

Normal Cortical Anatomy

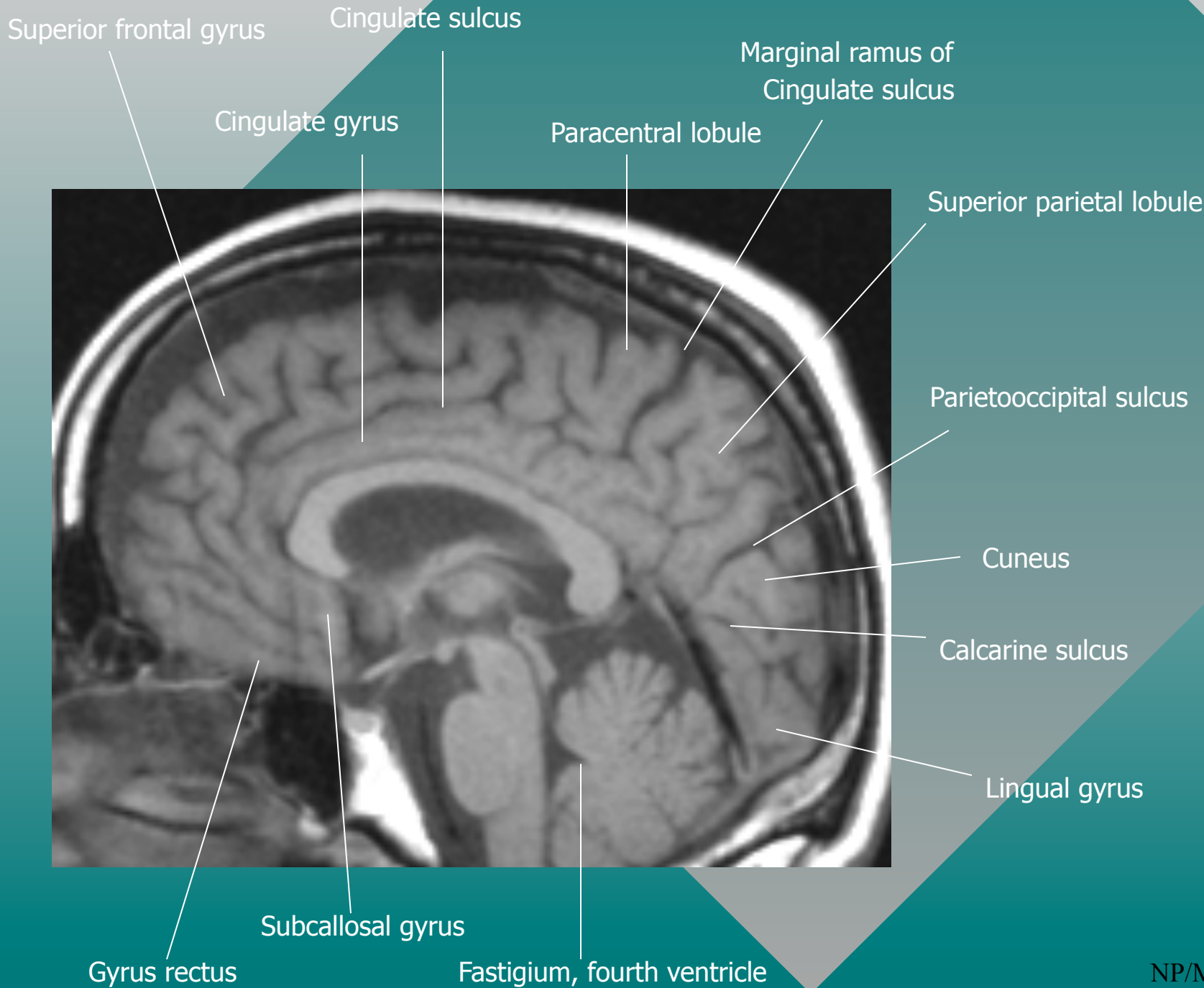
MGH

Massachusetts General Hospital
Harvard Medical School

NORMAL CORTICAL ANATOMY

- Sagittal
- Axial
- Coronal
- The Central Sulcus

Sagittal Neuroanatomy



Superior frontal gyrus

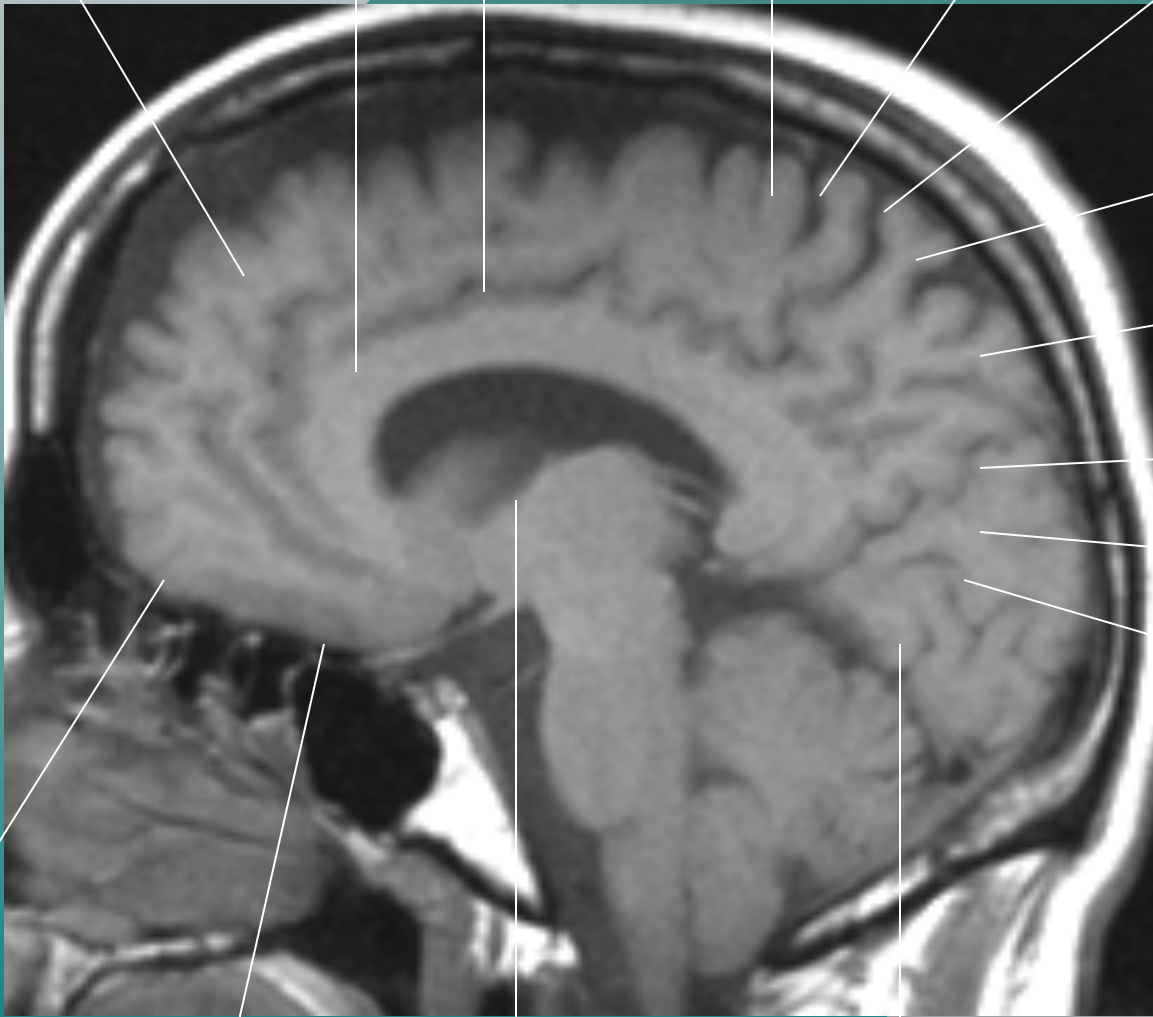
Cingulate sulcus

Precentral gyrus

Marginal ramus of Cingulate sulcus

Cingulate gyrus

Central sulcus



Superior parietal lobule

Precuneus

Parietooccipital sulcus

Cuneus

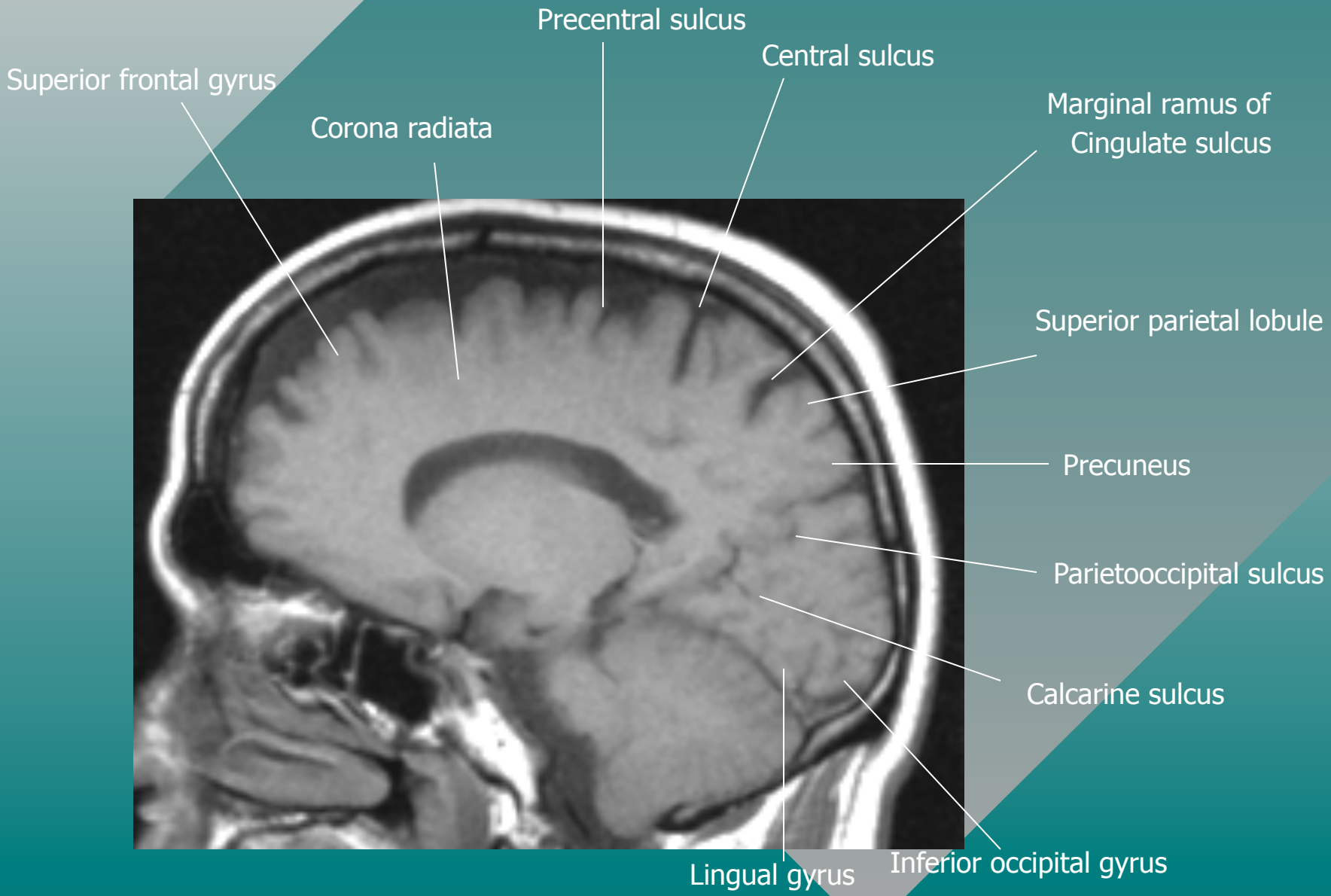
Calcarine sulcus

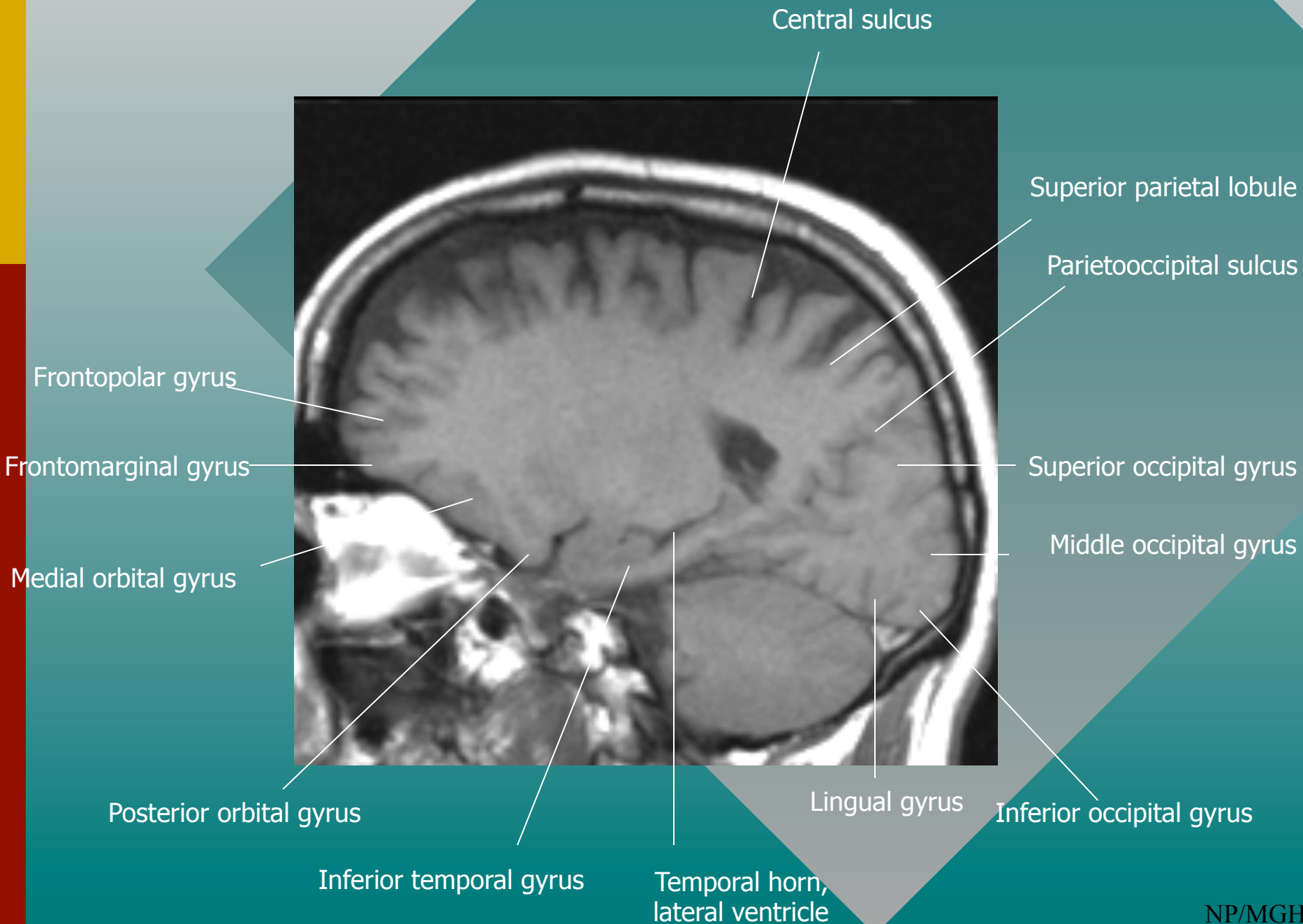
Frontomarginal gyrus

Gyrus rectus

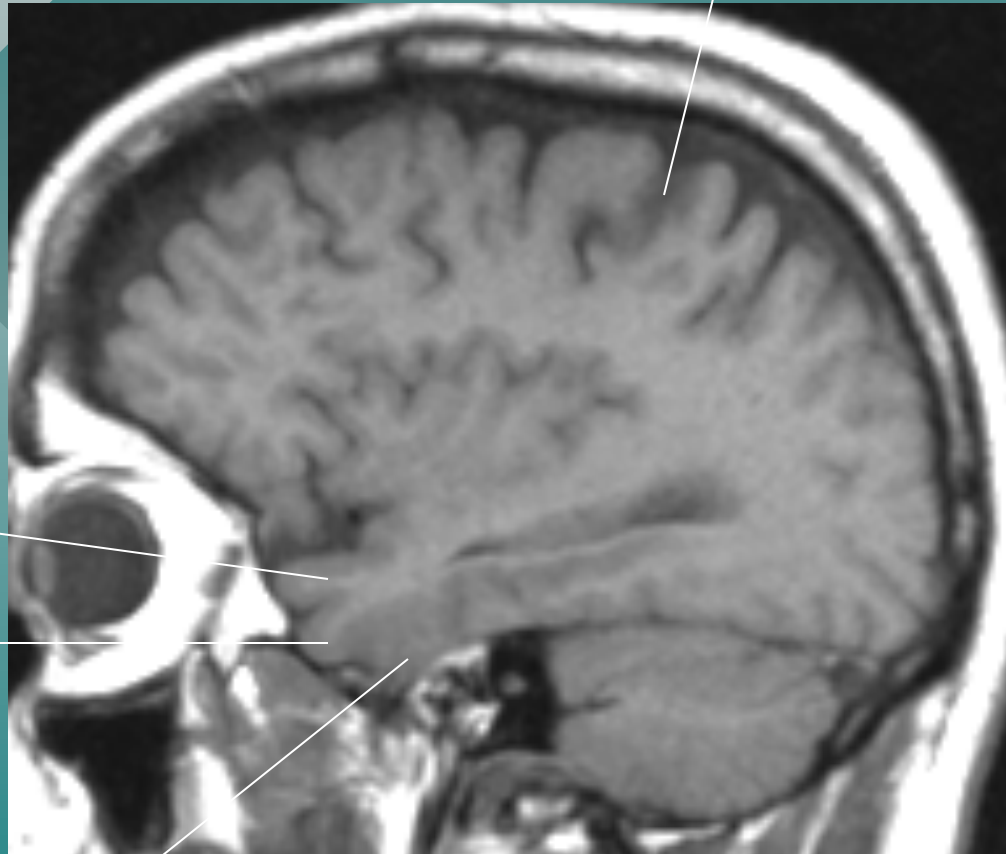
Caudothalamic groove

Lingual gyrus





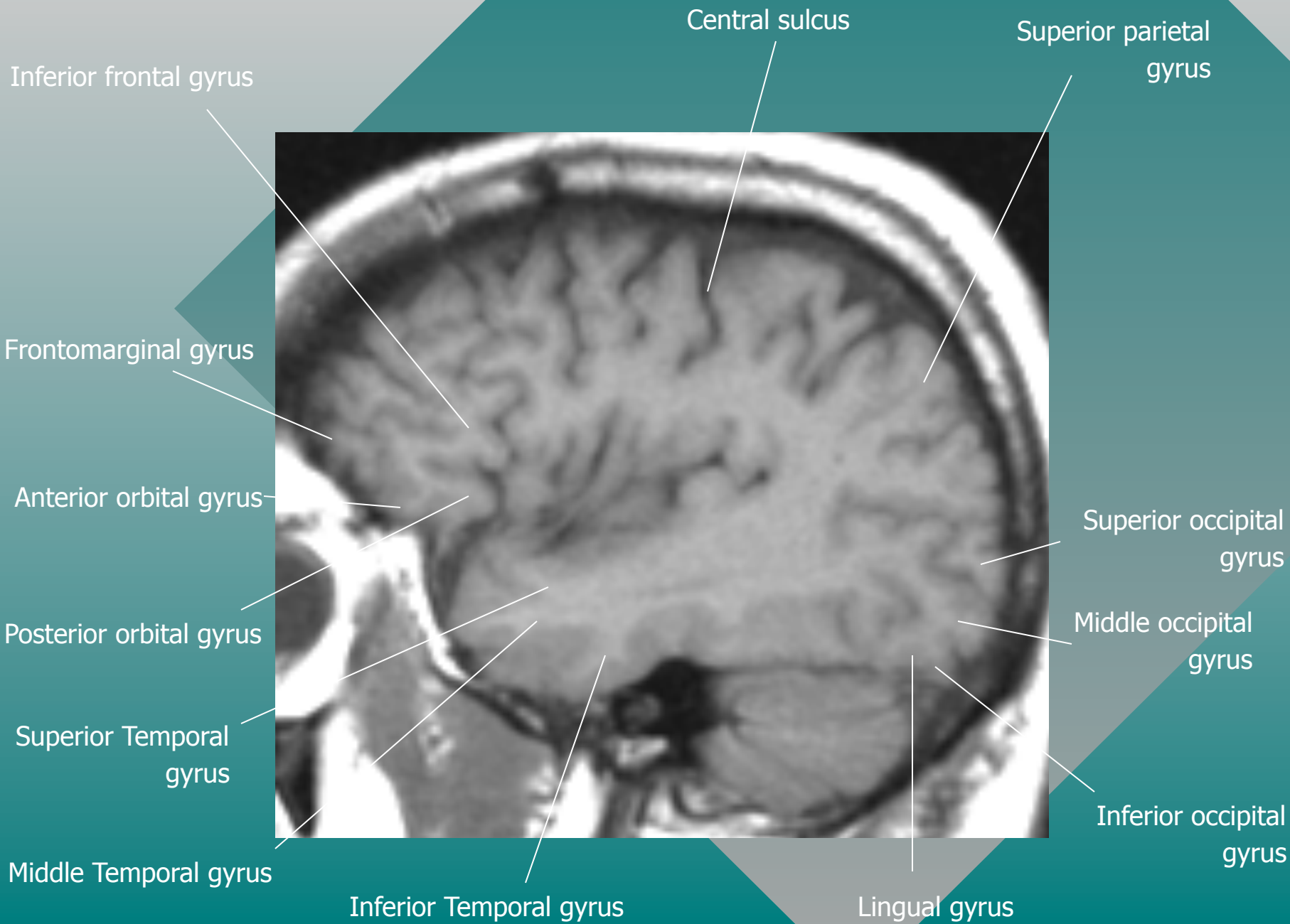
Central sulcus



Superior Temporal gyrus

Middle Temporal gyrus

Inferior Temporal gyrus



Precentral sulcus

Superior frontal sulcus

Central sulcus

