Microneurosurgical Anatomy and Surgical Technique

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Contents

Anatomy of Cranium, Dura Mater, Brain Surface, and Surgical Techniques

Xiang'En Shi, Long Wang, and Hai Qian

1 Anatomy of Cranium

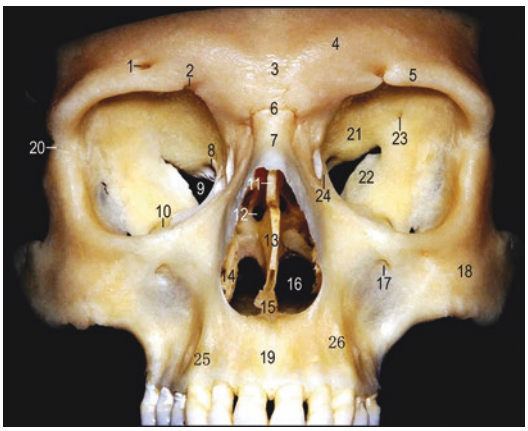

Fig. 1 Anterior view of cranium. (*1*) Supraorbital foramen, (*2*) Supraorbital notch, (*3*) Glabella, (*4*) Superciliary arch, (*5*) Supraorbital margin, (*6*) Frontonasal suture, (*7*) Nasion, (*8*) Optic foramen, (*9*) Superior orbital fissure, (*10*) Inferior orbital fissure, (*11*) Perpendicular plate of ethmoid bone, (*12*) Aperture of sphenoid sinus, (*13*) Vomer, (*14*) Inferior nasal concha, (*15*) Anterior nasal spine, (*16*) Nasal cavity, (*17*) Infraorbital foramen, (*18*) Zygomatic bone, (*19*) Maxilla, (*20*) Frontozygomatic suture, (*21*) Lesser wing of sphenoid bone, (*22*) Greater wing of sphenoid bone, (*23*) Lacrimal foramen (Hyrtl foramen), (*24*) Lacrimal groove, (*25*) Alveolar process, (*26*) Maxillary process

Fig. 2 Lateral view of right frontal, parietal, temporal, and zygomatic regions) zygomatic parts). (*1*) Coronal suture, (*2*) Superior temporal line, (*3*) Inferior temporal line, (*4*) Squamosal suture, (*5*) Temporal surface of frontal bone, (*6*) Zygomatic process of frontal bone, (*7*) Frontozygomatic suture, (*8*) Frontal process of zygomatic bone, (*9*) Greater wing of sphenoid bone, (*10*) Squamous part of temporal bone, (*11*) Postglenoid process, (*12*) Suprameatal triangle, (*13*) Anterior margin of external acoustic meatus, (*14*) Mastoid process, (*15*) Tympanic part of temporal bone, (*16*) Styloid process, (*17*) Articular tubercle, (*18*) Zygomatic arch, (*19*) Temporal process of zygomatic bone, (*20*) Zygomatic bone, (*21*) Lateral pterygoid plate, (*22*) Maxilla, (*23*) Palatine bone, (*24*) Lacrimal bone, (*25*) Suprameatal spine, (*26*) Pterion, (*27*) External acoustic meatus, (*28*) Clivus, (*29*) Pterygomaxillary fissure, (*30*) Maxillary tuberosity

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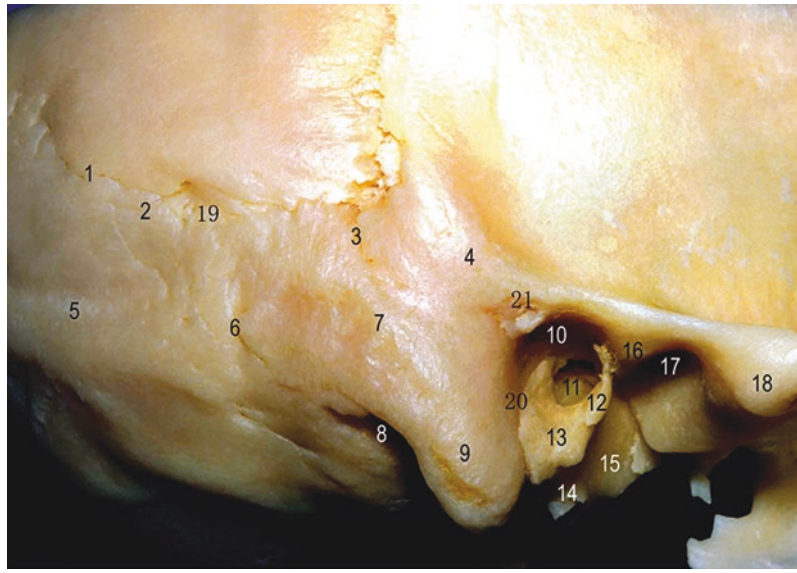


Fig. 3 Lateral view of right tympanic and mastoid part of temporal bone. (*1*) Lambdoid suture, (*2*) Superior nuchal line, (*3*) Squamosomastoid suture, (*4*) Suprameatal crest, (*5*) Inferior nuchal line, (*6*) Occipitomastoid suture, (*7*) Mastoid part of temporal bone, (*8*) Digastric groove, (*9*) Mastoid process, (*10*) Suprameatal triangle, (*11*) External acoustic meatus, (*12*) Anterior margin of external acoustic meatus, (*13*) Tympanic part of temporal bone, (*14*) Sheath of styloid process, (*15*) Pteryoid process, (*16*) Postglenoid process, (*17*) Mandibular fossa, (*18*) Articular tubercle, (*19*) Asterion, (*20*) Tympanomastiod fissure, (*21*) Suprameatal spine

