

Presentation - Supratentorial

- Anatomic neurologic deficit
 - Visual problems - VF, VA
 - Speech
 - Sensorimotor
 - Gerstmann's syndrome
- Obstructive hydrocephalus / Headache
- Seizure

Presentation - Posterior Fossa

- Obstructive hydrocephalus / Headache
- Vomiting - particularly in the morning
- Ataxia
- Cranial neuropathy - diplopia
- Nystagmus

Presentation – Pineal

- Obstructive hydrocephalus
- Parinaud's syndrome

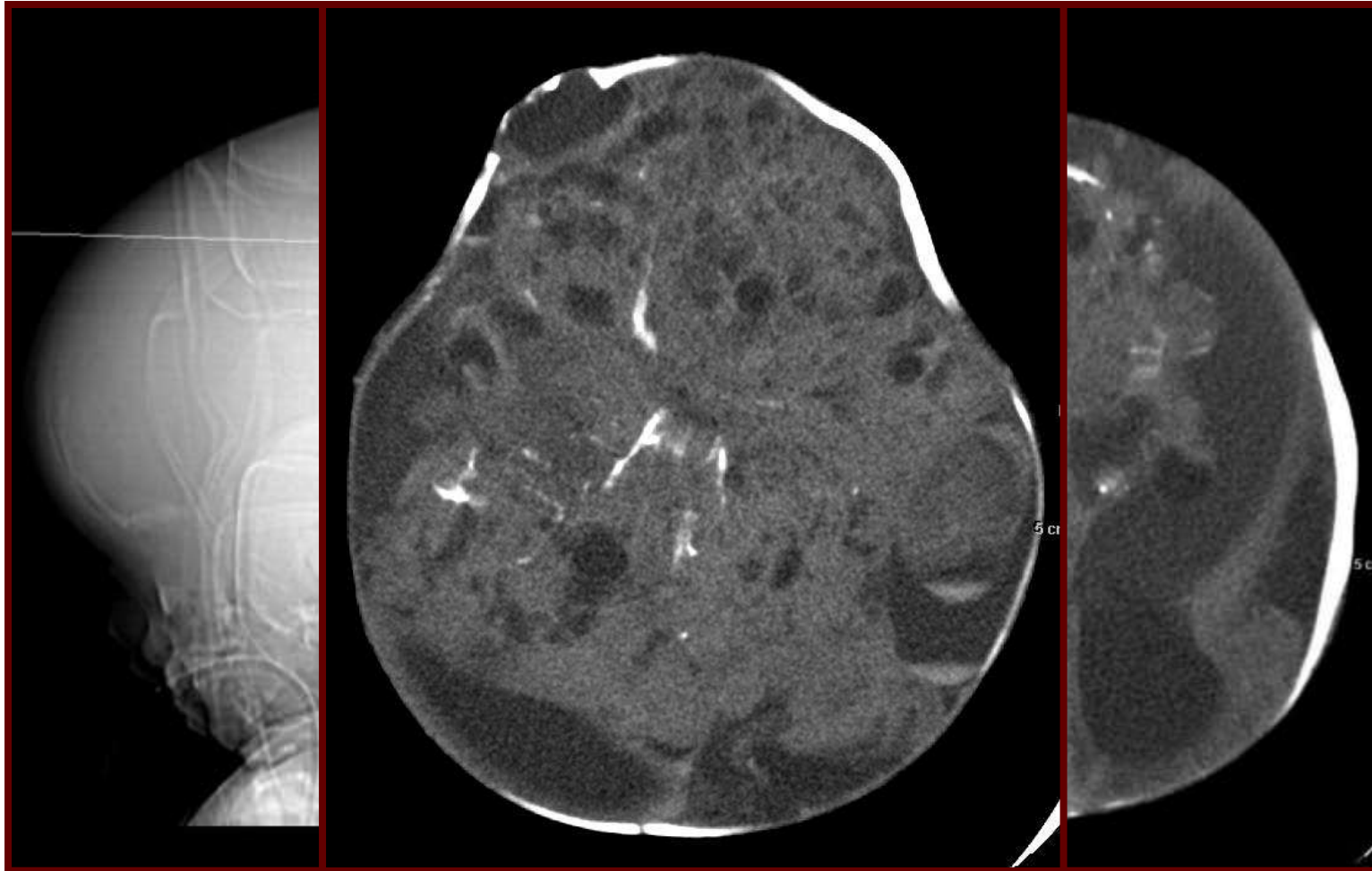
Presentation - Suprasellar

- Visual field or acuity deficits
- Endocrinopathy
- Hydrocephalus
- Diencephalic syndrome

