Lecture# 2

semester# 2

Head injury

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Head injury

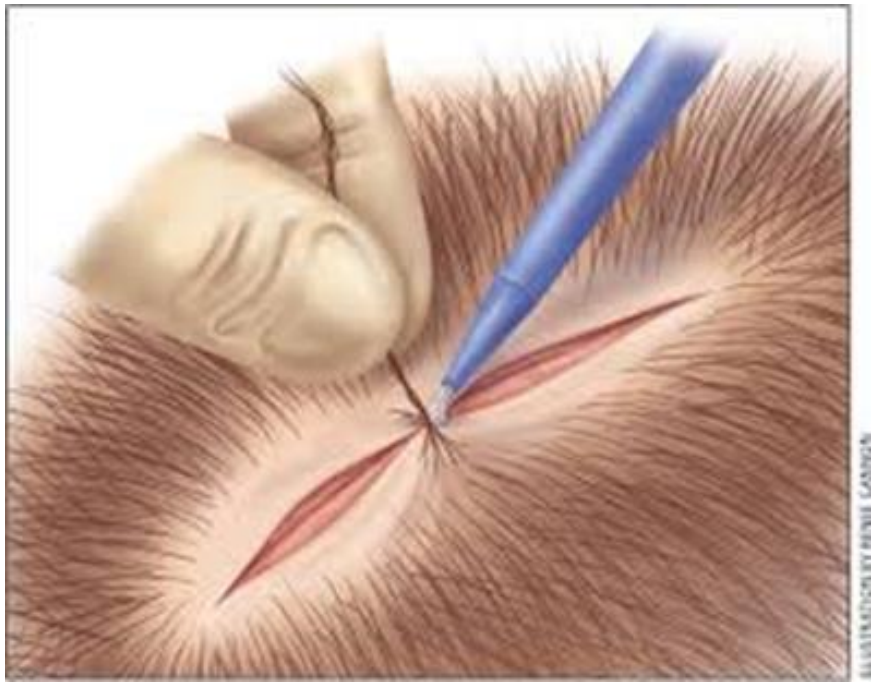
- is a broad classification that includes injury to the scalp, skull, or brain. It is the most common cause of death from trauma in the United States.
- Groups at highest risk for traumatic brain injury are persons age 15 to 24 years and males ،very young (under 5) and the very old (over 75)

Causes of Head injury

- Motor vehicle accident
- Firearm-related injures
- Fall
- Assault
- sports-related injures
- Recreational accidents

Types of head injuries

- Scalp lacerations
- The most minor type of head trauma
- Scalp- is highly vascular-profuse bleeding
- Major complications is infection



