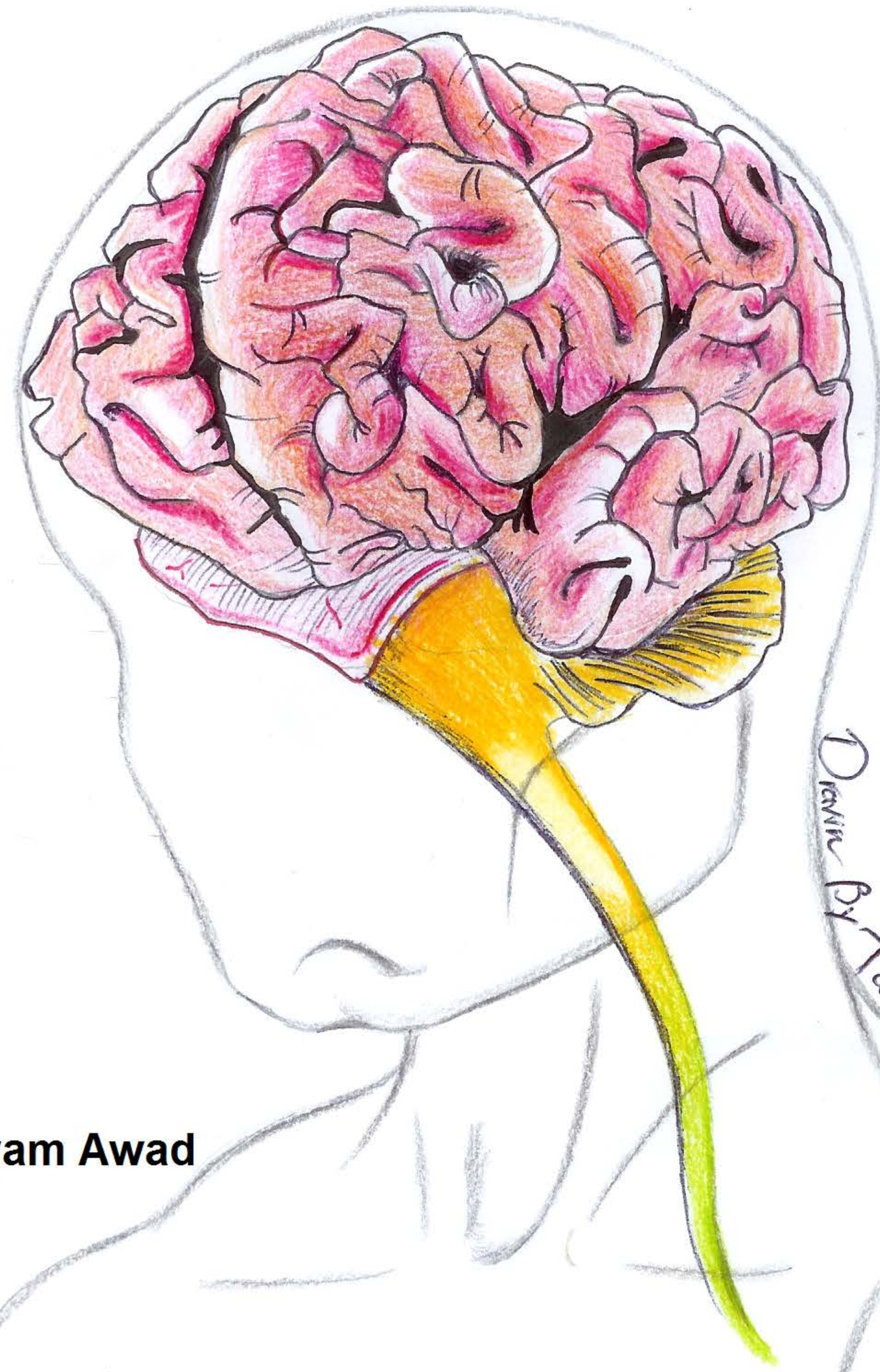
CENTRAL NERVOUS SYSTEM

- ○ Handout
- ○ Sheet
- ○ Slide

- ○ Anatomy
- ○ Physiology
- ● Pathology
- ○ Biochemistry
- ○ Microbiology
- ○ Pharmacology
- ○ PBL



Drawn By Tariq Bushnaq ...