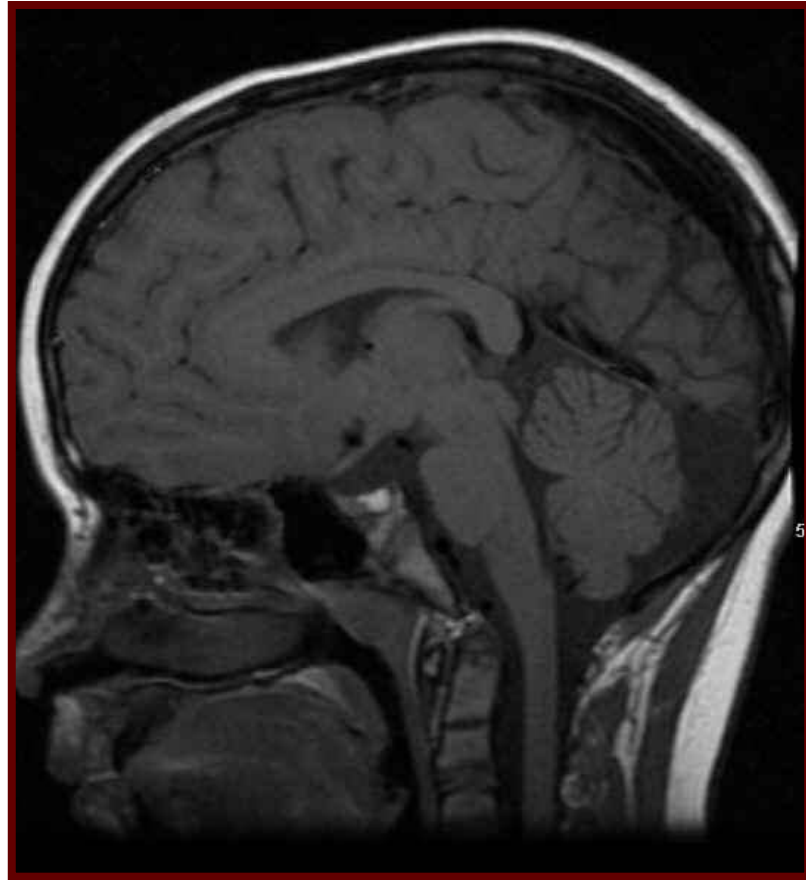
Surgery - Aims

- Relieve increased intracranial pressure
- Establish a diagnosis
- Subtotal vs. Gross total resection
- Avoid neurologic deficit
- Relieve hydrocephalus

