Intra cranial hemorrhage

Lecturer
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INTRACRANIAL HEMORRHAGE

- Extravascular accumulation of blood within different intracranial spaces.
- **Location:**

❖ **Intra-axial haemorrhage:**

- **Intracerebral haemorrhage**
  - basal ganglia haemorrhage
  - lobar haemorrhage
  - pontine haemorrhage
  - cerebellar haemorrhage
- **Intraventricular haemorrhage (IVH)**

❖ **Extra-axial haemorrhage**

- **extradural haemorrhage (EDH)**
- **subdural haemorrhage (SDH)**
- **subarachnoid haemorrhage (SAH)**

CAUSES

- **Traumatic :**
- extradural haemorrhage (EDH).
- subdural haemorrhage (SDH).
- subarachnoid haemorrhage (SAH).
- cerebral haemorrhagic contusion.

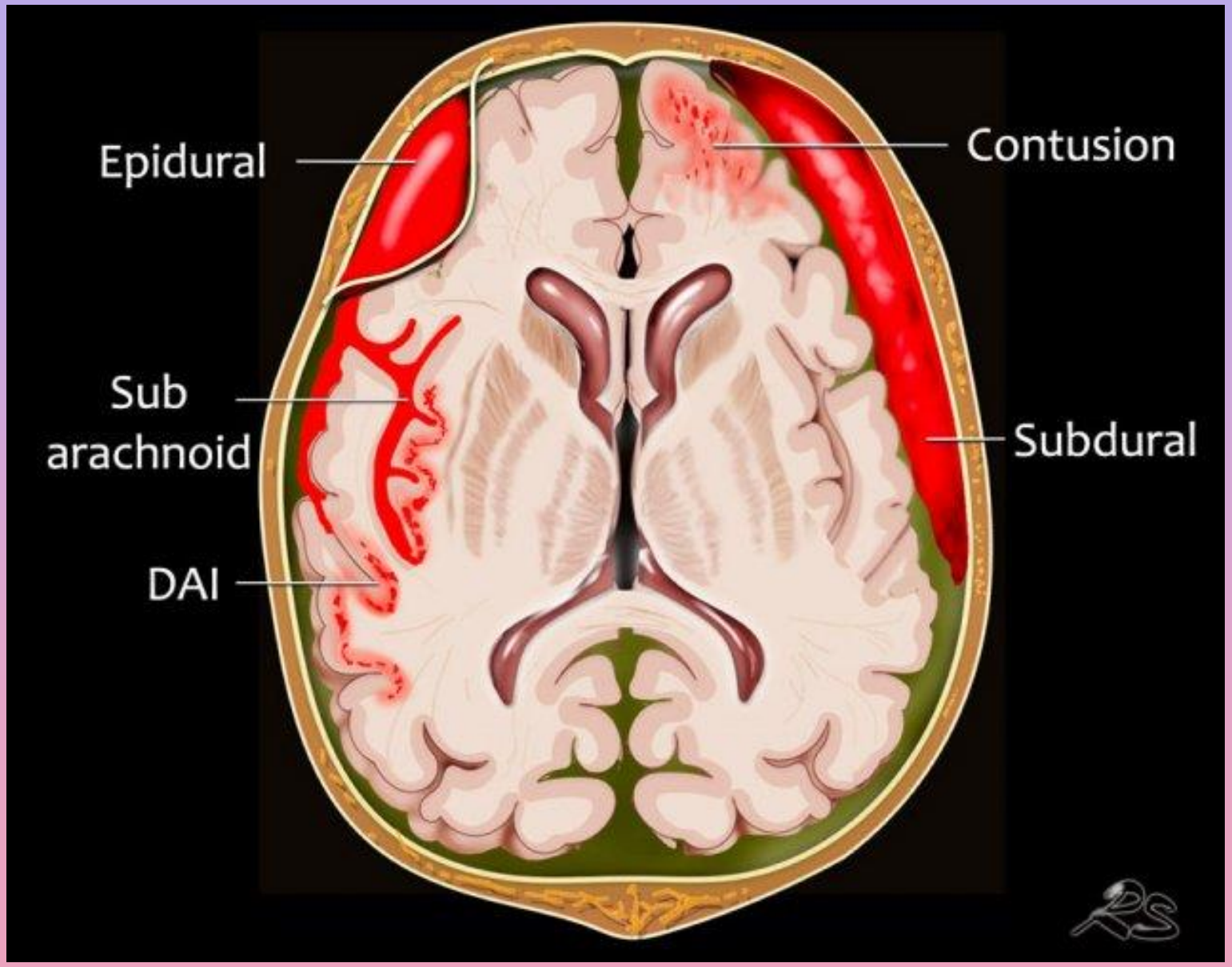
- **Non traumatic**
- hypertensive haemorrhage(s).
- vascular malformation(s).
- tumour related hemorrhage.
- cerebral amyloid angiopathy.
- cerebral venous thrombosis.