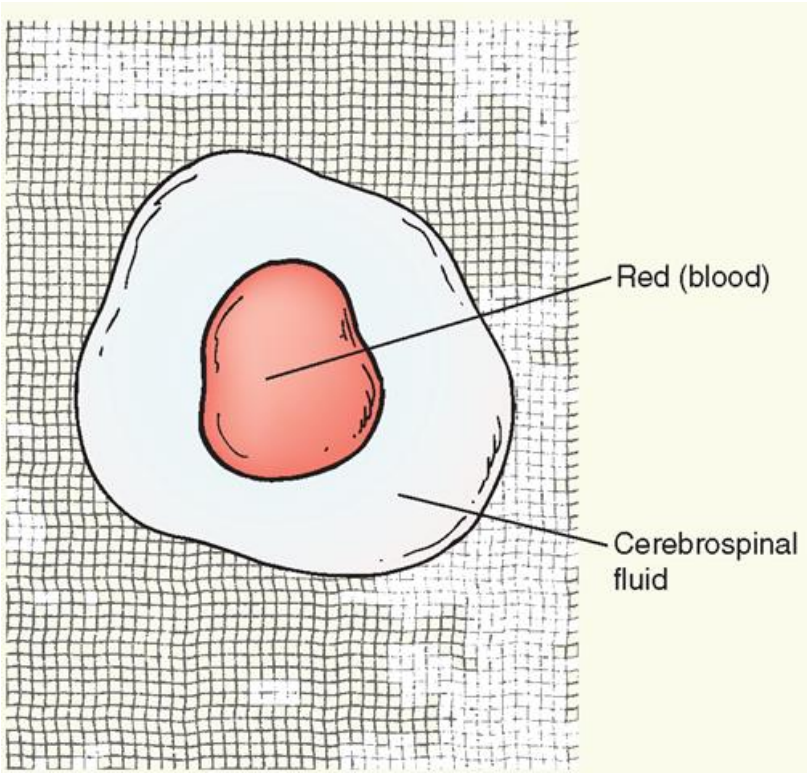
Types of head injury

Skull Fractures :- is a break in the continuity of the skull caused by forceful trauma. It may occur with or without damage to the brain. are classified as:-

- ✓ **linear, comminuted, depressed, or basilar**.
- ✓ A fracture may be **open**, indicating a scalp laceration or tear in the dura (eg, from a bullet or an ice pick),
- ✓ **closed**, in which the dura is intact
- ✓ hemorrhage from the nose, pharynx, or ears
- ✓ ecchymosis (bruising) may be seen over the mastoid (Battle's sign)
- ✓ (CSF otorrhea) and the nose (CSF rhinorrhea).

