PRESENTATION ON
HEAD INJURIES

INTRODUCTION

Head injury is a broad classification that include injury to scalp, skull or brain. It is the most common cause of death from trauma. Trauma involving the control nervous system can be life threatening. Even if it is not life threatening, brain and spinal cord injury way result in major physical and psychological dysfunction, and can alter the life completely.

Head injury

HEAD INJURY

DEFINITION

A head injury is a any trauma to the scalp, skull or brain. The injury may be a minor bump on the skull or a serious brain injury.

CAUSES

- Motor vehicle accidents
- Falls
- Assaults
- Sports related injuries
- Firearm related injuries
- Act of violence

TYPES OF HEAD INJURY

1. Skull Injuries/ laceration

Scalp laceration are associated with profuse bleeding. These are easily recognised because the scalp contain many blood vessels with poor constrictive abilities, even small wounds can bleed significantly

2. Skull Fractures

It frequently occur with head trauma. Fractures may be closed or open, depending on the presence of a scalp laceration or extension of fracture into air sinuses or dura.

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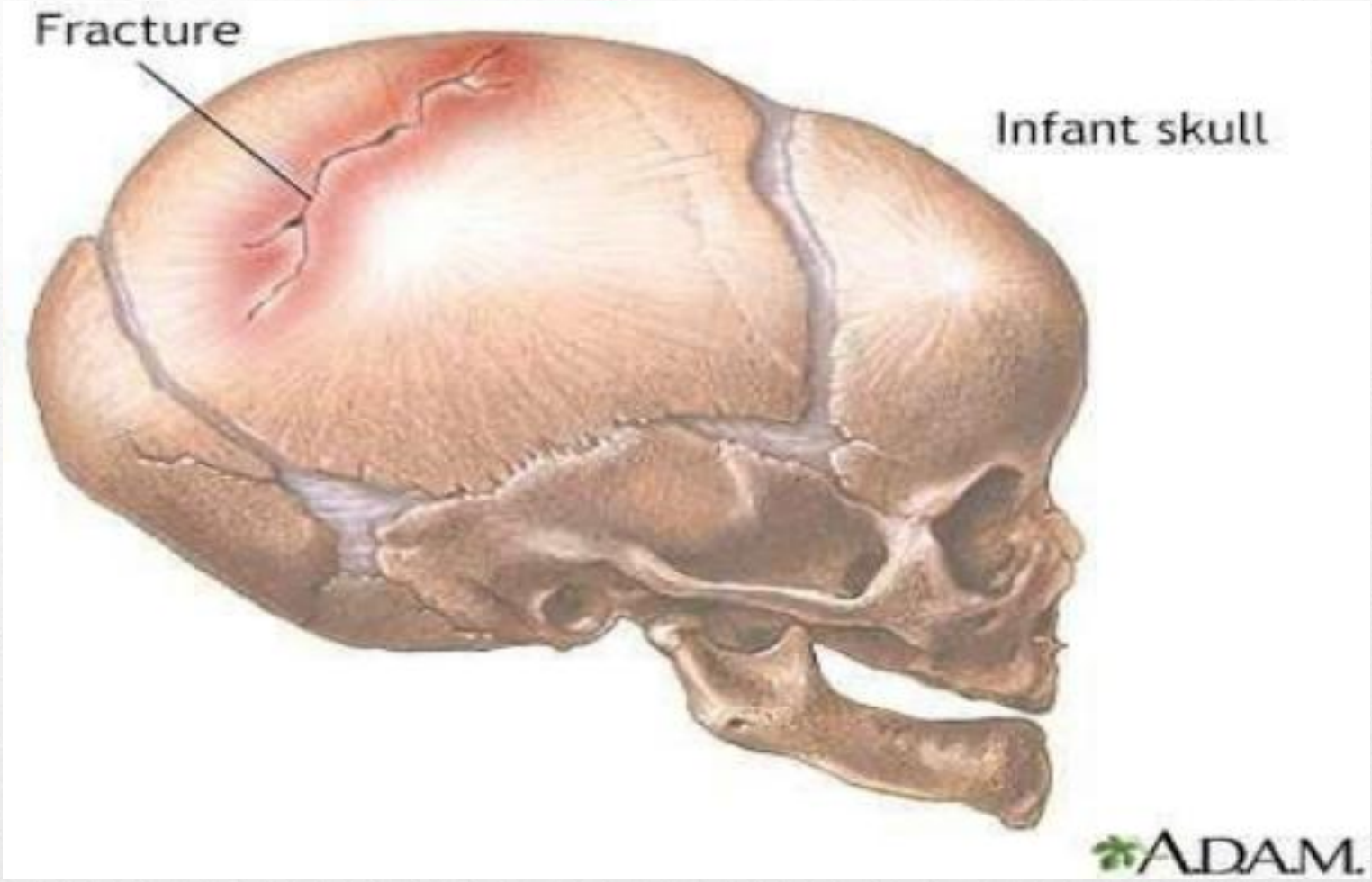

Fracture
Infant skull
A.D.A.M.