CT scan

- The first imaging modality used.
- Acute blood is **markedly hyperdense** compared to brain parenchyma.
- ***CT angiography (CTA)*** is increasingly used to assess for a vascular underlying cause, particularly in ***cases of subarachnoid haemorrhage.***
- MRI is typically requested when an underlying abnormality is suspected (tumor ?)
- **Acute hemorrhage is not hyperdense if the patient is anemic (hemoglobin < 8 g/dl)**

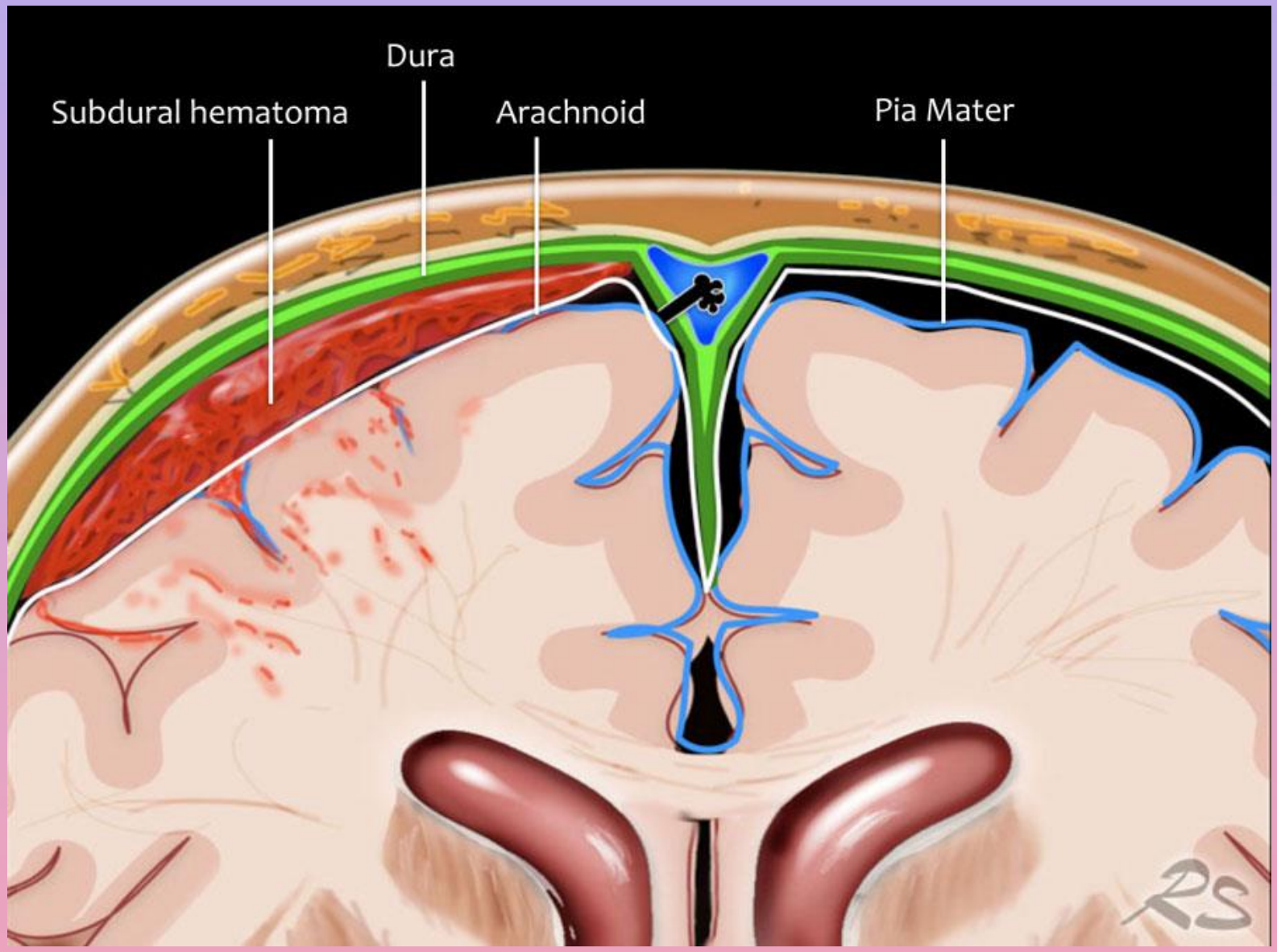
Extradural hemorrhages (EDH)