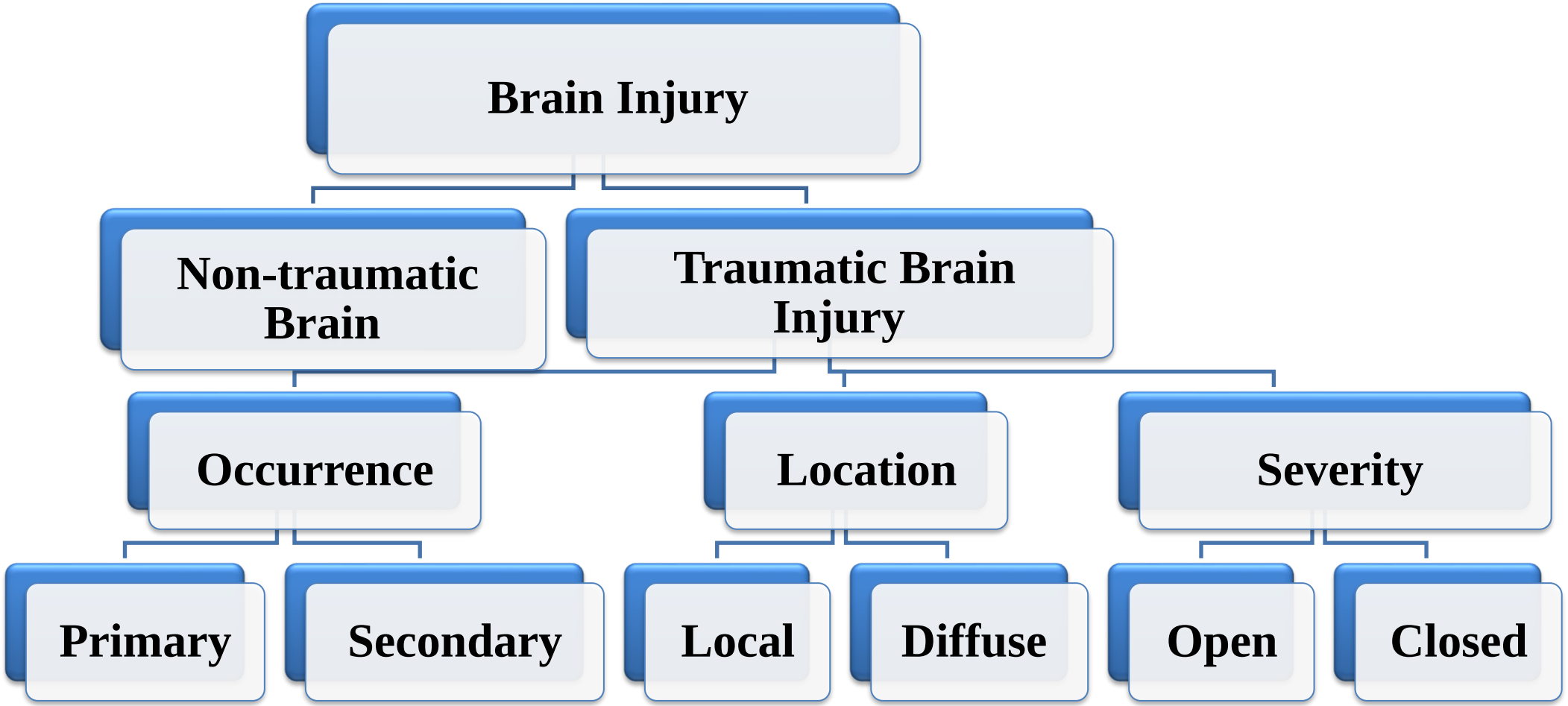
Basal skull Fractures

- CSF leak (extravasation) into ear (Otorrhea) or nose (Rhinorrhea)
- High risk infection or meningitis
- HALLO sign (Battle sign) on clothes of linen
- Possible injury to internal carotid artery
- Permanent CSF leaks possible



Medical Management

- ✓ Nondepressed skull fractures generally do not require surgical Treatment
- ✓ close observation of the patient is essential.
- ✓ Many depressed skull fractures are managed conservatively;
- ✓ The head is elevated 30 degrees to reduce ICP
- ✓ Persistent CSF rhinorrhea or otorrhea usually requires surgical intervention.


Brain Injury
Non-traumatic Brain
Traumatic Brain Injury
Occurrence
Location
Severity
Primary
Secondary
Local
Diffuse
Open
Closed

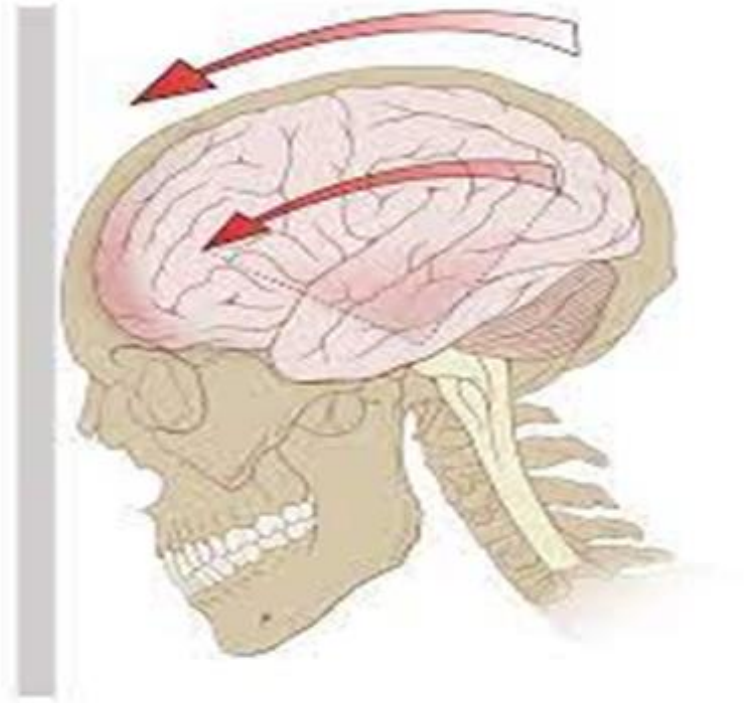
Clinical Manifestations of Brain Injury

- Altered level of consciousness
- Confusion
- Pupillary abnormalities (changes in shape, size, and response to light)
- Altered or absent gag reflex
- Absent corneal reflex
- Sudden onset of neurologic deficits
- Changes in vital sign
- Vision and hearing impairment
- Sensory dysfunction
- Spasticity
- Headache &Vertigo
- Movement disorders
- Seizures

Minor head trauma

-Concussion

- A sudden transient mechanical head injury with disruption of neural activity and a change in LOC
- Brief disruption in LOC
- Amnesia
- Headache
- Short duration