Done By :

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Lec # : **7**

CNS lecture 7

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FRCPath

Traumatic lesions

- Trauma to CNS causes mortality or disability
- Outcome depends on extent of trauma and site affected.
- Spinal cord trauma.. Severe disability.
- Brain stem trauma… can be fatal

Head injury

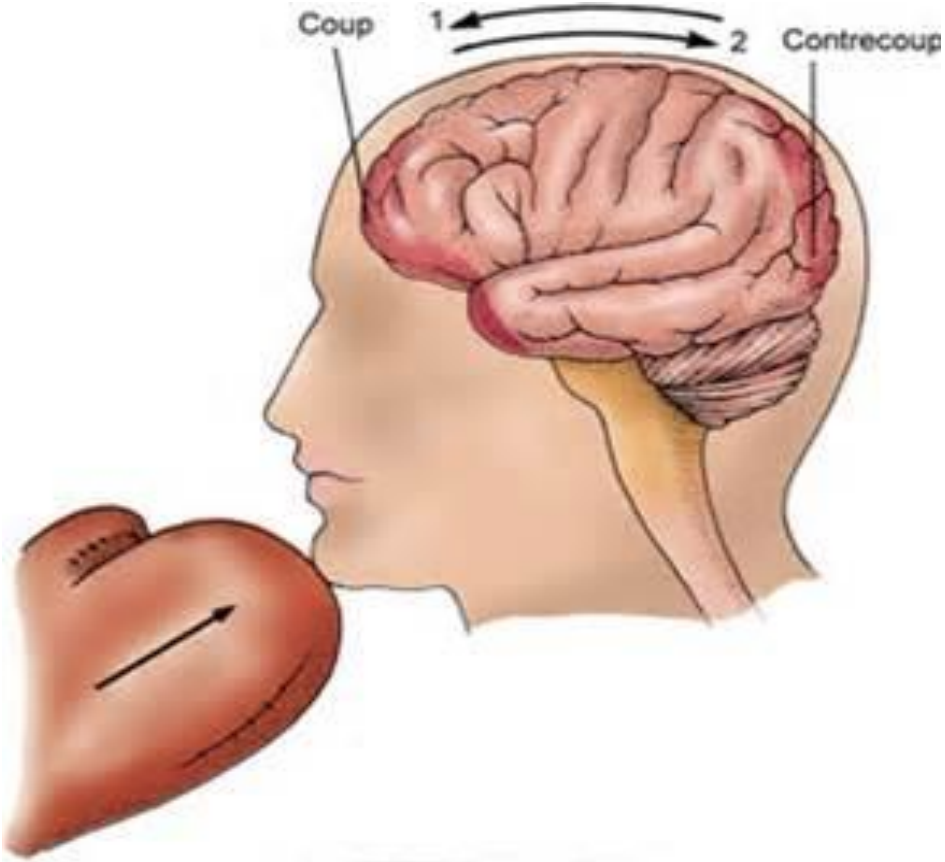
- Blunt or penetrating.
- Open or closed.
- Severe brain damage can occur without external signs of head injury
- Lacerations and even skull fractures are not necessarily associated with brain damage

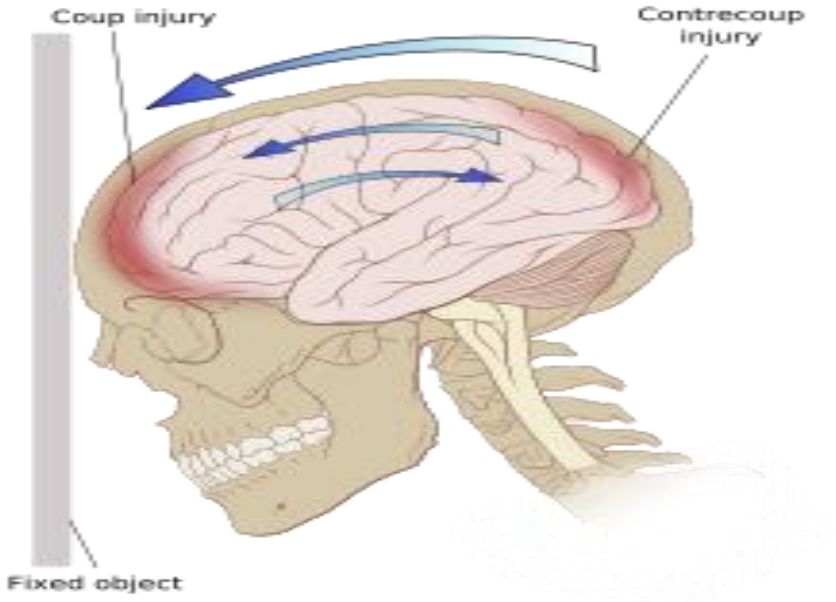
- Repetitive episodes of trauma can later lead to neurodegenerative process e:g Alzheimer