Types of skull fracture

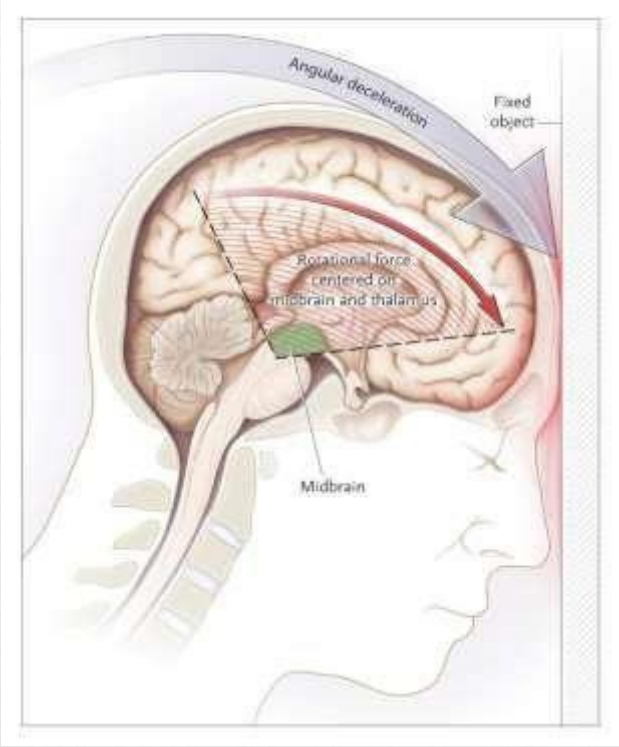
1. Linear- Break in continuity of bone without alteration of relationship of parts.
2. Depressed- Inward indentation of skull
3. Simple- Linear or depressed skull fracture without fragmentation or communicating lacerations.
4. Comminuted- Multiple linear fractures with fragmentation of bone into many pieces.
5. Compound- Depressed skull fracture and scalp laceration with communicating pathway to intracranial cavity

3. Minor Head Trauma

- **CONCUSSION**

A sudden transient mechanical head injury with disruption of neuronal activity and a change in the LOC.

It occurs when the brain suddenly shifts inside the skull and knocks against the skull bony surface.



Typical Signs:-

*Brief disruption of LOC

*Concussion can last from a few over 3 minutes or less than 5 minutes.

* Retrograde amnesia

* Headache

4. Major Head Trauma

- **Contusion**

*It is the bruising of the brain tissue within a focal area.

* It is usually associated with a closed head injury.

* In this type of injury contusion occur both at the site of the direct impact of the brain on the skull (coup) and at a secondary area of damage on the opposite side away from injury (conrecoup) leading to multiple contusion areas.

Pathophysiology

1. Brain suffer from traumatic injury
2. Brain swelling or bleeding occurs
3. Increase in intracranial volume
4. Increase in intracranial pressure
5. Pressure on blood vessels within the brain causes blood flow to the brain to slow
6. Cerebral hypoxia and ischaemia occur
7. ICP continues to rise and brain may herniate
8. Cerebral blood flow ceases.

TEST TO DETERMINE CSF LEAKAGE

There are 2 methods:-

1. Method 1 - Use dextrestix or tes-tape strip to determine whether glucose is present. CSF give positive reading for glucose. If blood is present in the fluid, the test becomes unreliable because blood itself contains glucose. Then go for method 2.

Method 2- (Halo or Ring sign)

* Allow the leaking fluid drip onto a white pad or towel and abserve the drainage.

* Within a few minutes, the blood coalesces into the center, and a yellowish ring encircles the blood if CSF is present.

Other tests

CT scan of the head- first line imaging to detect

fractures, hematomas, brain swelling or bleeding

MRI for more detailed brain evaluation

Skull X ray

CLINICALMANIFESTATION

- Altered level of consciousness
- Confusion
- Pupillary abnormalities (change in shape , size and response to light).
- Sudden onset of neurologic deficits
- Changes in vital signs (altered respiratory pattern, hypertension, bradycardia, tachycardia hypothermia or hyperthermia).
- Trouble walking and speaking
- Drainage of bloody or clear fluids from ears or nose
- Vomiting
- Seizures
- Weakness or numbness in legs or arms

COMPLICATIIONS

- Intracranial Haemorrhage- bleeding within the skull
- Cerebral edema- swelling of the brain
- Skull fractures
- Seizures- abnrmal brain activity
- Infections secondary to open head injuries
- CSF leakage
- Haematoma formation

MANAGEMENT

- Severe head injury is best managed in a neurointensive care setting
- The patient should be positioned with the head up 30 degrees- reason?

