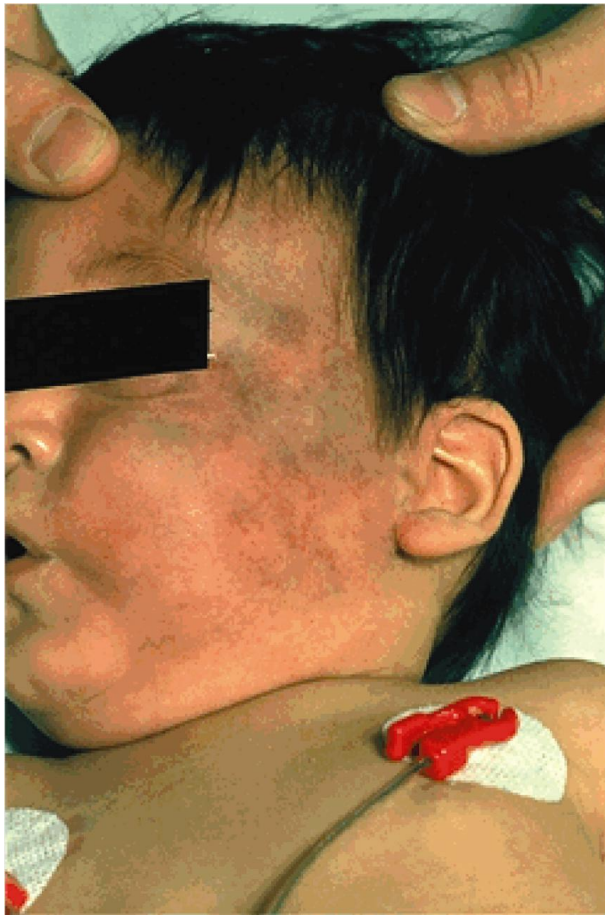
Approach–Detailed Physical Exam (1 of 2)

- Note child's interaction with caregiver? does the child avoid caregiver? Is the caregiver affectionate and concerned, towards the child?
- FTT: Height, weight, head circumference
- Ear, nose, throat, neck: For evidence of injuries
- Expose Fully for complete exam looking for injuries
- Note details of each injury (written description and drawings)
- Consider photography with a ruler and color wheel (for color standardization)

Approach – Detailed Physical Exam (2 of2)

- Chest: deformities/bruising/marks
- Abdomen:
  - Bruising/marks
  - Distention/tenderness/bowel activity
- Perineum:
  - Bruising to genitalia/buttocks
  - Scars/Skin tags
- Complete CNS exam

Can You Identify the Red Flag?



Background: Color and Age of Bruising

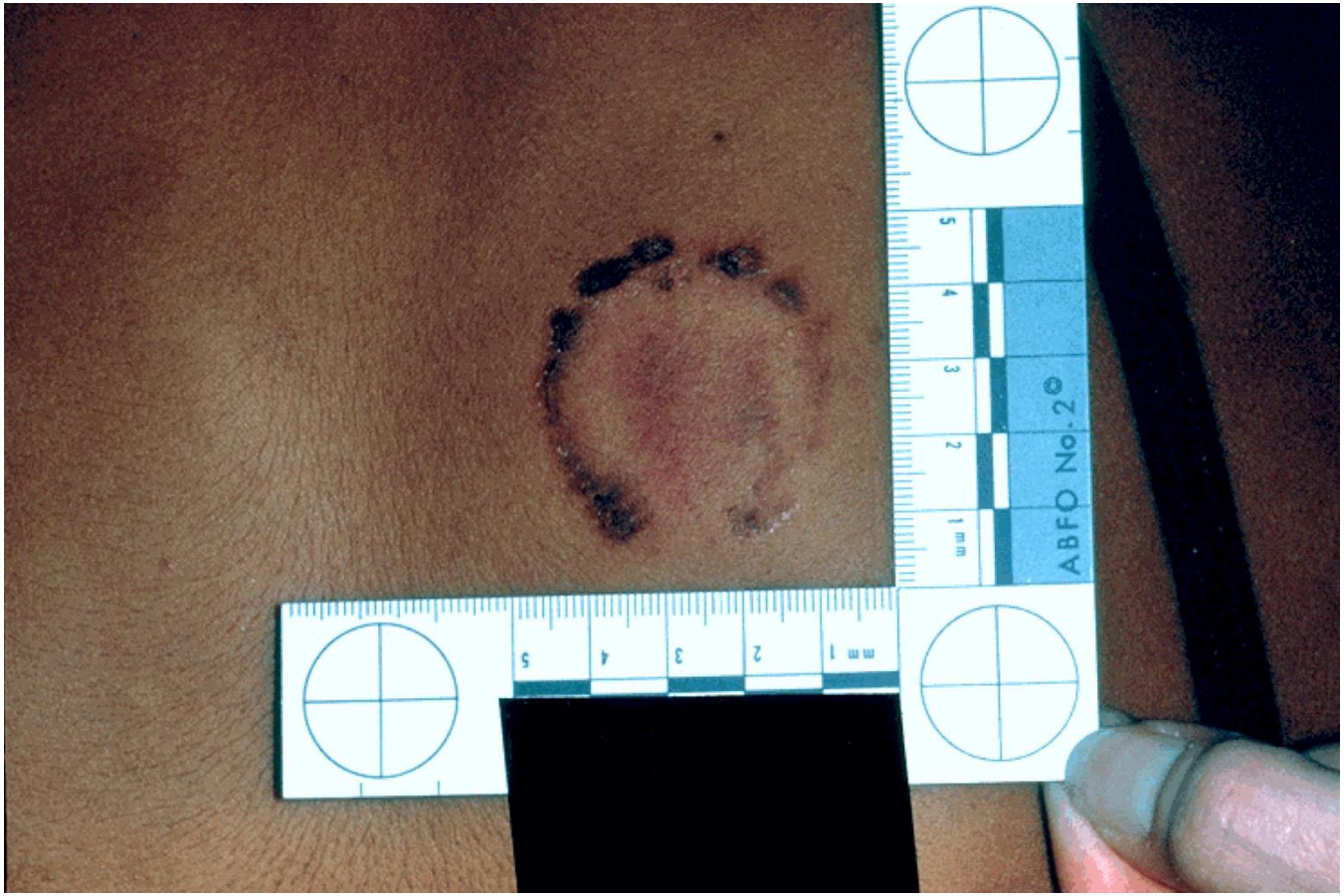
TABLE 10-1 Langlois and Gresham: The Color and Age of Bruising*

Color	Age
Blue, purple, or black	From 1 hour to resolution
Yellow	Older than 18 hours
Red	Indeterminate

Bruises From NAI

- The **buttocks and lower back** (from paddling)
- **Genitalia** and inner thighs (punishment for toilet training accidents)
- **Cheeks** (slapping or grabbing)
- Upper lip and **frenulum** of the tongue (forced feeding or bottle jamming)
- **Neck** (from strangulation)
- **Ear lobes/pinnae** (from boxing, pinching, and slapping)

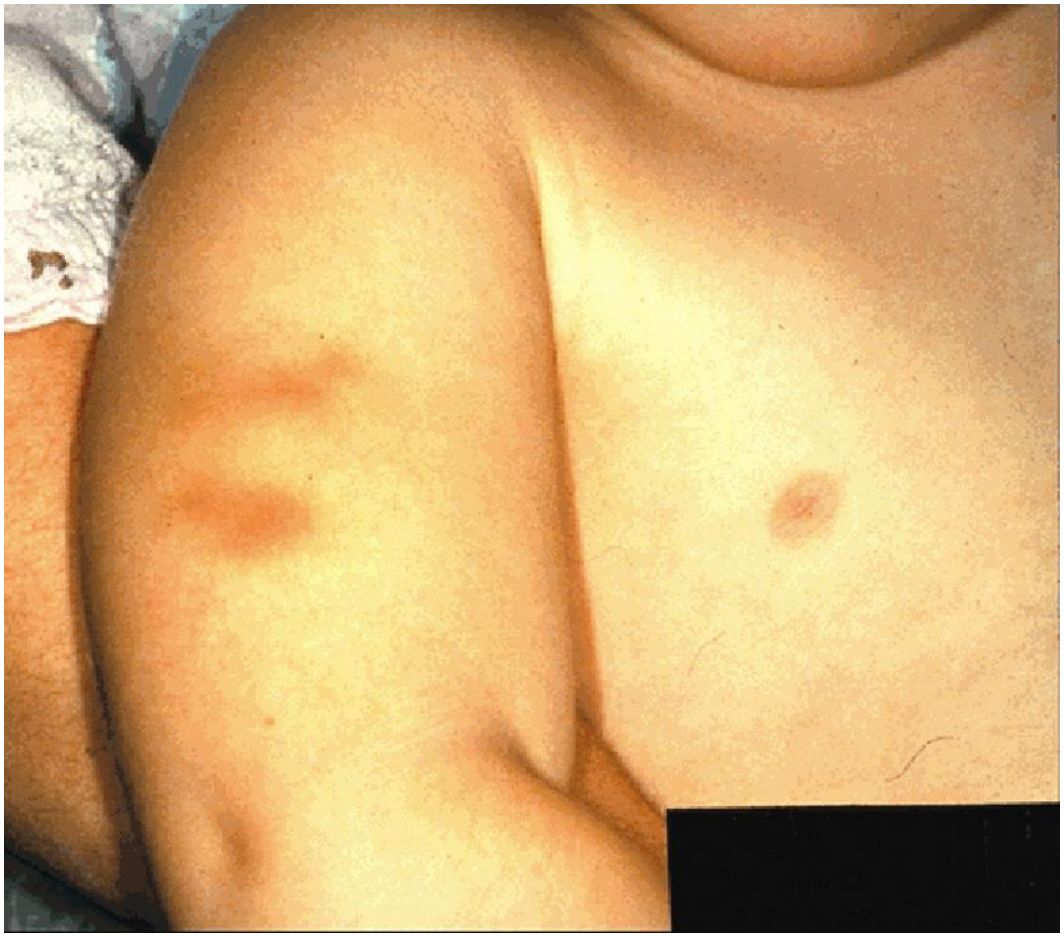
What is Your Impression? (1 of 7)



Bites

- An incomplete bite –short linear pattern.
- A complete bite – elliptical outline with central bruising.
- Measure the width between maxillary canine teeth. A width >3 cm corresponds to adult bite.

What Is Your Impression? (2 of 7)



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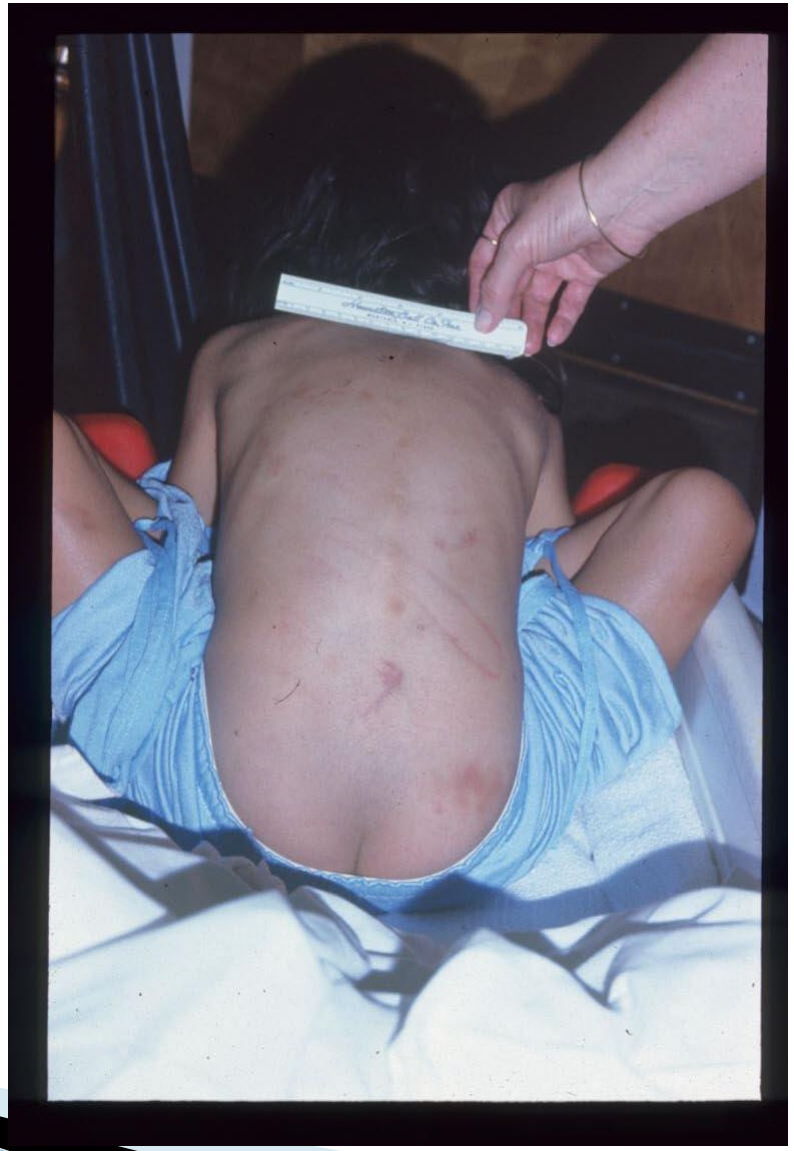