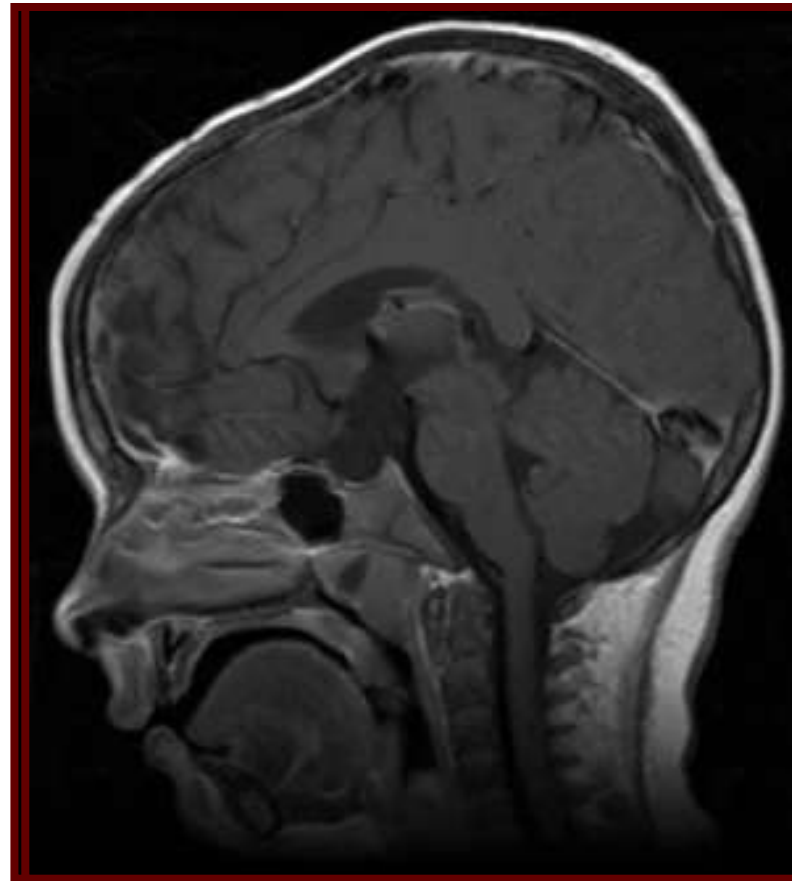
Fetal Brain Tumors



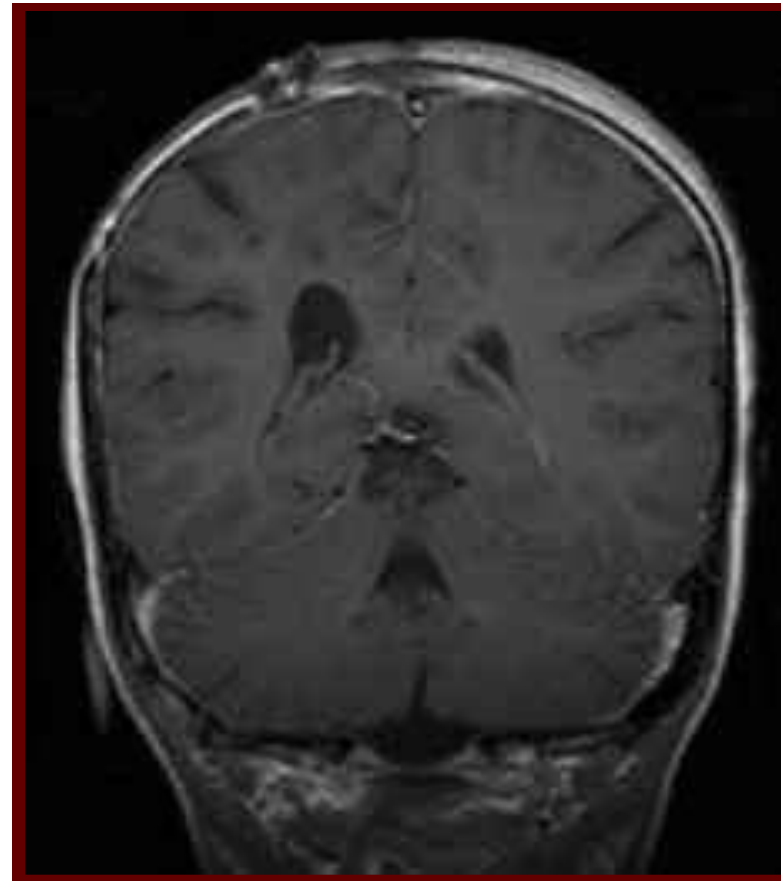
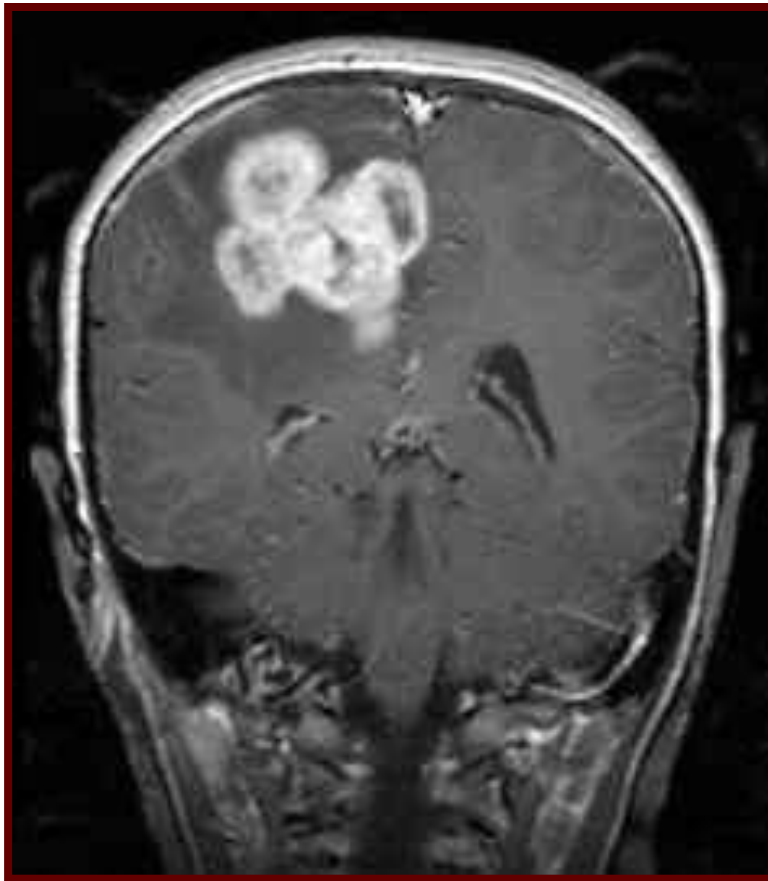
Pituitary Tumor



