



Introduction

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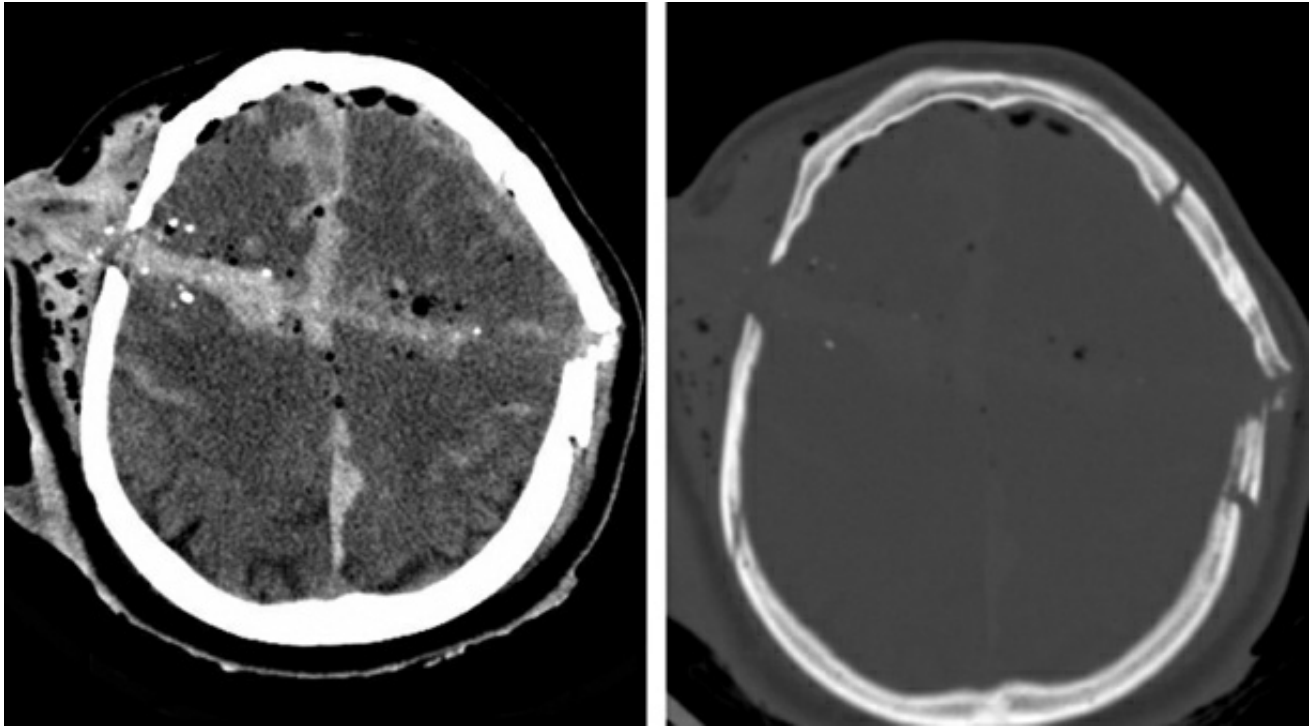


Figure 1: CT in soft tissue window (left) and bone window (right), demonstrating penetrating injury by a bullet with significant damage to brain structures along the bullet tract. Associated are also traumatic pneumocephalus, cerebral contusion and subarachnoid hemorrhage.

Imaging in Cranial traumatic injuries

- Neuroimaging plays a major role in
 - Delineating the extent of injury
 - Guiding surgical planning
 - Monitoring recovery
 - Guiding rehabilitation
- Computed tomography (CT) is used widely due to accessibility, efficiency and lower cost than Magnetic resonance imaging

(MRI)

- MRI is most often used as a secondary modality for assessing late acute or subacute stages

Mechanisms of injury

- Non-missile injury
 - A form of closed head injury
 - More common cause of neurotrauma than missile injury
 - Caused by high-speed accidents with significant acceleration and deceleration forces
 - Causes the brain to move within the skull and forcibly impacting the calvarium or dura, resulting in cerebral contusion
 - Rotation and changes in angular momentum may also cause serious injuries, by deforming and stretching the axons
- Missile injury/penetrating injury
 - Caused by a penetrating external object, such as a bullet (see Figure 1)
 - May result in the penetration of skull, meninges and brain, causing significant brain damage

Primary Traumatic Abnormalities

- Occur at the time of initial trauma
- Include scalp injuries, skull fractures, extra-axial hemorrhages/hematomas, and a spectrum of intra-axial injuries

Secondary (Delayed) Traumatic Abnormalities

- Occur after initial trauma
- Common manifestations are
 - Cerebral edema

- Intracranial hypertension
- Brain herniation
- Cerebral ischemia with focal, regional, or global perfusion alterations
- Brain death (when intracranial pressure exceeds intra-arterial pressure)

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Open Access Biomedical Image Search Engine.

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The Mount Fuji

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