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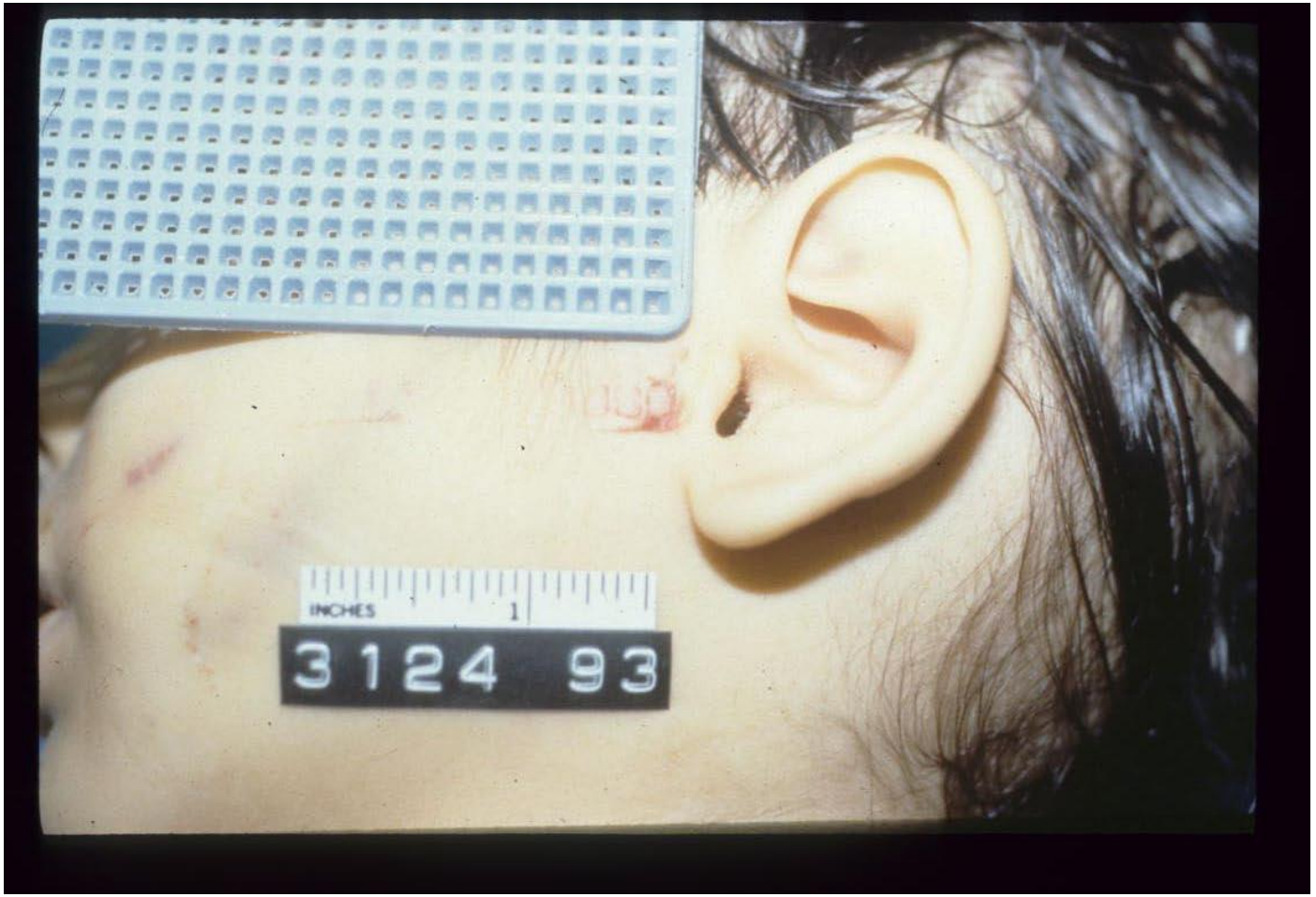

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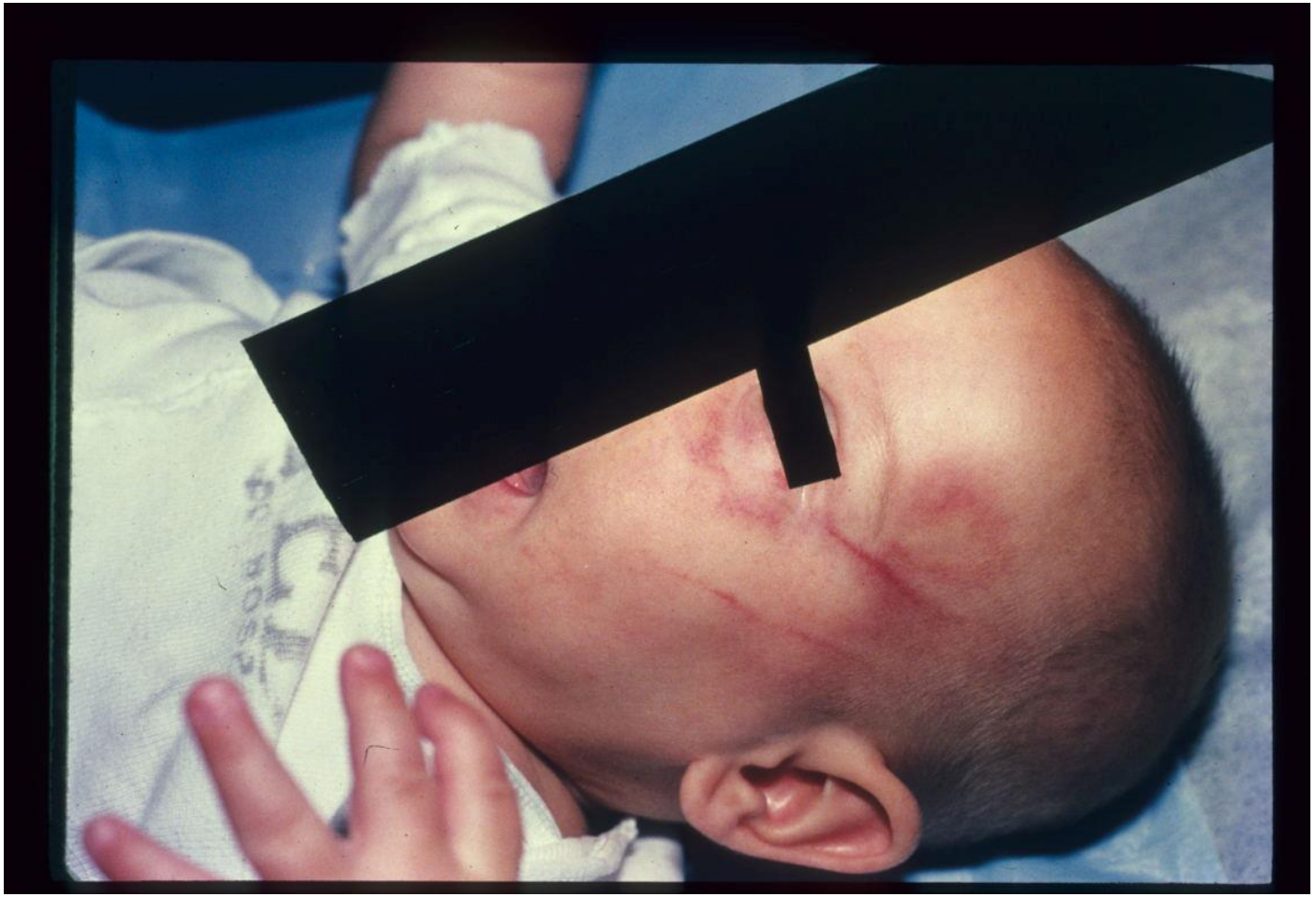
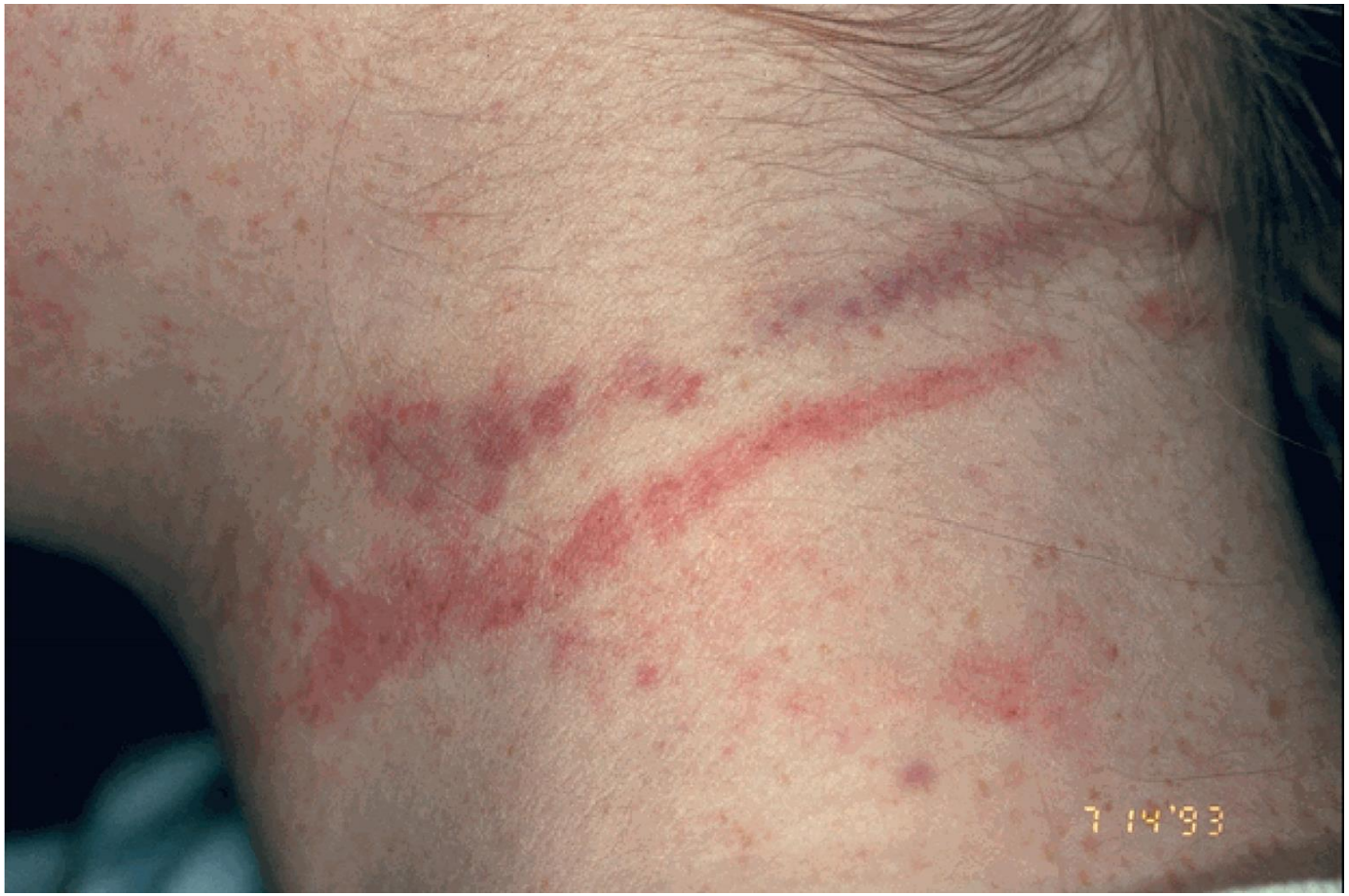