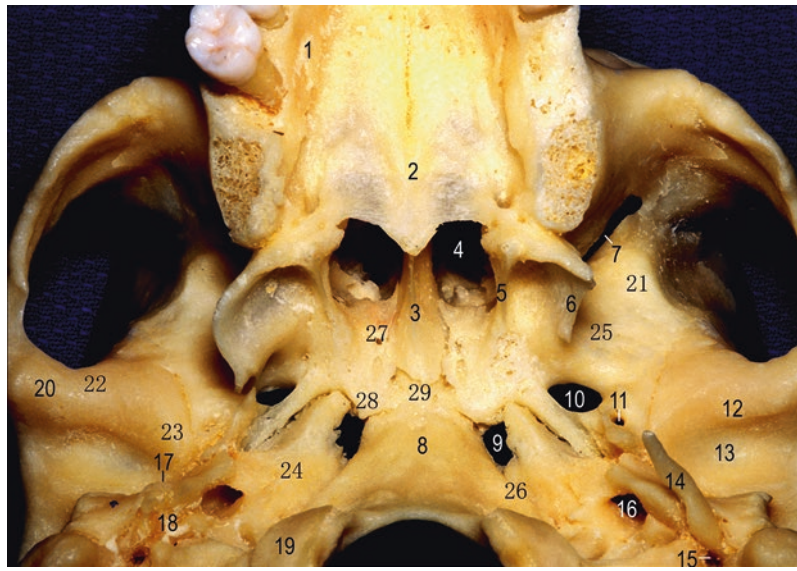


Fig. 4 External view of anterior and middle cranial base. (*1*) Maxilla, (*2*) Palatine bone, (*3*) Vomer, (*4*) Posterior nasal aperture, (*5*) Medial pterygoid plate, (*6*) Lateral pterygoid plate, (*7*) Inferior orbital fissure, (*8*) Clivus, (*9*) Foramen lacerum, (*10*) Foramen ovale, (*11*) Foramen spinosum, (*12*) Articular tubercle, (*13*) Mandibular fossa, (*14*) Styloid process, (*15*) Stylomastoid foramen, (*16*) External opening of carotid canal, (*17*) Margin of tegmen tympani, (*18*) Tympanic part of temporal bone, (*19*) Occipital condyle, (*20*) Zygomatic bone, (*21*) Greater wing of sphenoid bone, (*22*) Anterior root of zygomatic process, (*23*) Posterior root of zygomatic process, (*24*) Petrous part of temporal bone, (*25*) Infratemporal fossa, (*26*) Petroclival fissure, (*27*) Sphenoidal conchae, (*28*) Lingual process of sphenoidal bone, (*29*) Sphenoidal rostrum

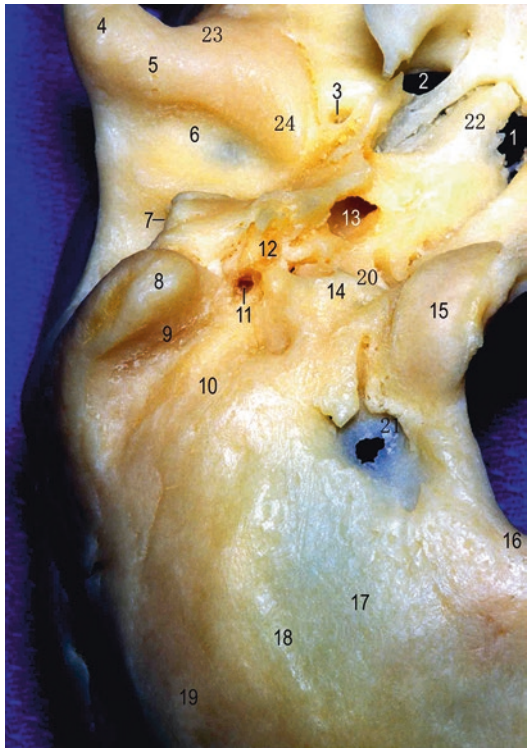


Fig. 5 Inferior view of right middle and posterior cranial fossae. (*1*) Foramen lacerum, (*2*) Foramen ovale, (*3*) Foramen spinosum, (*4*) Root of zygomatic arch, (*5*) Articular tubercle, (*6*) Mandibular fossa, (*7*) External acoustic meatus, (*8*) Mastoid process, (*9*) Digastric groove, (*10*) Occipital groove, (*11*) Stylomastoid foramen, (*12*) Tympanic part of temporal bone, (*13*) External opening of carotid canal, (*14*) Jugular process, (*15*) Occipital condyle, (*16*) Posterior margin of foramen magnum, (*17*) Squamous part of occipital bone, (*18*) Inferior nuchal line, (*19*) Superior nuchal line, (*20*) Jugular foramen, (*21*) Posterior condylar canal, (*22*) Petrous apex, (*23*) Anterior root of zygomatic process, (*24*) Posterior root of zygomatic process

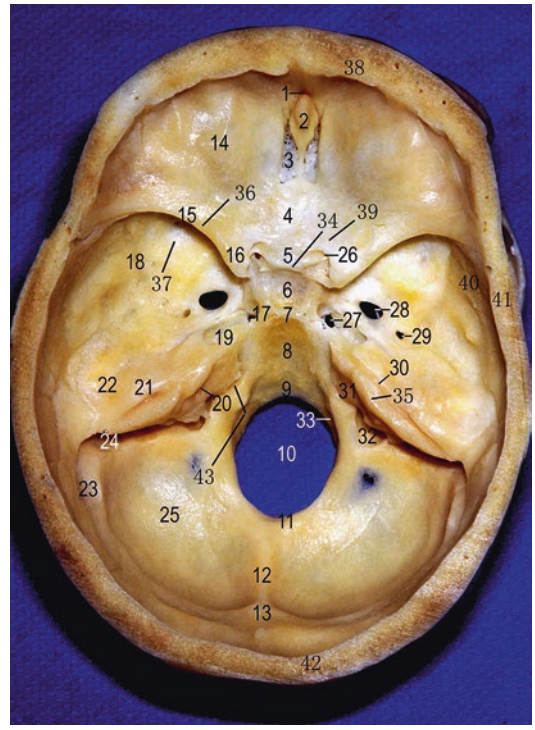


Fig. 6 Internal view of the skull base. (*1*) Foramen cecum, (*2*) Crista galli, (*3*) Cribriform plate, (*4*) Planum sphenoidale, (*5*) Chiasmatic sulcus, (*6*) Pituitary fossa, (*7*) Dorsum sellae, (*8*) Clivus, (*9*) Anterior margin of foramen magnum, (*10*) Foramen magnum, (*11*) Posterior margin of foramen magnum, (*12*) Internal occipital crest, (*13*) Internal occipital protuberance, (*14*) Anterior cranial fossa, (*15*) Sphenoid ridge, (*16*) Anterior clinoid process, (*17*) Posterior clinoid process, (*18*) Middle cranial fossa, (*19*) Petrous apex, (*20*) Internal acoustic meatus, (*21*) Arcuate eminence, (*22*) Tegmen tympani, (*23*) Transverse sulcus, (*24*) Sigmoid sulcus, (*25*) Posterior cranial fossa, (*26*) Optic canal, (*27*) Foramen lacerum, (*28*) Foramen ovale, (*29*) Foramen spinosum, (*30*) Superior petrosal sulcus, (*31*) Inferior petrosal sulcus, (*32*) Jugular foramen, (*33*) Hypoglossal canal, (*34*) Tuberculum sellae, (*35*) Petrous ridge, (*36*) Lesser wing of sphenoid bone, (*37*) Greater wing of sphenoid bone, (*38*) Frontal bone, (*39*) Sphenoid bone, (*40*) Temporal bone, (*41*) Parietal bone, (*42*) Occipital bone, (*43*) Petroclival fissure