Medications

1. Osmotic diuretics - Mannitol 25%

   1.5- 2g/kg IV injured over 30-60 minutes
2. Anti-convulsant- Phenytoin

   where it may inhibit spread of seizures

   activitiy in motor cortex

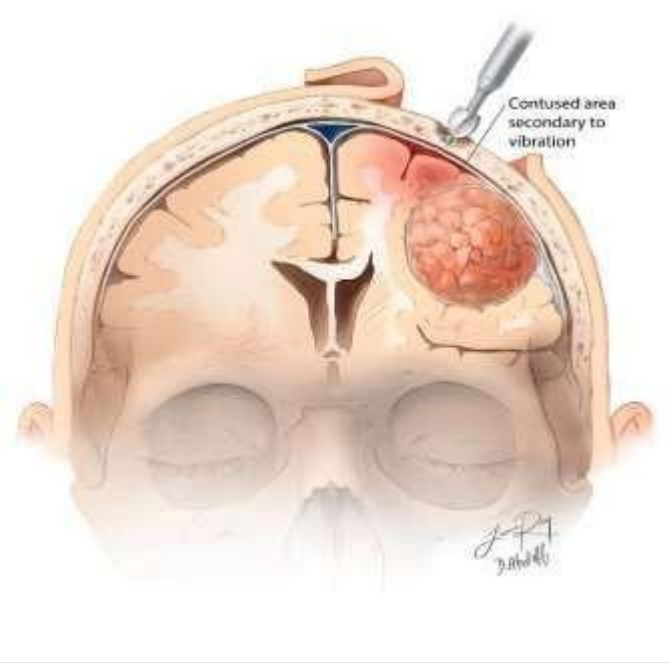
   Dosage- Load 10-150mg/kg
3. Barbiturates- Pentobarbital

   It will reduce the brain metabolic rate and helps reduce ICP

   Dosage- 100mg IV or 150-200mg IM

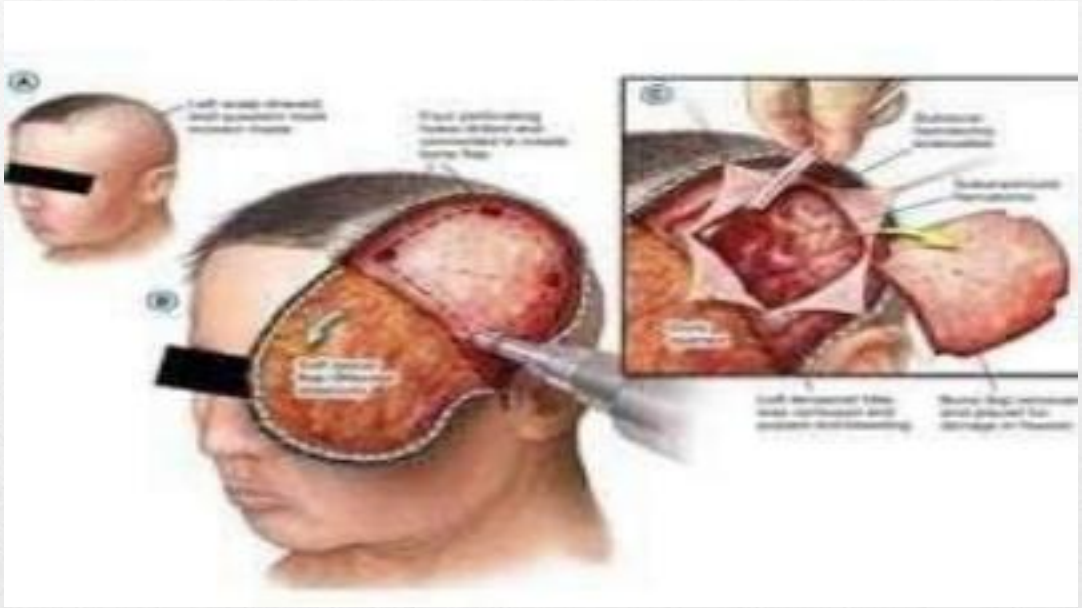
SURGICAL MANAGEMENT

1) Burr- hole or treplanning – A hole is drilled or scraped into the human skull, exposing the duramater to treat health problems related to intracranial disease.