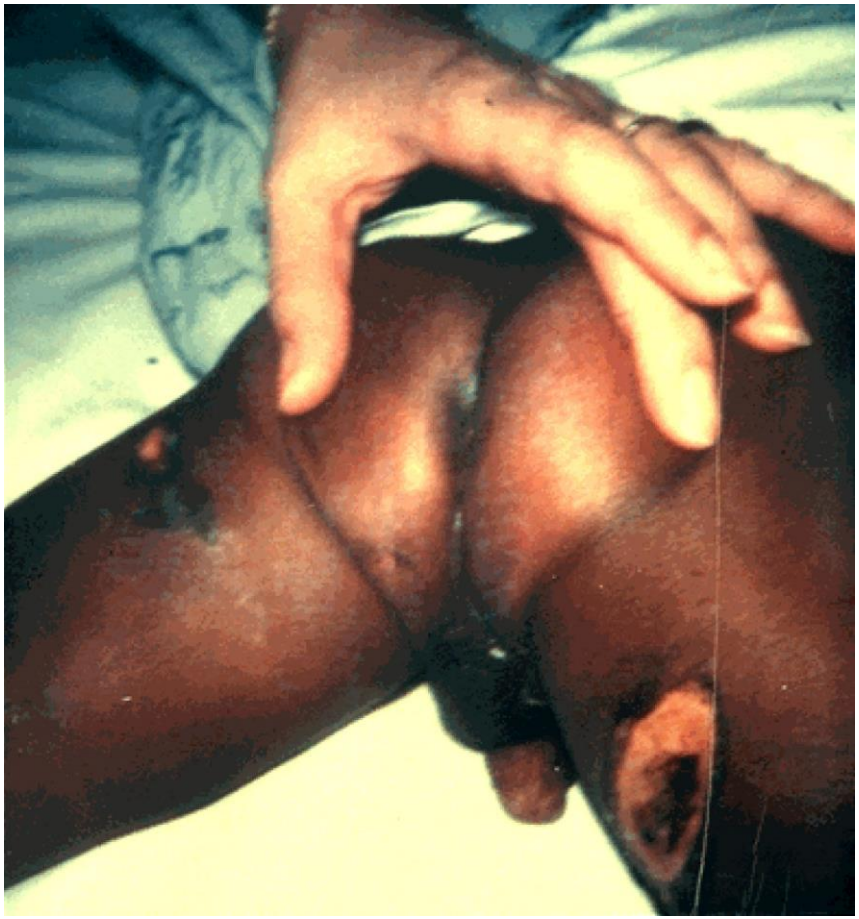
What Is Your Impression? (6 of 7)



Imprint Injuries

- Human hand and fingertip marks can appear as oval bruises, pinch marks as linear marks from the fingers, or
- Outlines of handprints/fingers.
- Belt marks/ Spoon marks/Chain Marks

What is your impression? (1of 5)



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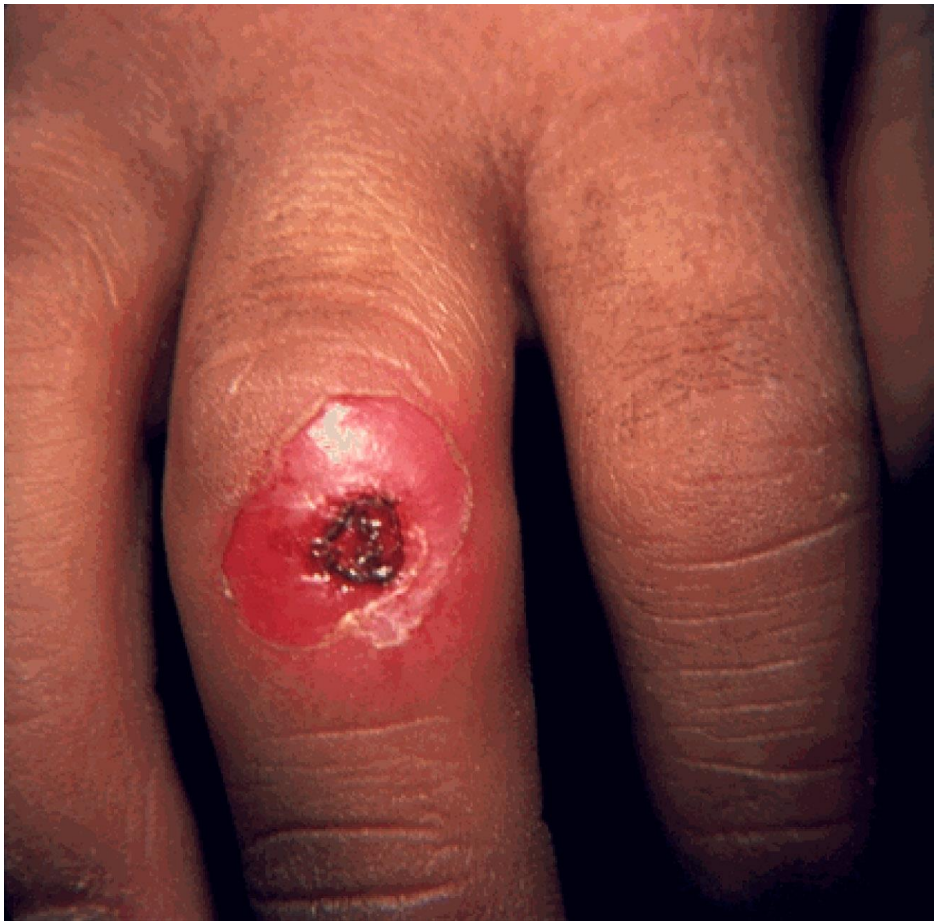

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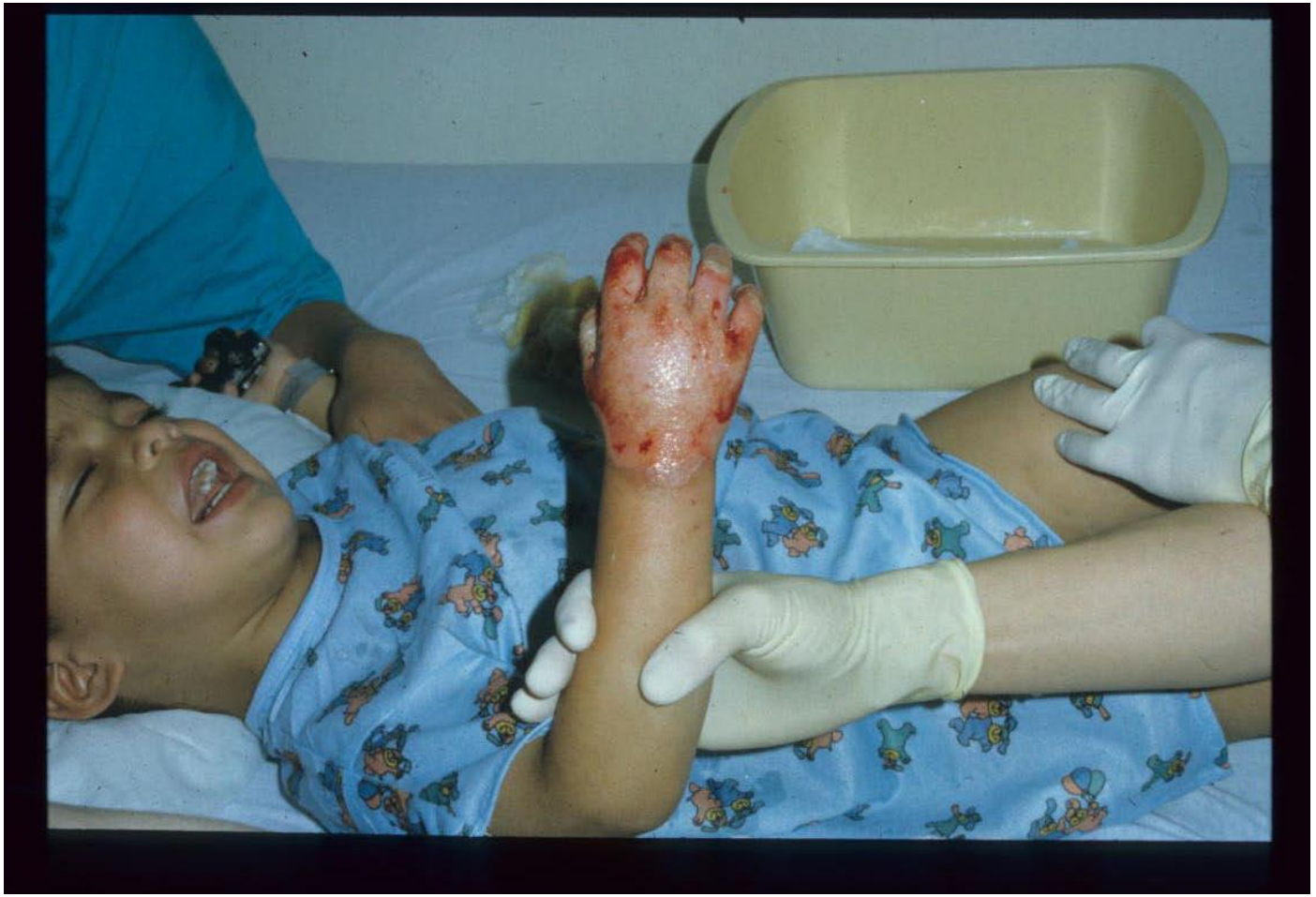

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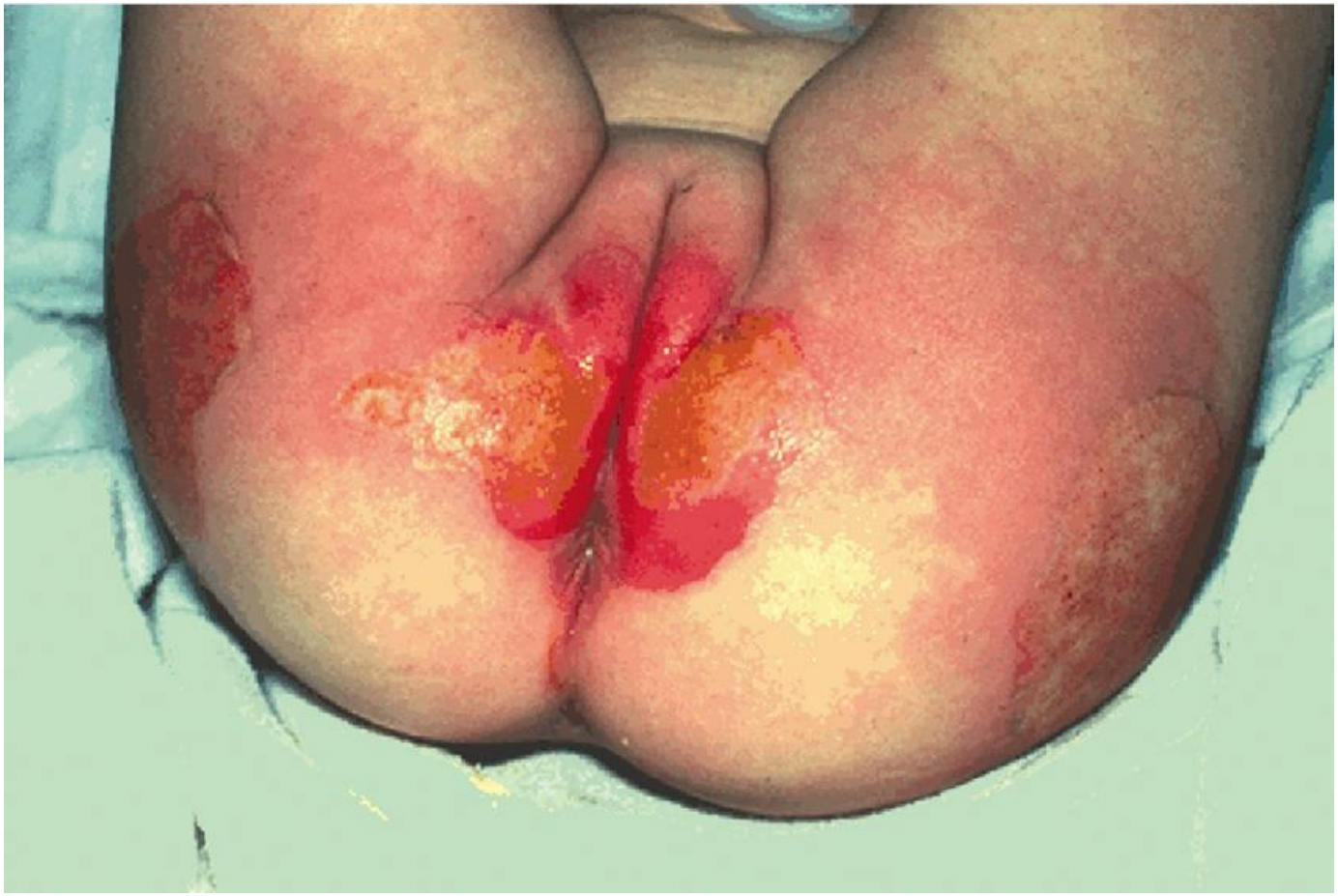