Postcentral sulcus

Inferior frontal gyrus,
pars triangularis

Lateral fissure,
posterior segment

Inferior frontal gyrus,
pars orbitalis

Angular gyrus

Superior Temporal gyrus

Superior Temporal sulcus

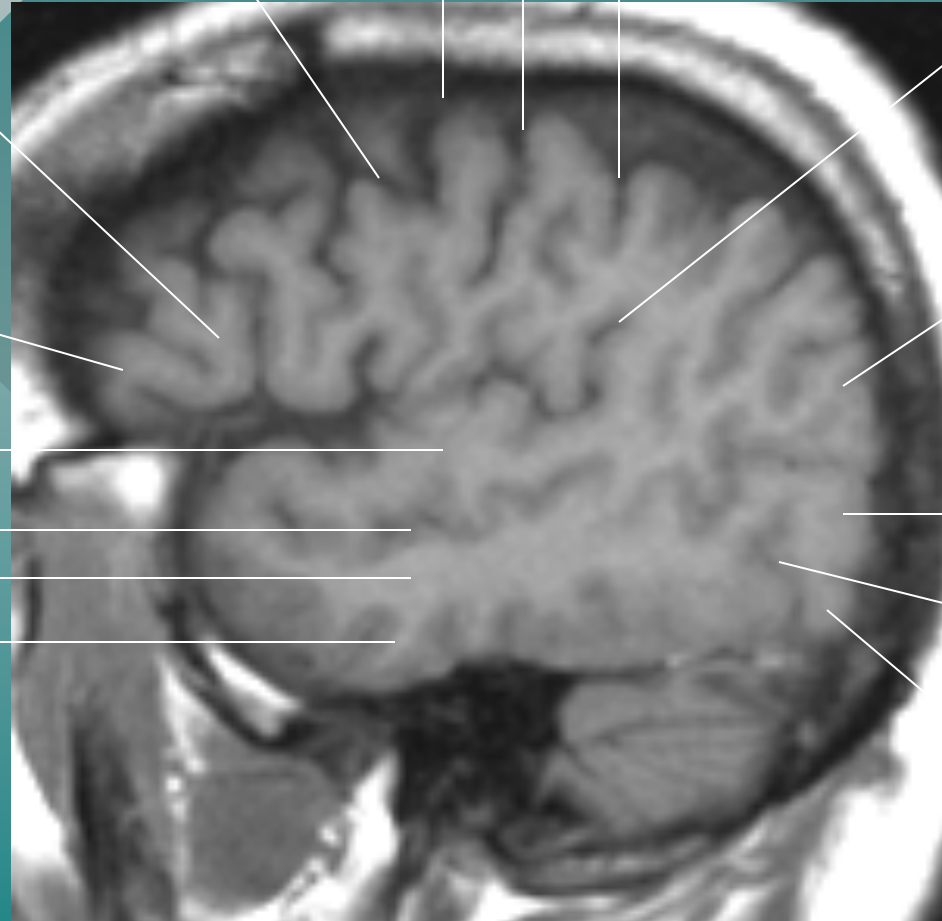
Middle occipital gyrus

Middle Temporal gyrus

Inferior Temporal gyrus

Anterior occipital sulcus

Inferior occipital gyrus



Axial Neuroanatomy

Fusiform gyrus

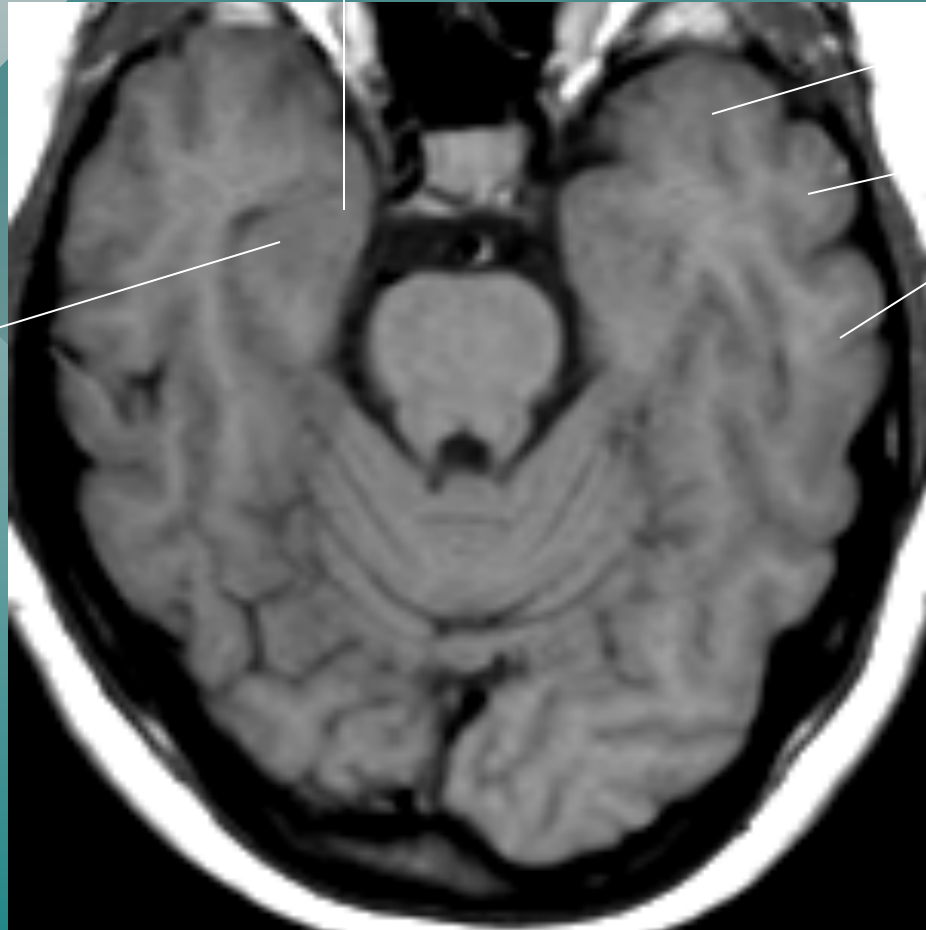
Superior Temporal gyrus

Middle Temporal gyrus

Inferior Temporal gyrus



Parahippocampal gyrus



Superior Temporal gyrus

Middle Temporal gyrus

Inferior Temporal gyrus

Hippocampal gyrus

Amygdala

Hippocampus

Superior Temporal gyrus

Middle Temporal gyrus

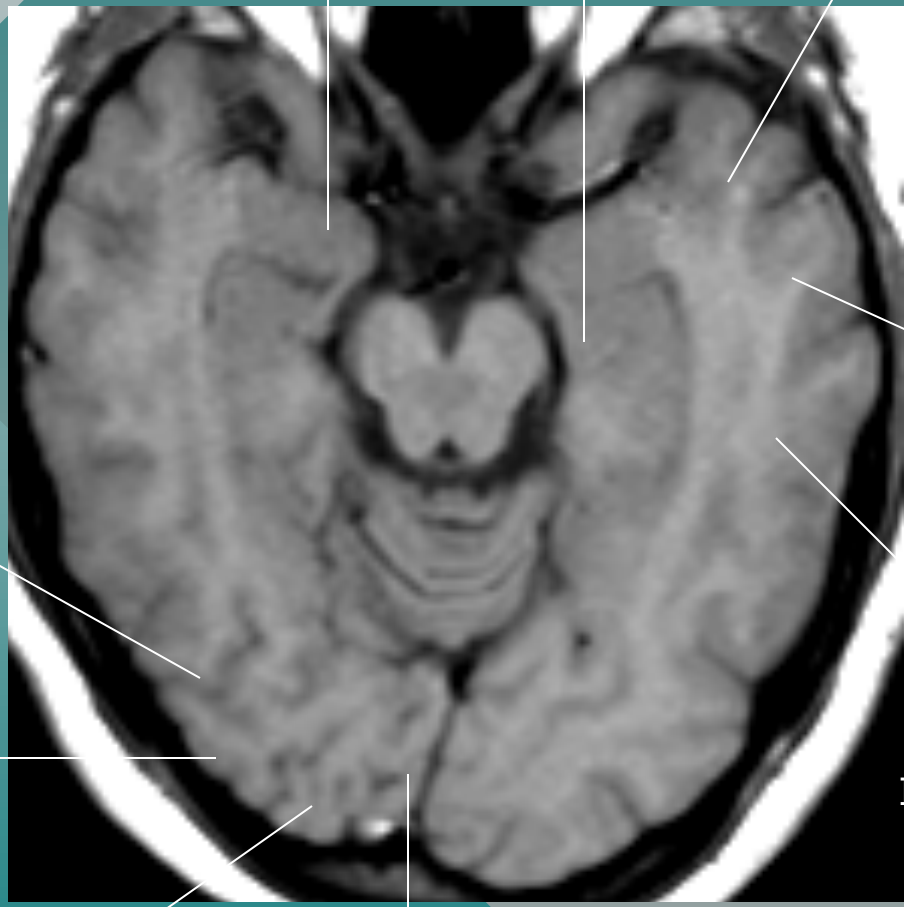
Inferior Temporal gyrus

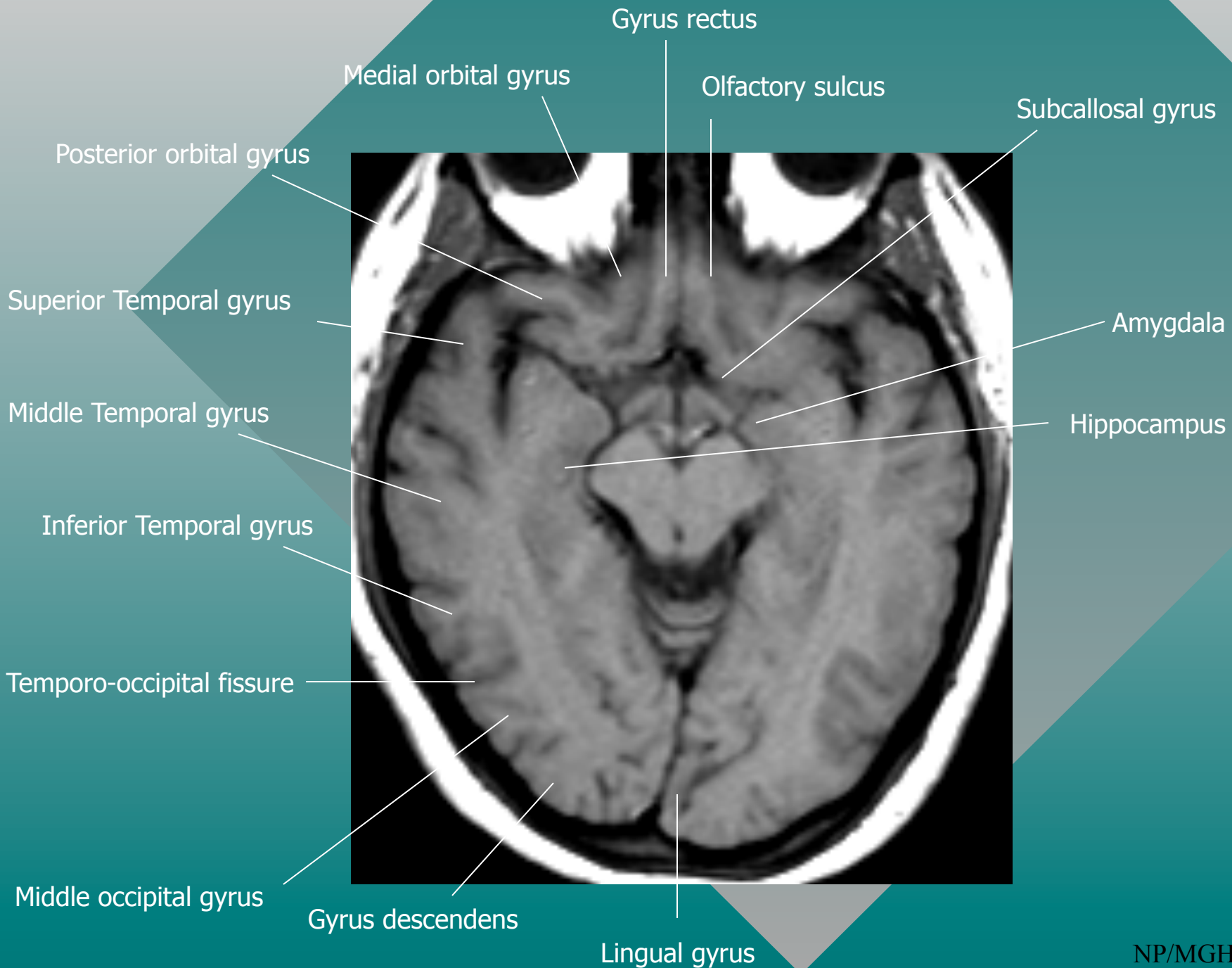
Temporo-occipital fissure

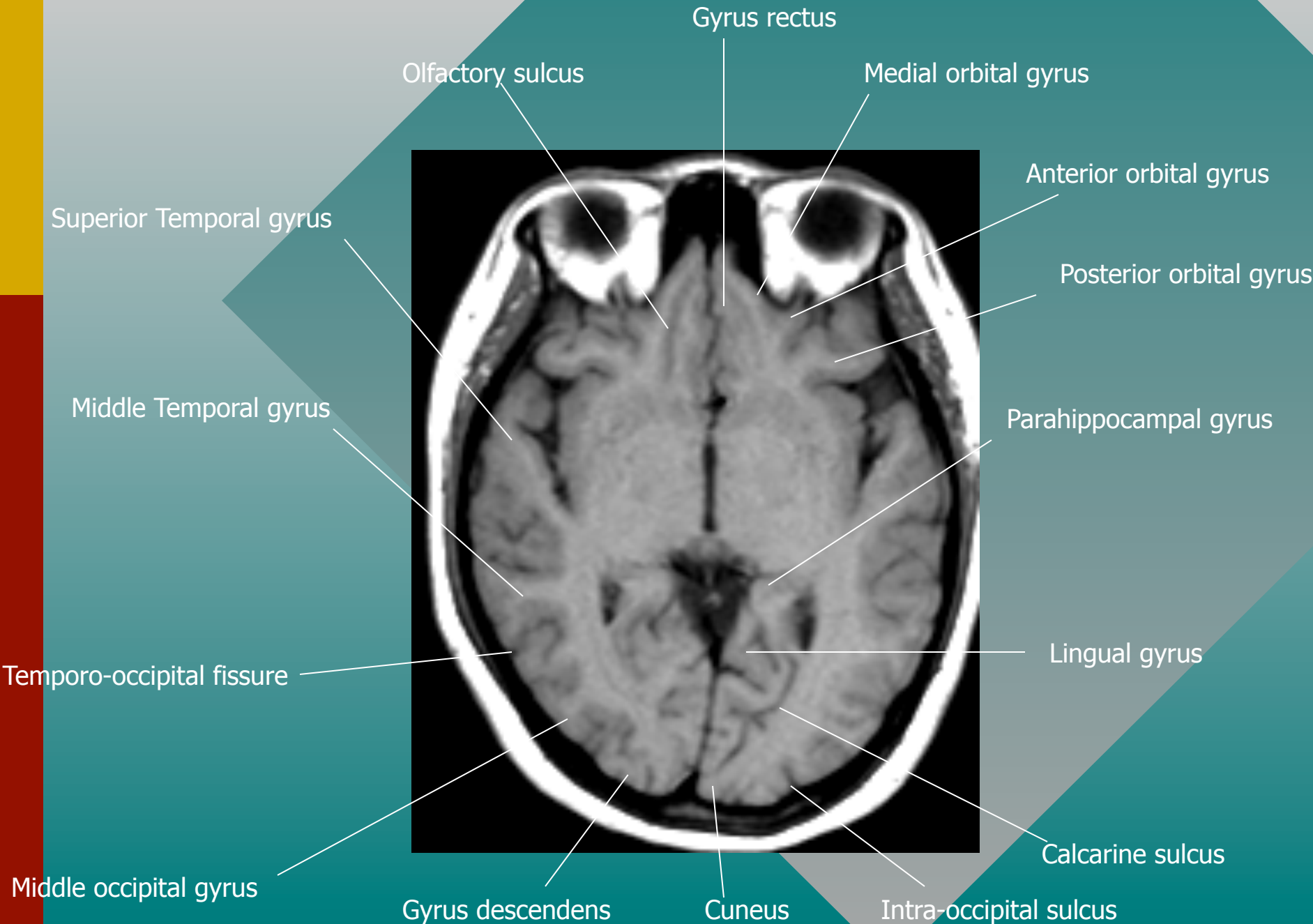