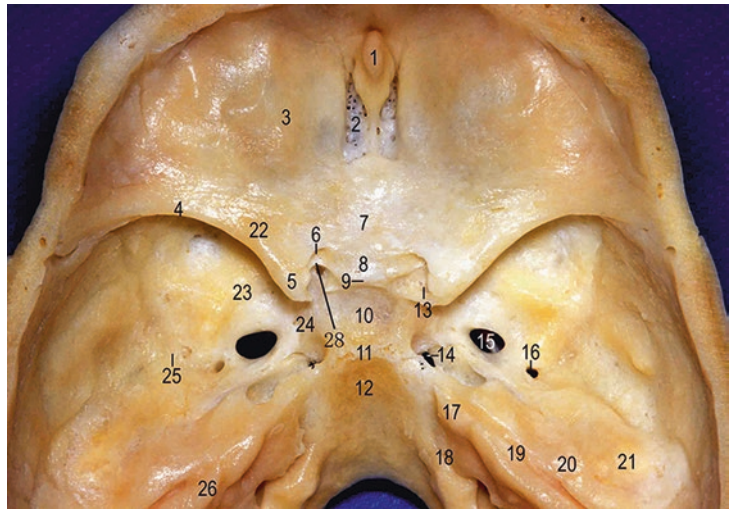
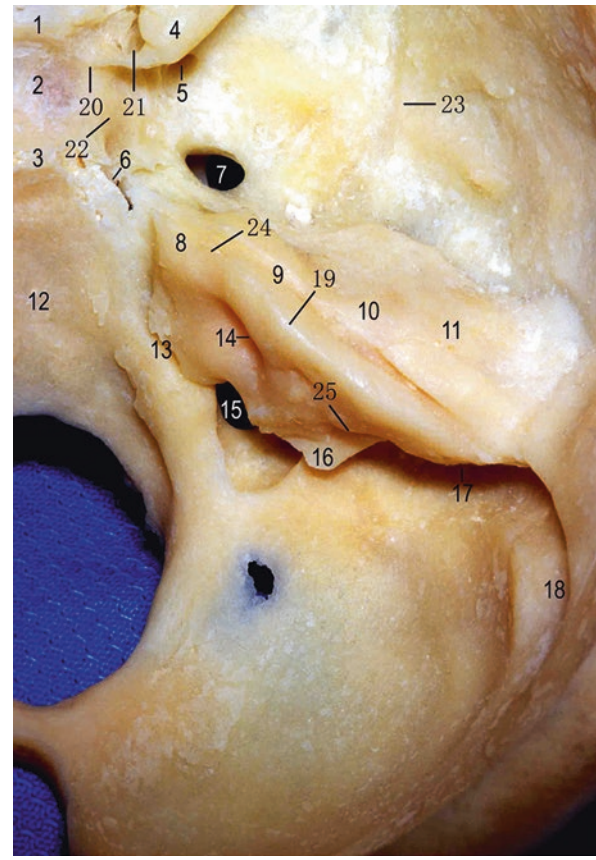


Fig. 7 Internal view of anterior and middle cranial fossae. (*1*) Crista galli, (*2*) Cribriform plate, (*3*) Anterior cranial fossa, (*4*) Sphenoid ridge, (*5*) Anterior clinoid process, (*6*) Optic canal, (*7*) Planum sphenoidale, (*8*) Chiasmatic sulcus, (*9*) Tuberculum sellae, (*10*) Pituitary fossa, (*11*) Dorsum sellae, (*12*) Clivus, (*13*) Caroticoclinoid foramen, (*14*) Internal opening of carotid canal, (*15*) Foramen ovale, (*16*) Foramen spinosum, (*17*) Petrous apex, (*18*) Inferior petrosal sulcus, (*19*) Superior petrosal sulcus, (*20*) Arcuate eminence, (*21*) Tegmen tympani, (*22*) Lesser wing of sphenoid bone, (*23*) Greater wing of sphenoid bone, (*24*) Carotid sulcus, (*25*) Groove for middle meningeal artery, (*26*) Petrous ridge, (*27*) NA, (*28*) Optic strut

Fig. 8 Internal view of middle and posterior cranial fossae. (*1*) Tuberculum sellae, (*2*) Pituitary fossa, (*3*) Dorsum sellae, (*4*) Anterior clinoid process, (*5*) Foramen rotundum, (*6*) Internal opening of carotid canal, (*7*) Foramen ovale, (*8*) Petrous apex, (*9*) Superior petrosal sulcus, (*10*) Arcuate eminence, (*11*) Tegmen tympani, (*12*) Dorsum sellae, (*13*) Inferior petrosal sulcus, (*14*) Internal acoustic meatus, (*15*) Jugular foramen, (*16*) Posterior jugular ridge, (*17*) Sigmoid sulcus, (*18*) Transverse sulcus, (*19*) Petrous ridge, (*20*) Middle clinoid process, (*21*) Caroticoclinoid foramen, (*22*) Carotid sulcus, (*23*) Groove for middle meningeal artery, (*24*) Trigeminal impression, (*25*) Endolymphatic depression



2 Anatomy of Dura Mater

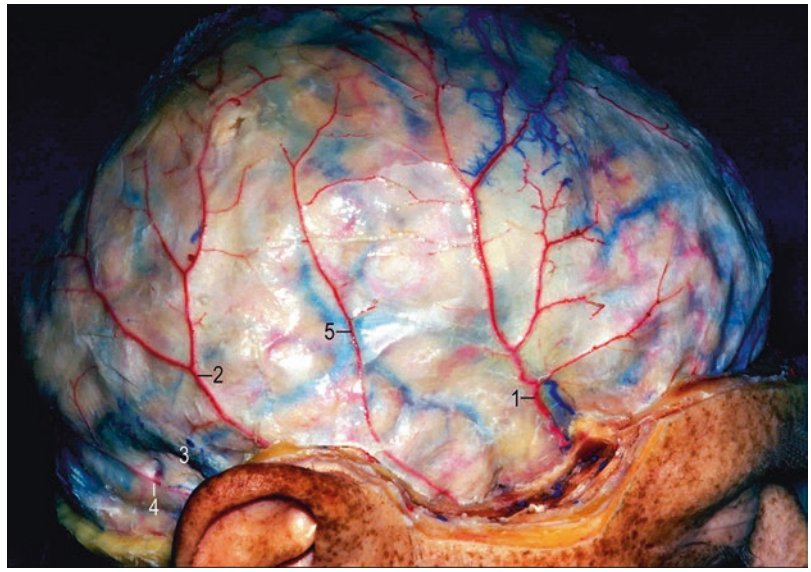


Fig. 9 Lateral view of cranial dura mater. (*1*) Frontal branch of middle meningeal artery, (*2*) Parietooccipital branch of middle meningeal artery, (*3*) Transverse sinus, (*4*) Posterior meningeal artery, (*5*) Parietal branch of middle meningeal artery