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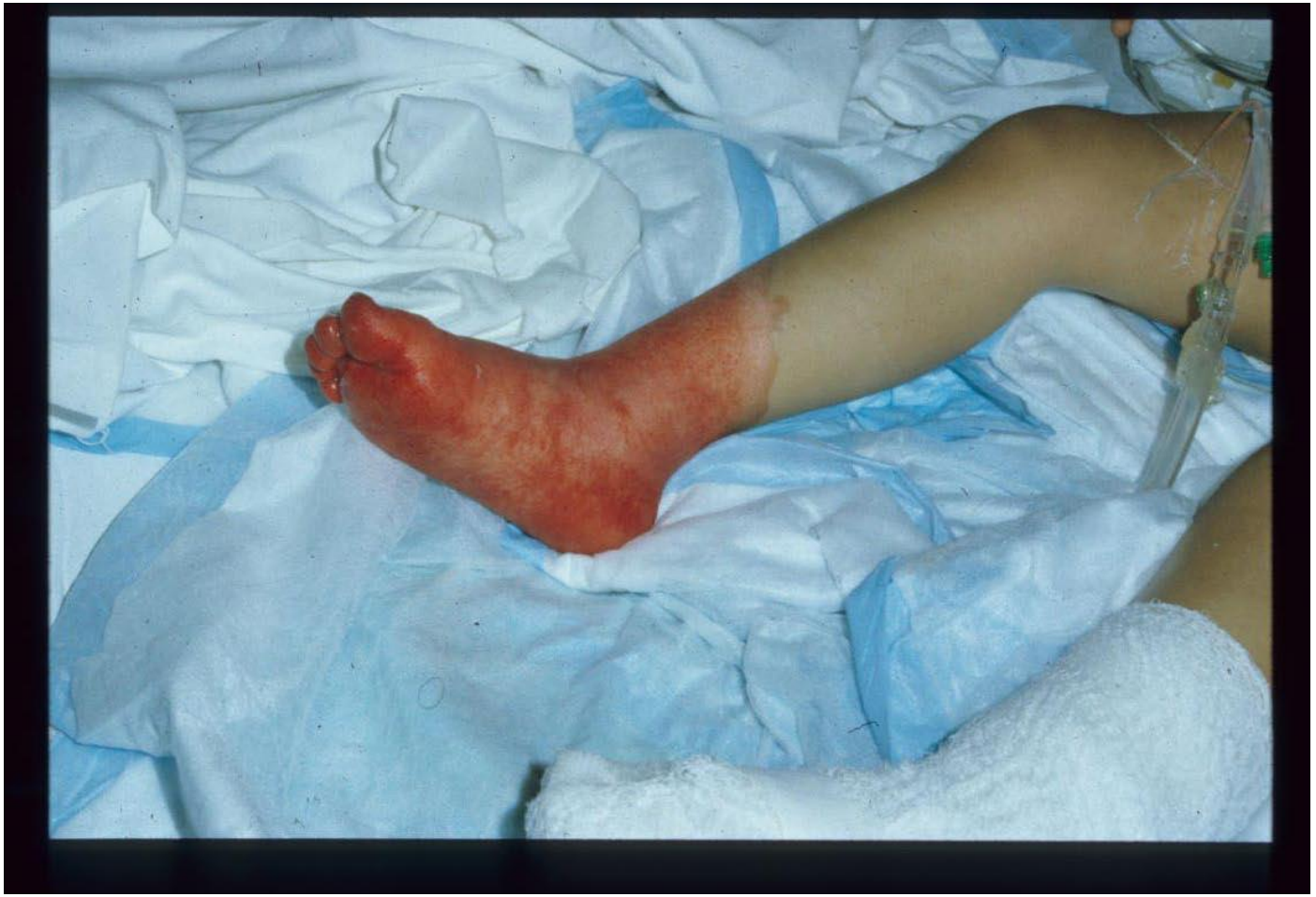
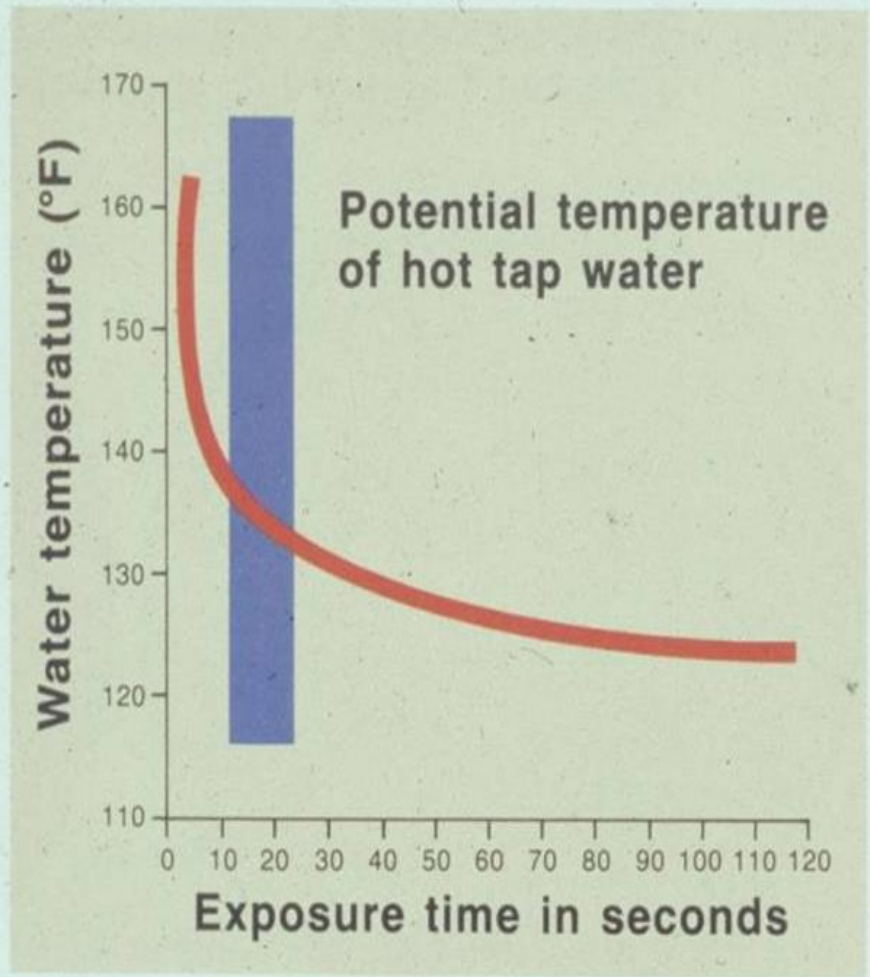
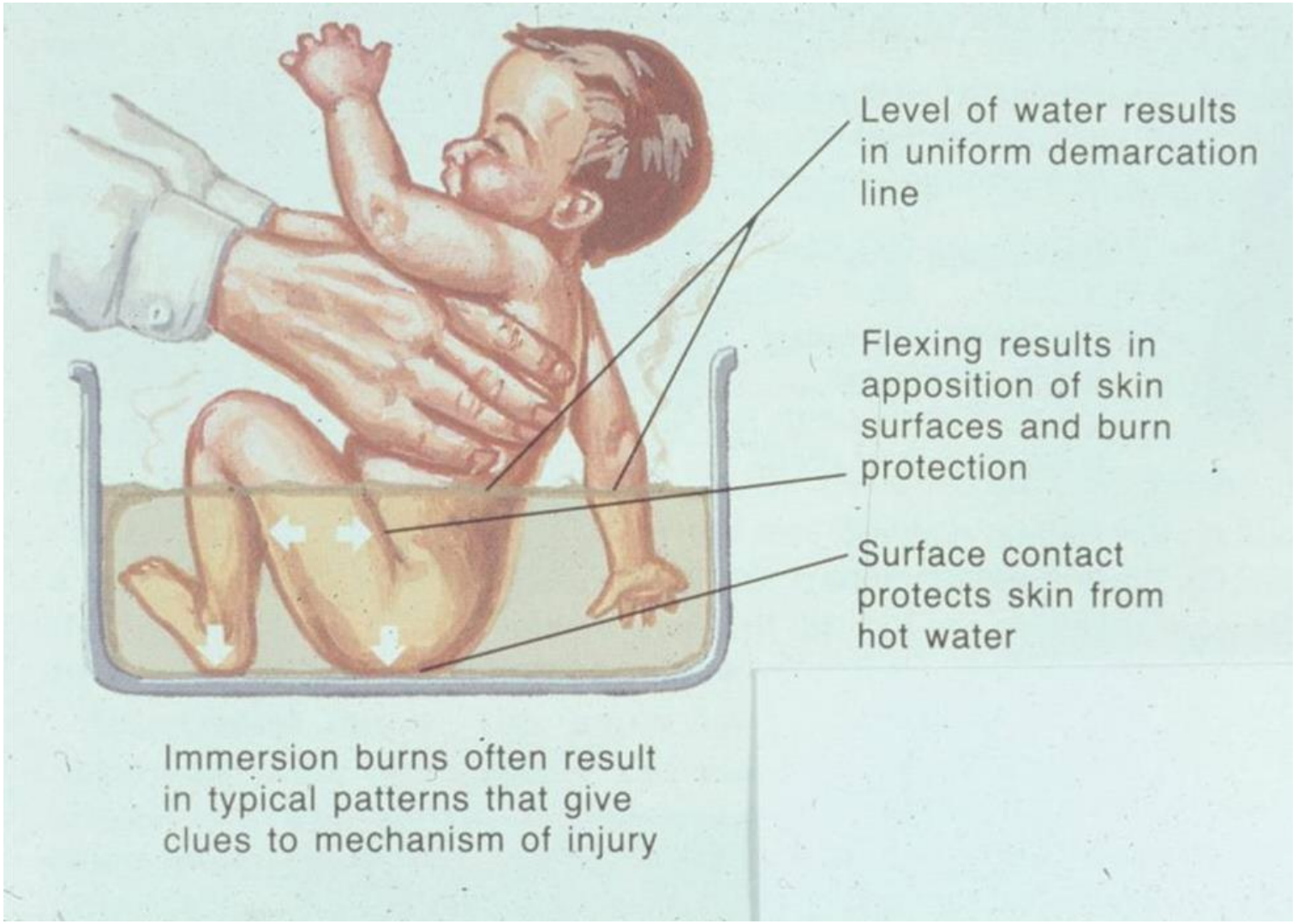


