



E18 A Scientific Approach to Infant Head Injury Evaluation

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After attending this presentation, attendees will be able to: describe the differences between infant and adult neuroanatomy contributing to the differences in impact injury mechanisms; describe the differences between skull deformation and whole brain differential acceleration contributing to infant head injury; and describe the role of formal biomechanical reconstruction of an event with a history of a fall.

This presentation will impact the forensic science community by giving prosecuting and defense attorneys the tools to evaluate an infant head injury when the history is a fall.

There is often a history of a fall or clinical evidence for an impact in an infant or a toddler with head injury. Unfortunately, there is scant objective information to assist a prosecuting or defense attorney who needs to evaluate the history. This presentation will describe an approach to injury evaluation of such an event.

The analysis should include: a determination of whether the injury is acute or remote; potential pre-existing conditions placing the child at increased risk for impact injury from a fall; biomechanical reconstruction; and evidence after appropriate evaluation indicating that the history is incorrect.

This presentation will discuss the above considerations. In addition, described in this presentation are: the basic mechanical differences between infant and older child head trauma; Federal Head Injury Criteria; and examples of reconstruction of falls will be provided. Take-home messages will include:

Any head impact may be associated with diffuse as well as focal injury. "Diffuse" rather than "focal" injury does little to assist in determining the ultimate mechanism. Pre-impact motion rarely has anything to do with the mechanism, morphology, and/or outcome for infant head injury, i.e., the "translational fall" is a myth. Bridging vein rupture is an unlikely mechanism for most cases of infant subdural hemorrhage or traumatic brain injury.

Finally, the default diagnosis will be suggested for an infant with an unexplained head injury is "I don't know", not "Non-accidental injury."

Infant Head Injury, Falls, Biomechanics