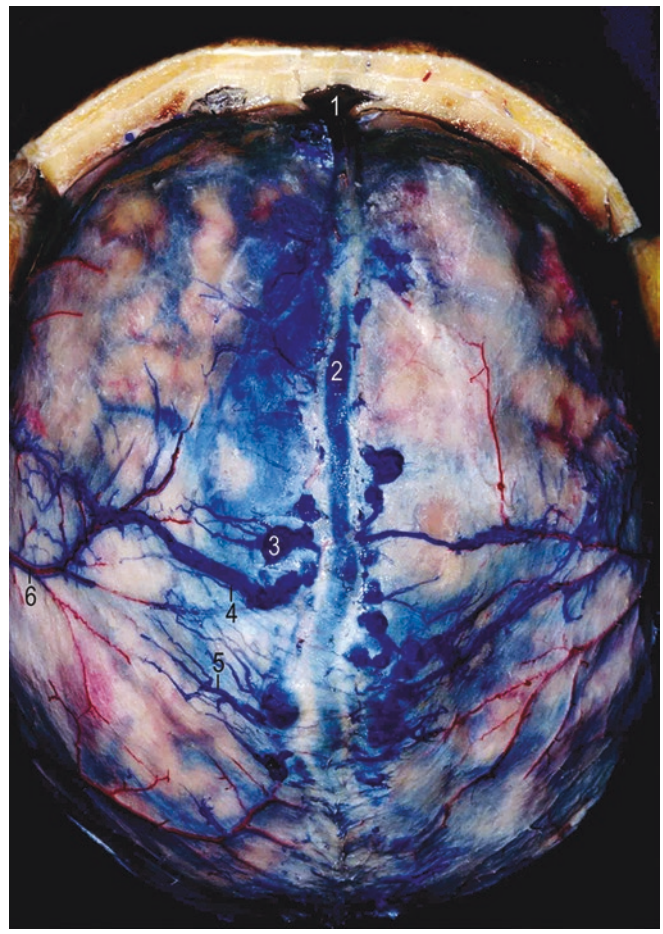


Fig. 10 Superior view of convexity dura mater. (*1*) Frontal sinus, (*2*) Superior sagittal sinus, (*3*) Lateral lacunae, (*4*) Middle meningeal veins, (*5*) Posterior parietal meningeal vein, (*6*) Middle meningeal artery

3 Anatomy of Brain Surface

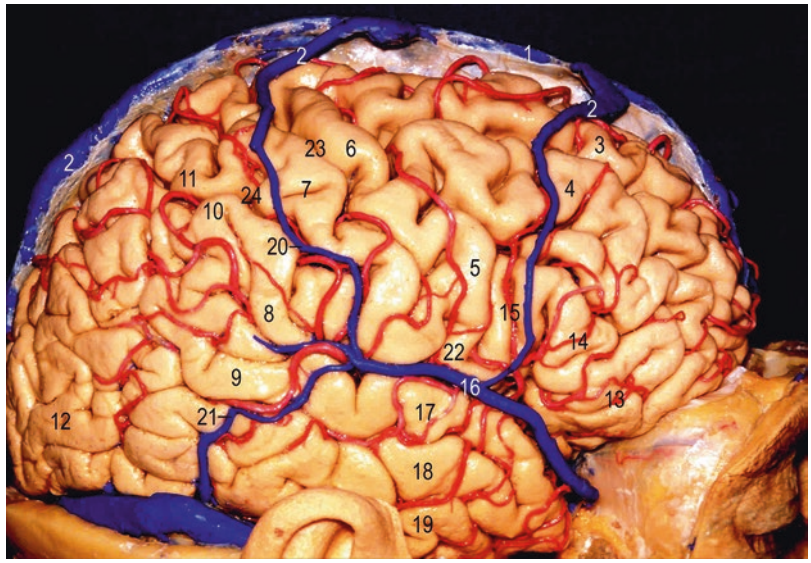


Fig. 11 Overview of lateral surface of the brain. (*1*) Superior sagittal sinus, (*2*) Superior cerebral veins, (*3*) Superior frontal gyrus, (*4*) Middle frontal gyrus, (*5*) Inferior frontal gyrus, (*6*) Precentral gyrus, (*7*) Postcentral gyrus, (*8*) Supramarginal gyrus, (*9*) Angular gyrus, (*10*) Inferior parietal lobule, (*11*) Superior parietal lobule, (*12*) Occipital lobe, (*13*) Pars Orbitalis, (*14*) Pars Triangularis, (*15*) Anterior part of Pars opercularis, (*16*) Sylvian vein (superficial middle cerebral vein), (*17*) Superior temporal gyrus, (*18*) Middle temporal gyrus, (*19*) Inferior temporal gyrus, (*20*) Superior anastomotic vein (vein of Troland), (*21*) Inferior anastomotic vein (vein of Labbe), (*22*) Posterior part of Pars opercularis, (*23*) Central sulcus, (*24*) Postcentral sulcus

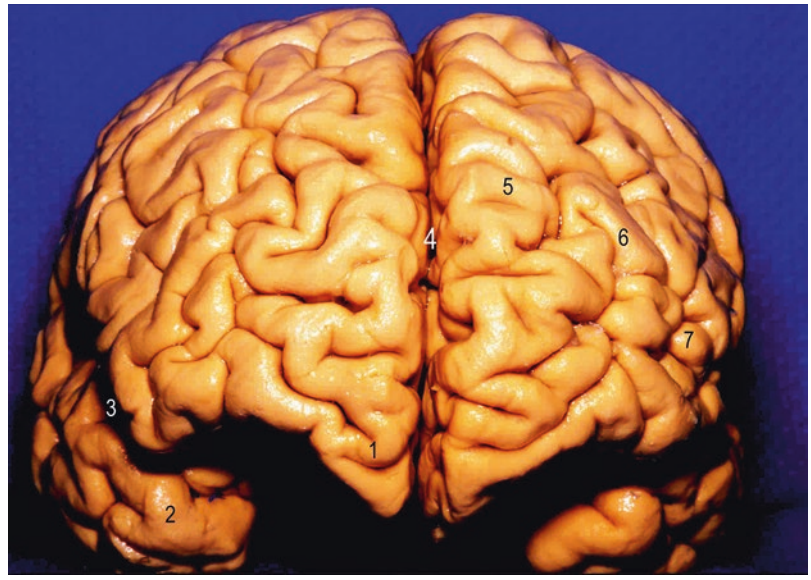


Fig. 12 Anterior view of lateral surface of the brain. (*1*) Frontal pole, (*2*) Temporal pole, (*3*) Sylvian fissure, (*4*) Longitudinal fissure, (*5*) Superior frontal gyrus, (*6*) Middle frontal gyrus, (*7*) Inferior frontal gyrus