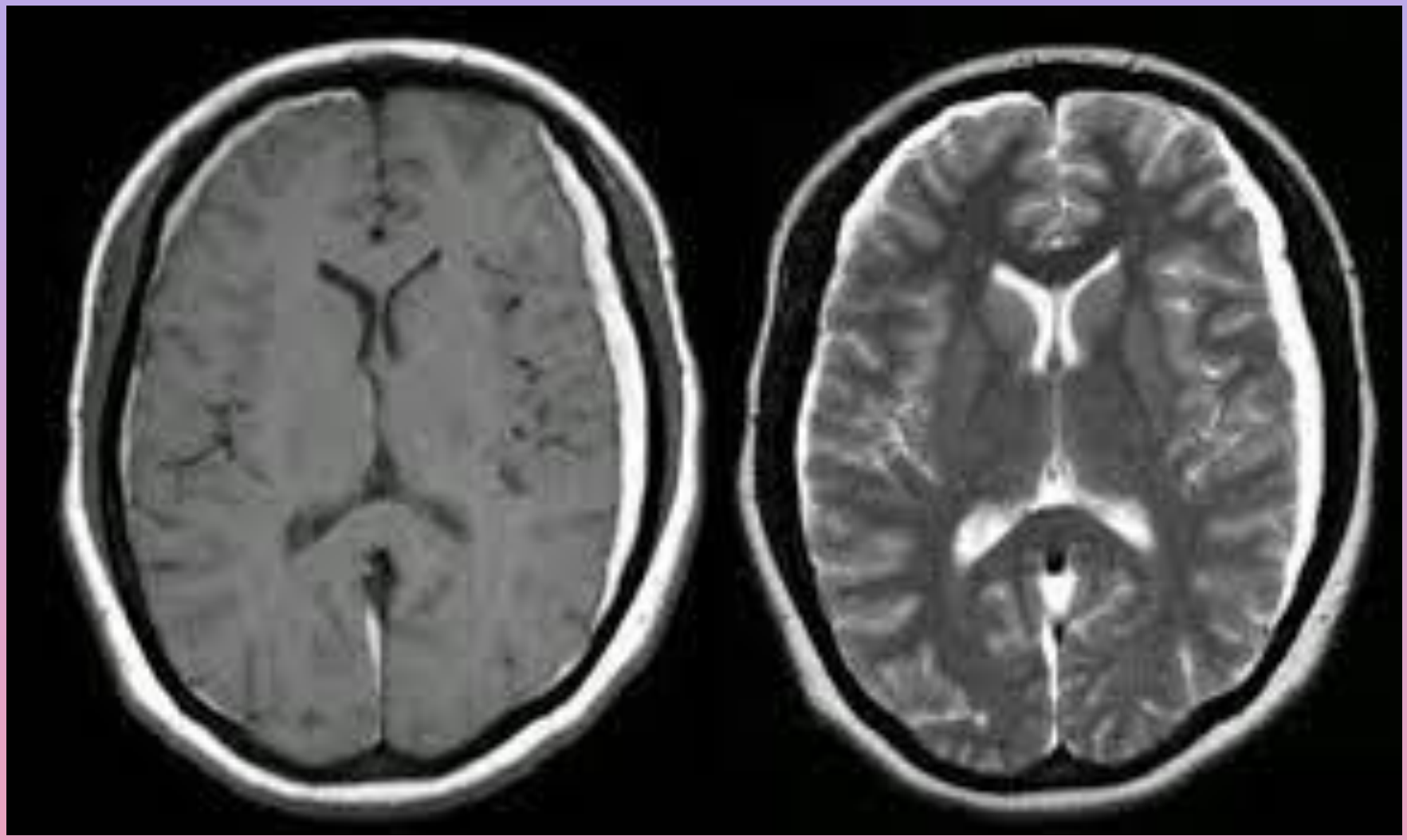
- Represent collections of blood in the extradural (epidural) space. The hemorrhage sits between the skull superficially and the dura which overlies the brain parenchyma. The bleed in relation to the dura mater is the key anatomical difference between an extradural and a subdural hemorrhage.
- It is mostly seen in children who have a head injury with fracture of the temporal bone resulting in tearing of the middle meningeal artery.
- can cross the midline because it is located between the dura and the skull.
- an epidural hematoma usually does not cross suture lines.