Traumatic parenchymal injury

When an object impacts the head:

- Injury of brain at site of impact: coup injury
- Injury opposite to site of impact: countercoup
- Both are contusions


Coup
1
2
Contrecoup


Coup injury
Contrecoup injury
Fixed object

Brain injury

- Concussions
- Contusions
- Lacerations
- Diffuse axonal damage

concussions

- Reversible altered consciousness after head injury in the absence of contusions
- Transient dysfunction in the form of: loss of consciousness, temporary respiratory arrest, loss of reflexes.
- Pathogenesis: unknown
- Recovery is complete but amnesia of the episode.

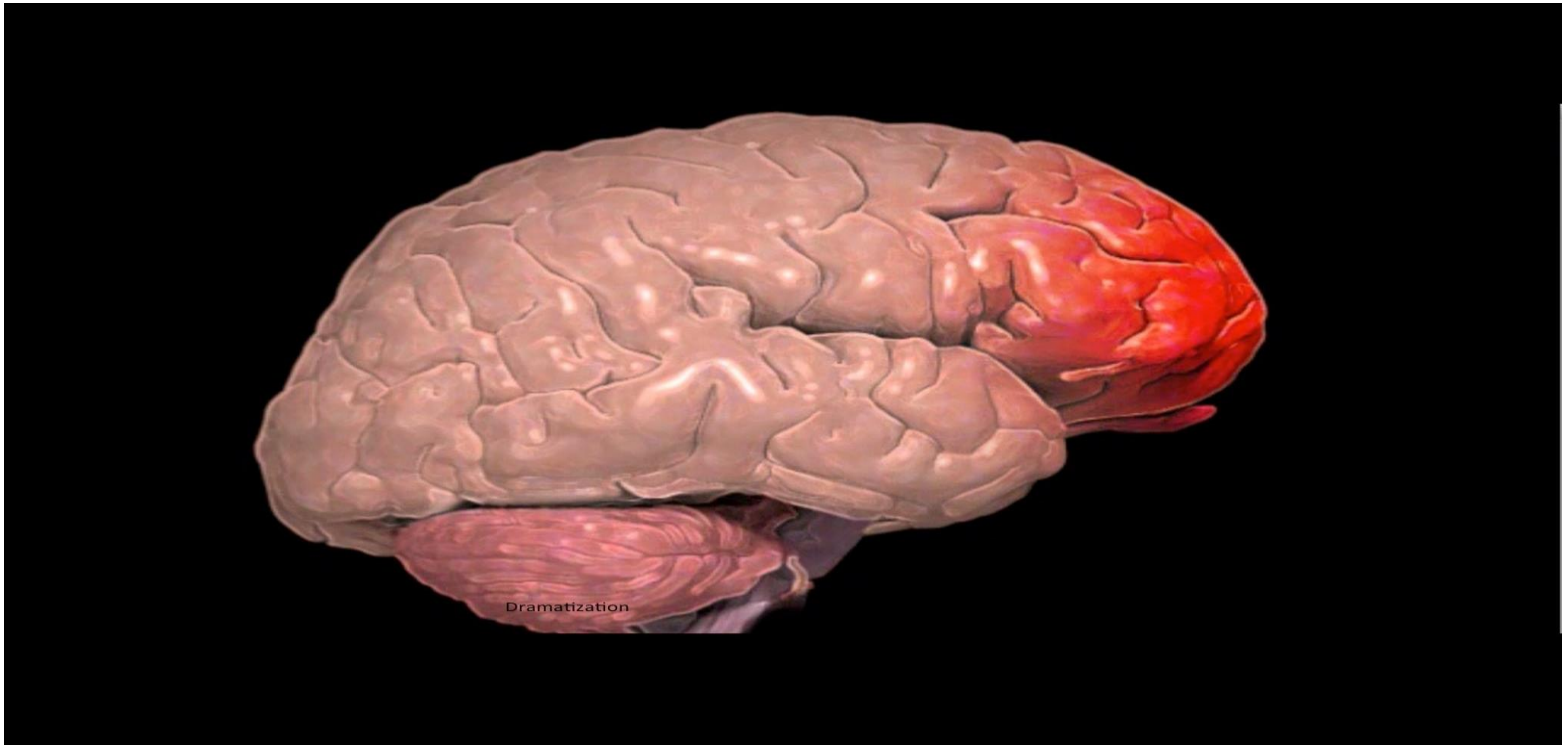
contusion

- Caused by rapid tissue displacement , disruption of vascular channels with subsequent haemorrhage, tissue injury and edema.
- Common in areas overlying rough and irregular bone surface: orbitofrontal region, temporal lobe tips.