Fig. 13 Superior view of the lateral surface of the brain. (*1*) Central sulcus, (*2*) Precentral gyrus, (*3*) Paracentral lobule, (*4*) Superior frontal sulcus, (*5*) Pars triangularis, (*6*) Inferior frontal gyrus, (*7*) Frontal pole, (*8*) Occipital pole, (*9*) Longitudinal fissure, (*10*) Pars opercularis

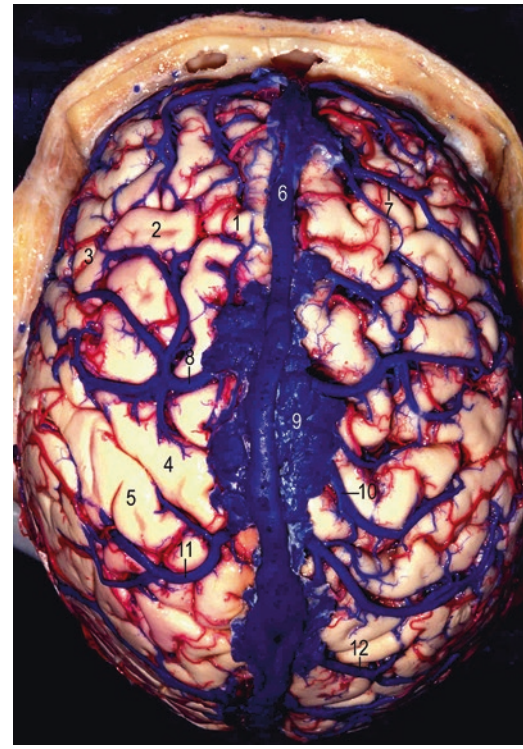


Fig. 14 Superior sagittal sinus and its tributaries. (*1*) Superior frontal gyrus, (*2*) Middle frontal gyrus, (*3*) Inferior frontal gyrus, (*4*) Precentral gyrus, (*5*) Postcentral gyrus, (*6*) Frontal part of superior sagittal sinus, (*7*) Middle frontal vein, (*8*) Posterior frontal vein, (*9*) Venous Lacunae, (*10*) Central vein, (*11*) Postcentral vein, (*12*) Anterior parietal vein

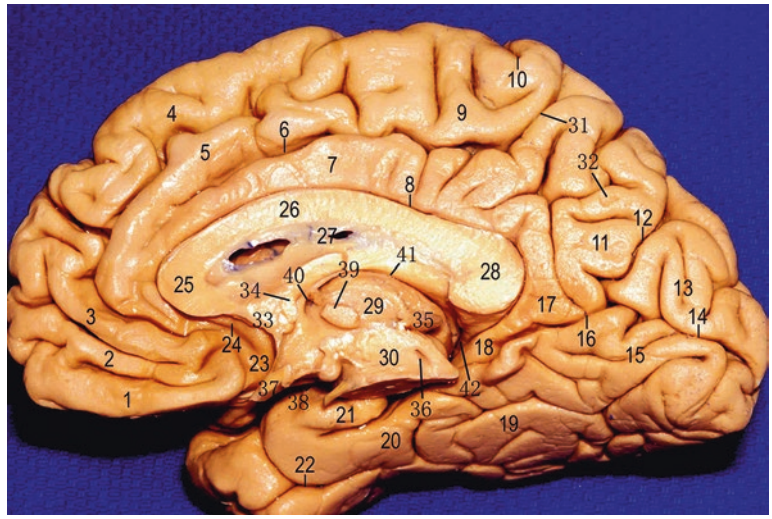


Fig. 15 Overview of medial surface of the brain. (*1*) Gyrus rectus, (*2*) Inferior rostral gyrus, (*3*) Superior rostral gyrus, (*4*) Medial superior frontal gyrus, (*5*) Paracingulate gyrus, (*6*) Cingulate sulcus, (*7*) Cingulate gyrus, (*8*) Callosal sulcus, (*9*) Paracentral lobule, (*10*) Central sulcus, (*11*) Precuneus, (*12*) Parieto-occipital sulcus, (*13*) Cuneus, (*14*) Calcarine sulcus, (*15*) Lingual gyrus, (*16*) Anterior calcarine sulcus, (*17*) Posterior cingulate gyrus, (*18*) Isthmus, (*19*) Fusiform gyrus, (*20*) Parahippocampal gyrus, (*21*) Uncus, (*22*) Rhinal sulcus, (*23*) Paraterminal gyrus, (*24*) Cingulate pole, (*25*) Genu of corpus callosum, (*26*) Body of corpus callosum, (*27*) Septum pellucidum, (*28*) Splenium of corpus callosum, (*29*) Thalamus, (*30*) Mesencephalon, (*31*) Ascending ramus of cingulate sulcus, (*32*) Precuneus, (*33*) Anterior commissure, (*34*) Column of fornix, (*35*) Pineal body, (*36*) Cerebral aqueduct, (*37*) Optic chiasm, (*38*) Apex, (*39*) Massa intermedia, (*40*) Foramen of Monro, (*41*) Choroid fissure, (*42*) Fasciolar gyrus