Epidural
Contusion
Sub
arachnoid
Subdural
DAI

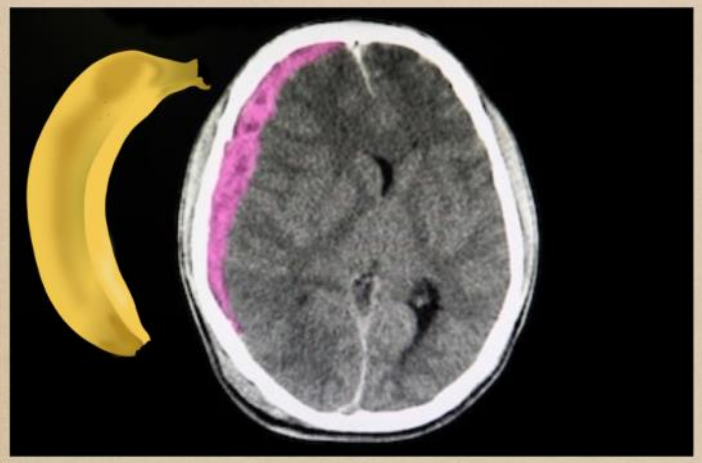
Subdural hematoma

- A subdural hematoma is a collection of blood between the inner layer of the dura and the arachnoid.
  It cannot cross the midline, but can be located near dural folds like the falx or the tentorium.
- It usually results from rupture of the cortical bridging veins.
  It usually occurs in head trauma and especially in patients who are treated with antcoagulantia.
- It is most common in elderly and alcoholics with atrophy.