Burns Linked With Abuse

- Immersion burns
- Patterned contact burns – Branding
- Cigarette burns



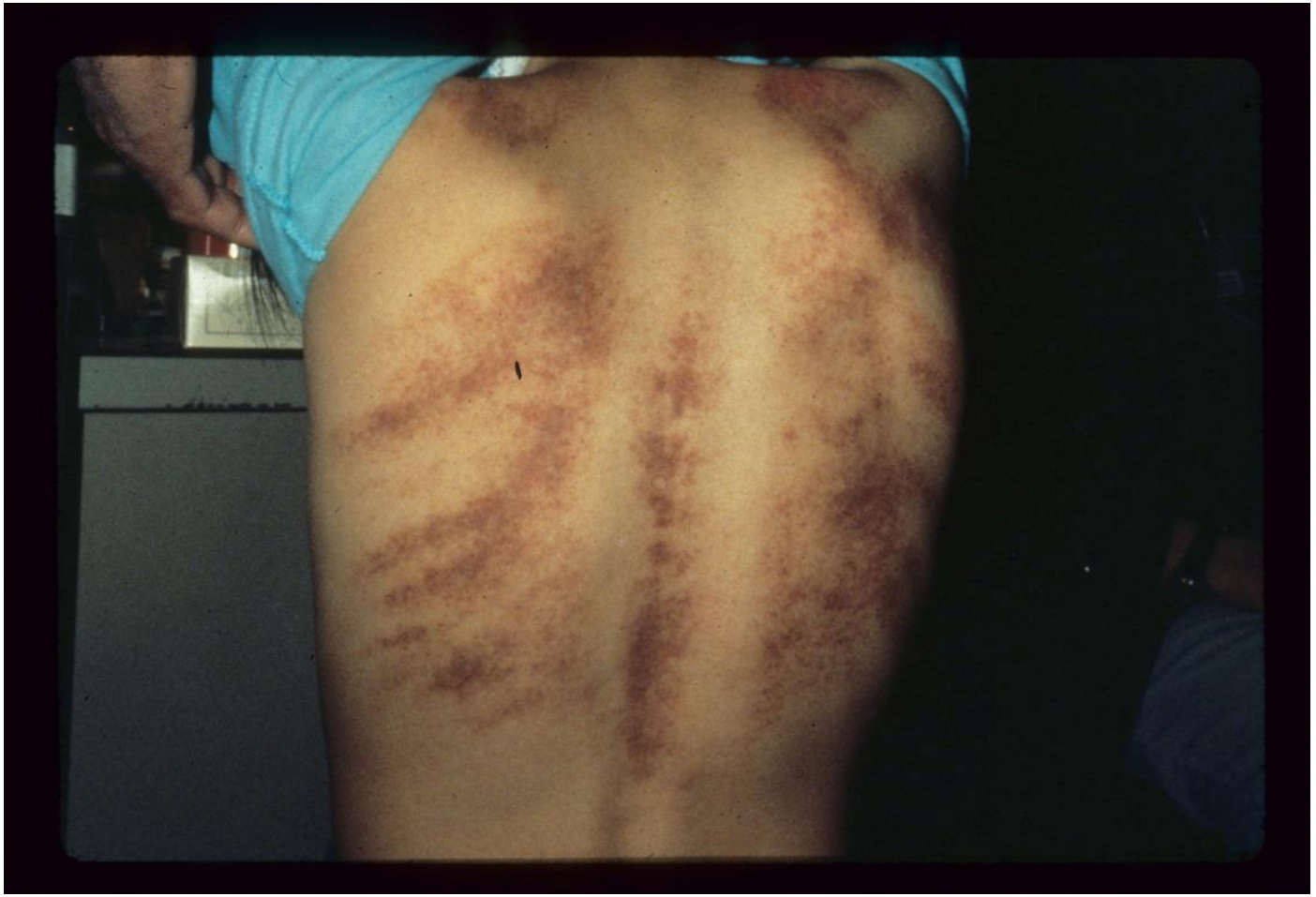
Correlation of time and temperature needed for full-thickness burn


Level of water results in uniform demarcation line
Flexing results in apposition of skin surfaces and burn protection
Surface contact protects skin from hot water
Immersion burns often result in typical patterns that give clues to mechanism of injury

Immersion Burns

- clearly demarcated edges
- a stocking or glove distribution.
- Accidental spilling of hot liquids is a common scenario and usually involve the face, chest, and upper arms in a flow pattern with splashing that demarcates the flow of the liquid.

What Is Your Impression? (1 of 4)



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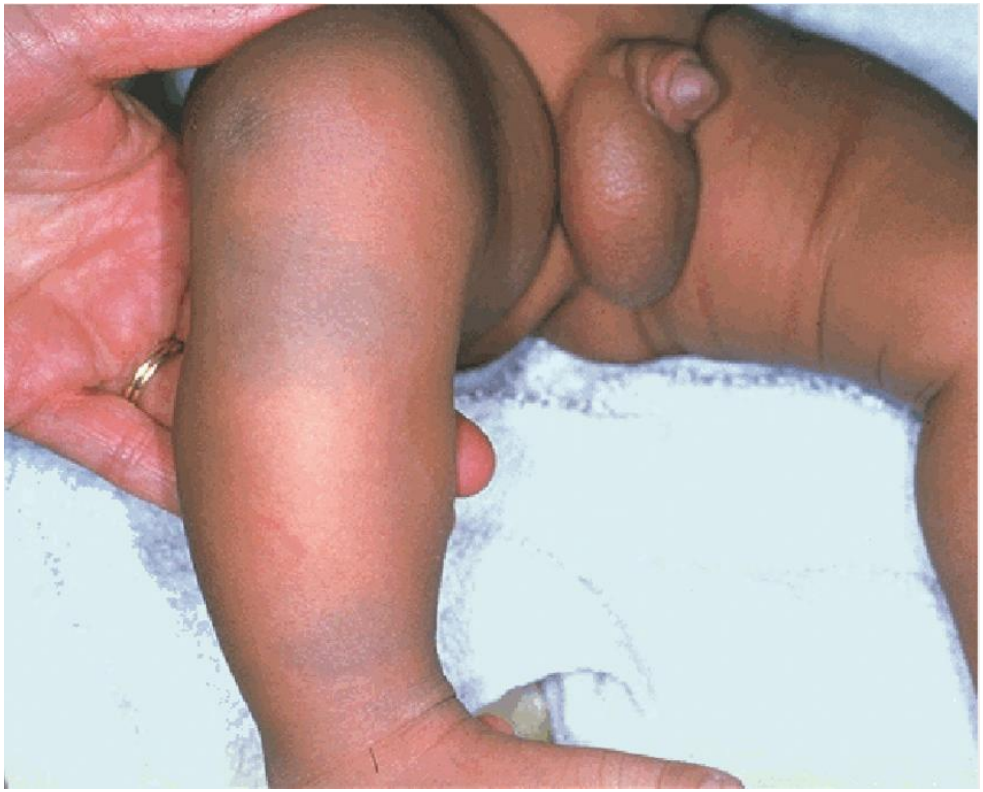

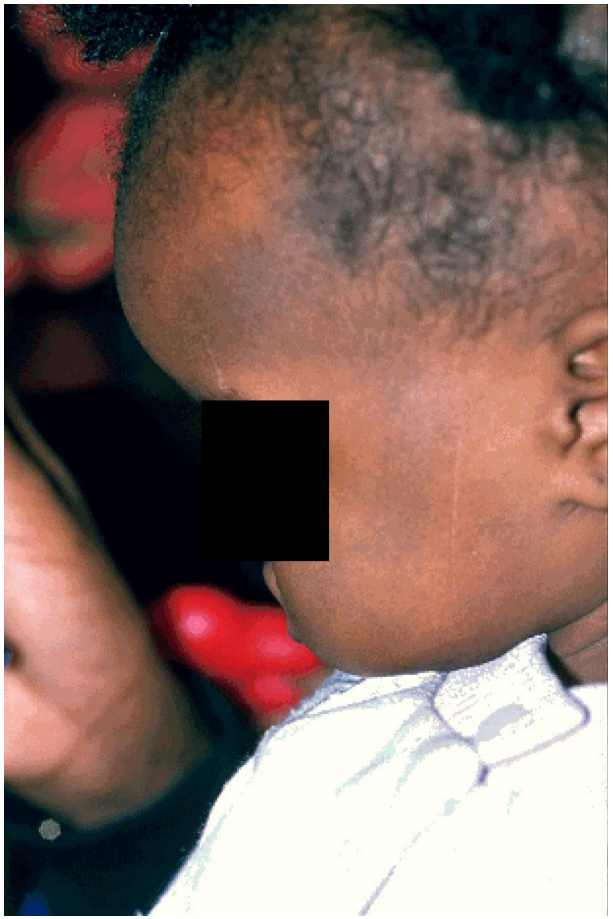

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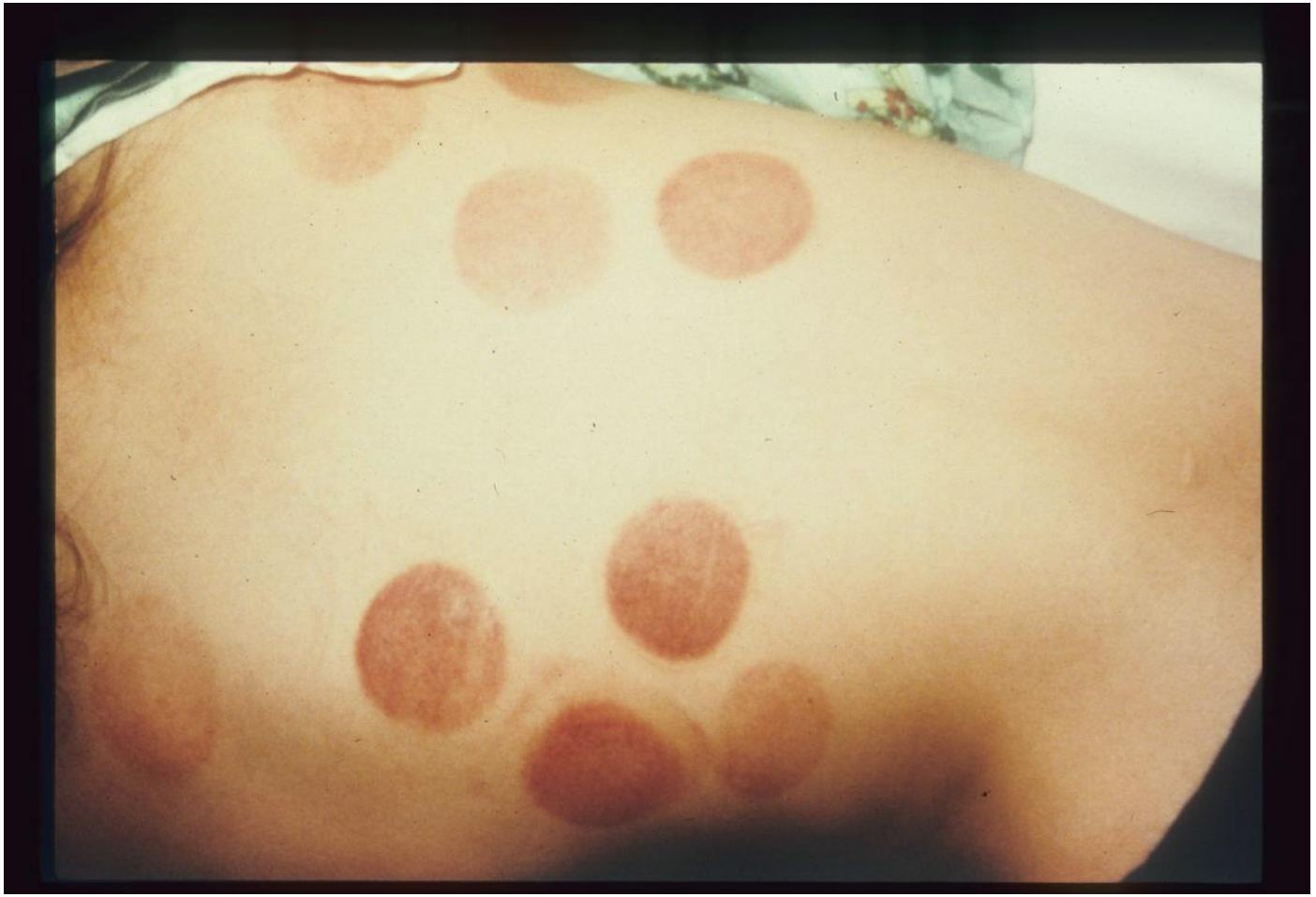


Conditions That Mimic Child Maltreatment

- Accidental bruises: knee, shin, forehead
- Birthmarks: “Mongolian spots”
- Bruises secondary to coagulopathies
  - ITP
  - Von Willebrand’s
- Folk remedies
  - Coining, spooning,cupping
  - Collera moida
  - Moxibustion
  - Cautery

Case Progression

- Historical red flags identified:
  - Inconsistent/evasive history
  - Delay in seeking medical care
  - Father admits to alcohol addiction.
- Detailed physical exam shows:
  - Unusual location for accidental bruises
  - Ruptured frenulum
  - bite mark: 3 cm width

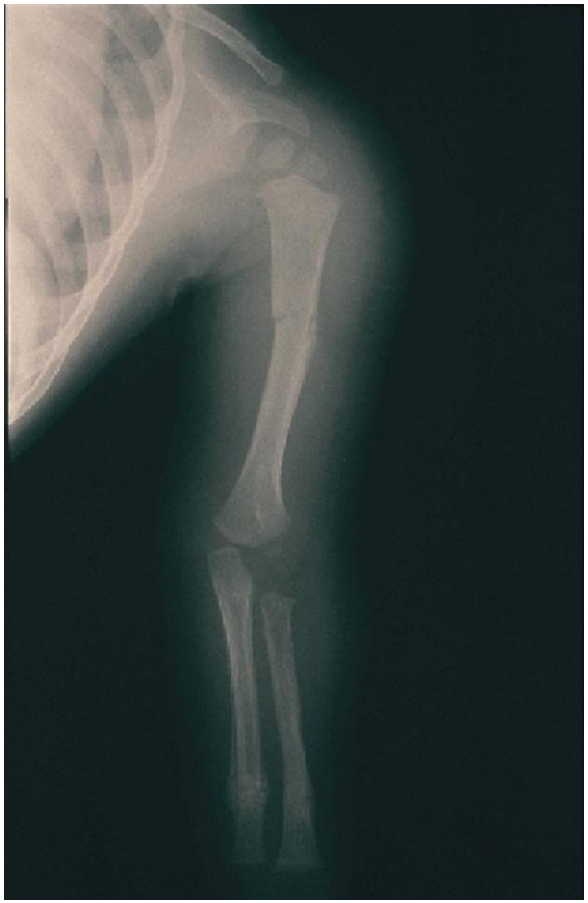
Case Outcome

- Child protection notified
- Laboratory tests normal
- Skeletal survey normal
- Admitted to hospital for full medico-social evaluation
- Services consulted:
  - Ophthalmology
  - Child Abuse Team