Inferior occipital gyrus

Gyrus descendens

Lingual gyrus







Frontomarginal gyrus

Superior frontal gyrus

Anterior orbital gyrus

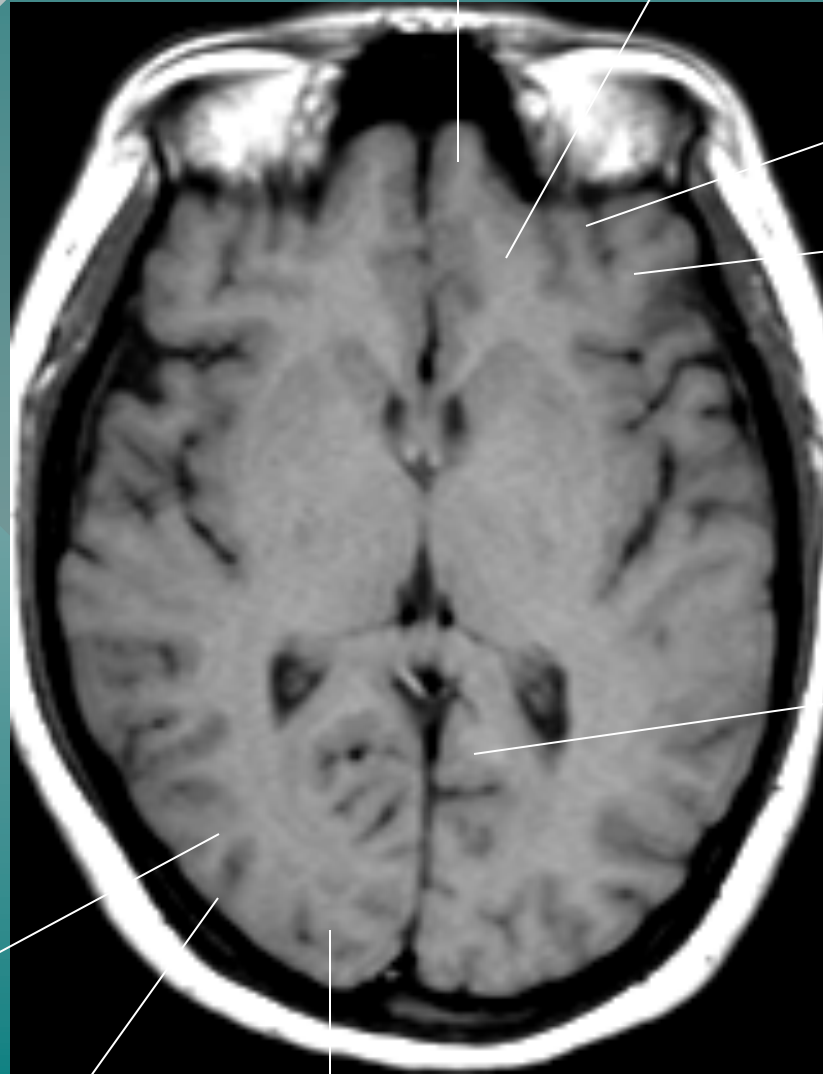
Posterior orbital gyrus

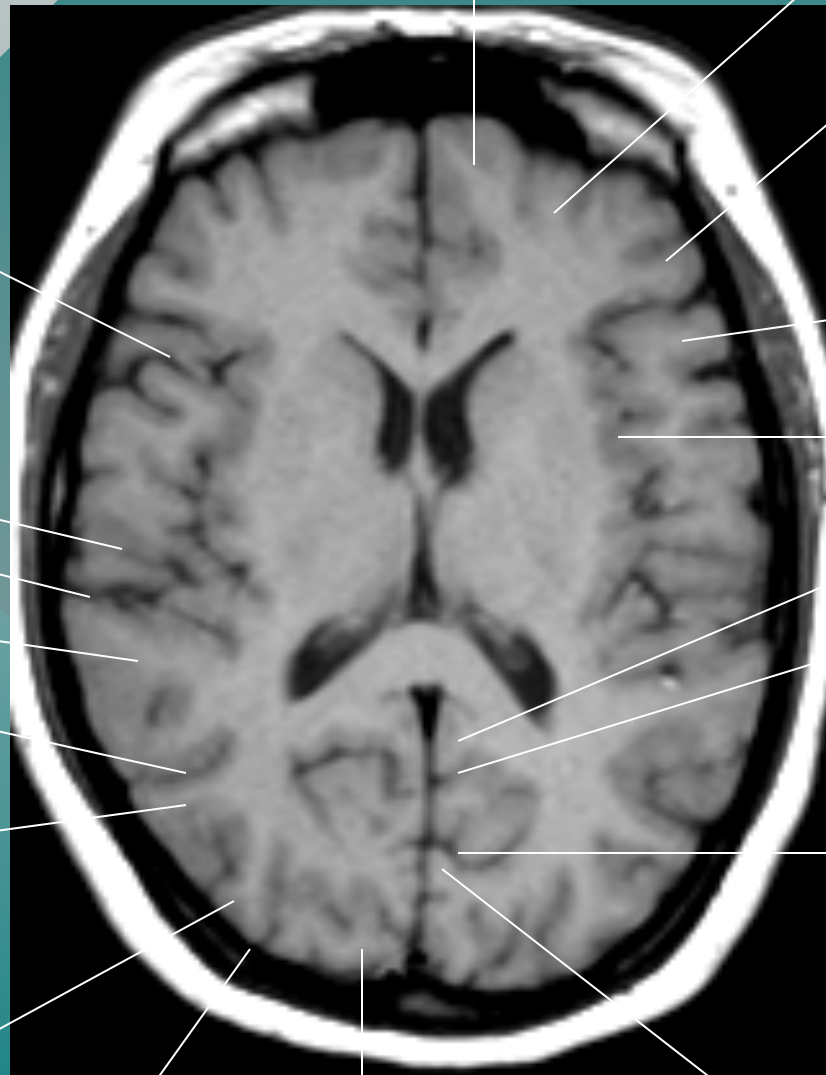
Cingulate gyrus

Middle occipital gyrus

Intra-occipital sulcus

Superior occipital gyrus





Superior frontal gyrus

Middle frontal gyrus

Inferior frontal gyrus,
pars orbitalis

Lateral fissure

Inferior frontal gyrus,
pars opercularis

Inferior parietal gyrus

Insula

Lateral fissure

Cingulate gyrus

Superior temporal gyrus

Parieto-occipital fissure

Superior temporal sulcus

Calcarine sulcus

Middle temporal gyrus

Cuneus

Middle occipital gyrus

Superior occipital gyrus

Intra-occipital sulcus

Superior frontal gyrus

Middle frontal gyrus

Inferior frontal gyrus

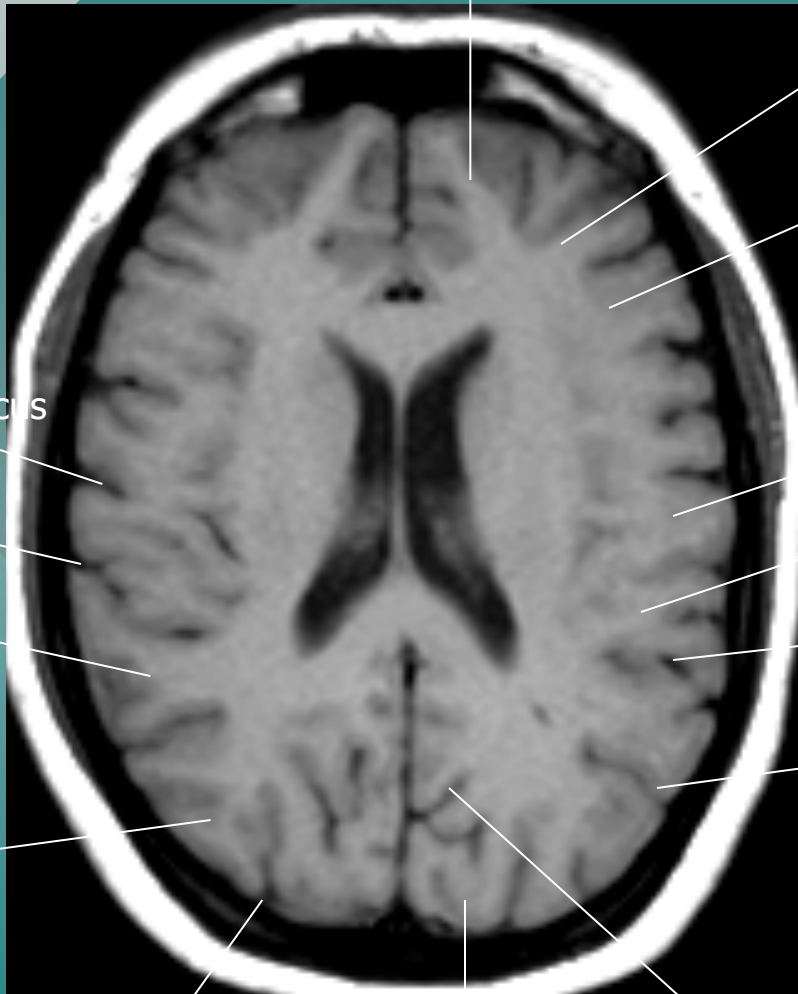
