South East of Scotland Major Trauma Centre Training and Education

SCOTTISH TRAUMA NETWORK SOUTH EAST

ICU Trauma
Head Trauma - Management of TBI

The primary concerns when managing a head injury are ensuring adequate oxygenation of the brain, managing good brain perfusion and controlling raised Intracranial Pressure (ICP).

Intubation and ventilation of the patient is the best way to ensure good oxygenation, and to facilitate carbon dioxide level control.

- > CO2 in blood will cause blood vessels in the brain to dilate, increasing brain blood volume and consequently > ICP.
- Caution needs to be taken to ensure that CO2 levels do not become too low – blood vessels will over-constrict causing brain ischaemia.

Simple interventions such as elevating the head of the patient's bed and ensuring good jugular venous drainage can reduce ICP.

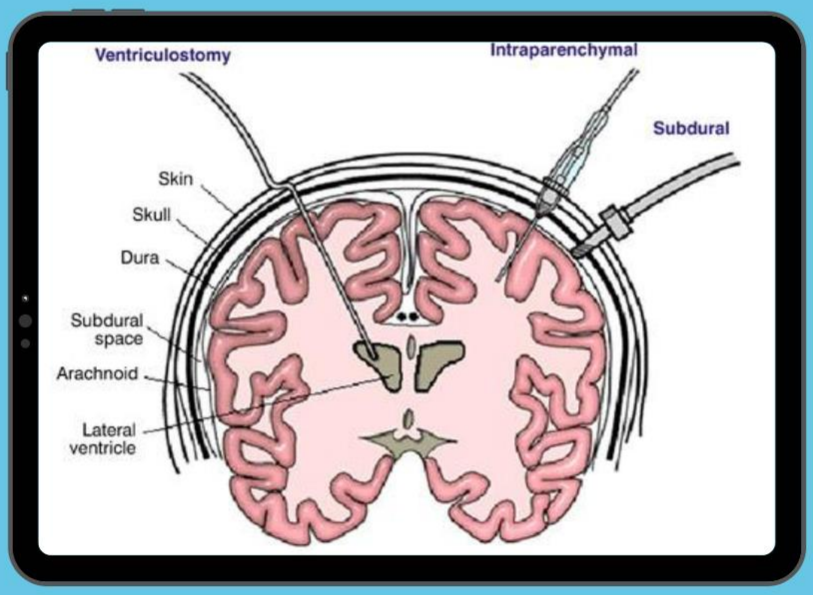

Image credit: https://www.medgadget.com

ICP can be measured by placing a catheter into the brain and measuring the pressure directly.

Hypertonic (5%) saline or Mannitol can be used to reduce the amount of cerebral water and therefore reducing ICP.

I.V. Fluids or peripheral vasoconstrictor (noradrenaline) are used to elevate blood pressure and maintain adequate cerebral perfusion pressure (CPP).

Useful resources:

- Management of traumatic brain injury (TBI) in adults (NHS Lothian intranet – directory – Cirtical Care – Neurological)
- ICU Head Injury Management Flow Chart (NHS Lothian intranet – directory – Critical Care – Neurological)
- Critical Care Management of Sub-Arachnoid Haemorrhage (SAH) – directory – Critical Care – Neurological)

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