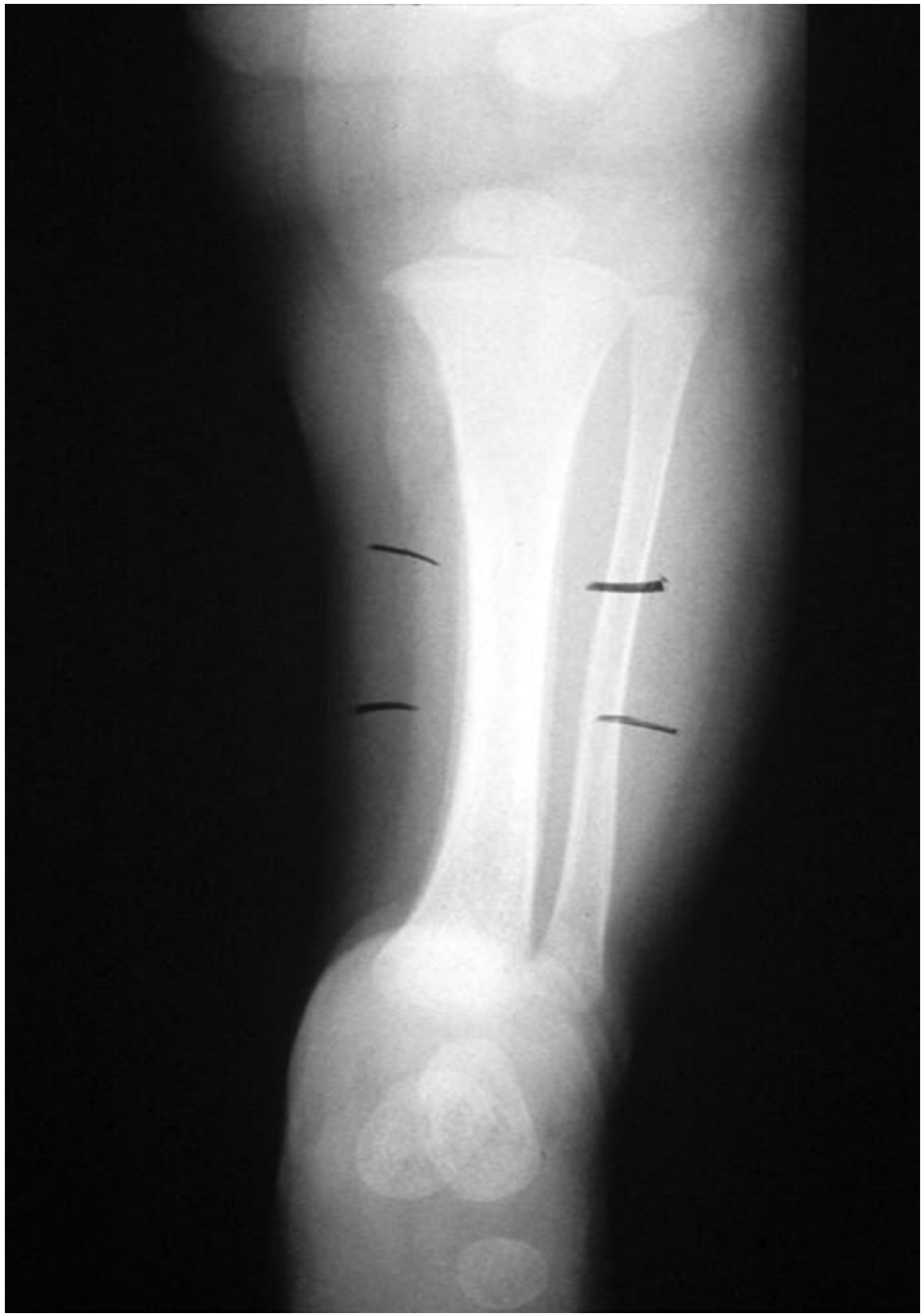
Case Study 3: “Arm Pain”

- Mother noticed four days ago that 1 yr-old daughter was not moving right arm.
- No history of trauma, previously healthy
- Child alert, sitting in mom’s lap
- Head/Neck: No Trauma
- **Extremities: Tender upper and lower right arm**

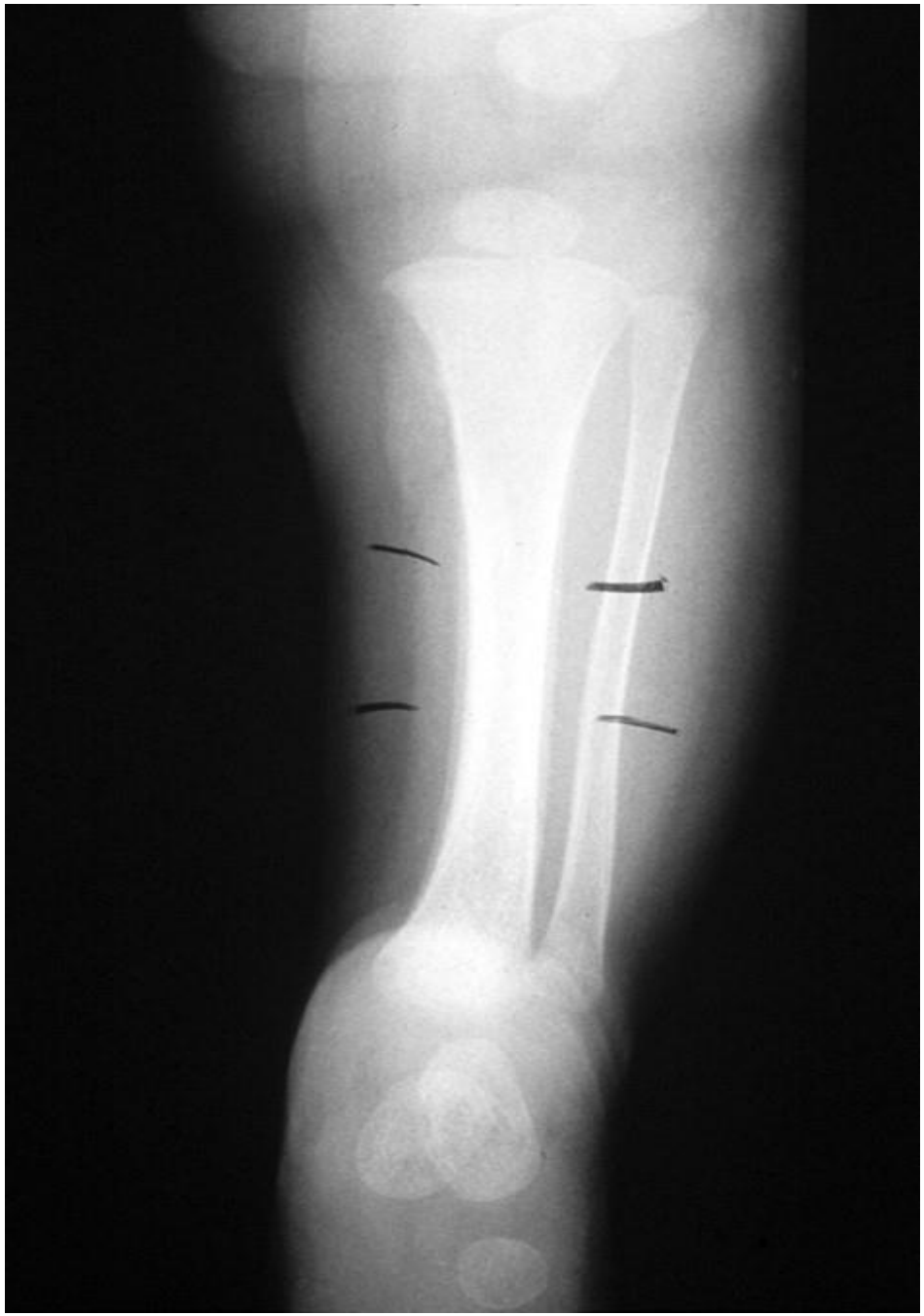
An X-Ray Is Obtained – Findings?



Comment?

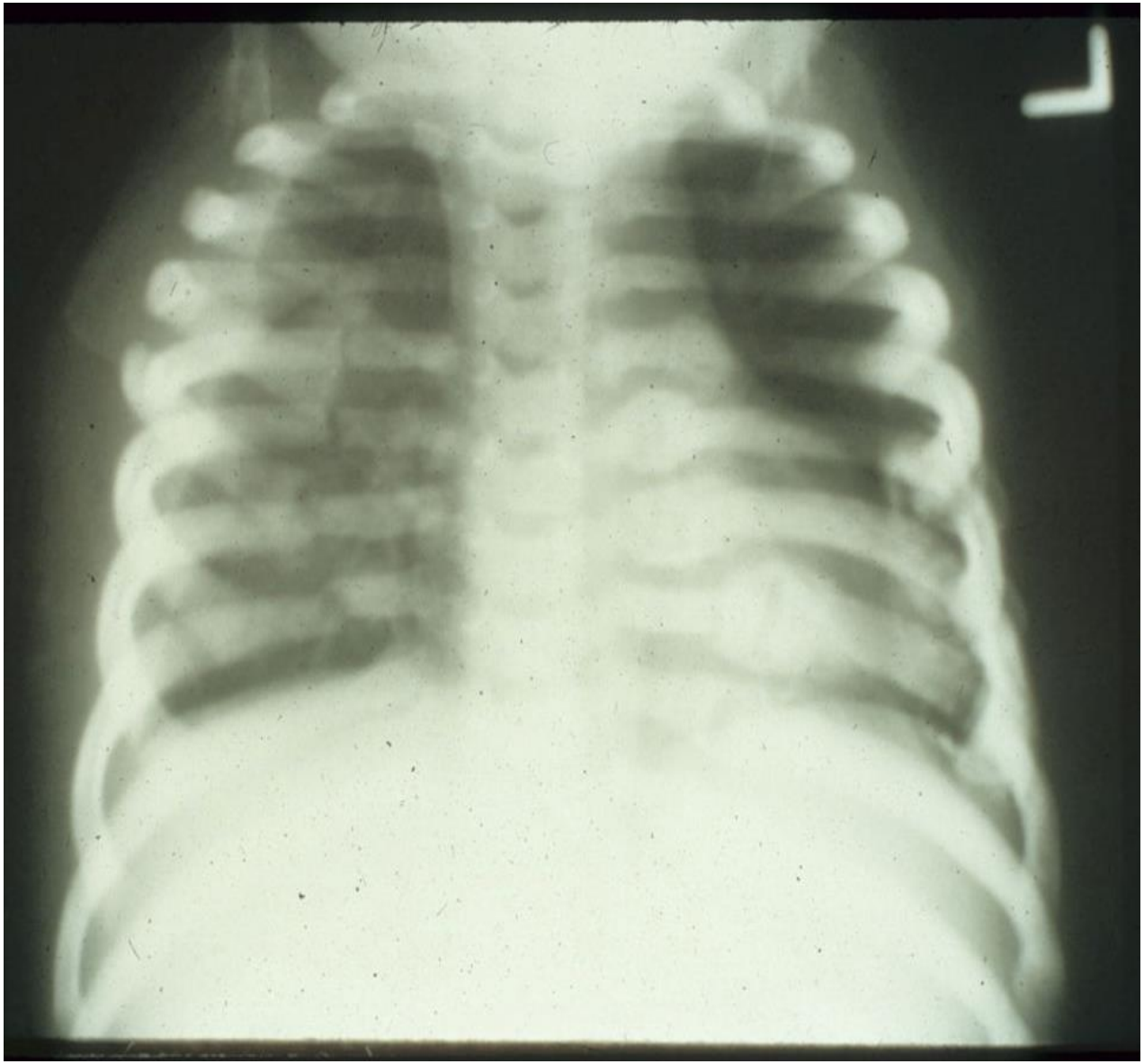


Fractures in Different Stages of Healing



Dating of Bone Injuries

Age of Injury	Radiographic Bone Appearance
0-2 days	Fracture, soft tissue swelling
0-5 days	Visible fragments
10-14 days	Callus, periosteal new bone
8 weeks	Dense callus after fracture



Rib Fractures

- It takes great force to break the ribs of an infant – flexibility and compliance of chest wall and ribs
- Mechanism of injury is of an adult grasping the infant's chest with both hands, and squeezing and compressing the chest while the infant is violently shaken

Impression?