Postcentral gyrus

Inferior parietal gyrus

Lateral fissure

Superior temporal sulcus

Parieto-occipital sulcus



Central sulcus

Lateral fissure

Superior temporal gyrus

Middle occipital gyrus

Intra-occipital sulcus

Superior occipital gyrus

Precentral sulcus

Precentral gyrus

Central sulcus

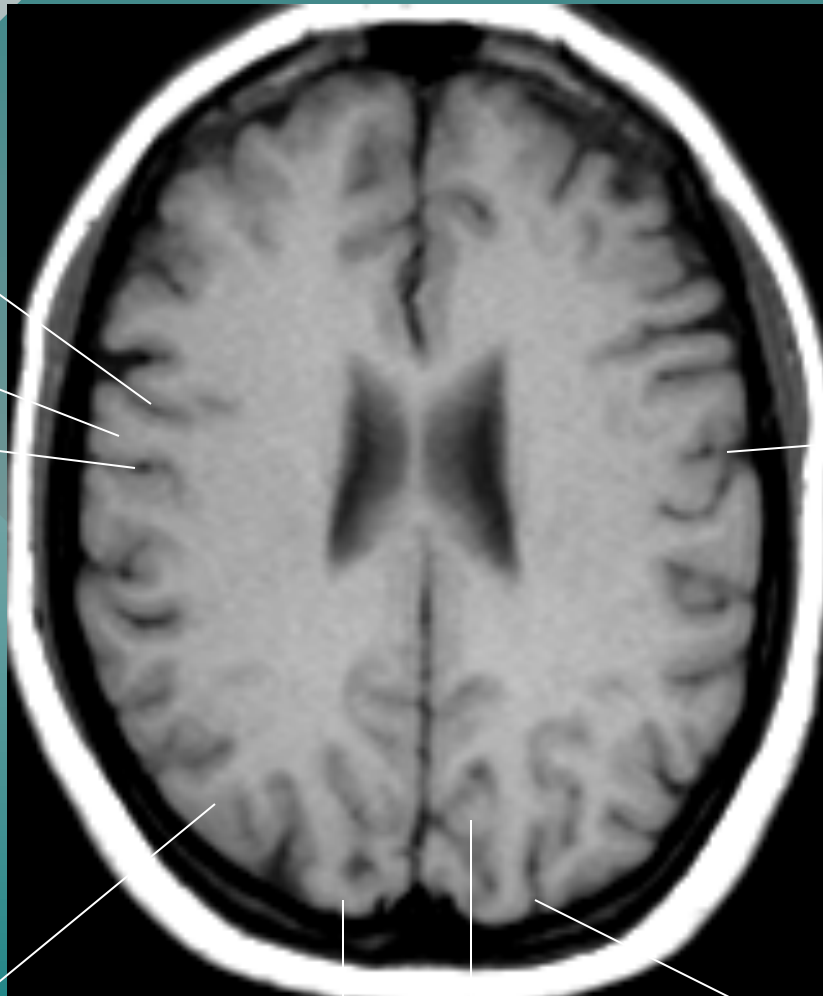
Central sulcus

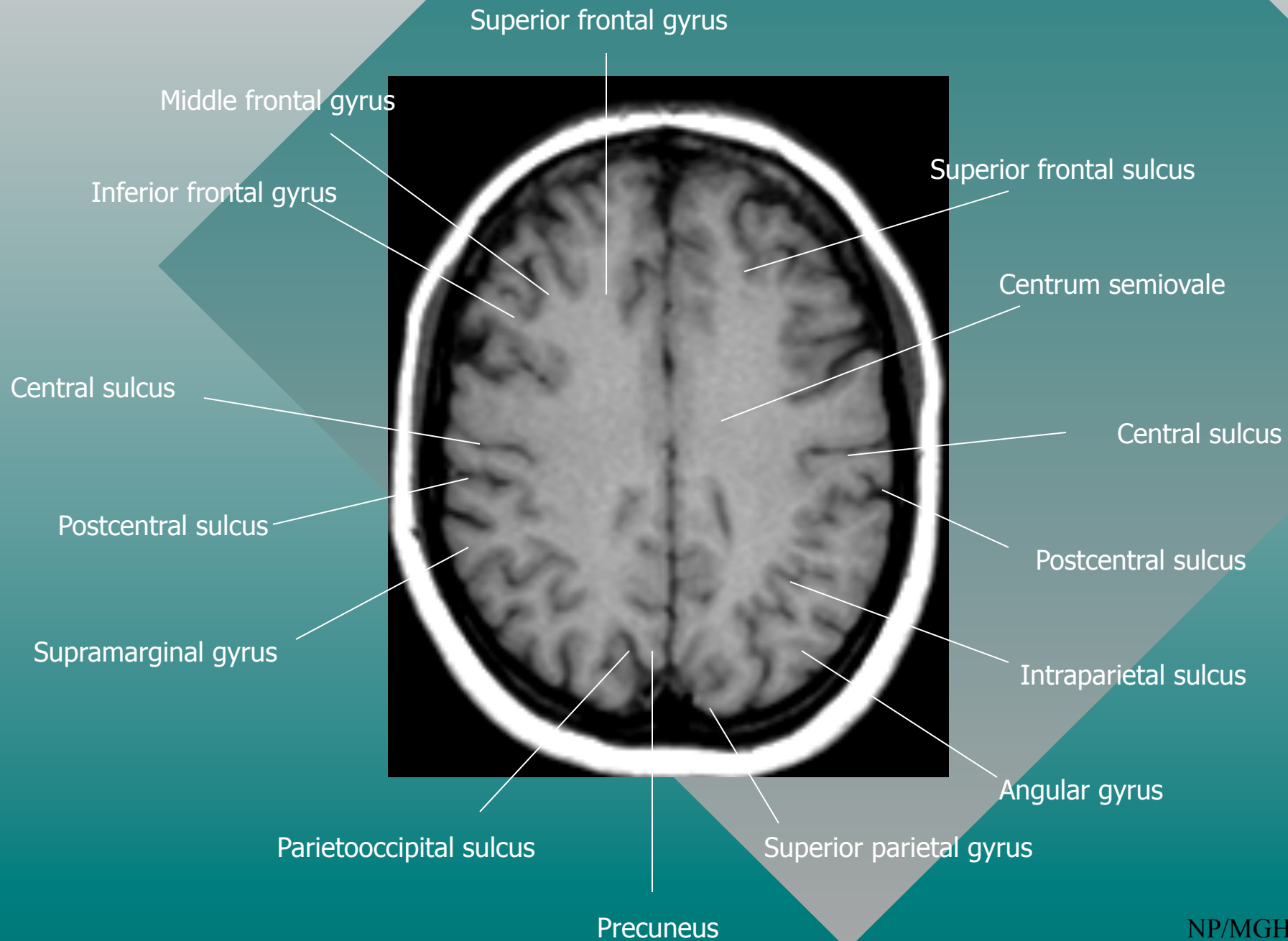
Middle occipital gyrus

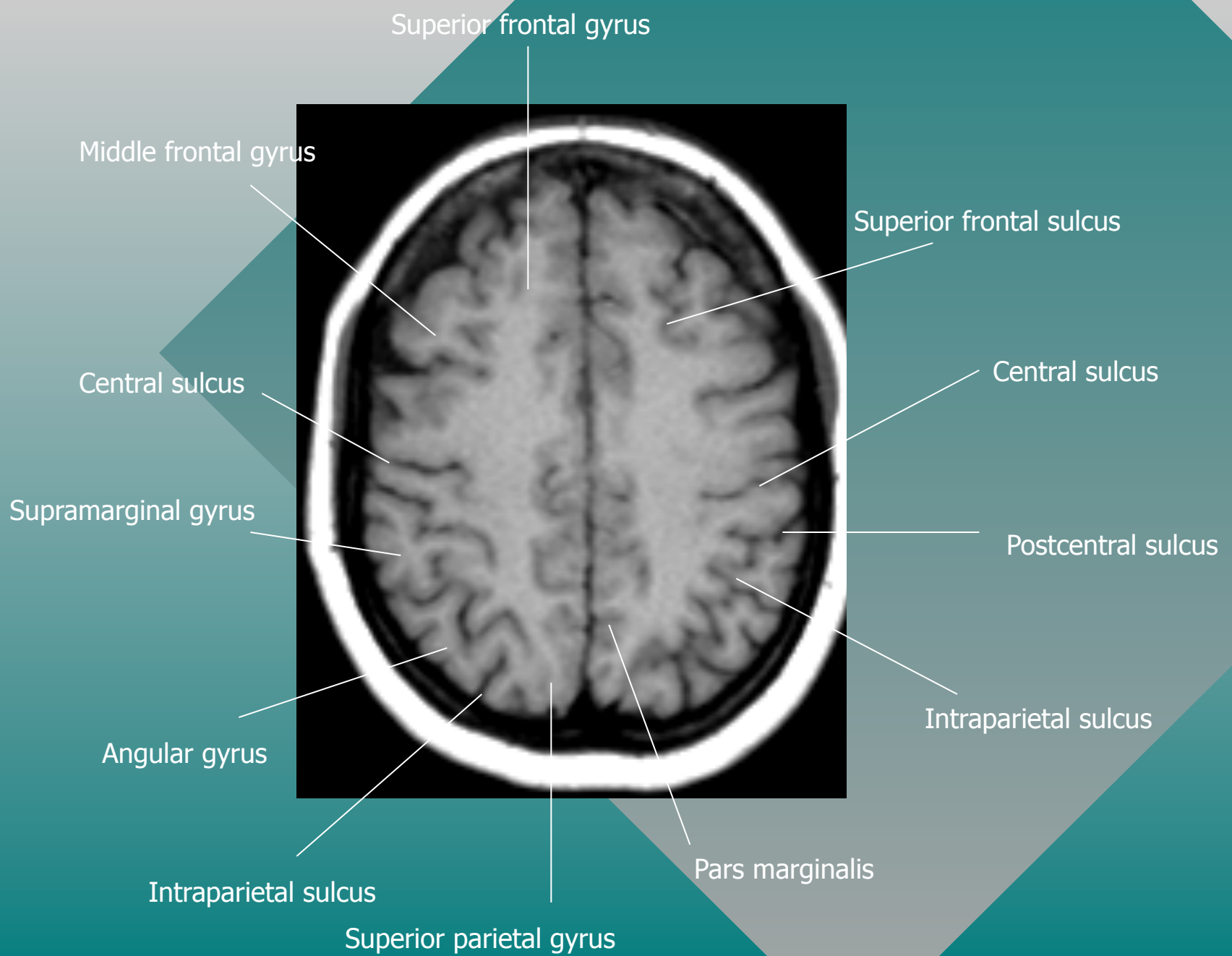
Cuneus

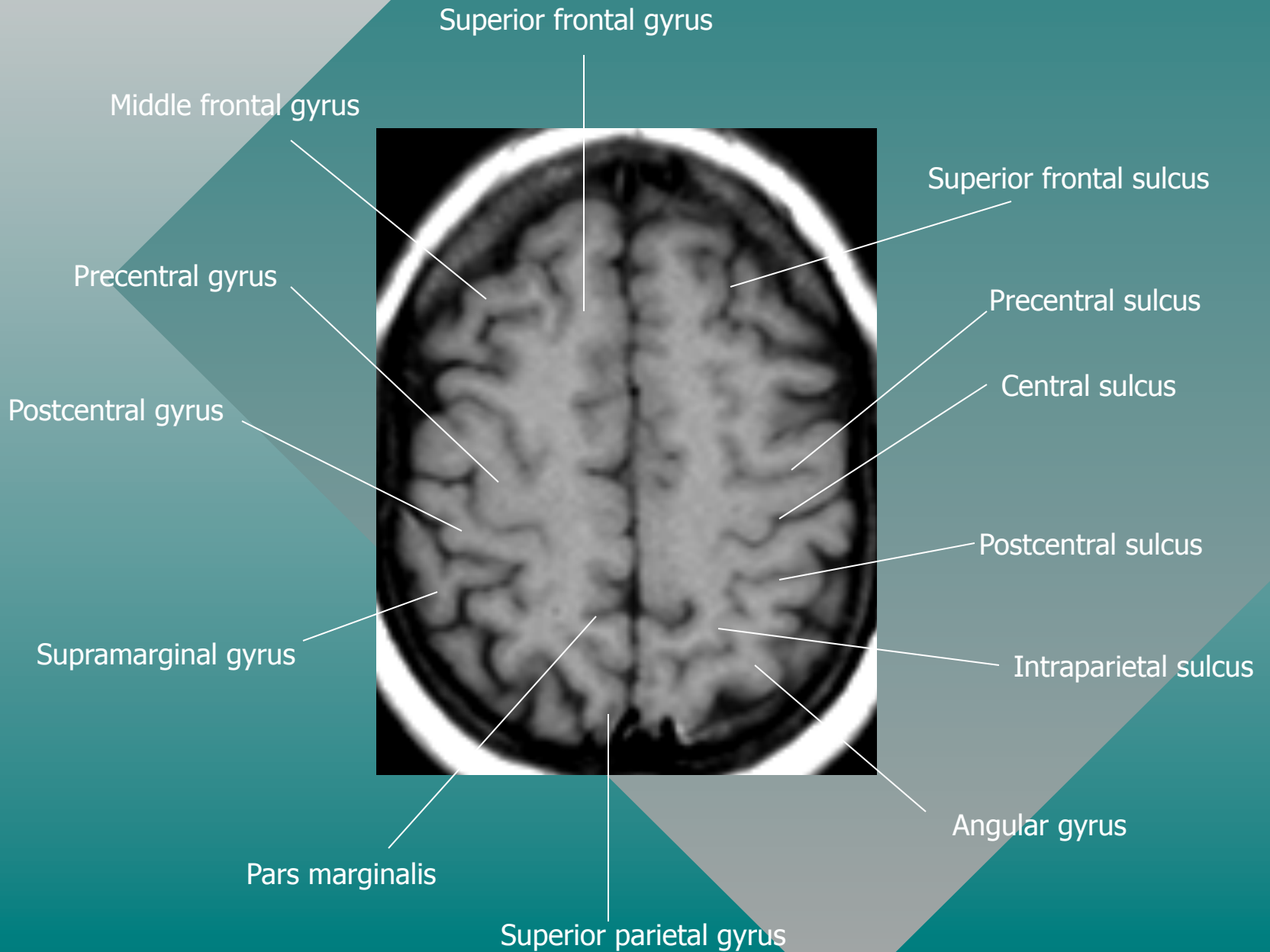
Intra-occipital sulcus

Superior occipital gyrus





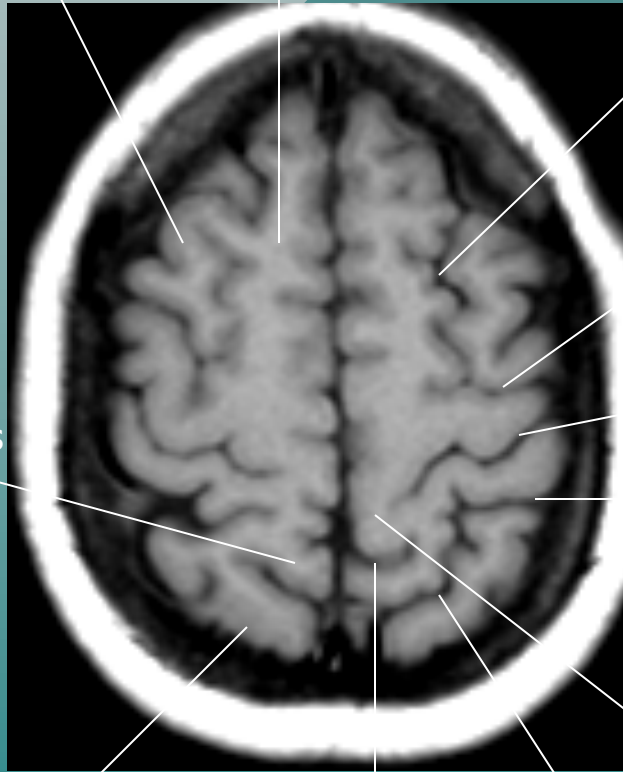




Superior frontal gyrus

Middle frontal gyrus

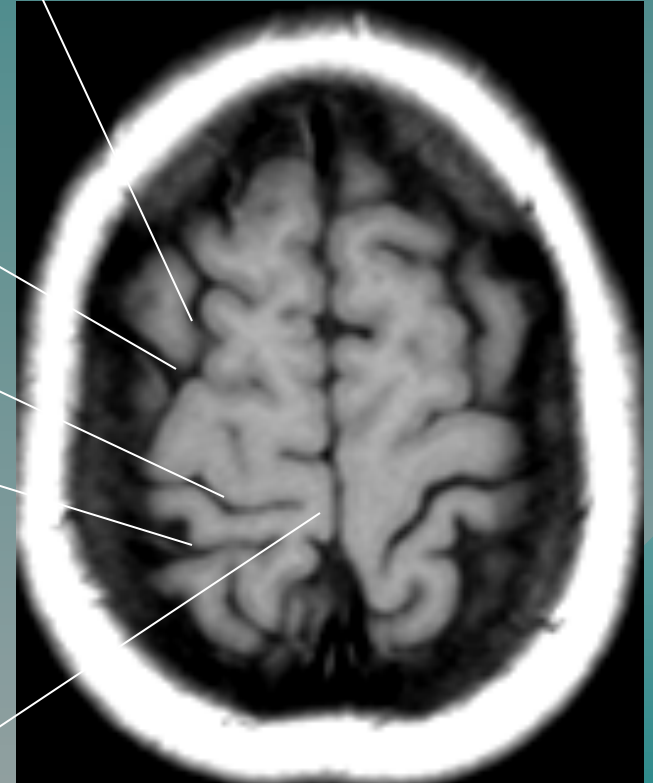
Superior frontal sulcus



Precentral sulcus

Central sulcus

Postcentral sulcus



Paracentral lobule

Intraparietal sulcus

Precuneus

Superior parietal gyrus

Pars marginalis