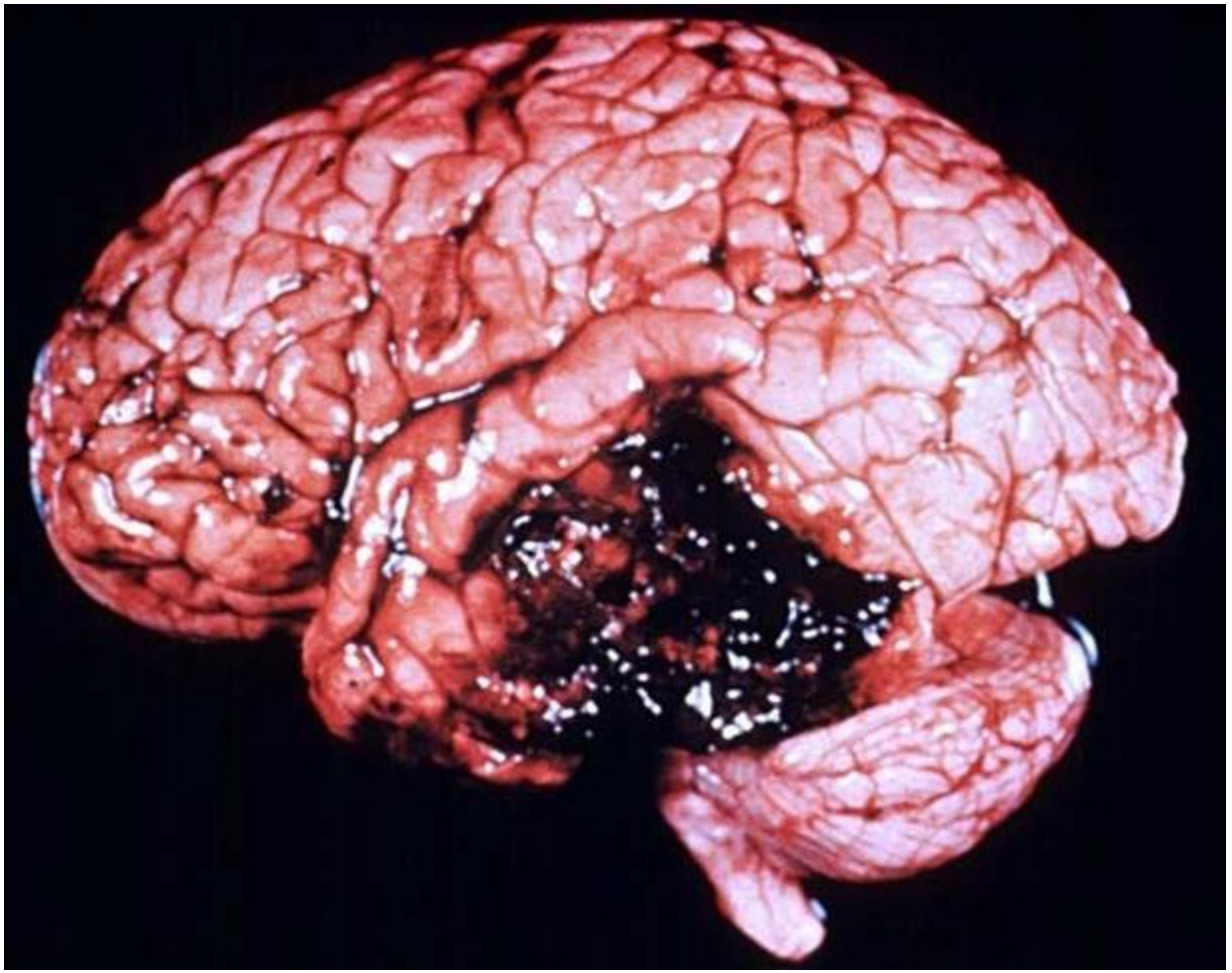
lacerations

- Penetrating injuries cause skull fractures and brain lacerations
- Laceration: tissue tearing and hemorrhage.

contusion



laceration



Contusion/morphology

- Wedge shaped, widest aspect closest to point of impact.
- Edema and extravasated RBCs.
- Superficial aspects of cortex affected more (contrary to ischemic injury)

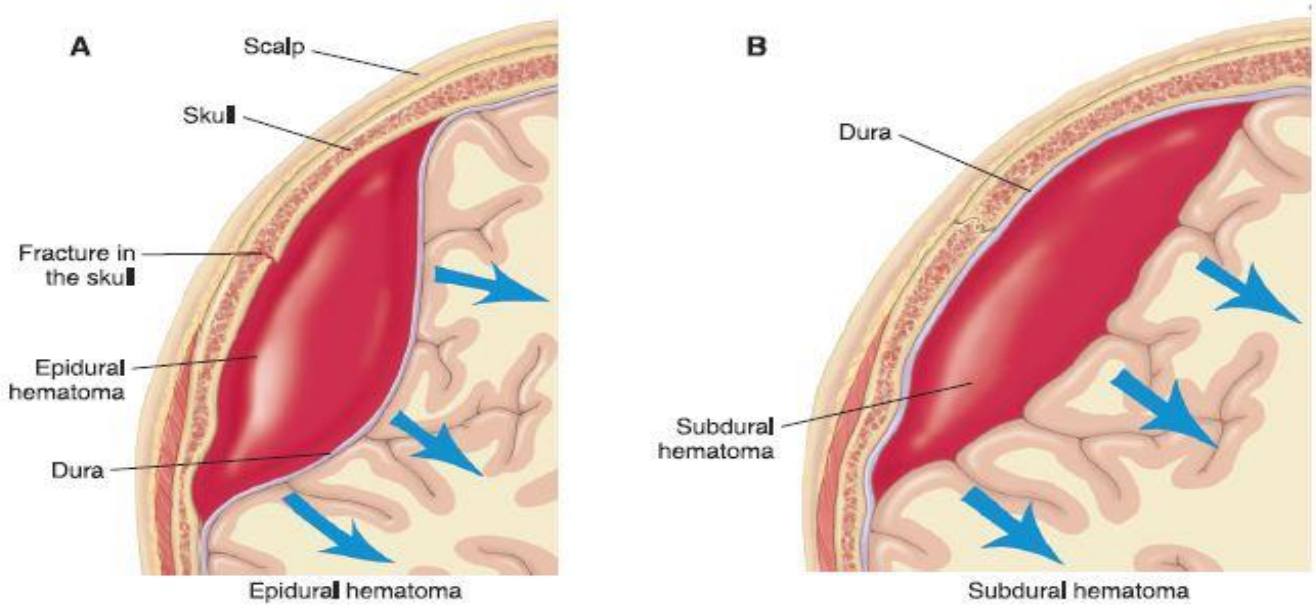
- Old traumatic injury: depressed, retracted, yellow brown patches involving the gyri.
- Larger lesions: cavity, resembling remote infarcts

Diffuse axonal injury

- Brain trauma can cause subtle widespread injury to axons within the brain:= diffuse axonal injury
- Movement of one region of the brain relative to another.. disrupt axonal integrity.
- Appear under LM as axonal swelling
- Can lead to severe irreversible neurologic deficit.