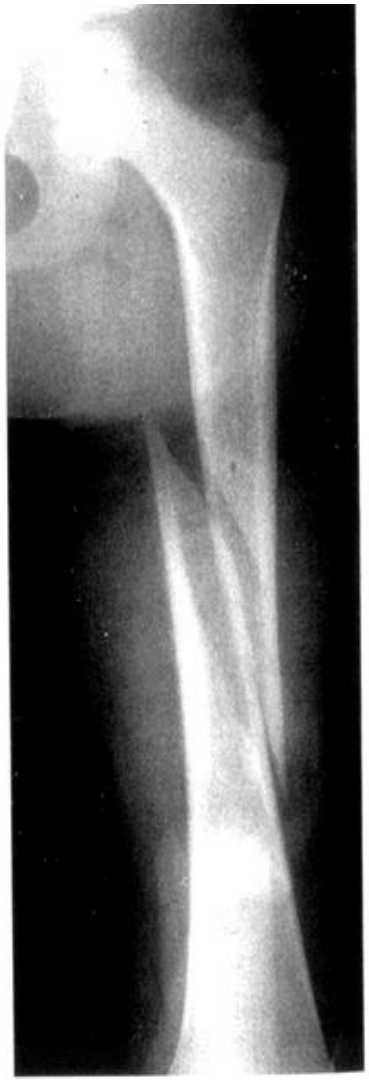


FIG. 4. Fourth most common type: femur, spiral, middle third. Considered by many authors to be the classic type.

Myths

- Spiral Fractures have a high association with NAT
- Actually commonly seen accidental fx pattern

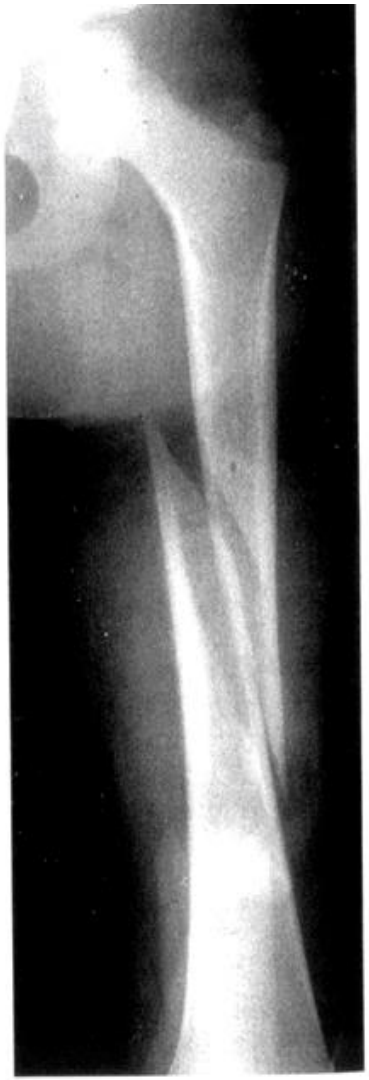
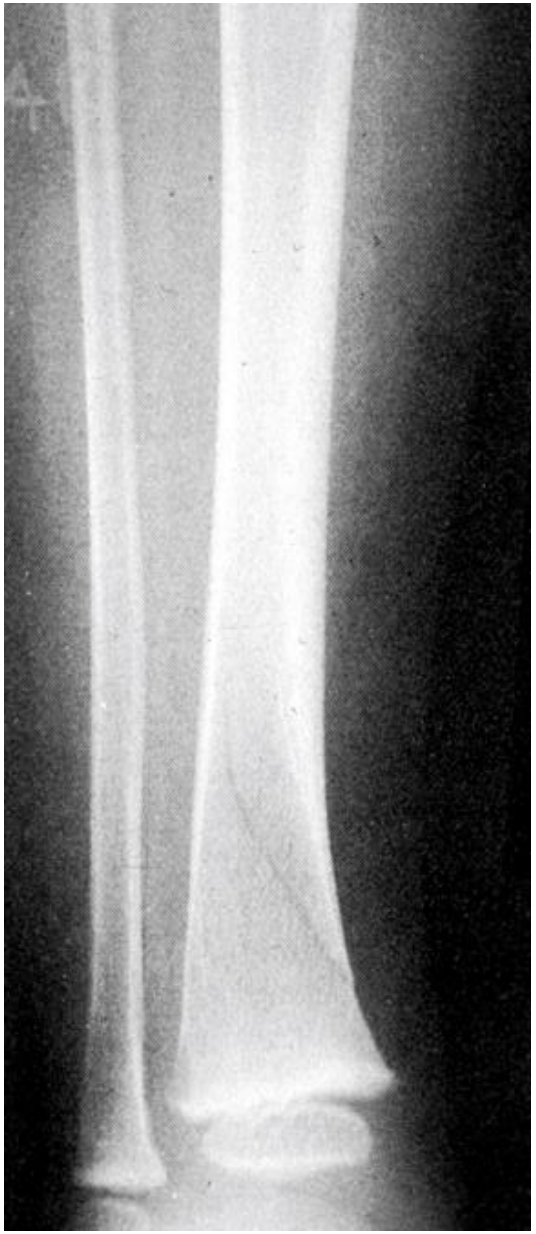


FIG. 4. Fourth most common type: femur, spiral, middle third. Considered by many authors to be the classic type.

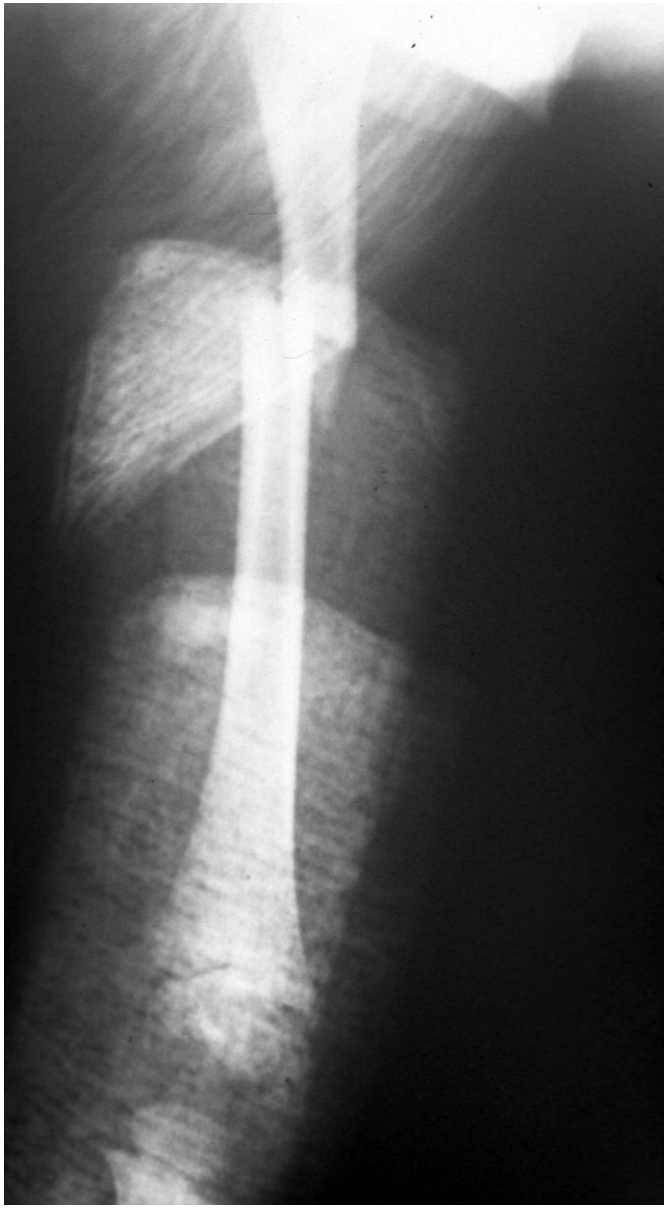
Fracture Types

- Spiral can occur accidently
- Spiral only 8-36% of fx's in NAT series
- Toddlers fx common accidental injury

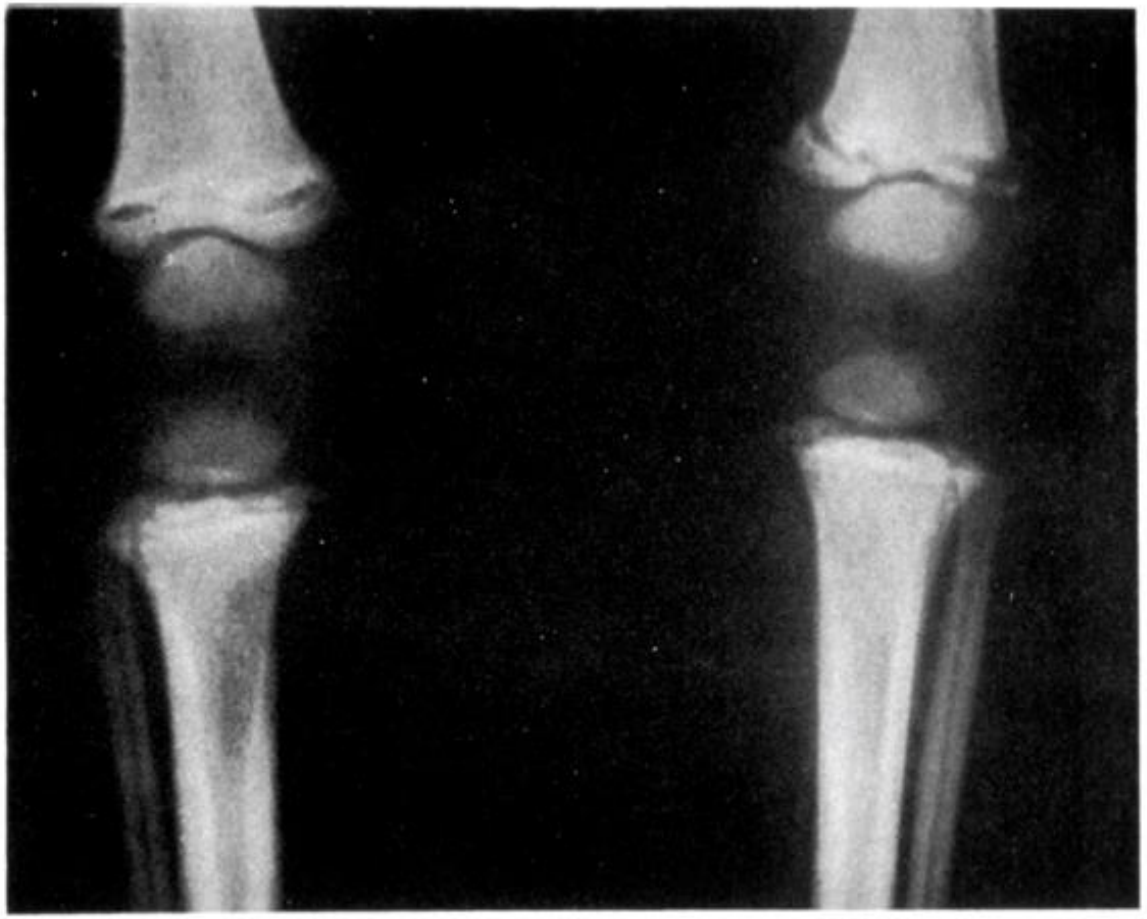


Myth: Fracture Types

- Transverse Most common in NAT
  - Also very common Accidental



Impression?



