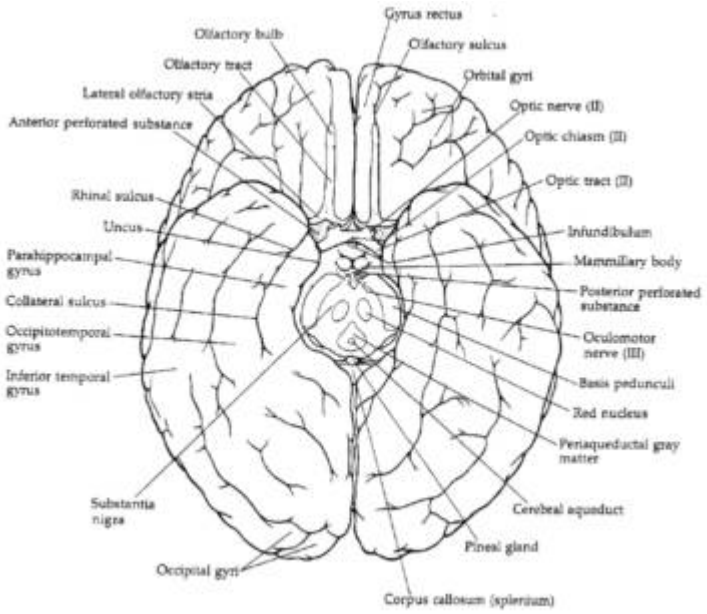
Rhinal sulcus



The rhinal sulcus can be considered an anterior continuation of the collateral sulcus and it separates the uncus from the temporal pole [1]. It bulges into the floor of the anterior third of the temporal horn [2].

Use of the gray matter overlying the anterior portions of the occipitotemporal sulcus and rhinal sulcus as an intraoperative landmark for locating the temporal horn during amygdalohippocampectomies approached by the superior or lateral surface of the temporal lobe.

The presence of occipitotemporal and rhinal sulci was analyzed in the magnetic resonance imaging scans of 165 patients who subsequently underwent mesial temporal resections, focusing on coronal slices up to 4 cm from the temporal pole. These sulci were used during surgery to locate the temporal horn in 150 surgeries. Five adult cadaveric heads whose vessels were perfused with colored silicone were used for photography. RESULTS: These sulci are the principal sulci of the anterior basal temporal lobe. They were present in 154 out of 165 and 165 out of 165 patients, respectively. When approaching mesial temporal structures from the superior or lateral surface of the temporal lobe, dissection is initially performed through the white matter toward the floor of the middle fossa until the gray matter overlying an anterior basal sulcus is encountered. Dissection continues medially and superiorly from the top of the gray matter until the temporal horn is entered.

Gray matter overlying these sulci leads toward the anterior portion of the floor of the temporal horn and constitutes a landmark for locating the temporal horn. However, only the rhinal sulcus was always present. When both are present, the gray matter overlying the occipitotemporal sulcus is a reliable landmark. These landmarks are most suitable for mesial temporal resections without significant displacement of the temporal horn [3].

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http://www.hindawi.com/journals/ert/2012/769825/fig6/

The medial view of the anterior segment of the medial temporal region (MTR). (This illustration

correlates with Figures 6(b) and 6 ©).

The anterior choroidal artery (AChA) gives off an anterior uncal artery that irrigates the semilunar gyrus and an uncohippocampal artery that irrigates the uncinate gyrus and band of Giacomini and penetrates the uncal sulcus to vascularize the extraventricular hippocampal head. The internal carotid artery (ICA) gives off an anterior uncal artery that supplies the semilunar gyrus. This branch usually is present when the anterior uncal artery of the AChA is absent. An anterior uncal artery also arises from the M1 segment of the middle cerebral artery (MCA) and supplies the ambient gyrus. An uncoparahippocampal artery arises from the temporopolar artery and irrigates both the ambient gyrus and the anterior parahippocampal area. Branches from the P2a segment of the PCA irrigate the anterior parahippocampal region (anterior parahippocampal artery) or both the anterior parahippocampal gyrus and hippocampal head (anterior hippocampal-parahippocampal artery). (b) The medial surface of the anterior segment of the left MTR. The white arrow points the posterior end of the uncal notch. The anterior part of this segment is irrigated by middle cerebral branches (orange shaded area), the posterosuperior part is supplied by anterior choroidal branches (blue shaded area), and the posteroinferior part is vascularized by posterior cerebral branches (yellow shaded area). The ICA typically supplies the area supplied by the AChA and the MCA if their branches are absent. The branches of the MCA are the anterior uncal artery superiorly and the unco-parahippocampal artery inferiorly.

The branches of the AChA are the anterior uncal artery anteriorly, the posterior uncal artery posteriorly, and the unco-hippocampal artery posteroinferiorly.

The branches of the PCA are the anterior hippocampal-parahippocampal artery medially and the anterior parahippocampal artery laterally. Areas of vascular anastomosis are typically found at the confluence of vascular territories (curved arrows).

© The same view of (a) in a silicon injected anatomic specimen.

(d) Inferior view of the anterior segment of the left MTR.

The inferior lip of the posterior uncal segment has been removed to expose the extraventricular hippocampal head. The semilunar gyrus has been retracted to expose the branches of the AChA.

Two anterior uncal arteries arise from the first one-third of the AChA and irrigate the semilunar gyrus. A posterior uncal artery from the AChA penetrates the uncal sulcus and irrigates the extraventricular hippocampal head. An anterior hippocampal-parahippocampal artery arising from the anteroinferior temporal branch of the PCA gives rise to an anterior hippocampal branch that supplies the extraventricular hippocampal head and anastomoses with the unco-hippocampal branch of the AChA (green arrow).

(e) Lower surface of the anterior segment of the right MTR. The entorhinal area is irrigated medially by the parahippocampal branch of the anterior hippocampal-parahippocampal artery that arises from the P2a, and laterally by a large anterior parahippocampal artery that originates from the anterior inferior temporal artery.

A.: artery; A.C.A.: anterior cerebral artery;

A.Ch.A.: anterior choroidal artery;

Amb.: ambient; Ant.: anterior;

Car.: carotid;

Chor.: choroidal;

Dent.: dentate;

Entorhin.: entorhinal;

Giac.: Giacomini;

Hippo.: hippocampus;

ICA: internal carotid artery;

Inf.: inferior;

Intralimb.: intralimbic;

Lent.: lenticulo;

M.C.A.: middle cerebral artery;

M1.: M1 segment of middle cerebral artery;

Parahippo.: parahippocampal;

P.C.A.: posterior cerebral artery;

P2A.: anterior part of the P2 segment of posterior cerebral artery;

P2P.: posterior part of the P2 segment of posterior cerebral artery;

P.Co.A.: posterior communicating artery;

Ped.: peduncle;

Pol.: polar;

Semianul.: semiannular;

Semilun.: semilunar;

Str.: striate;

Sulc.: sulcus;

Temp.: temporal;

Tr.: tract;

Unc.: uncal;

Uncin.: uncinate;

V.: vein.

1)

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2)
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