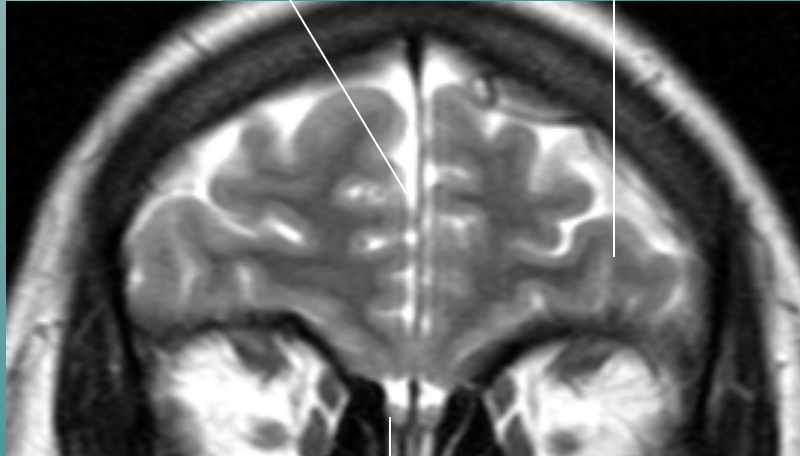
Coronal Neuroanatomy

Interhemispheric Fissure

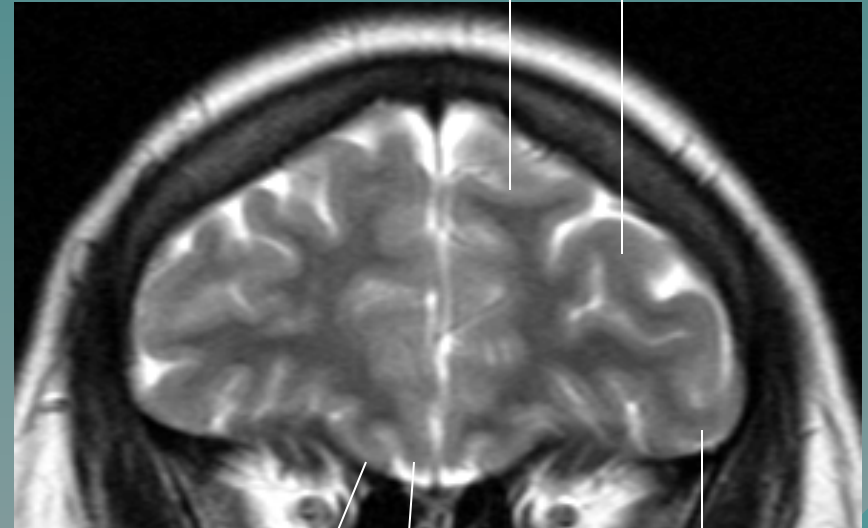
Inferior Frontal gyrus

Superior Frontal gyrus

Middle Frontal gyrus



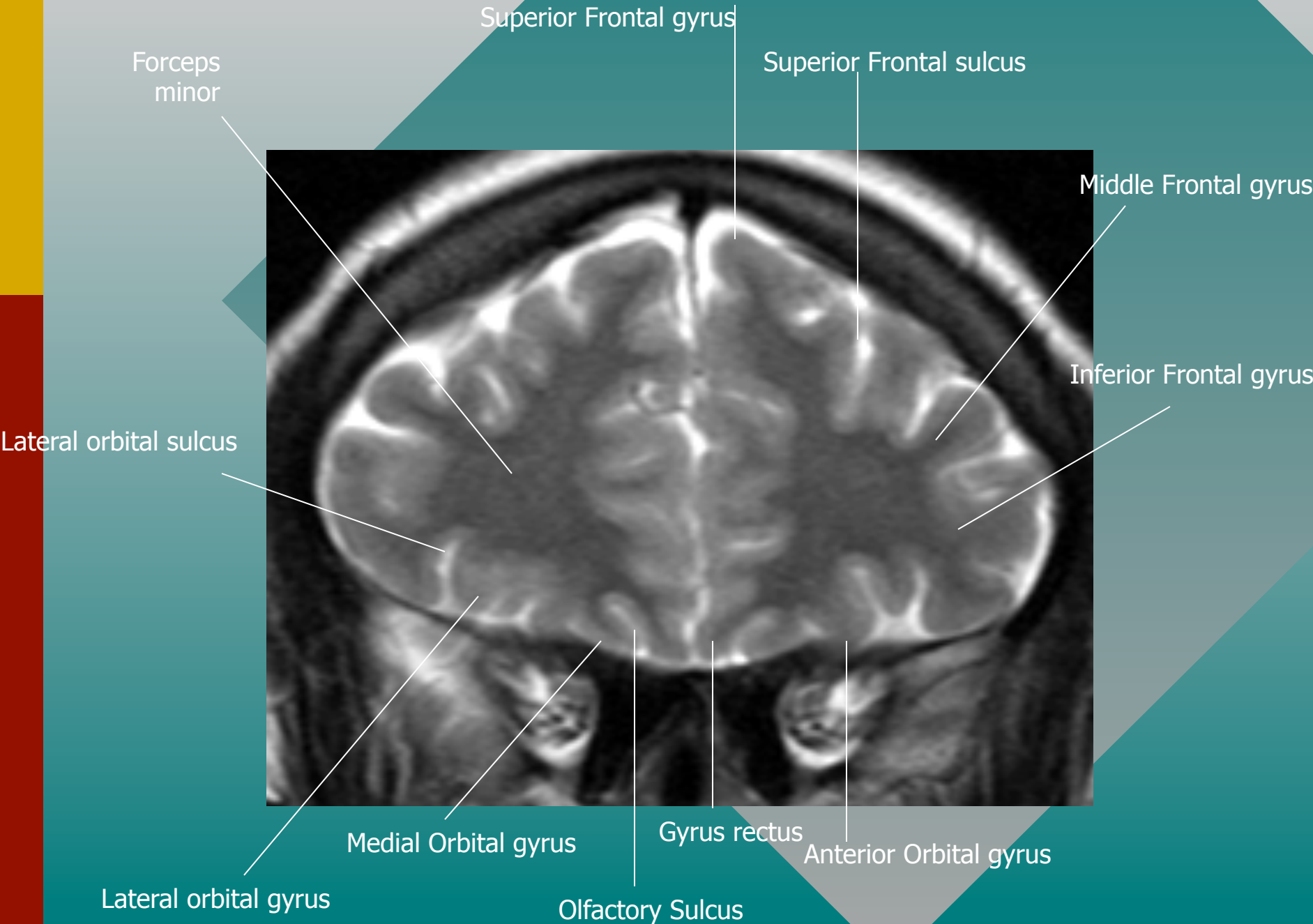
Olfactory bulb



Medial Orbital gyrus

Gyrus rectus

Inferior Frontal gyrus



Circular insular sulcus

Cingulate gyrus

Superior Frontal gyrus

Middle Frontal gyrus

Inferior Frontal sulcus

Inferior Frontal gyrus
pars opercularis

Sylvian Fissure

Posterior Orbital gyrus

Medial Orbital gyrus

Gyrus rectus

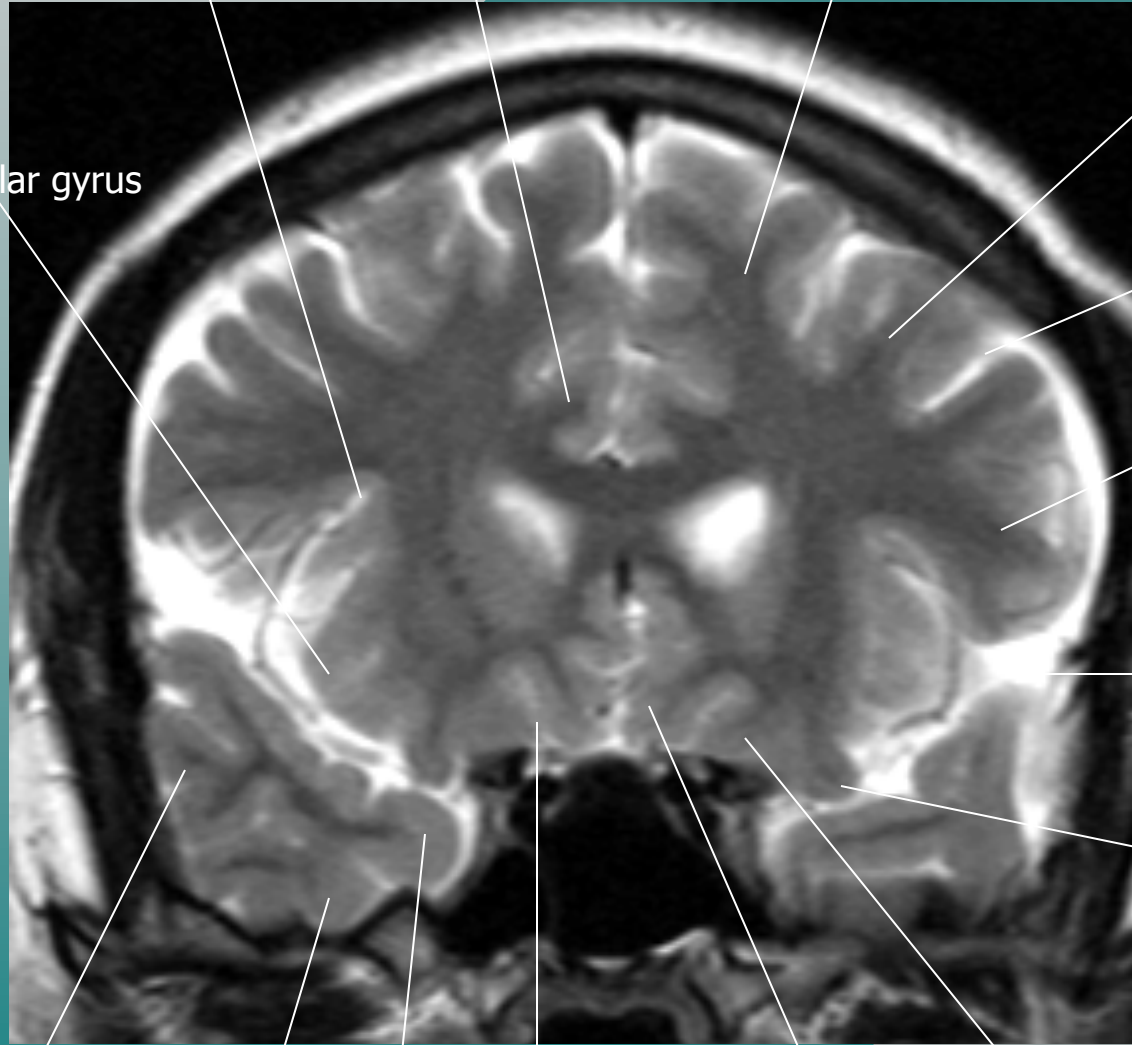
Olfactory Sulcus

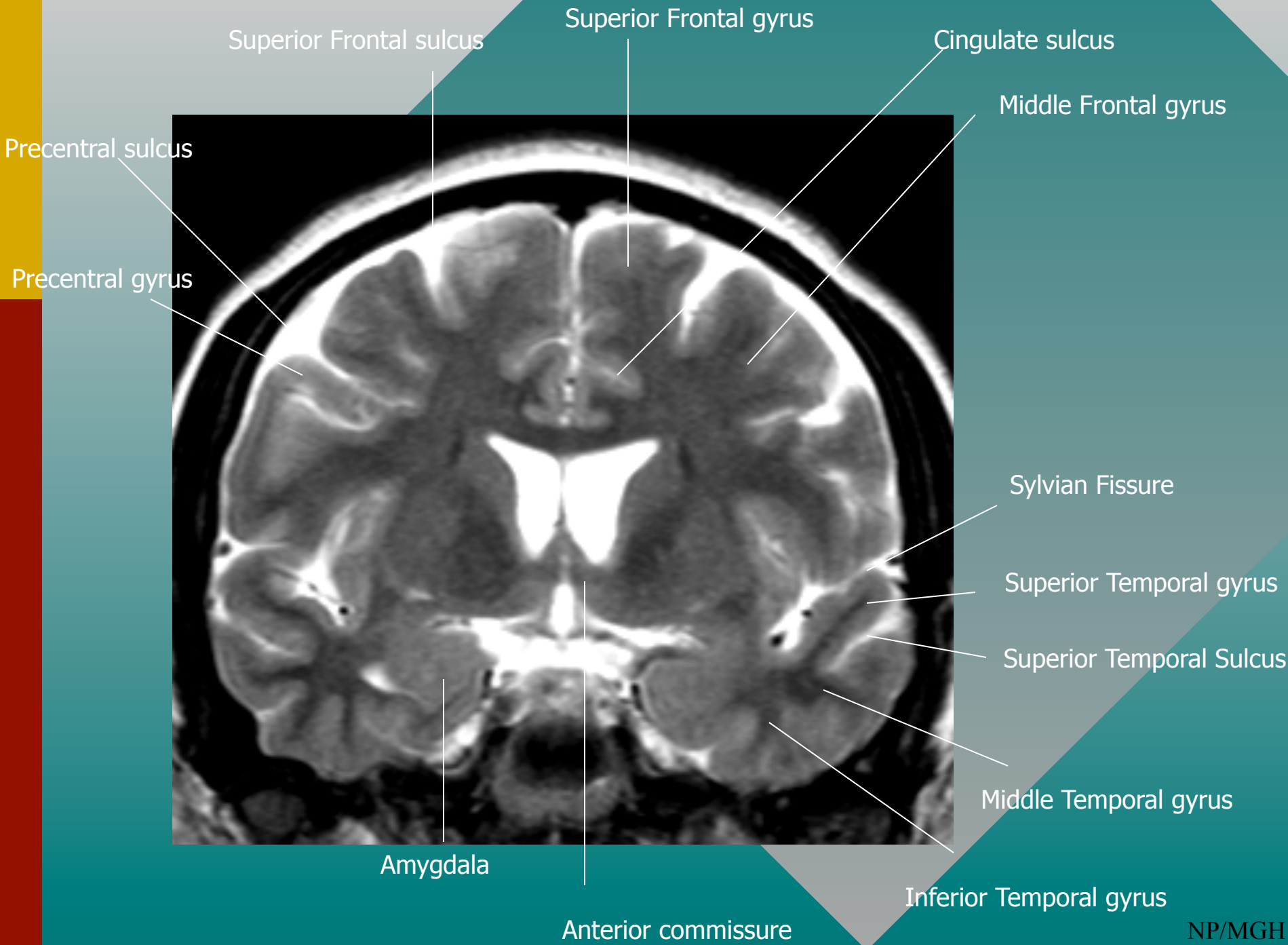
Superior Temporal gyrus

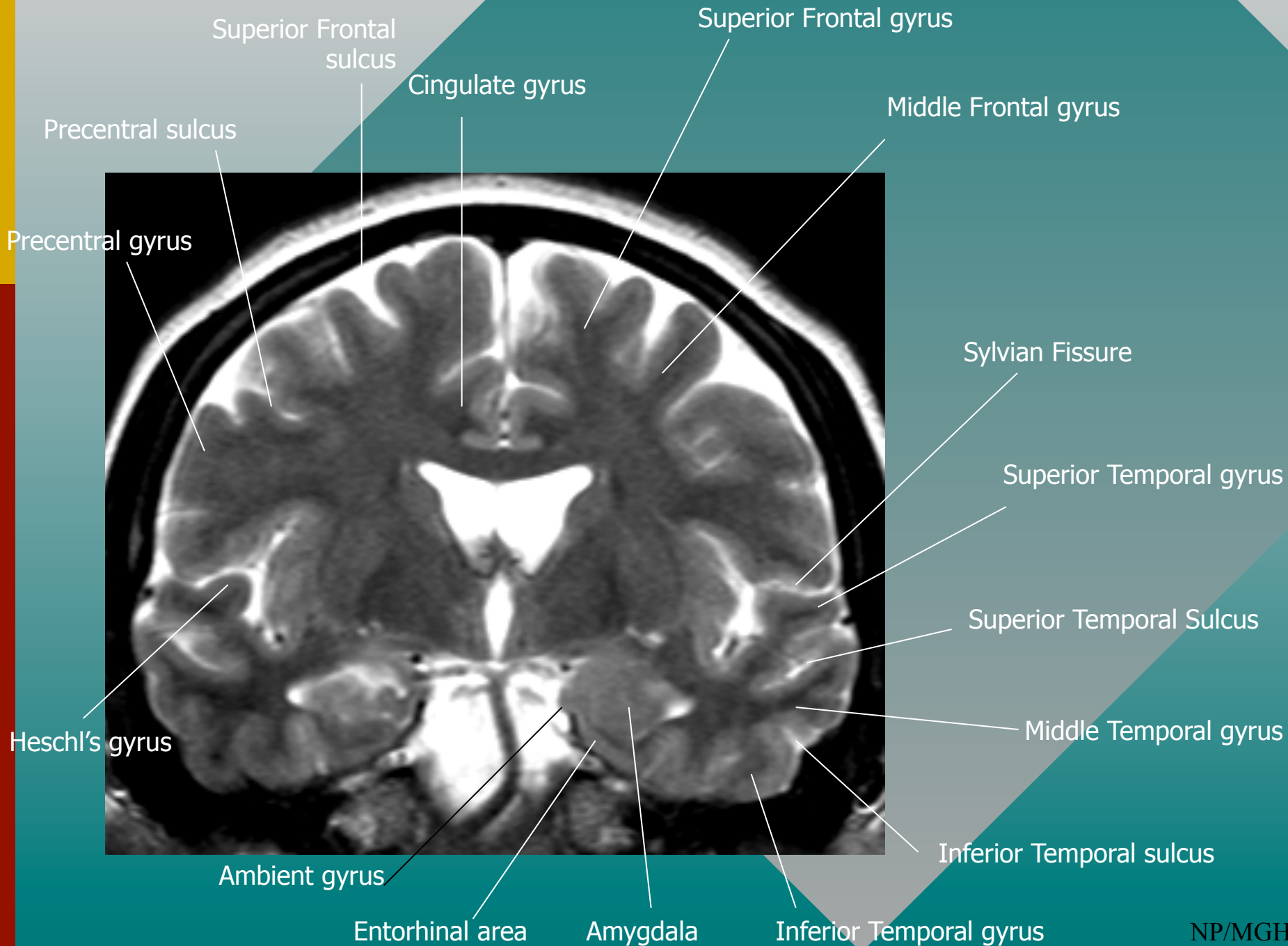
Inferior Temporal gyrus

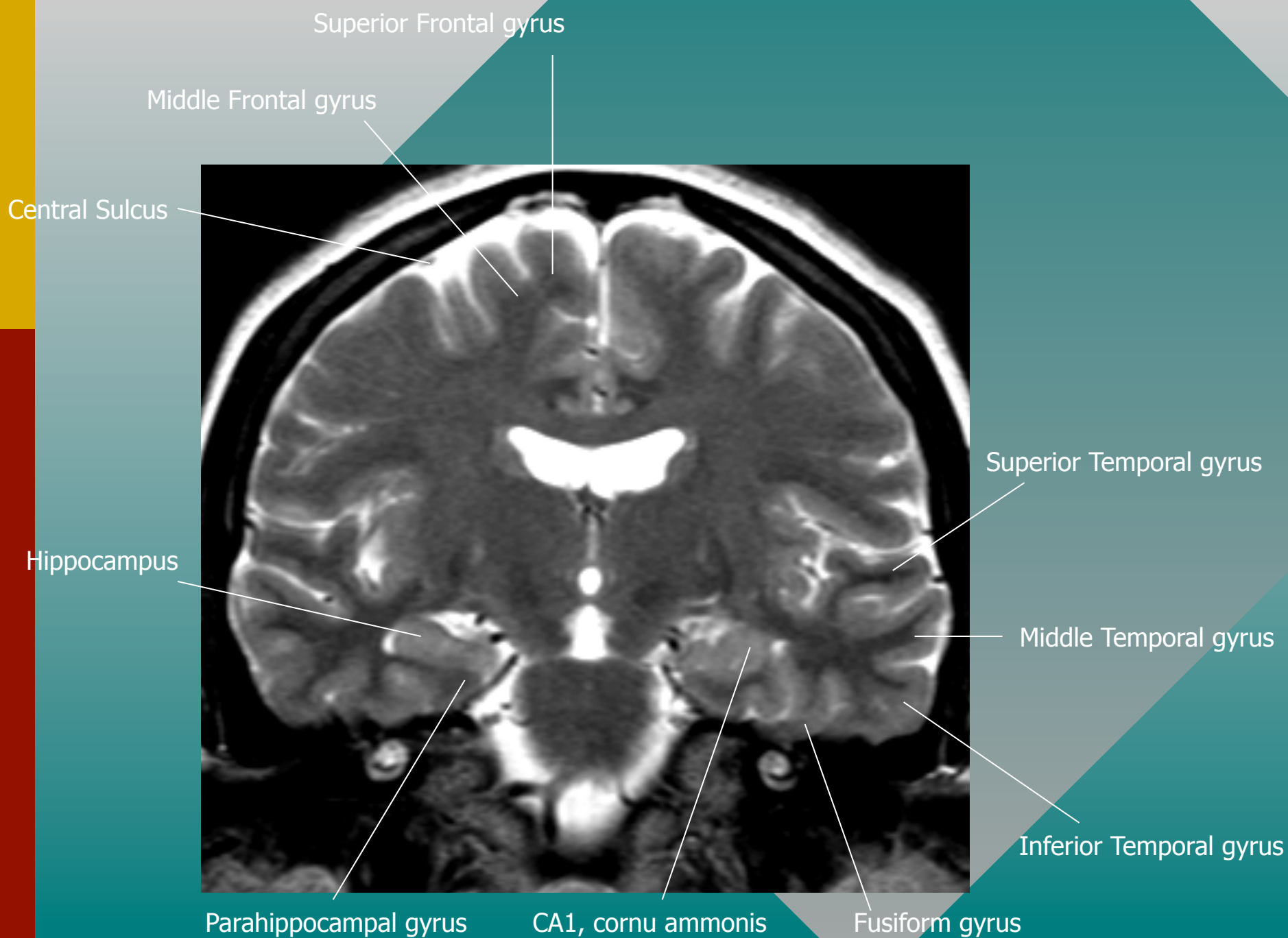
Middle Temporal gyrus

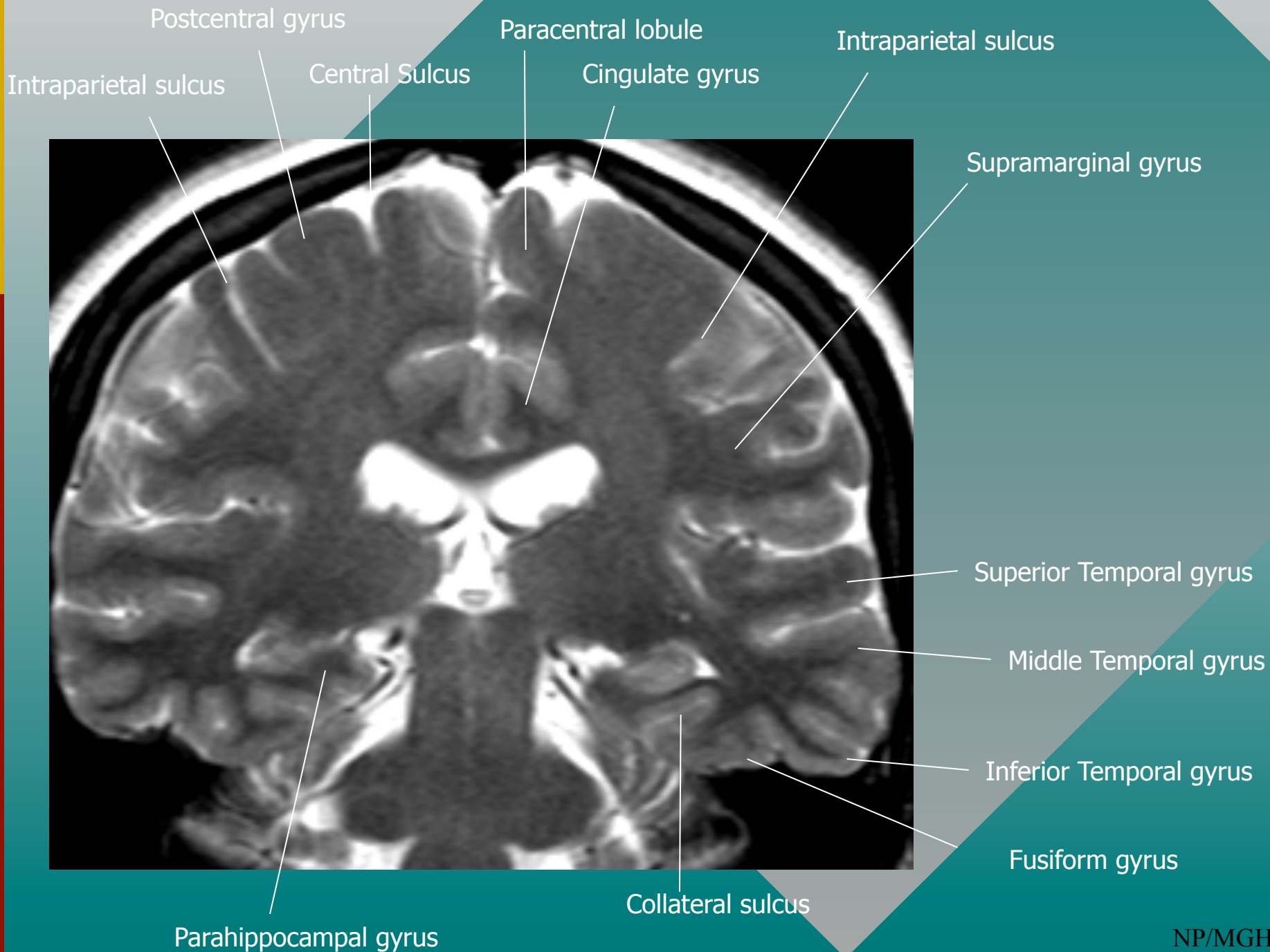
short insular gyrus