Dura
Subdural hematoma
Arachnoid
Pia Mater
RS



Subdural Hematoma



- Concave/Crescent-Shaped
- Bridging Veins
- Elderly, Alcoholics

suB = Banana

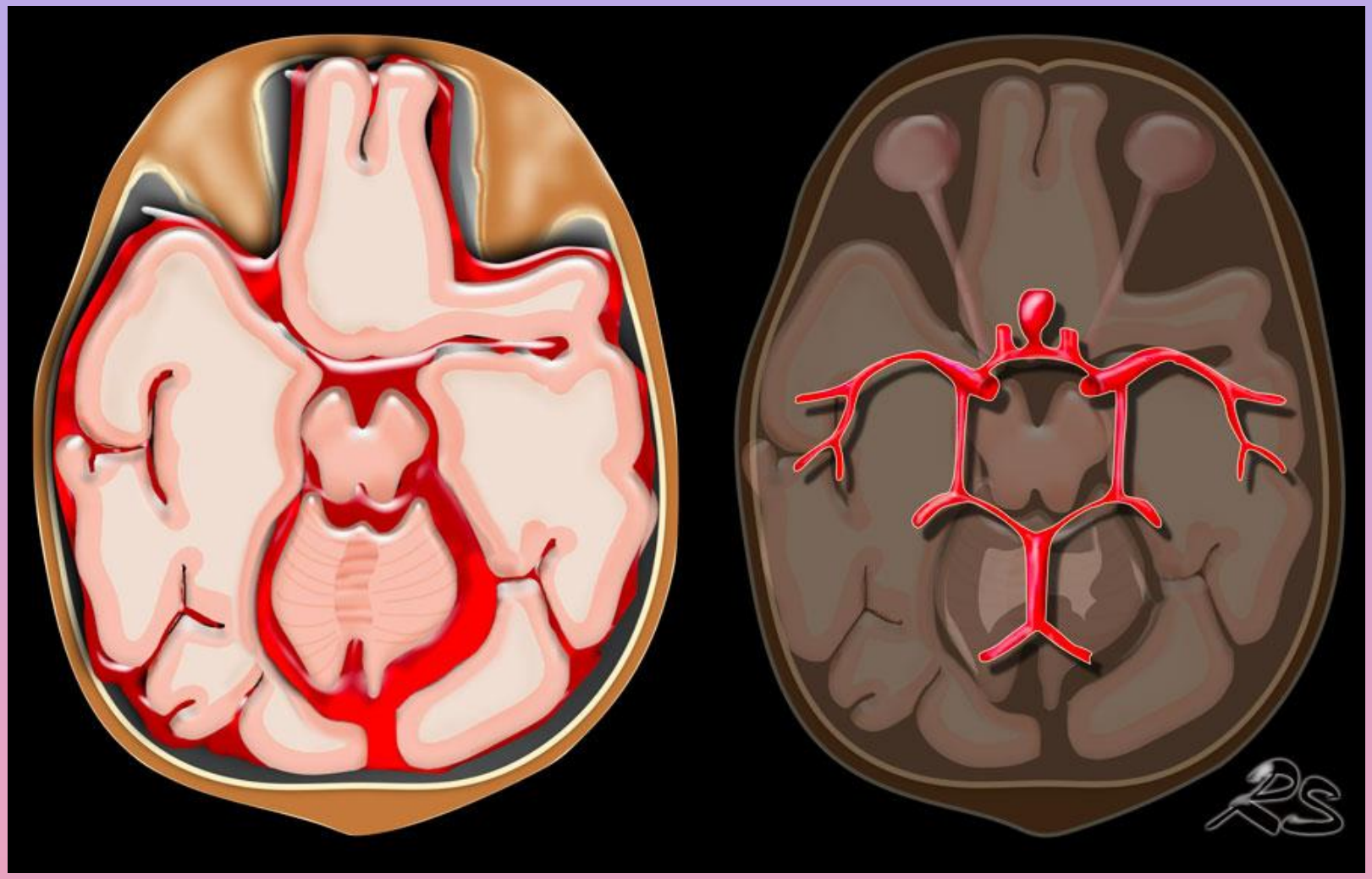
Epidural Hematoma

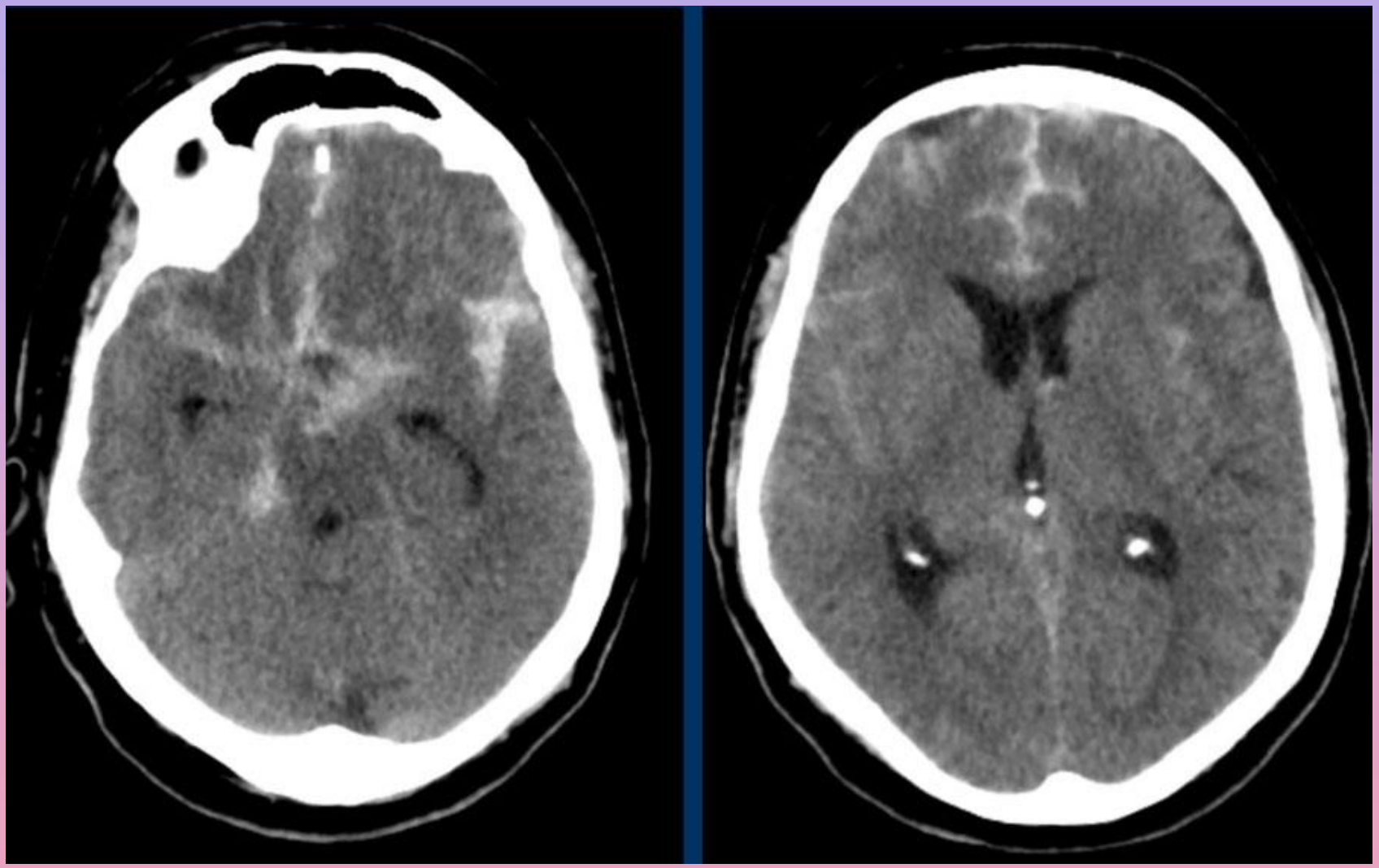
- Convex/Lens-Shaped
- Middle Meningeal Artery
- “Lucid Interval”

Epi = Pie = Lemon

subarachnoid hemorrhage (SAH)

- Is bleeding in the subarachnoid space between the arachnoid and the pia mater.
- The most common cause is trauma.
- Non-traumatic SAH is the result of aneurysmal rupture with spread of blood into the subarachnoid cisterns





Cerebral hemorrhage

- An **intracerebral hemorrhage**, or **intraparenchymal cerebral hemorrhage**, is a subset of an intracranial hemorrhage and encompasses a number of entities that have in common the acute accumulation of blood within the parenchyma of the brain.

Causes

- primary hemorrhages (no underlying lesion)
- lobar hemorrhages secondary to cerebral amyloid angiopathy
- hypertensive hemorrhages
- secondary hemorrhages (some other lesion complicated by hemorrhage)
- ischemic stroke
- cerebral venous thrombosis
- vascular malformation
- tumor (primary or secondary)