Craniopharyngioma



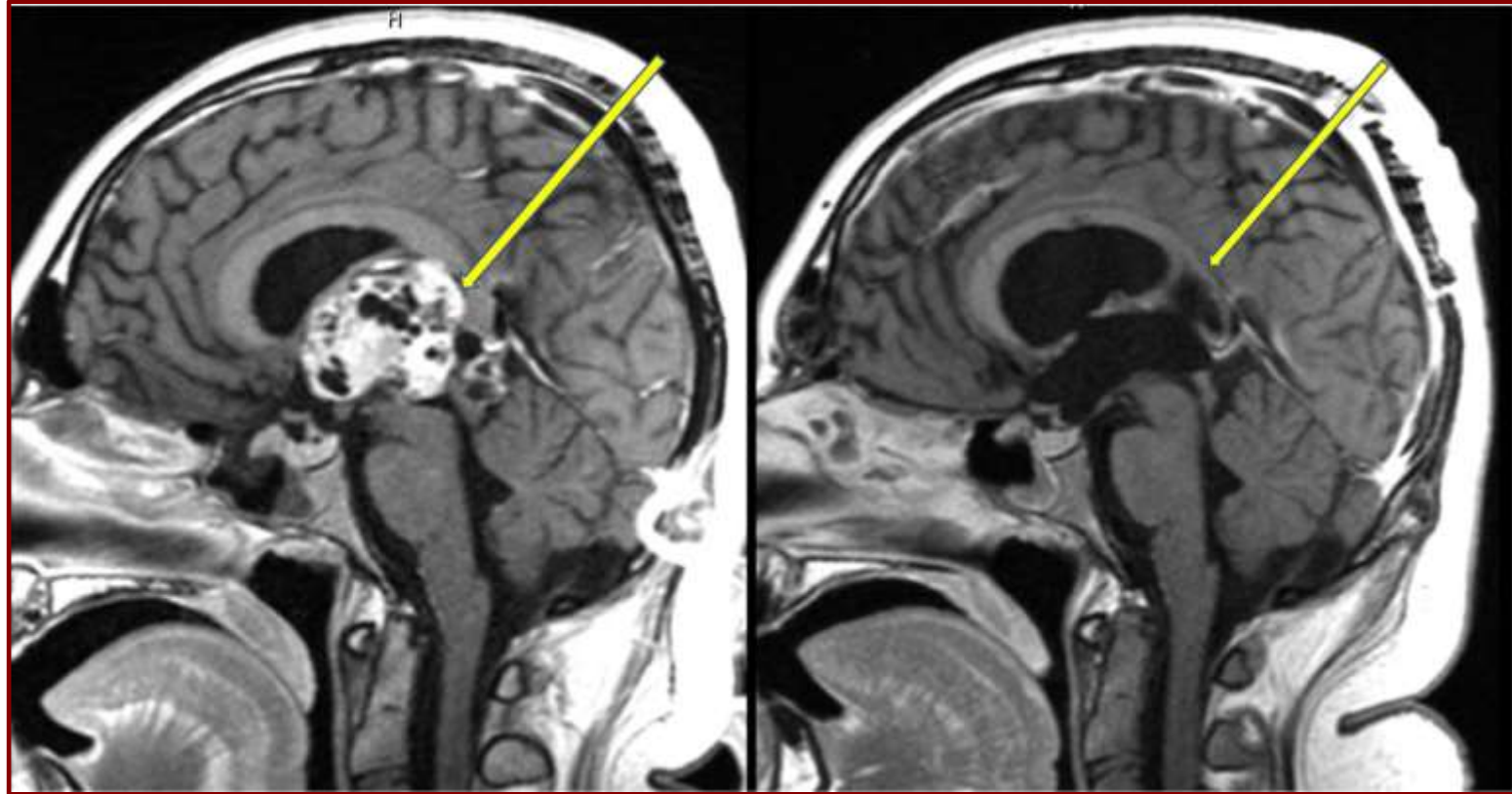
Ependymoma



Medulloblastoma



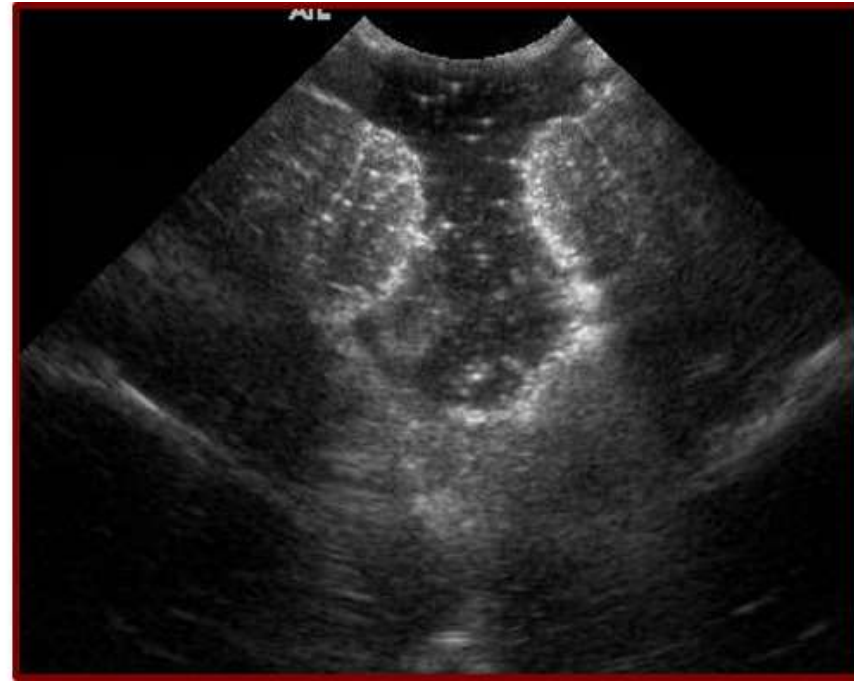
Pineal Tumor



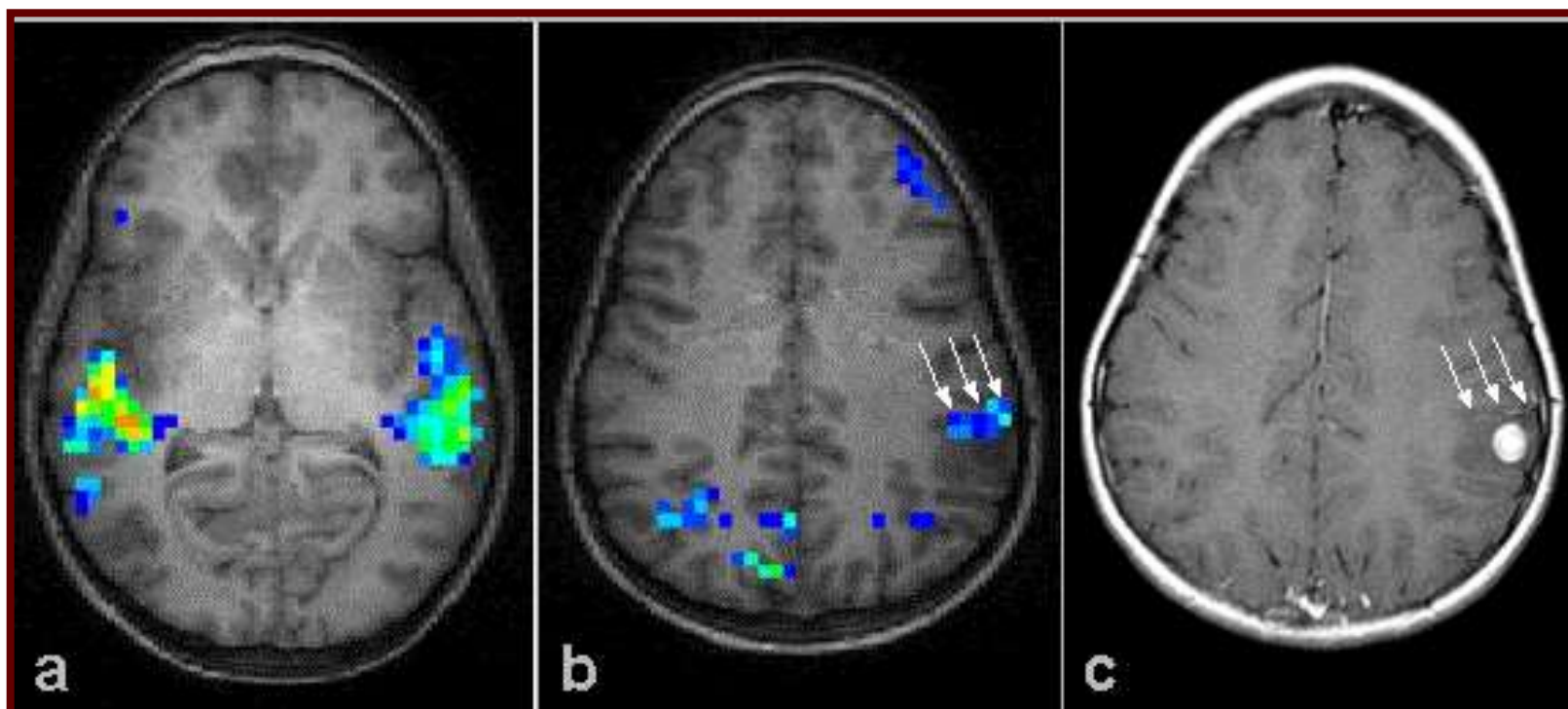
Improvement

- Intra-operative imaging
 - CT, MRI, Ultrasound
- Functional imaging
 - Functional MRI, Tractography
- Chemo/Biological/Immuno Therapies
- Radiation- stereotactic, Proton Beam
- Endonasal endoscopic skull base