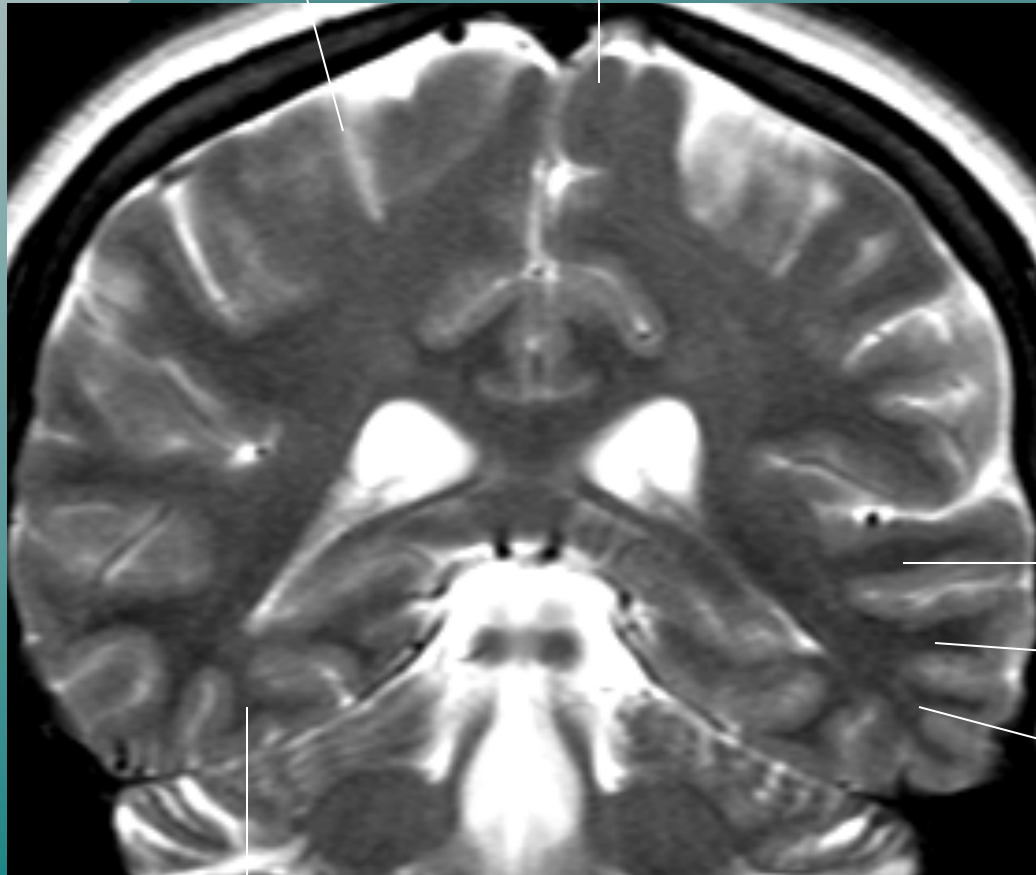








Central sulcus
Paracentral lobule

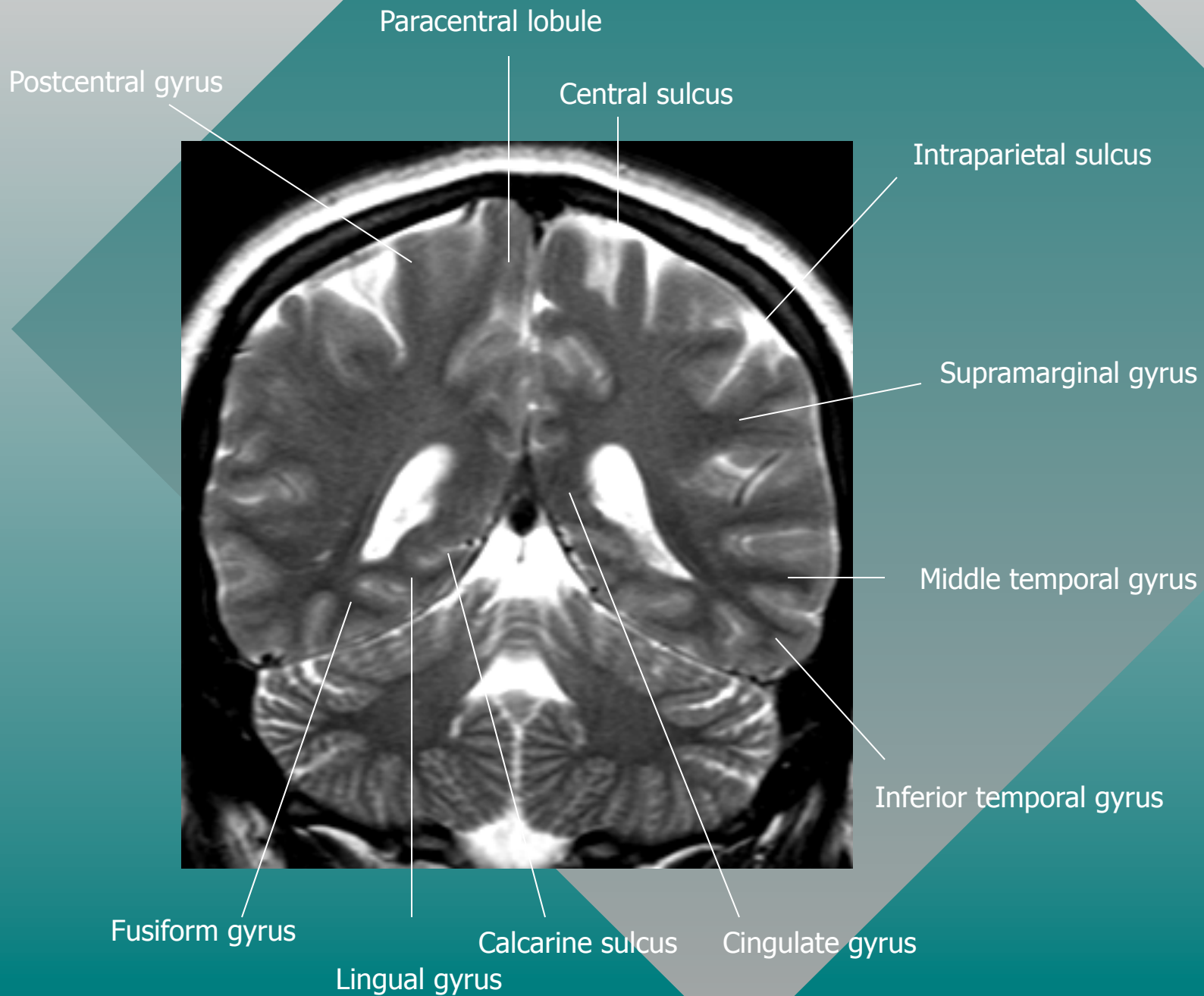


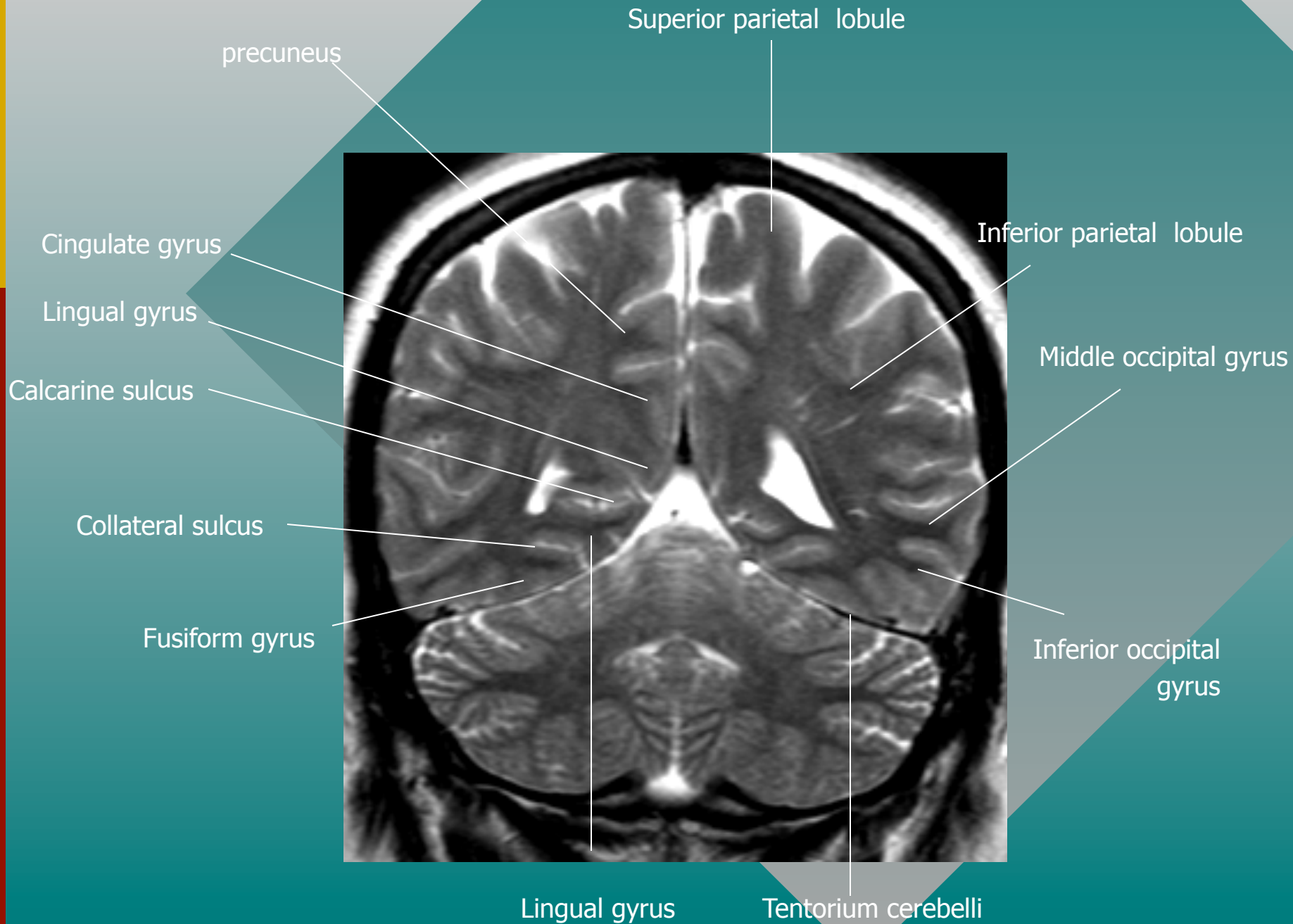
Superior Temporal gyrus

Middle Temporal gyrus

Inferior temporal gyrus

Fusiform gyrus





The Central Sulcus

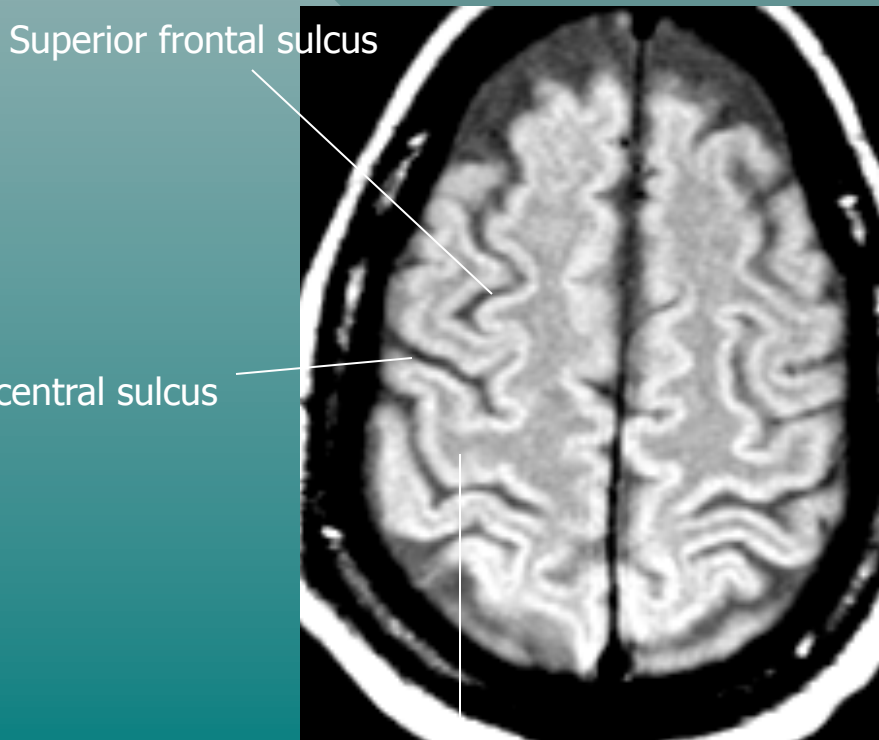
The Central Sulcus (CS)*

- superior frontal sulcus - pre CS sign
- sigmoidal Hook sign
- pars bracket sign
- Bifid post-CS sign
- thin postcentral gyrus sign
- intraparital sulcus - post-CS
- midline sulcus sign

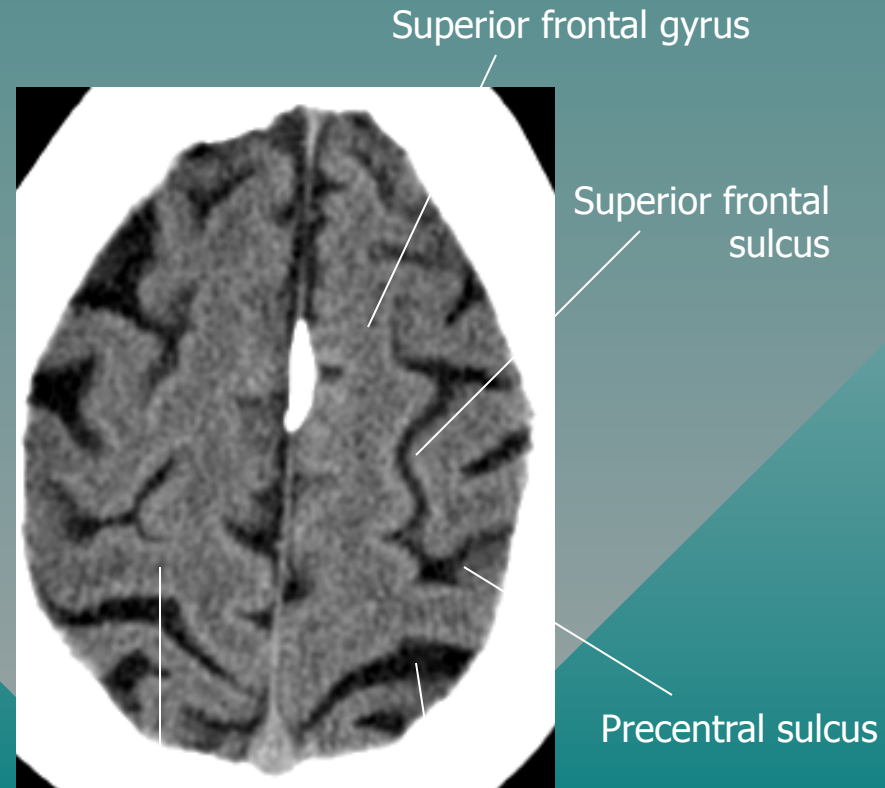
*Naidich & Brightbill. Int J Neurorad 1996;2:313-338

The Central Sulcus (CS)

- Superior frontal sulcus - preCS sign
 - the posterior end of the superior frontal sulcus joins the precentral sulcus in 85%



Precentral gyrus

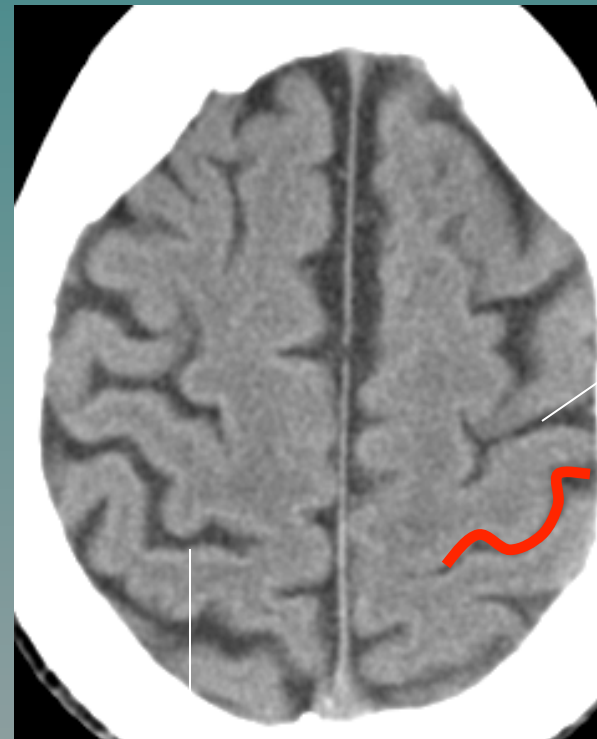


Precentral gyrus

Central sulcus