Traumatic vascular injury

- Epidural
- Subdural
- Subarachnoid
- intraparenchymal

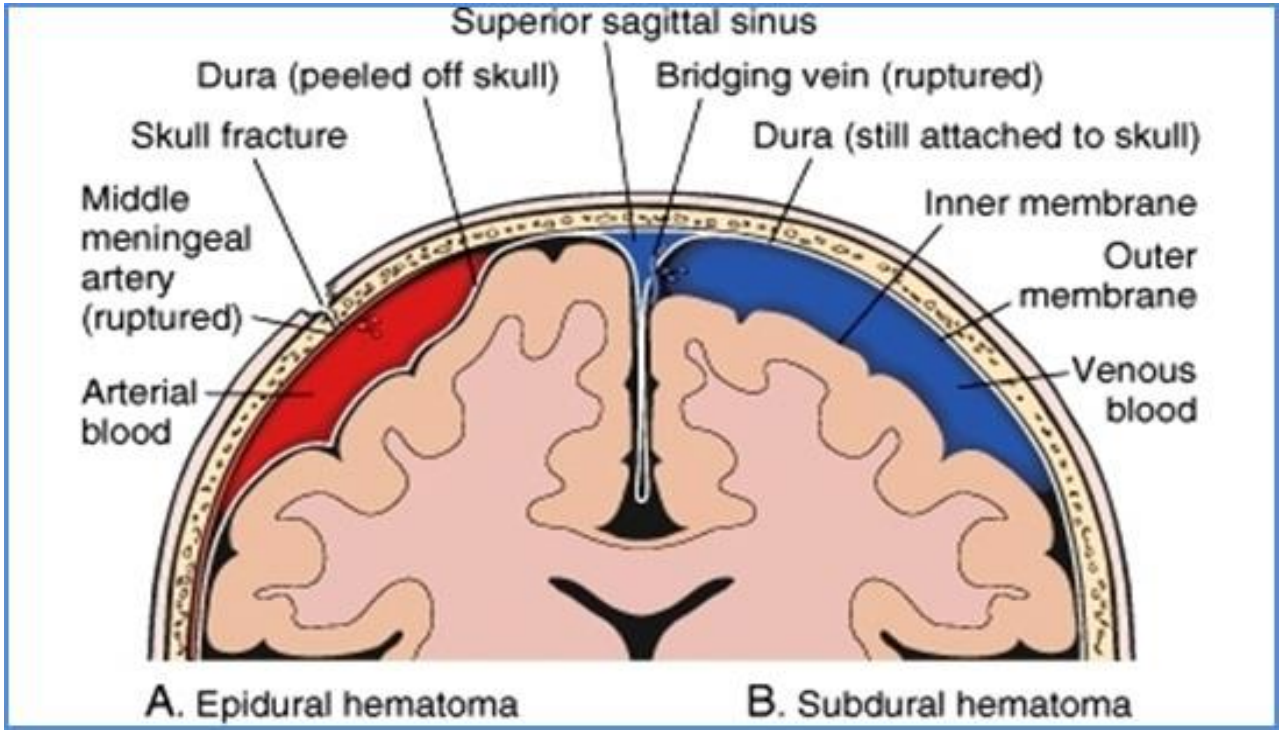

A
Scalp
Skull
Fracture in the skull
Epidural hematoma
Dura
Epidural hematoma
B
Dura
Subdural hematoma
Subdural hematoma

Epidural hematoma

- Dural vessel torn due to fracture.
- Usually: middle meningeal artery
- Blood accumulates under arterial pressure and dissects the dura, compressing the brain parenchyma

Subdural hematoma

- Rapid movement of brain during trauma.. Can tear the bridging veins
- This leads to bleeding in the subdural space


Superior sagittal sinus
Dura (peeled off skull)
Bridging vein (ruptured)
Skull fracture
Dura (still attached to skull)
Middle meningeal artery (ruptured)
Inner membrane
Outer membrane
Arterial blood
Venous blood
A. Epidural hematoma
B. Subdural hematoma