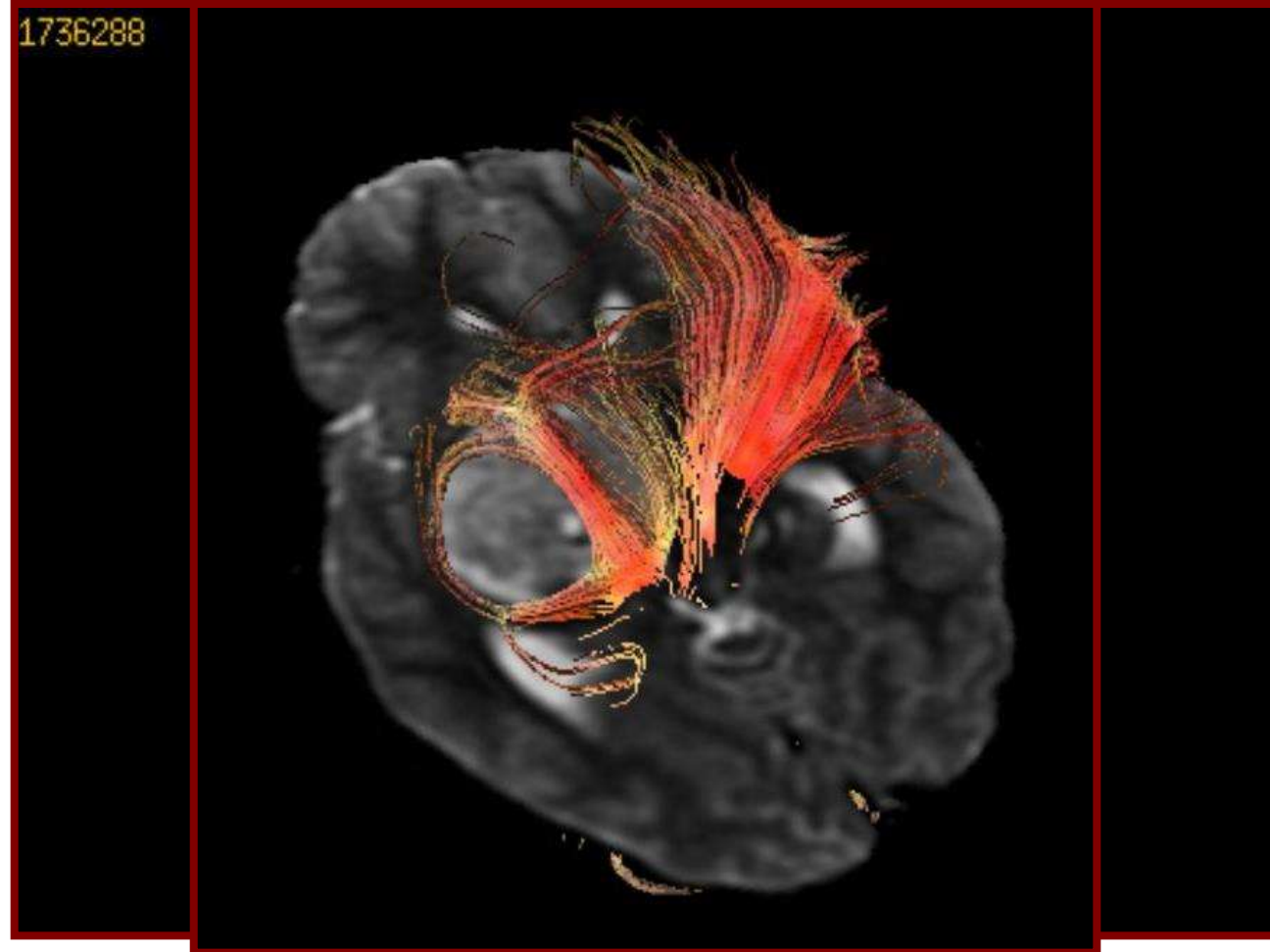
Intra-operative Imaging



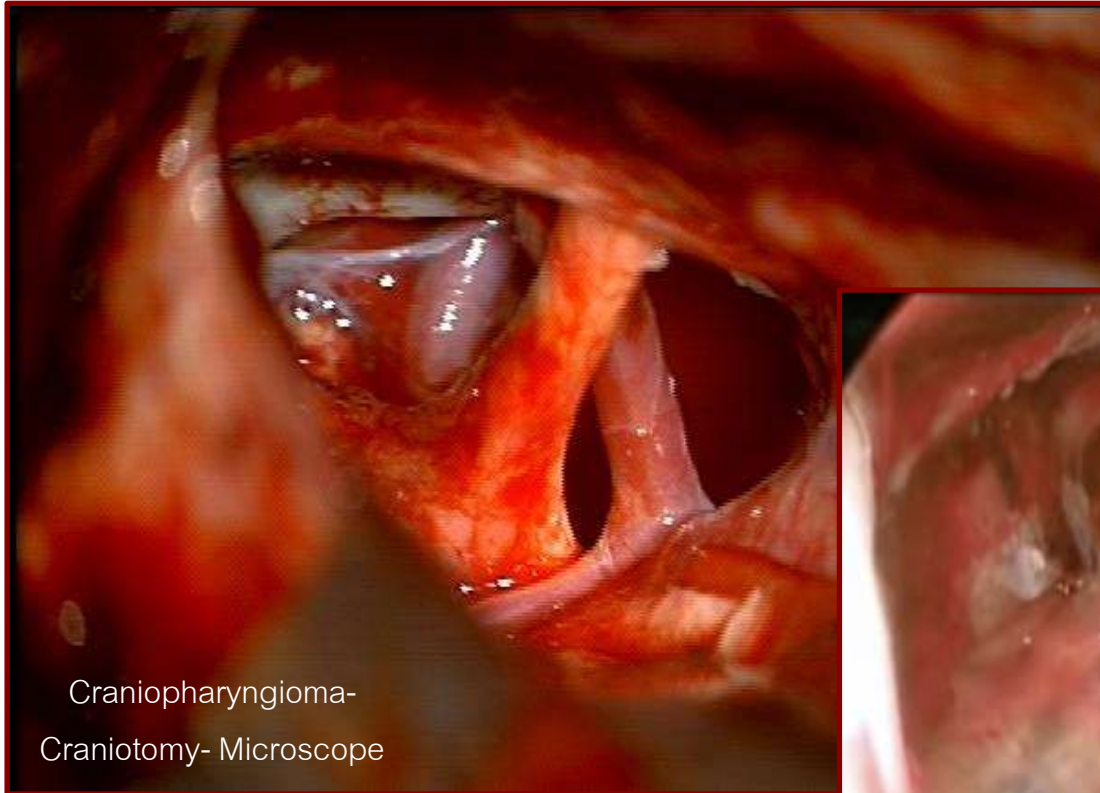
Functional MRI



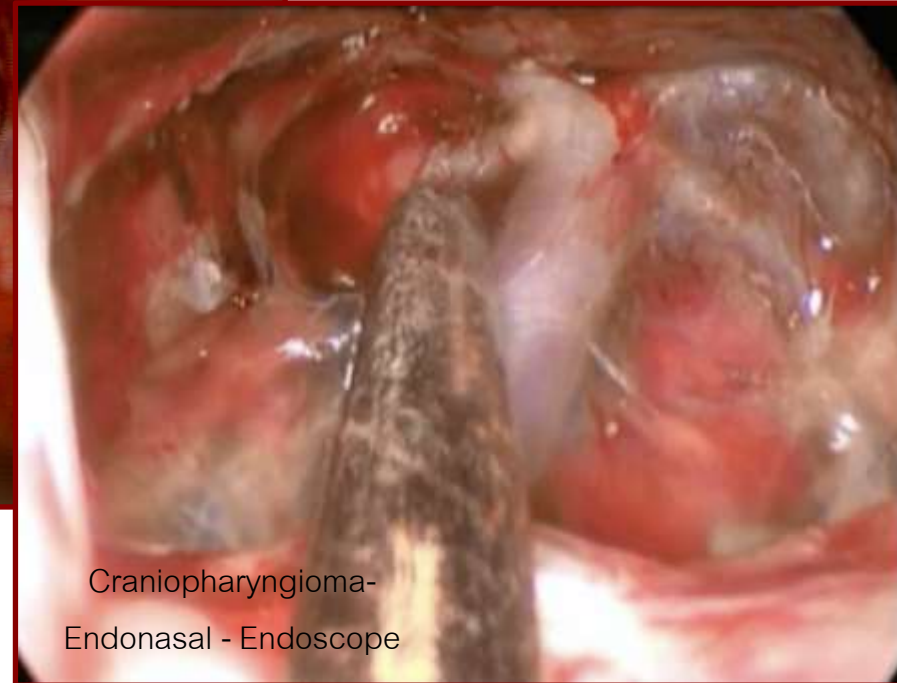
Diffusion Tensor Imaging



Endoscopic Endonasal

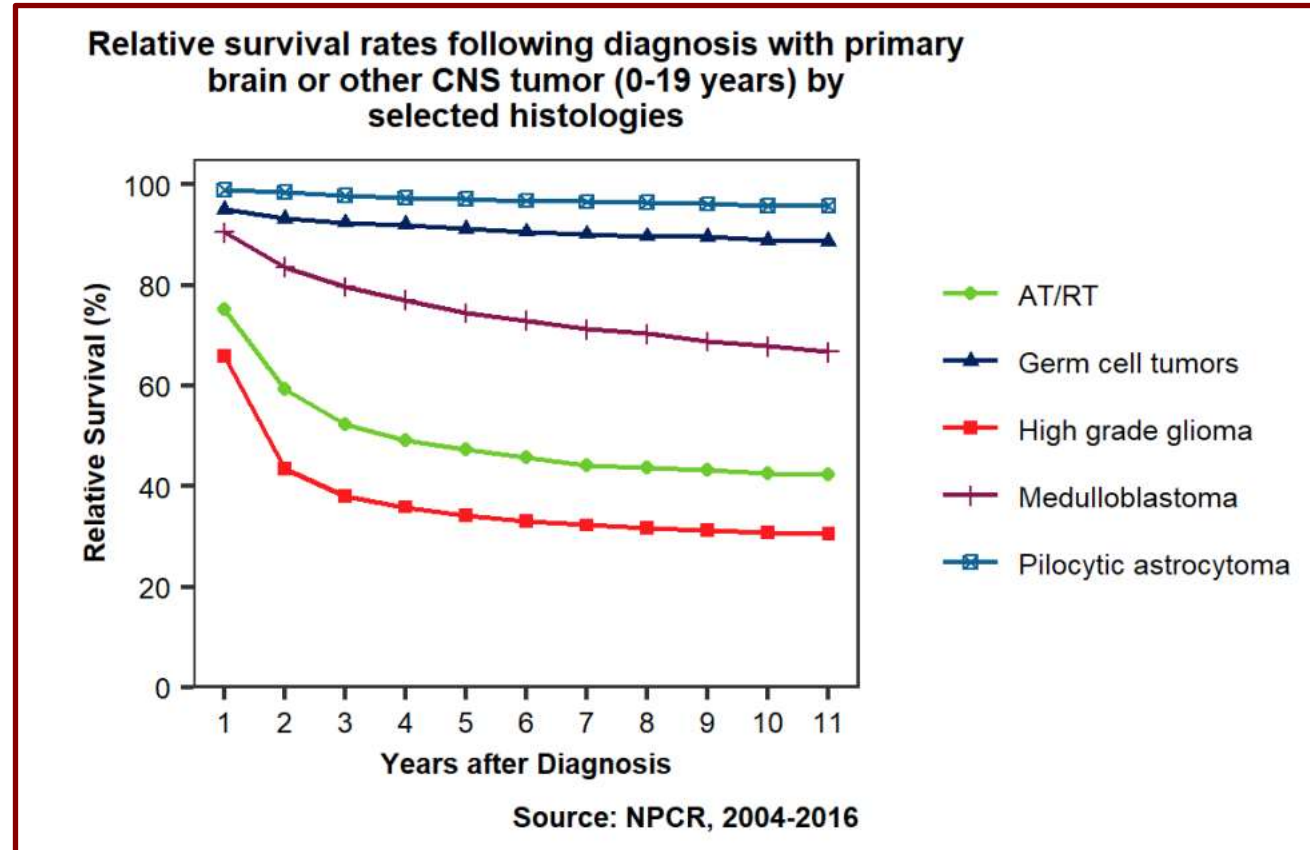


Craniopharyngioma-
Craniotomy- Microscope

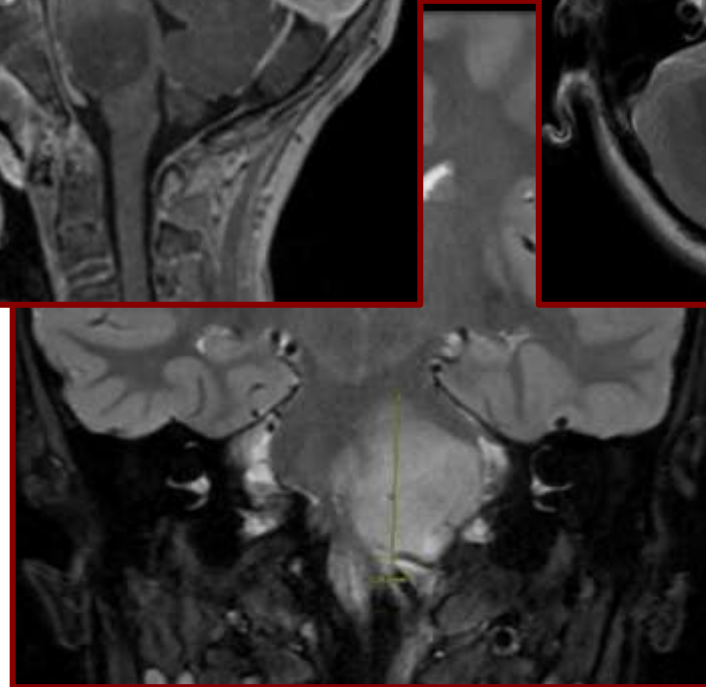
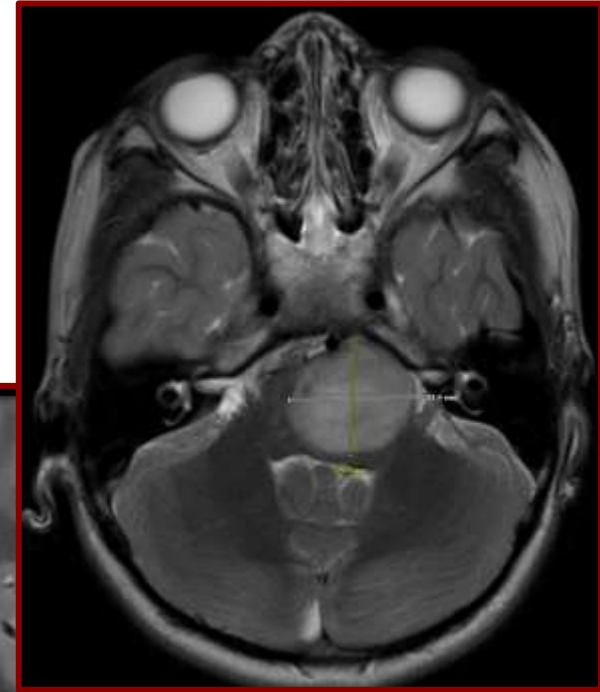
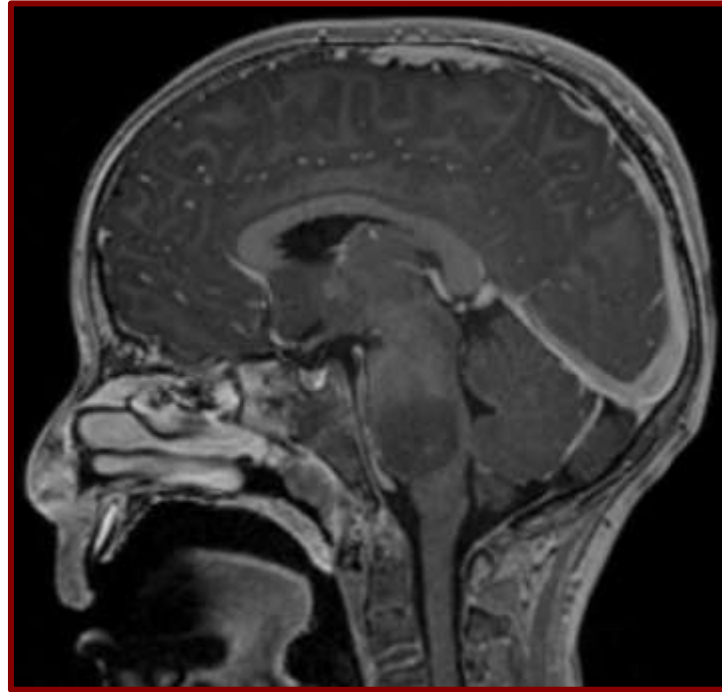


Craniopharyngioma-
Endonasal - Endoscope