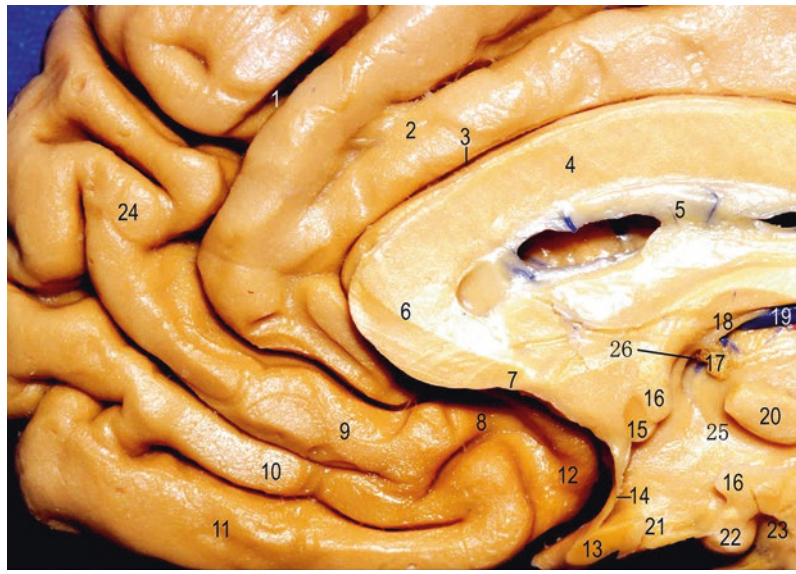


Fig. 16 Sagittal view of anterior medial frontal region. (*1*) Cingulate sulcus, (*2*) Cingulate gyrus, (*3*) Callosal sulcus, (*4*) Body of corpus callosum, (*5*) Septum pellucidum, (*6*) Genu of corpus callosum, (*7*) Rostrum of corpus callosum, (*8*) Cingulate Pole, (*9*) Superior rostral gyrus, (*10*) Inferior rostral gyrus, (*11*) Rectus gyrus, (*12*) Postolfactory sulcus, (*13*) Optic chiasm, (*14*) Lamina terminalis, (*15*) Anterior commissure, (*16*) Column of fornix, (*17*) Choroid plexus, (*18*) Body of fornix, (*19*) Internal cerebral vein, (*20*) Massa intermedia, (*21*) Infundibular recess, (*22*) Mamillary body, (*23*) Interpeduncular fossa, (*24*) Medial frontal gyrus, (*25*) Hypothalamic sulcus, (*26*) Foramen of Monro

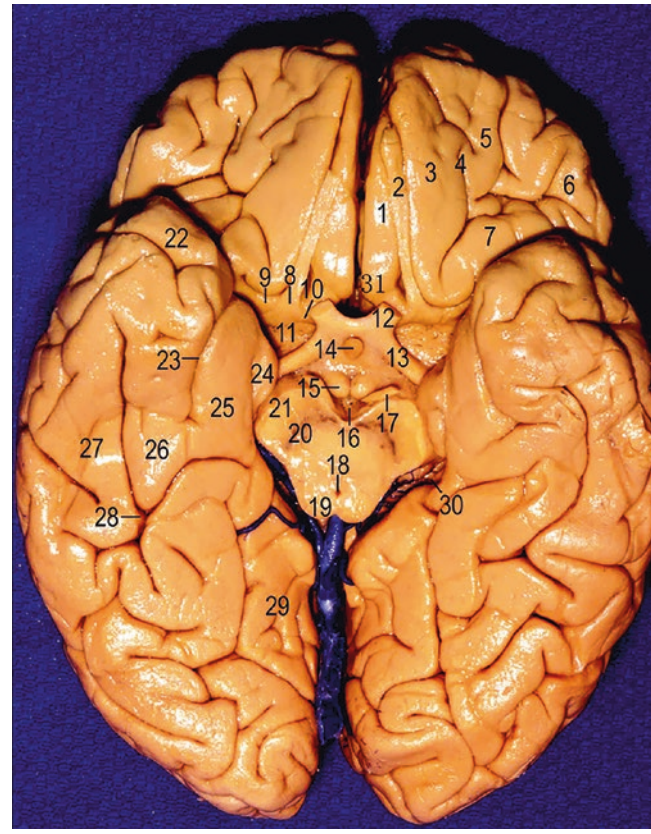


Fig. 17 Overview of inferior surface of the brain. (*1*) Gyrus rectus, (*2*) Olfactory tract, (*3*) Medial orbital gyrus, (*4*) Orbital sulcus, (*5*) Anterior orbital gyrus, (*6*) Lateral orbital gyrus, (*7*) Posterior orbital gyrus, (*8*) Olfactory trigone, (*9*) Lateral olfactory stria, (*10*) Medial olfactory stria, (*11*) Anterior perforator substance, (*12*) Optic nerve, (*13*) Optic tract, (*14*) Infundibulum, (*15*) Mammillary body, (*16*) Posterior perforator substance, (*17*) Oculomotor nerve, (*18*) Cerebral aqueduct, (*19*) Superior colliculus, (*20*) Substantia nigra, (*21*) Cerebral peduncle, (*22*) Temporal pole, (*23*) Rhinal sulcus, (*24*) Uncus, (*25*) Parahippocampal gyrus, (*26*) Fusiform gyrus, (*27*) Inferior temporal gyrus, (*28*) Occipitotemporal sulcus, (*29*) Lingual gyrus, (*30*) Lateral geniculate body, (*31*) Paraterminal gyrus

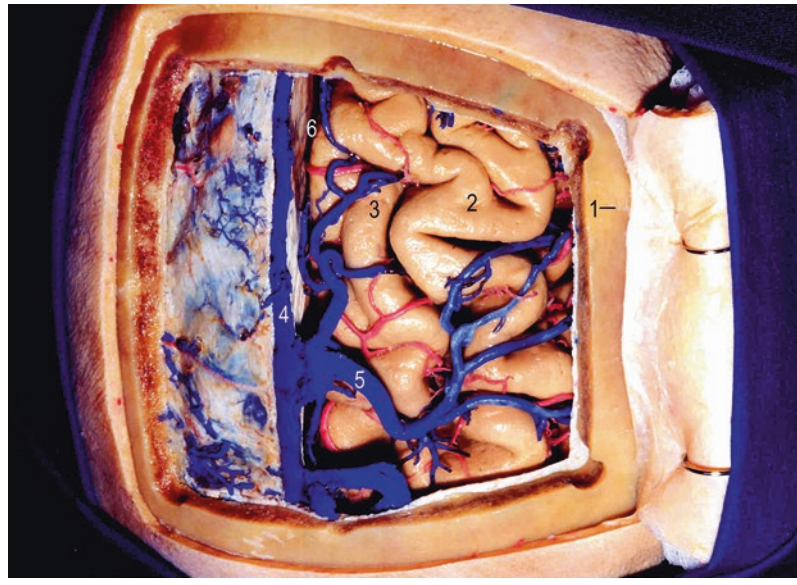


Fig. 18 Craniotomy of interhemispheric transcallosal approach. (*1*) Coronal suture, (*2*) Middle frontal gyrus, (*3*) Superior frontal gyrus, (*4*) Superior sagittal sinus, (*5*) Posterior frontal vein, (*6*) Longitudinal fissure