The Central Sulcus (CS)

- Sigmoid “Hook”
 - hooklike configuration of the posterior surface of the precentral gyrus
 - the “hook” corresponds to the motor hand area.
 - The “hook” is well seen on CT (89%) and MRI (98%).

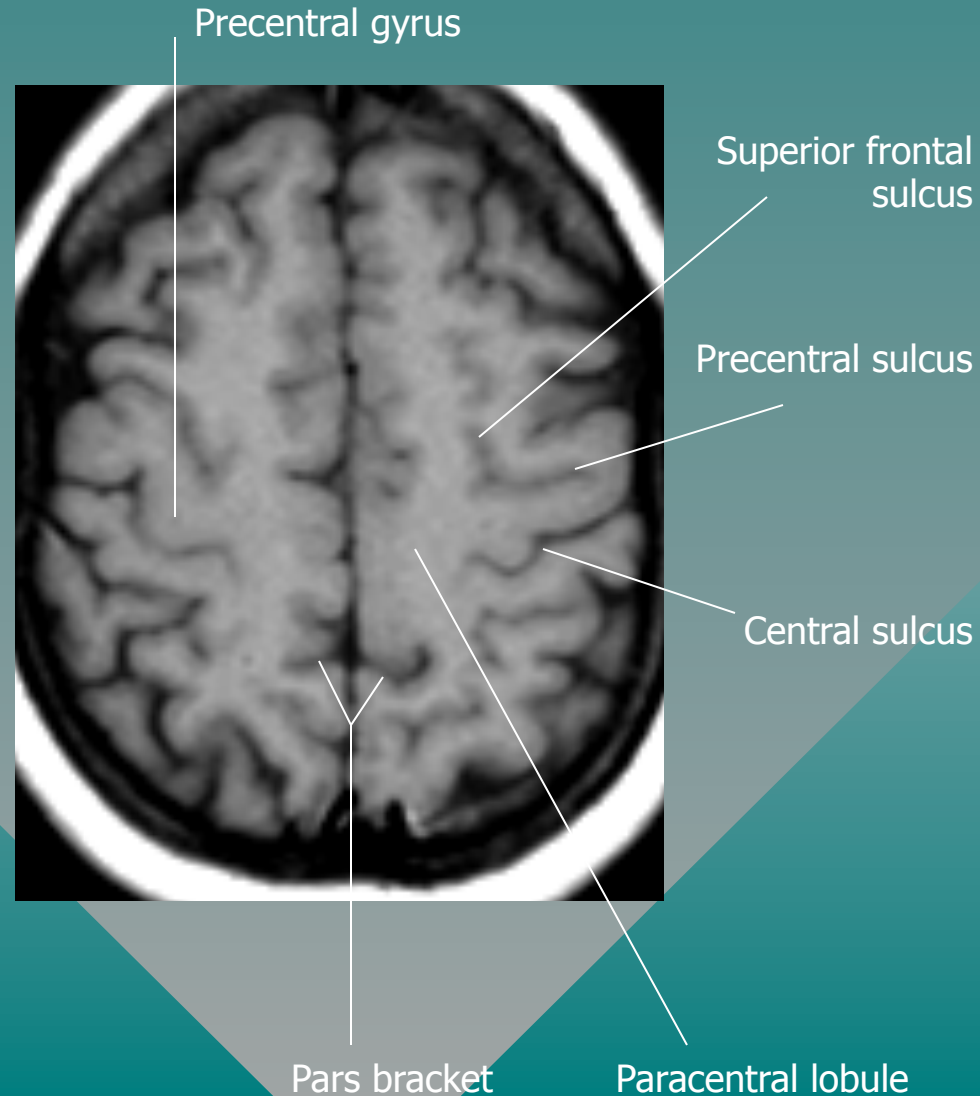


Precentral sulcus

Central sulcus

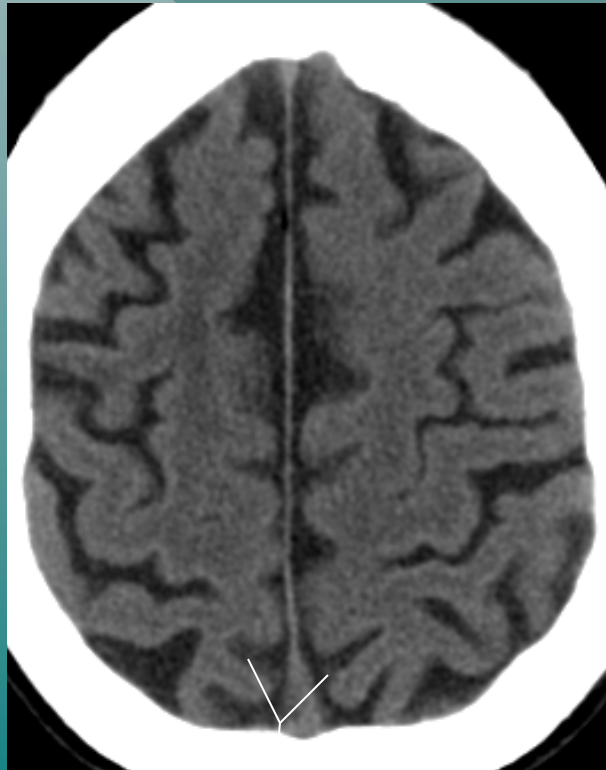
The Central Sulcus (CS)

- pars bracket sign
 - The paired pars marginalis form a “bracket” to each side of the interhemispheric fissure at or behind the central sulcus (96%).

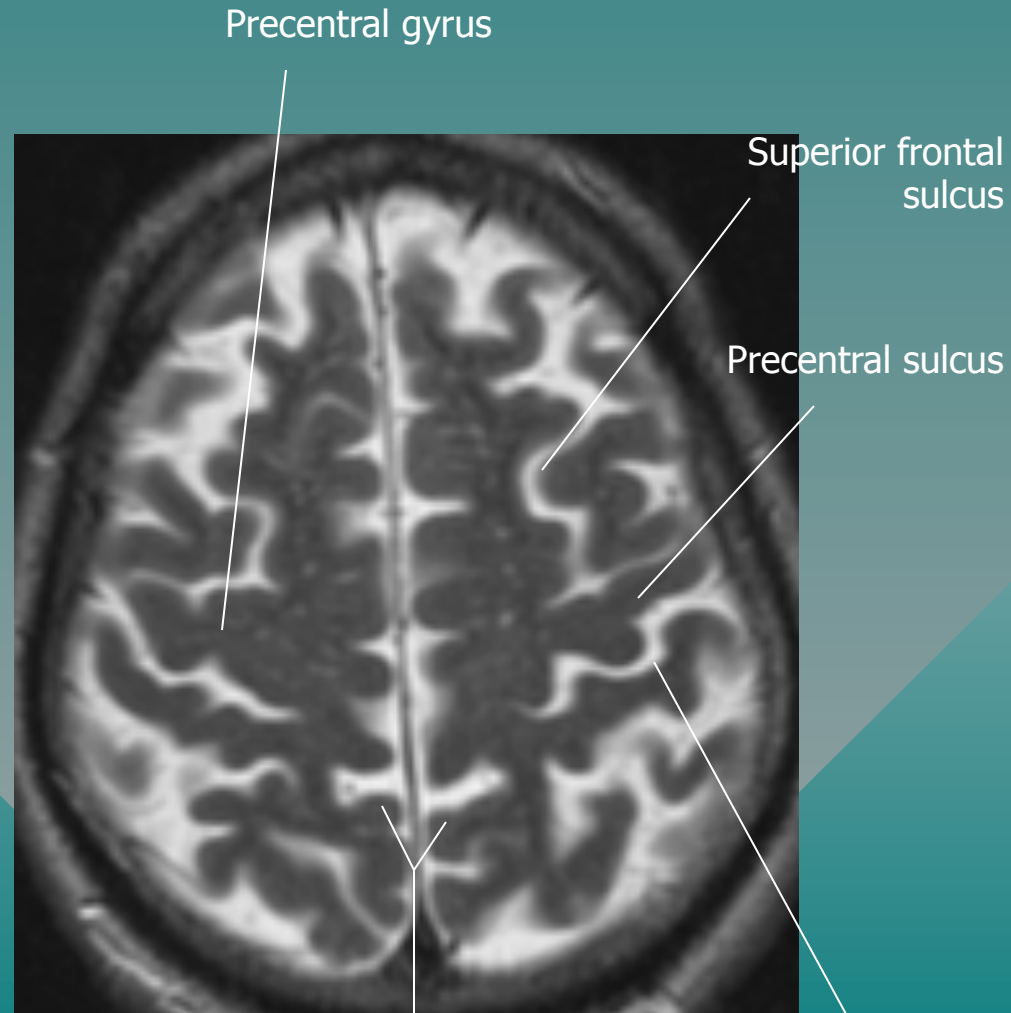


The Central Sulcus (CS)

- pars bracket sign



Pars bracket

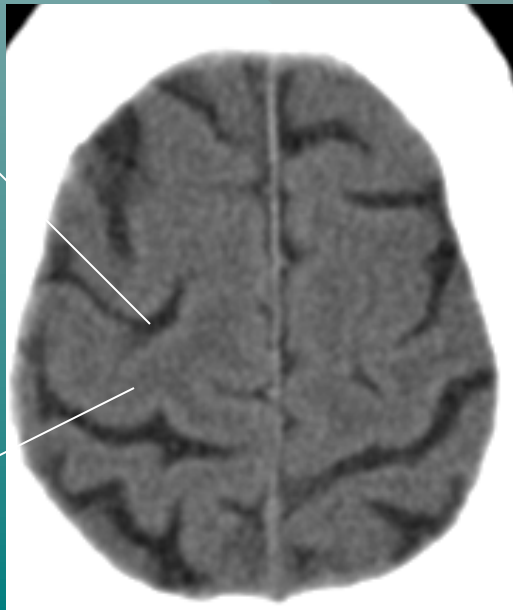


Pars bracket

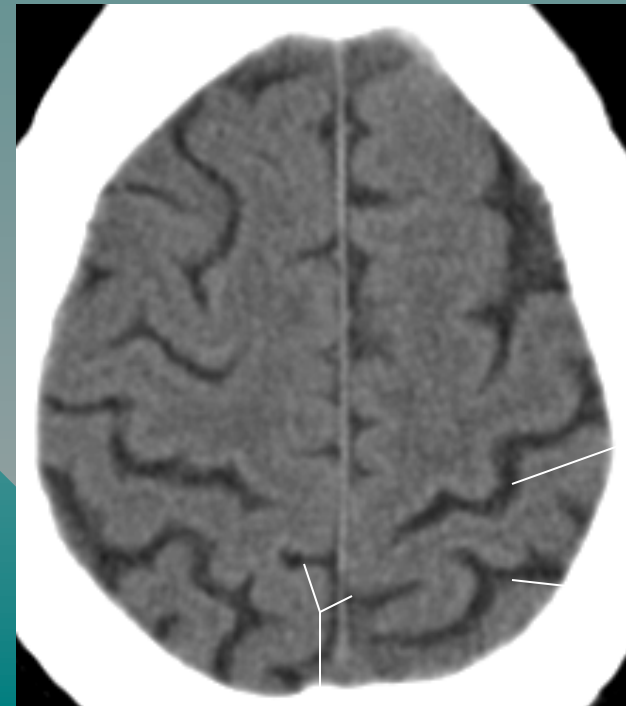
The Central Sulcus (CS)

- Bifid post-CS sign
 - the post-CS is bifid (85%).
 - The bifid post-CS encloses the lateral end of the pars marginalis (88%).