Pediatric Brain Tumor Survival

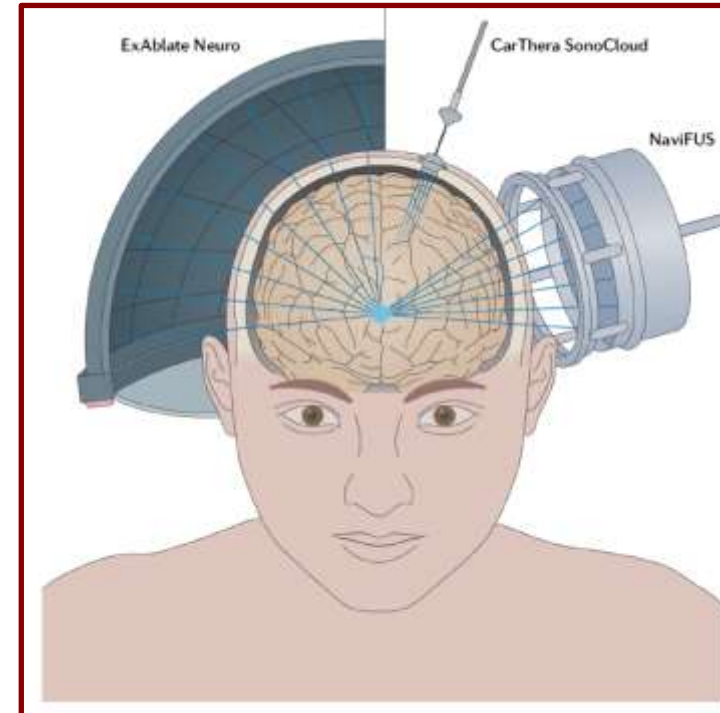


Diffuse Intrinsic Pontine Glioma



Focused Ultrasound

- Non-invasive ultrasonic waves to heat, ablate, modulate, or activate tissue
- Focused via curved transducer, lens or phased array, such that the pressure is highest at a small target
- Non-invasive, “incision-less”
- MRgFUS: marriage of 2 innovative technologies



Meng et al. *Nature Reviews*, 2021.

Focused Ultrasound

- Low Intensity Focused Ultrasound (LIFU)
 - Sonodynamic therapy - DIPG
 - BBB disruption – delivery of doxorubicin - DIPG
- High Intensity Focused Ultrasound (HIFU)
 - Ablation of benign, centrally-located tumors

When should we order a scan and what type of scan?

- Seldom do we see tumors present as isolated seizure or headache
- Worsening headache, morning H/A, morning vomiting
- New onset or progressive neurologic deficit
- In the very young- symptoms of increased intracranial pressure

Thank You