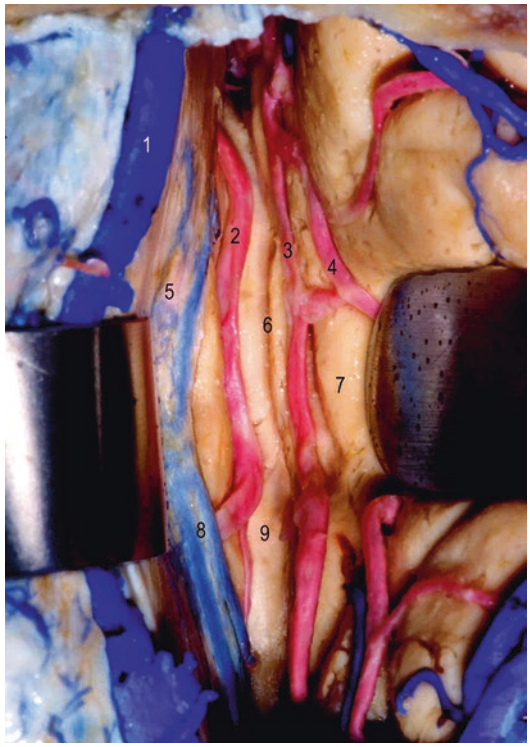


Fig. 19 Trajectory of interhemispheric transcallosal approach. (*1*) Superior sagittal sinus, (*2*) Left pericallosal artery, (*3*) Right pericallosal artery, (*4*) Right callosomarginal artery, (*5*) Falx cerebri, (*6*) Right callosal sulcus, (*7*) Cingulate gyrus, (*8*) Inferior sagittal sinus, (*9*) Body of corpus callosum

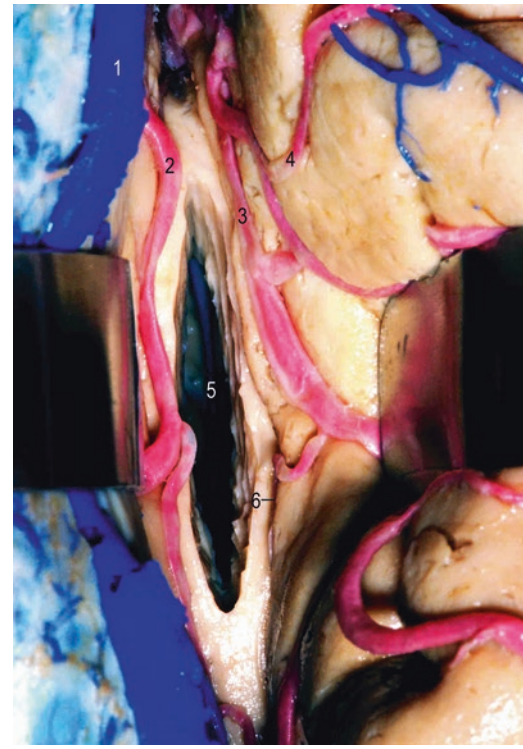


Fig. 20 Callostomy of interhemispheric transcallosal approach, (*1*) Superior sagittal sinus, (*2*) Left pericallosal artery, (*3*) Right pericallosal artery, (*4*) Right medial intermediate frontal artery, (*5*) Third ventricle, (*6*) Right callosal sulcus

Case 1.1 Frontal Epidermoid Cyst

Clinical presentation:

A 12-year-old boy presented with a 3-year history of frontal mass.

Neurological exam:

Uneventful

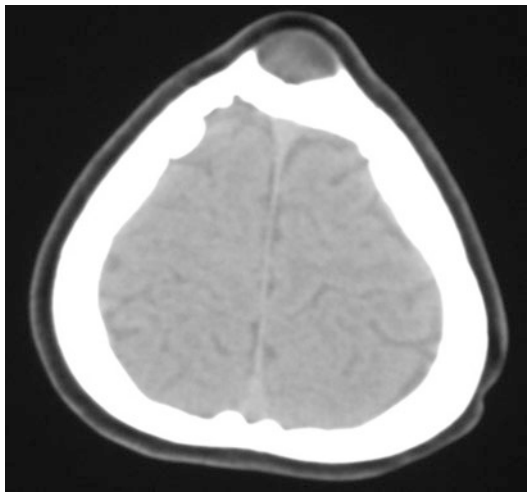


Fig. 21 Pre-op CT scan revealed a well-defined, uncalcified, and hypodense mass eroding the outer table of frontal bone

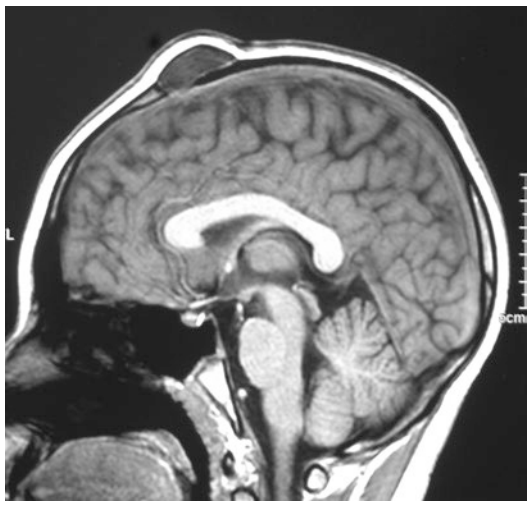


Fig. 22 Sagittal T1-weighted MRI

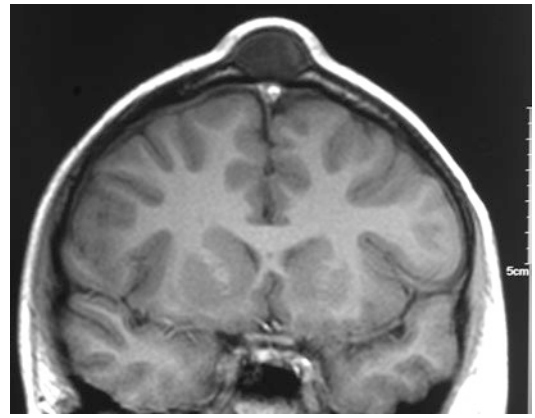


Fig. 23 Coronal T1-weighted MRI. Pre-op T1-weighted MRI showed an osseous round lesion expanding into subcutaneous tissue and invading the inner table of frontal bone