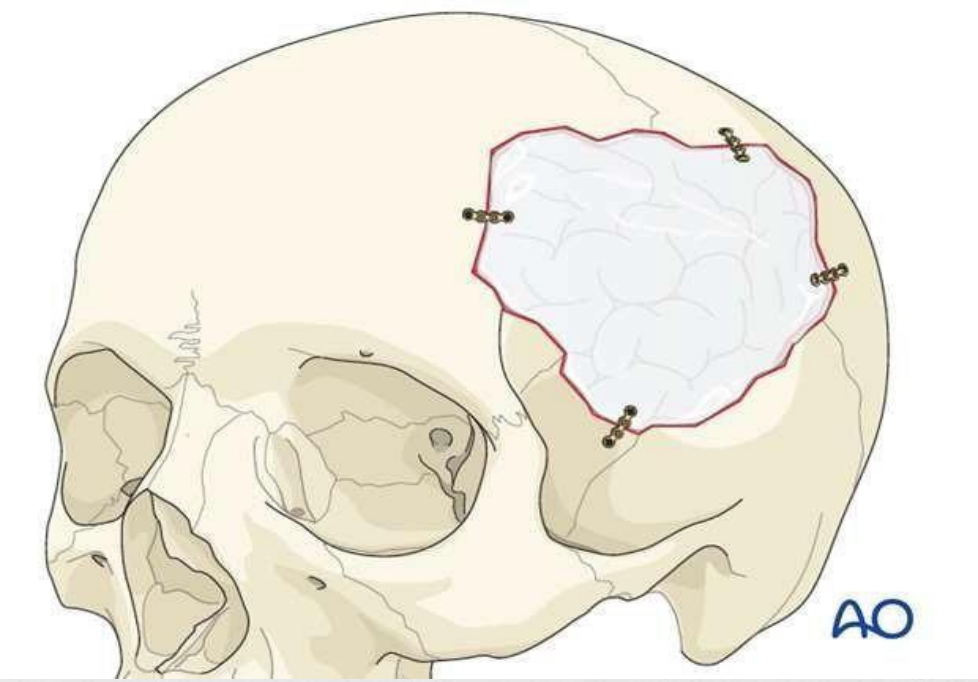


2.Craniotomy- Bone flap is temporarily removed from the skull to access the brain

3.Craniectomy - Excision into cranium to cut away a bone flap.



4.Cranioplasty - Surgical repair of a defect or deformity of a skull



NURSING DIAGNOSIS

- Ineffective cerebral tissue perfusion related to increased ICP and decreased CPP as evidenced by unconsciousness and change in vital signs.
- Fluid volume deficit related to decreases level of consciousness and hormonal dysfunction as evidenced by
- Risk for injury related to decrease level of consciousness.
- Impaired skin integrity related to compromised circulation shifting of fluid from intravascular to interstitial space as evidenced by….
- Anxiety related to outcome of disease as evidenced by poor concentration on work isolation from other rude behaviour
  as evidenced by…

Nursing Diagnosis

- Ineffective cerebral tissue perfusion related to cerebral edema as

  evidenced by unconsciousness and change in vital signs.

Goal- Maintain level of consciousness GCS

Interventions

Neurological examination can be done assess the glassgow soma scale.

Provide rest b/w two procedures.

Give a continuous observation

Administer IV mannitol

Nursing Diagnosis 2-

Ineffective thermoregulation related to damage to hypothalamic centre as evidenced by persistent elevation of body, temperature , warmth and dry skin.

Goal- ~~Maintain body temperature to normal range.~~

Interventions-

* Monitor temperature frequently and continuously
* Provide adequate fluid to the patient
* Provide adequate fluid to the patient
* Maintain proper ventilation in room

❖ Nursing Diagnosis 3-

❖ Ineffective airway clearance related to increased production of secretion retained as evidenced by change in the rate of respiratory use of accessory muscles.

Goal- Maintain patent airway

Interventions

* Auscultate breath sound
* Assess for any obstruction in airway
* Provide humidified oxygen
* Administer O_2 therapy
* Give suctioning, if necessary

❖ Nursing Diagnosis 4-

Risk for infection related to CSF leakage from nose

Goal- Prevent or decrease the risk for infection

Interventions

* Aseptic techniques should be maintained

* Maintain sterility

* Hand washing should be done before and after the procedure

*Assess the skin for any lesions so that any micro- organism do not invade from there.

* Provide antibiotics

SUMMARY

We have discussed about the intro, definition, causes types of head injury, it‘s clinical manifestation, pathophysiology, complications, measures, diagnostic medical management surgical management and nursing management of head injury.

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CONCLUSION

- Head injury is the most common result of traffic accident.
- For further prognosis and treatment of patients with head injury substrate an CT of the brain is essential for the further prognosis and treatment.
- It is usually minor head injury with associated extremity injuries, while severe head injuries associated with chest trauma.
- Severe head injury is important factor of the final outcome

Any Questions