Precentral sulcus



Precentral gyrus

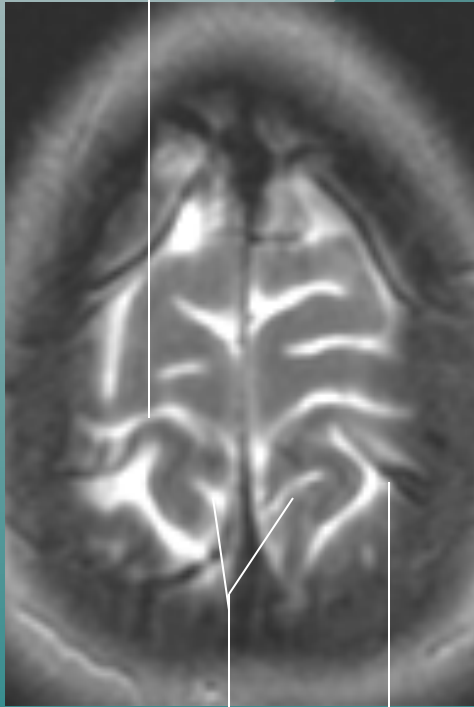


Central sulcus

Postcentral sulcus

Pars bracket

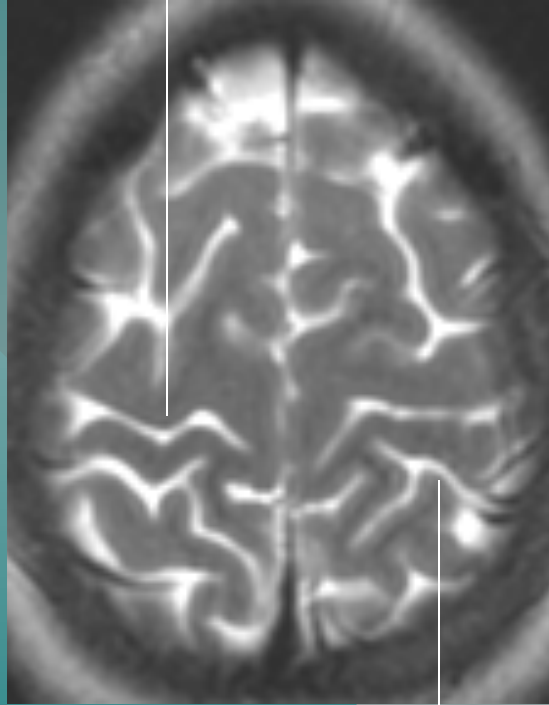
Central sulcus



Postcentral sulcus

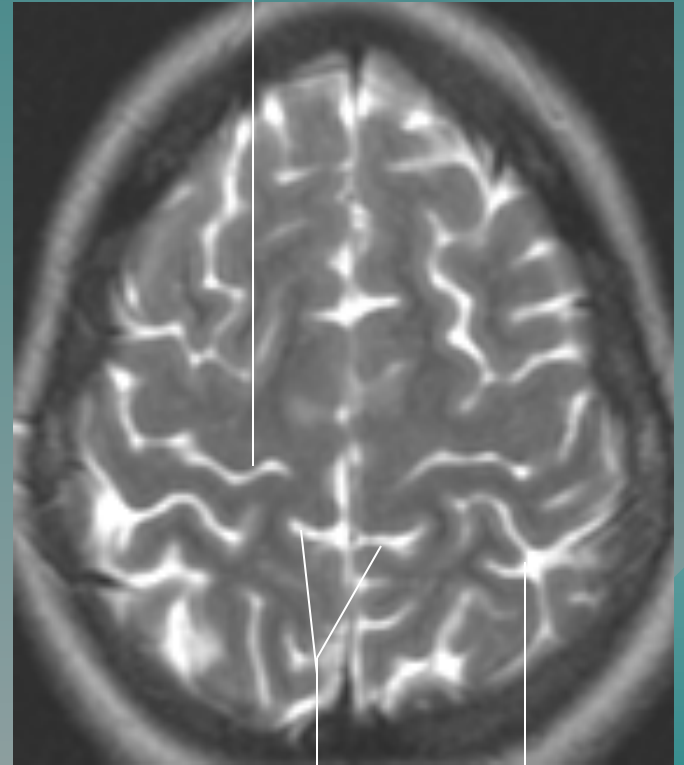
Pars bracket

Central sulcus



Postcentral sulcus

Central sulcus

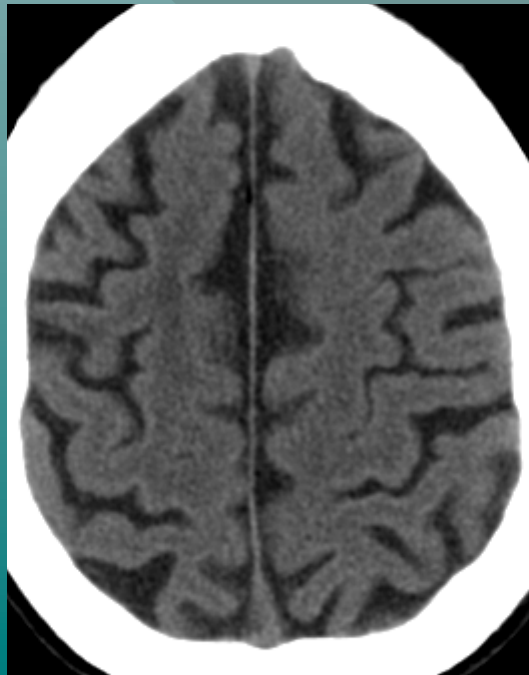


Postcentral sulcus

Pars bracket

The Central Sulcus (CS)

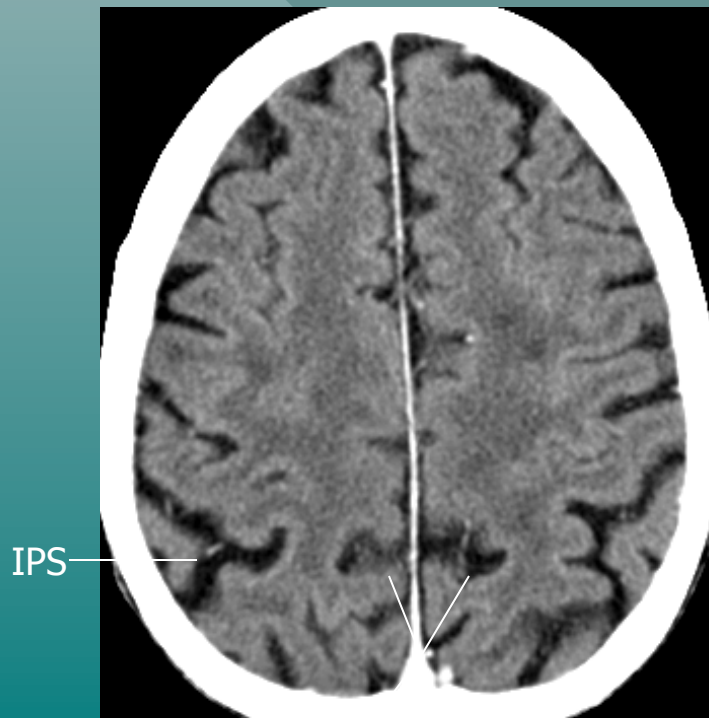
- Thin post-CG sign
 - the postcentral gyrus is thinner than the precentral gyrus (98%).



Postcentral gyrus

The Central Sulcus (CS)

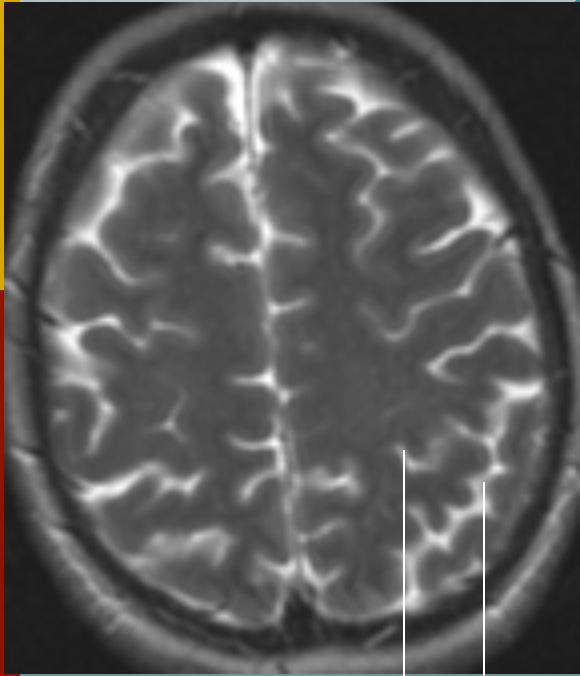
- Intraparietal Sulcus (IPS) and the post-CS
 - in axial MRI, the IPS intersects the post-CS (99%).



Pars bracket

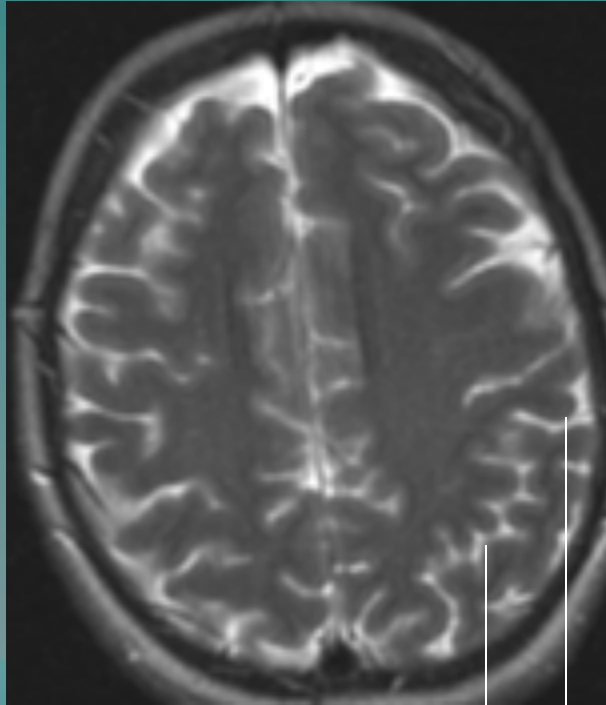


Pars bracket



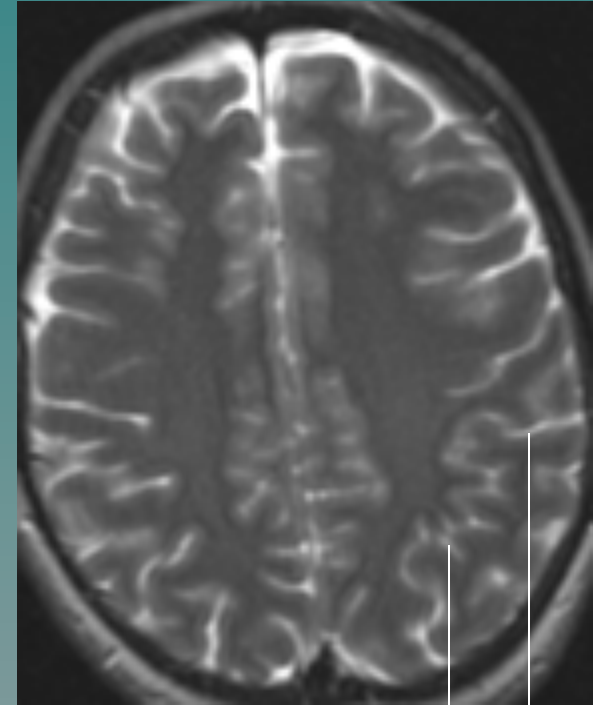
IPS

Postcentral sulcus



IPS

Postcentral sulcus

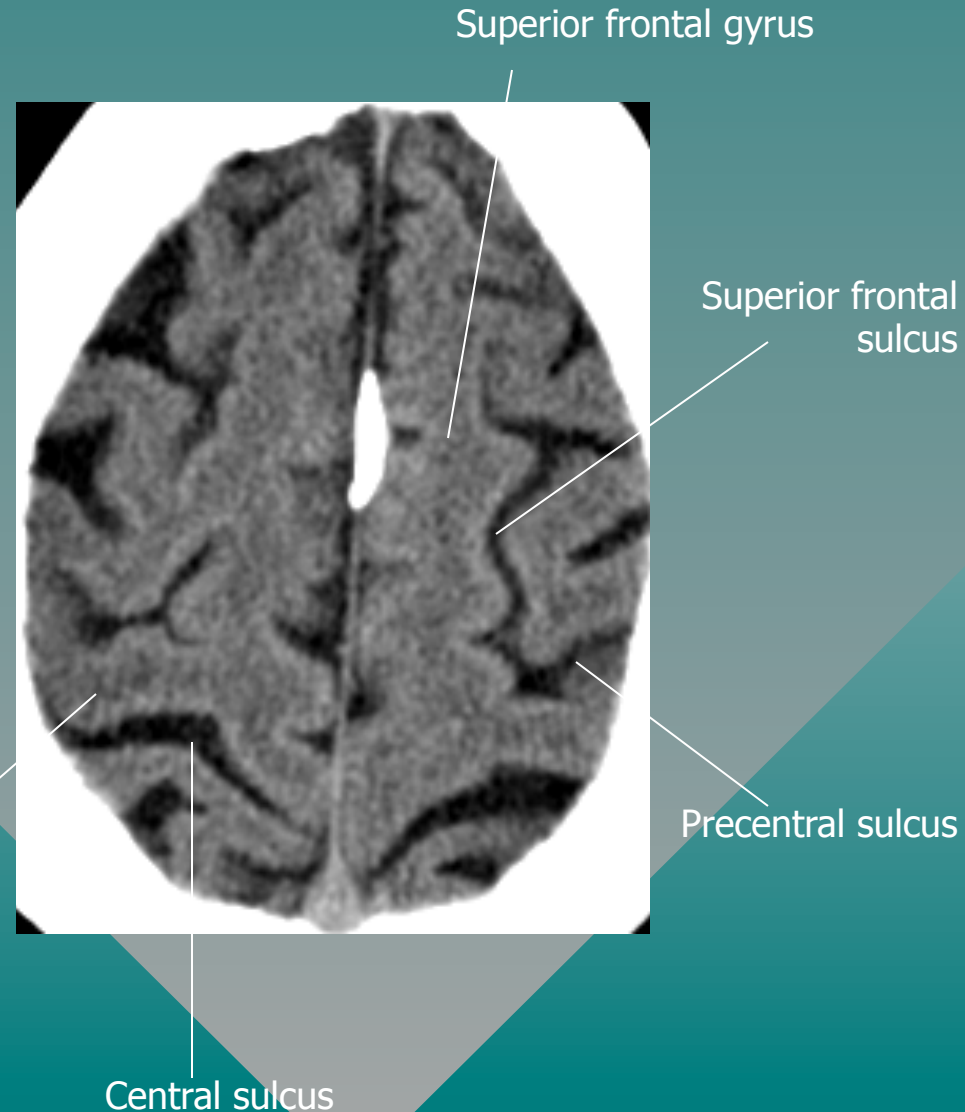


IPS

Postcentral sulcus

The Central Sulcus (CS)

- Midline Sulcus sign
 - the most prominent convexity sulcus that reaches the midline interhemispheric fissure is the CS (70%).



The Central Sulcus (CS)



The Central Sulcus (CS)