Fig. 24 A curvilinear incision was made along the outer margin of osseous mass

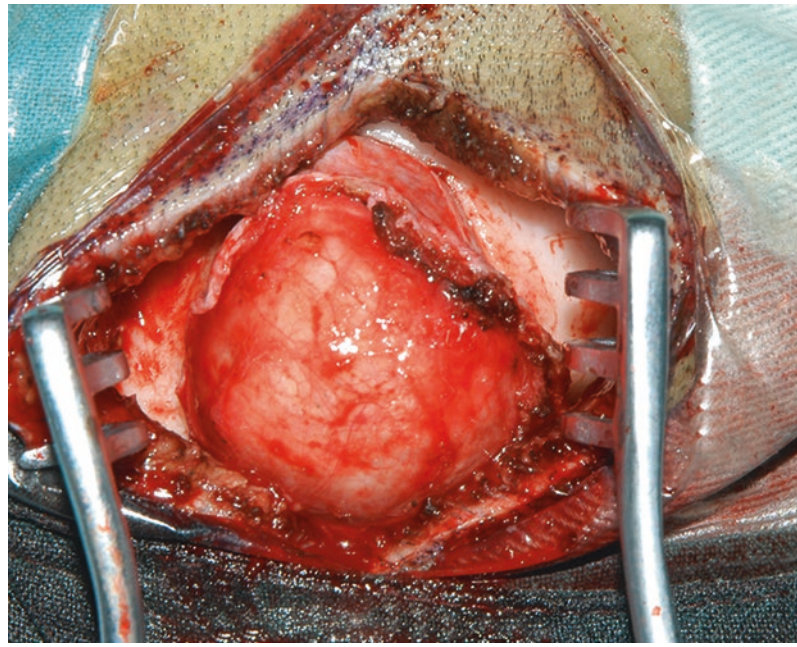


Fig. 25 The nodule protruded from the bony surface with ductile texture after opening the subcutaneous tissue

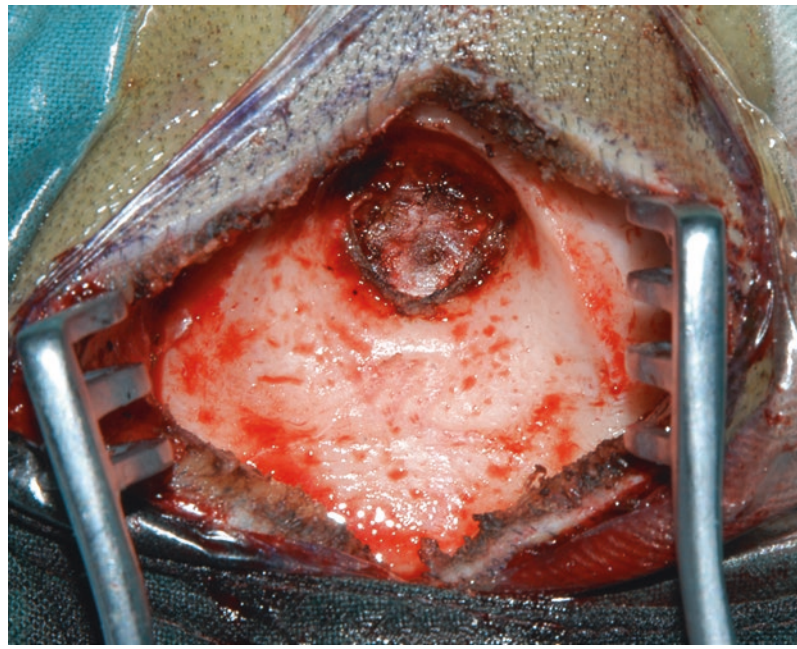


Fig. 26 The lesion with outer table erosion was resected en bloc while the inner table of frontal bone was well defined

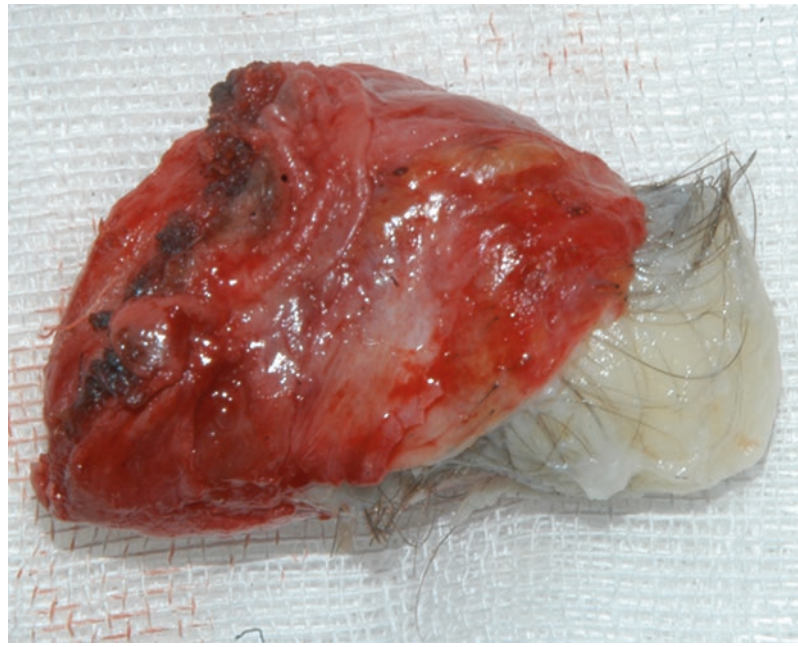


Fig. 27 The mass was opened and the lipid component was seen with hair

Case 1.2 Right Frontoparietal Meningioma

Clinical presentation:

A 39-year-old lady presented with a history of headache and hemiparesis of right lower extremity for 4 days.

Neurological exam:

Muscle strength: Grade IV (Lt lower extremity), others V

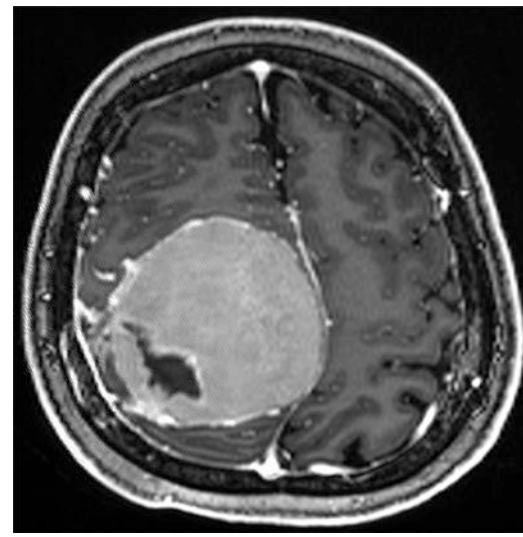


Fig. 28 Pre-op axial Gd-enhanced T1-weighted MR