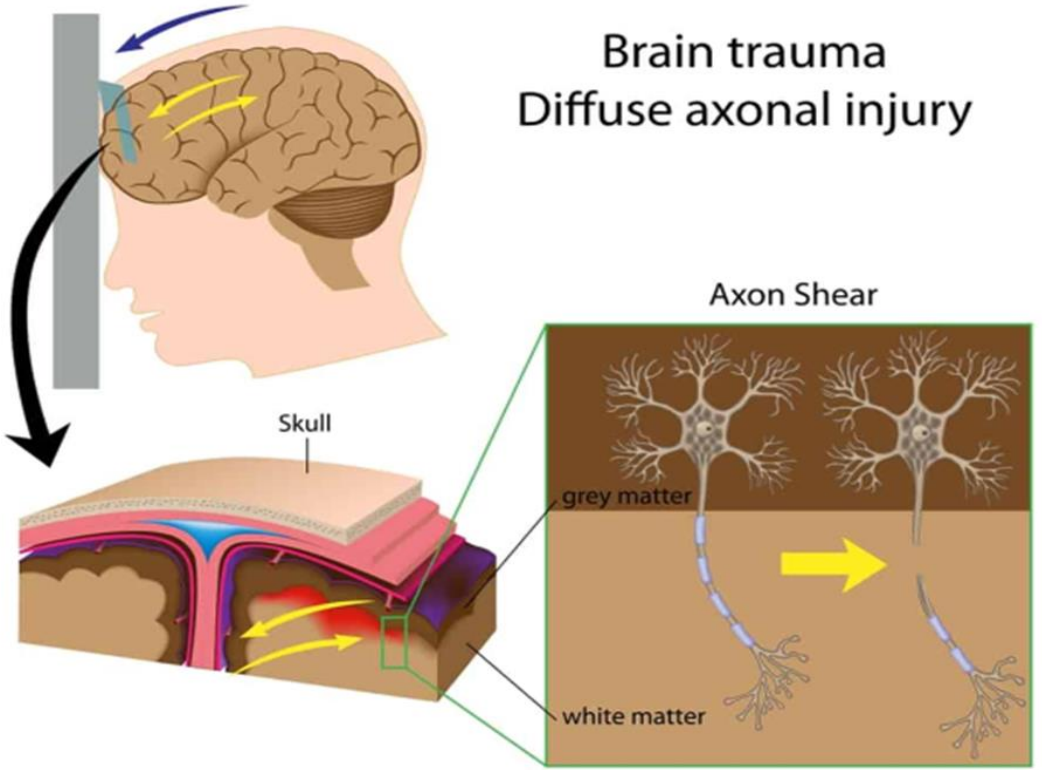
Major head trauma

- **Contusion**
- The bruising of brain tissue with a focal area that maintain the integrity of the pia mater and arachnoid layers

- **Lacerations**
- Involve actual tearing of the brain tissue
- Intracerebral hemorrhage is generally associated with cerebral laceration

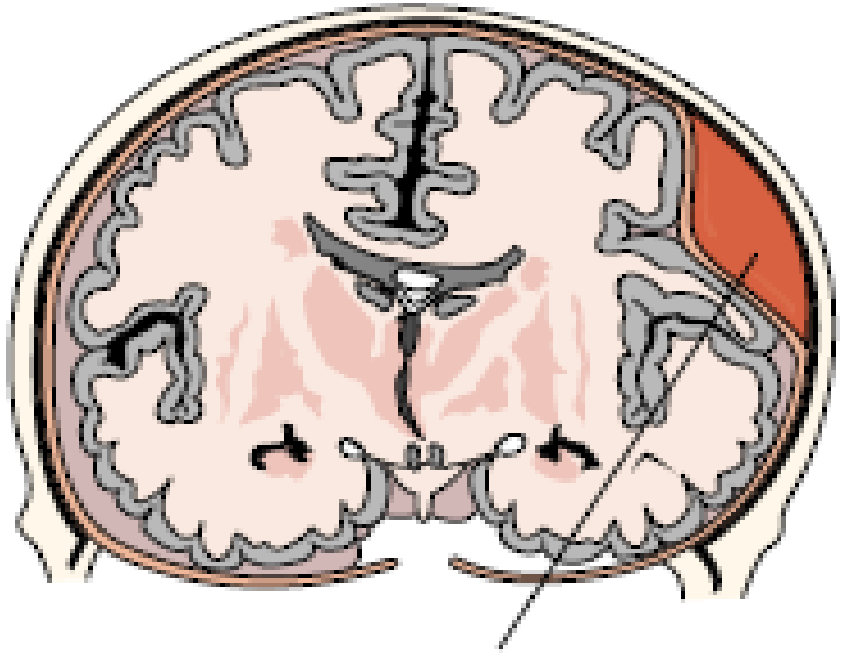
Diffuse Axonal Injury

widespread damage to axons in the cerebral hemispheres, corpus callosum, and brain stem. Clinically, the patient experiences immediate coma, decorticate and decerebrate posturing