Metaphyseal or Bucket Handle

- Pathognomonic of NAT

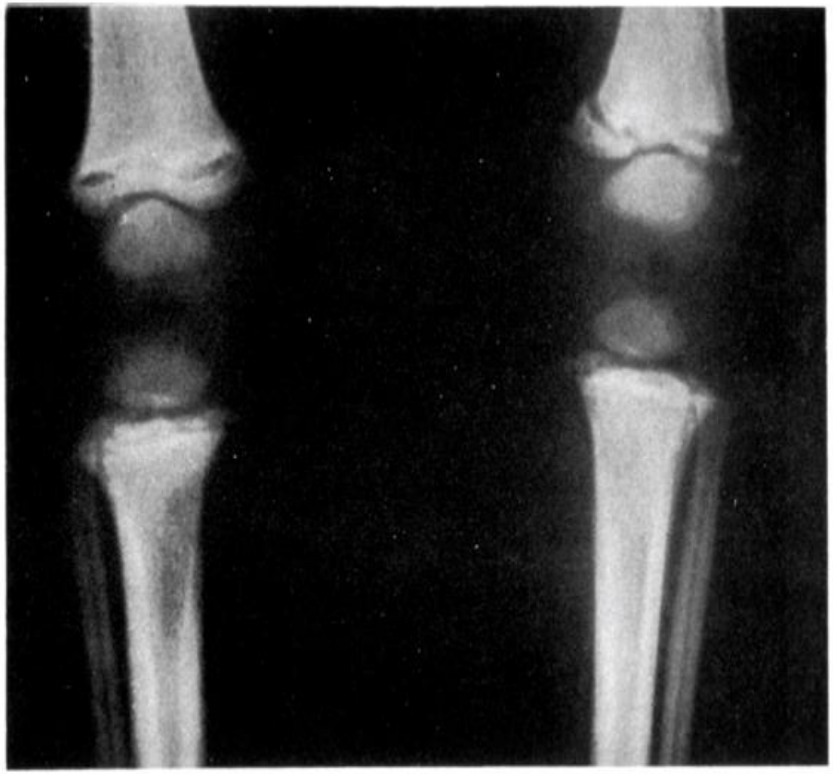
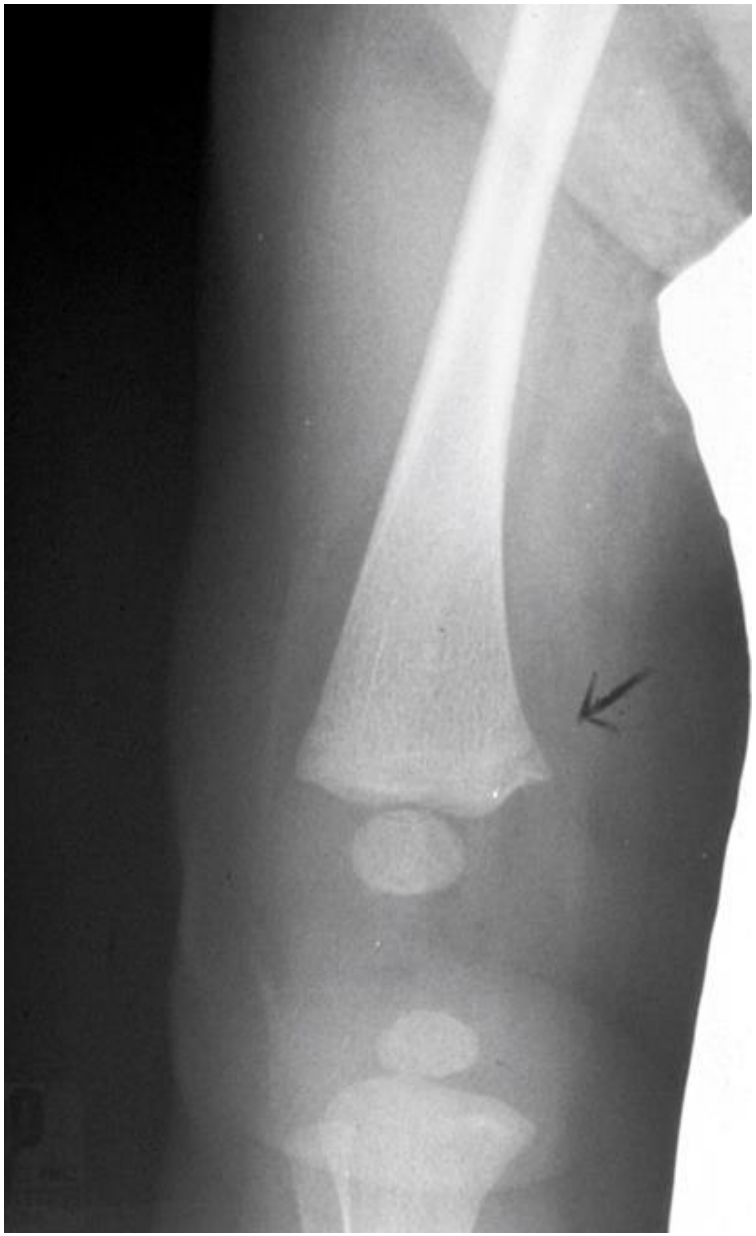


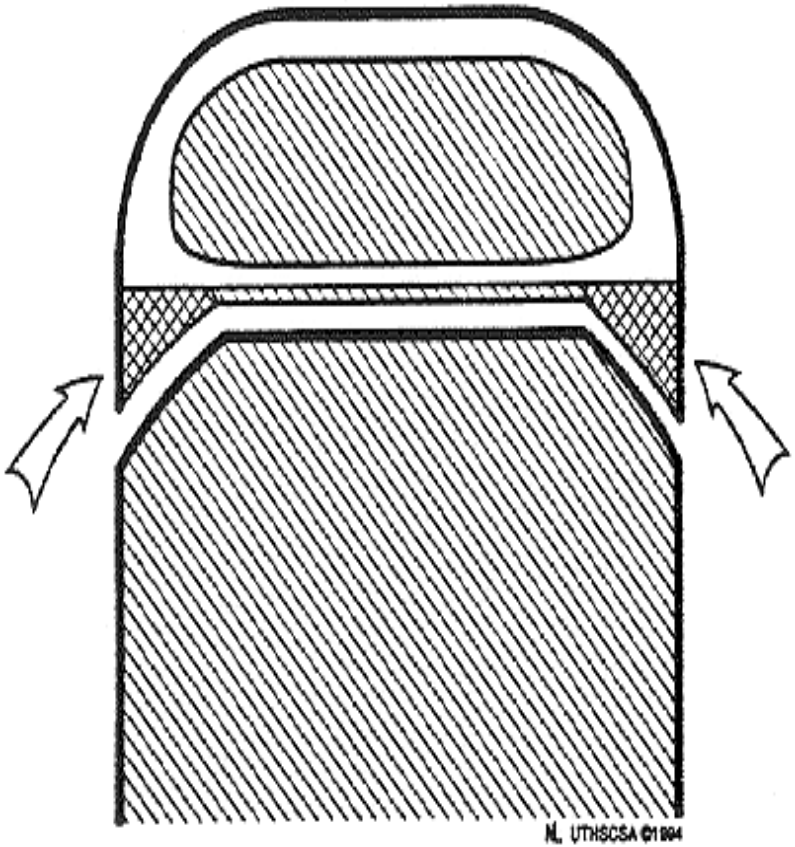
FIG. 5. Characteristic corner metaphyseal fractures occurring in child abuse. Bilaterality is another clue to the battered child syndrome.

Metaphyseal Bucket Handle Fx



Metaphyseal Fractures

- Traction/rotation mech of injury
- Planar fracture through primary spongiosa disklike fragment of bone/cartilage, thicker at periphery

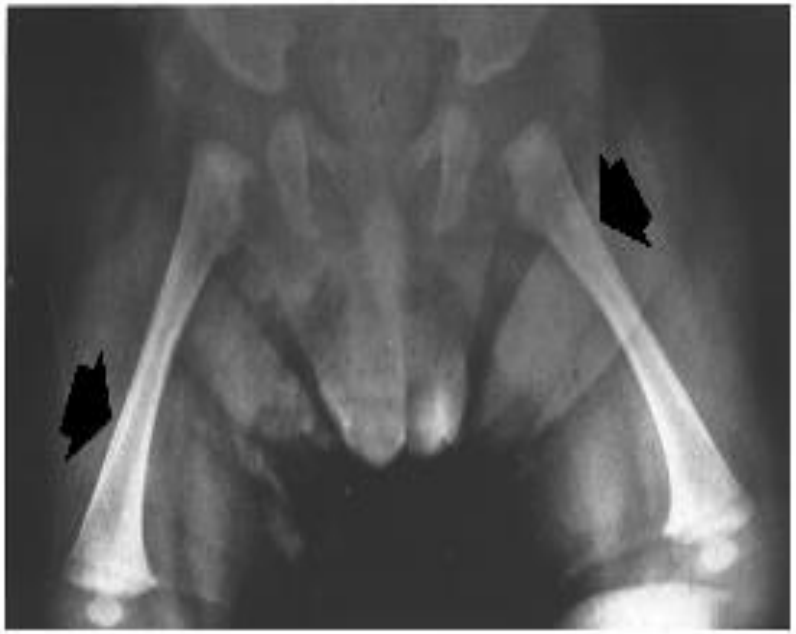


Summary: Fractures Commonly seen in NAT – High Specificity

- Femur # in child < 1 year old
- Humeral shaft#< 3 year old
- Sternal #
- Bucket-handle (Metaphyseal) #
- Posterior rib #
- Digit fractures in nonambulatory children
- Fracture pattern not specific (spiral, transverse, etc.)
- Multiple fractures at different stages of healing highly specific

Differential Diagnosis – NAT Fractures

- Accidental trauma
- Osteogenesis Imperfecta
- Metabolic Bone Disease (rickets, etc.)
- Pathological fractures
- Birth trauma



Diagnostic Studies

- Skeletal survey – Avoid Babygrams
- Bone scan – Minor Fractures, Sequential
- Bone metabolism work-up:
  - Calcium
  - Phosphorus
  - Alkaline phosphatase
  - Skin biopsy

Case Study 4: "Trouble Urinating"

- 4-year-old girl comes to ED complaining of pain when urinating
- Child was left with aunts family for babysitting in evening
- Mom noticed some blood in her underpants, and became concerned.
- Child is clinging to mom, but otherwise alert
- **Concern?**
- **Red Flags?**

First Clue: Red Flags Sexual Abuse

- Sexual acting out
- Aggression,
- Nightmares,
- Developmental regression,
- Appetite loss
- Phobias
- depression
- Recurrent abdominal pain, headaches
- Genital symptoms
- Dysuria
- STDs
- Recurrent UTIs
- Anogenital bleeding or bruising
- Foreign body
- Pregnancy

Questions

What would Be your Approach to This Patient

General Impression

- History provided by child is the most important aspect.
  - Conduct interview in a private, quiet setting.
  - The interview is unrushed
  - interviewer uses open-ended questions.
- Interview parent separately
- Obtain full medical history
- Obtain full social history: Household occupants, child care, relatives, visitors, domestic violence

Examination

- Perform general physical exam.
- Record secondary sexual development
- Pediatric Gynae/Sexual abuse Team
  - Examine genital area in frog-leg or knee chest (female); male lying supine
- Document abrasions, lacerations, bruises, petechiae, scars: Draw and describe findings, normal and abnormal

Diagnostic Studies

- Urinalysis, urine pregnancy test
- Evidence/specimen collection if within 72 hours
- STD testing
- If active vaginal bleeding, need exam under anesthesia

What Else: Vaginal Bleeding

- Straddle/accidental injury
- Infection (*Shigella*, pinworms)
- Urethral prolapse
- UTI
- Foreign body
- Tumor
- Precocious puberty

Case Progression Physical Exam

- Patient states, “XYZ (18 year old son of Aunt) took me downstairs, pulled down my panties and touched me with his finger here.” (points to her genital area.) He gave her candy and said “don’t tell anyone.”
- Genital exam (frog leg position): Petechiae on left labia minora, abrasion near clitoris (3:00 position). No bleeding, No hymen tear. No anal findings.
- Police report made; cousin arrested
- Child protective service report filed
- Local wound care recommended
- Follow-up with child advocacy cente

Case 4:

DEFINITION OF NEGLECT:

- Historically, neglect has been difficult to define
- Broadly stated, neglect is a condition where a child's basic needs are not being met by their parent(s) or caretaker(s)
- Types of Neglect
  - Physical Neglect
  - Educational Neglect
  - Emotional Neglect
  - Medical Neglect

Risk factors associated with neglect

- Medical
  - Chronic medical conditions
    - Illnesses, inborn errors of metabolism, heart disorders, pulmonary disorders, kidney disorders, genetic disorders
  - Congenital anomalies
- Poverty
- Lack of Education
- Lack of social resources
- Parent-child interactive disorders
- Family dysfunction
- Parental mental health disorders

Learning Points – NAT

- Team approach
- Professional, tactful, nonjudgmental approach in initial workup
- Medical records become part of legal record. Document legibly and thoroughly.
- Photograph physical findings
- Don't Discharge patient to home in suspicious case
- Report incident to law enforcement and child protective services

Thank You