

Video-recorded Short Fall-Crushing Injury in a Toddler

Jane W. Turner, MD, PhD
Juliette Scantlebury, MD
St. Louis, MO

Case presentation

- 23 month old
- Ran out onto bowling lane, slipped and fell
- Uncle followed her, slipped and fell on her
- Immediately unconscious
- Intubated at the scene

Emergency department

- Transported to nearest hospital and then transported by helicopter to children's hospital emergency department
- Tachycardic, hypotensive, pupils fixed, Glasgow Coma Score 3, temperature 36.8 Celsius
- Cerebrospinal fluid rhinorrhea, hemotympanum, bilateral periorbital ecchymoses
- Possible laceration of occipital scalp

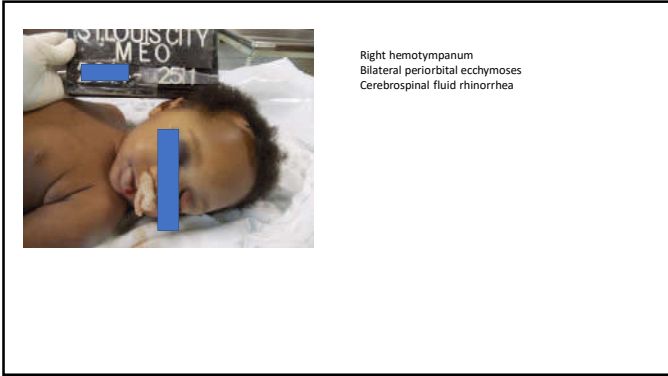
Head computed tomography

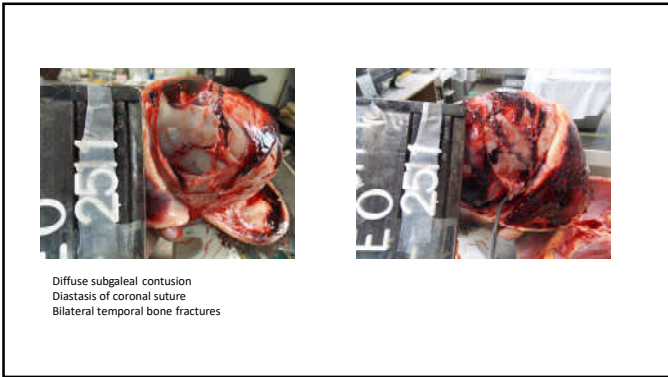
- Fractures of right temporal bone, bilateral ethmoid bones, bilateral orbital plates, diastasis of coronal sutures
- Edema, diffuse subarachnoid hemorrhage, basilar cistern subarachnoid hemorrhage, left frontal contusion
- Loss of gray-white junction

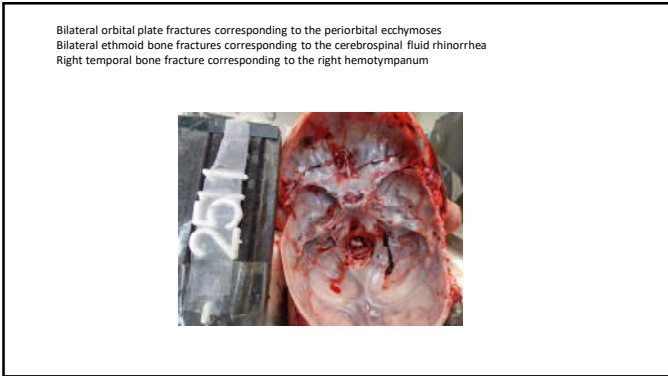


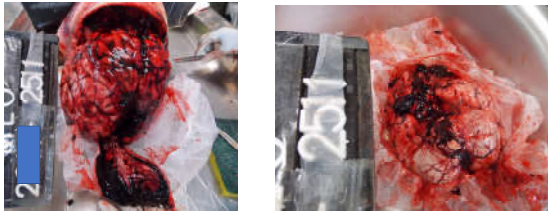
Autopsy

- Weight 40 lbs, height 35 inches
- Intracranial pressure monitor
- Diffuse subgaleal hemorrhage, skull fractures, subdural and subarachnoid hemorrhages
- Right optic nerve sheath hemorrhage, bilateral retinal hemorrhages
- Left frontal contusion



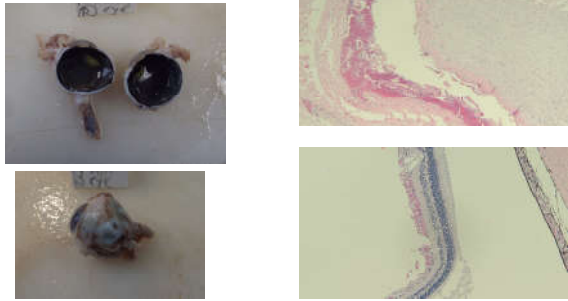






Subdural and subarachnoid hemorrhages
Left frontal cortical contusion

Right optic nerve sheath hemorrhage
Scattered bilateral retinal hemorrhages



Pediatric short falls and head injury-- Unknowns

- Minimum distance for lethal injury
- Minimum amount of force required
- Radiologic imaging and its specificity for accidental vs. inflicted injury
- Retinal hemorrhages and its specificity for accidental vs. inflicted injury
- Definition of short fall with respect to height—the literature varies greatly

Take away message

- Not all falls are equal
- Confounding factors may contribute to injury
 - Acceleration
 - Surface
 - Additional injury

Overlap with Findings in Inflicted Head Injury

- Subgaleal hematoma
- Skull fracture
- Subdural and subarachnoid hematoma
- Retinal hemorrhages
- Neurotrauma

Summary

- In at least one reference in the medical record the injury in this case was reported as a simple fall
- Video recording demonstrates a fall while running on a waxed, hard surface followed by probable crushing injury
- Skull fractures plus "triad" of subdural hemorrhage, retinal hemorrhages and neurotrauma
- Manner of death: Accident