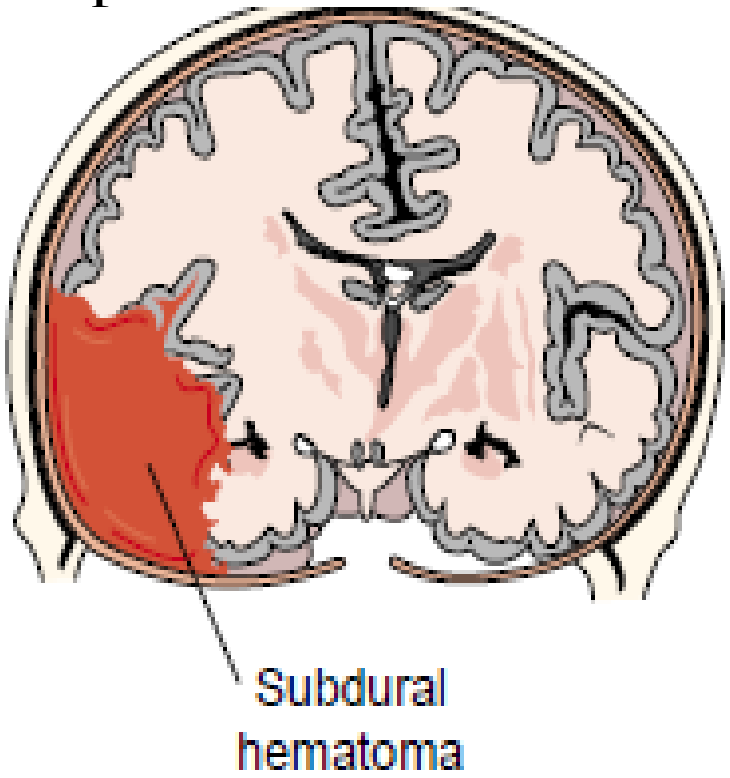
Complication of head injury

- Epidural hematoma
- Results from bleeding between the dura and the inner surface of the skull.
- Neurologic emergency
- Venous or arterial origin



Subdural hematoma

- Occurs from bleeding between the dura mater and arachnoid layer of the meningeal covering of the brain
- Usually venous in origin
- Much slower to develop into a mass large enough to produce symptoms
- May be caused by an arterial hemorrhage



Subdural Hematoma

Acute	Subacute	Chronic
symptoms develop over 24 to 48 hours. (LOC), pupillary signs, and hemiparesis. Coma, increasing blood pressure, decreasing heart rate, and slowing respiratory rate are requiring immediate intervention	less severe Clinical manifestations usually appear between 48 hours and 2 weeks after the injury. Signs and symptoms are similar to those of an acute subdural hematoma	The time between injury and onset of symptoms may be lengthy (eg, 3 weeks to months) There may be severe headache, alternating focal neurologic signs; personality changes; mental deterioration; and focal seizures.

Diagnostic study

- CT scan considered the best diagnostic test to determine craniocerebral trauma
- MRI
- Cervical spin X-ray
- Glasco Coma scale (GCS)
- Craniotomy
- Craniectomy
- Cranioplasty
- Burr-hole

Nursing management

- **Nursing assessment**
- GCS score
- Neurologic statues
- Presence CSF leak

Nursing diagnoses

- Ineffective tissue perfusion
- Hyperthermia
- Acute pain
- Anxiety
- Impaired physical mobility

Planning

- Maintain adequate cerebral perfusion
- Remain normothermic
- Be free from pain
- Discomfort and infection
- Attain maximal cognitive, motor and sensory function