

MENINGIOMA



Dr Monica Santos

DEFINITION

Meningiomas are a diverse group of brain tumors that arise from the arachnoid layer (specifically the arachnoid cap cells) and can therefore occur in any part of the CNS with a meningeal covering.



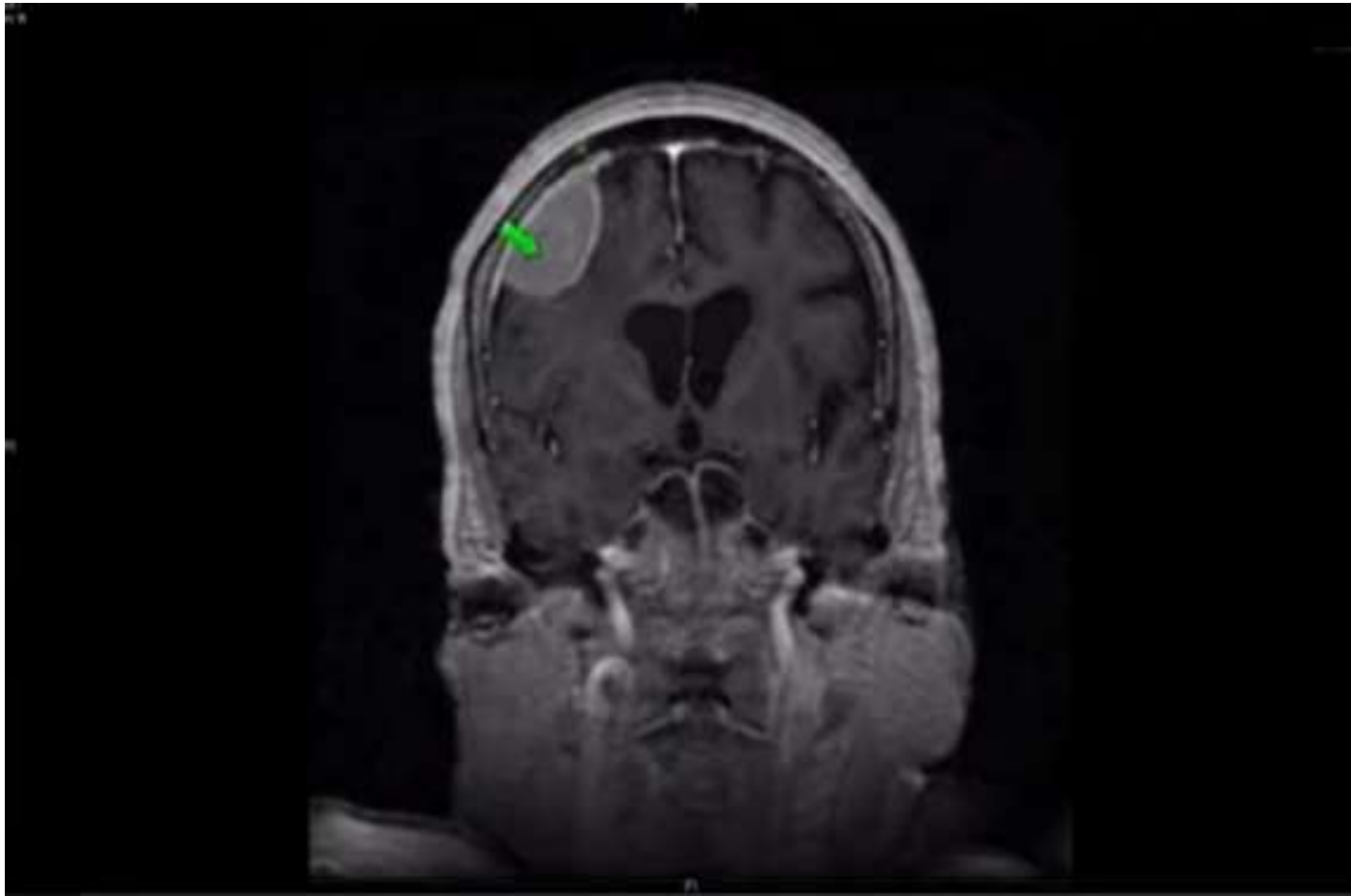
EPIDEMIOLOGY

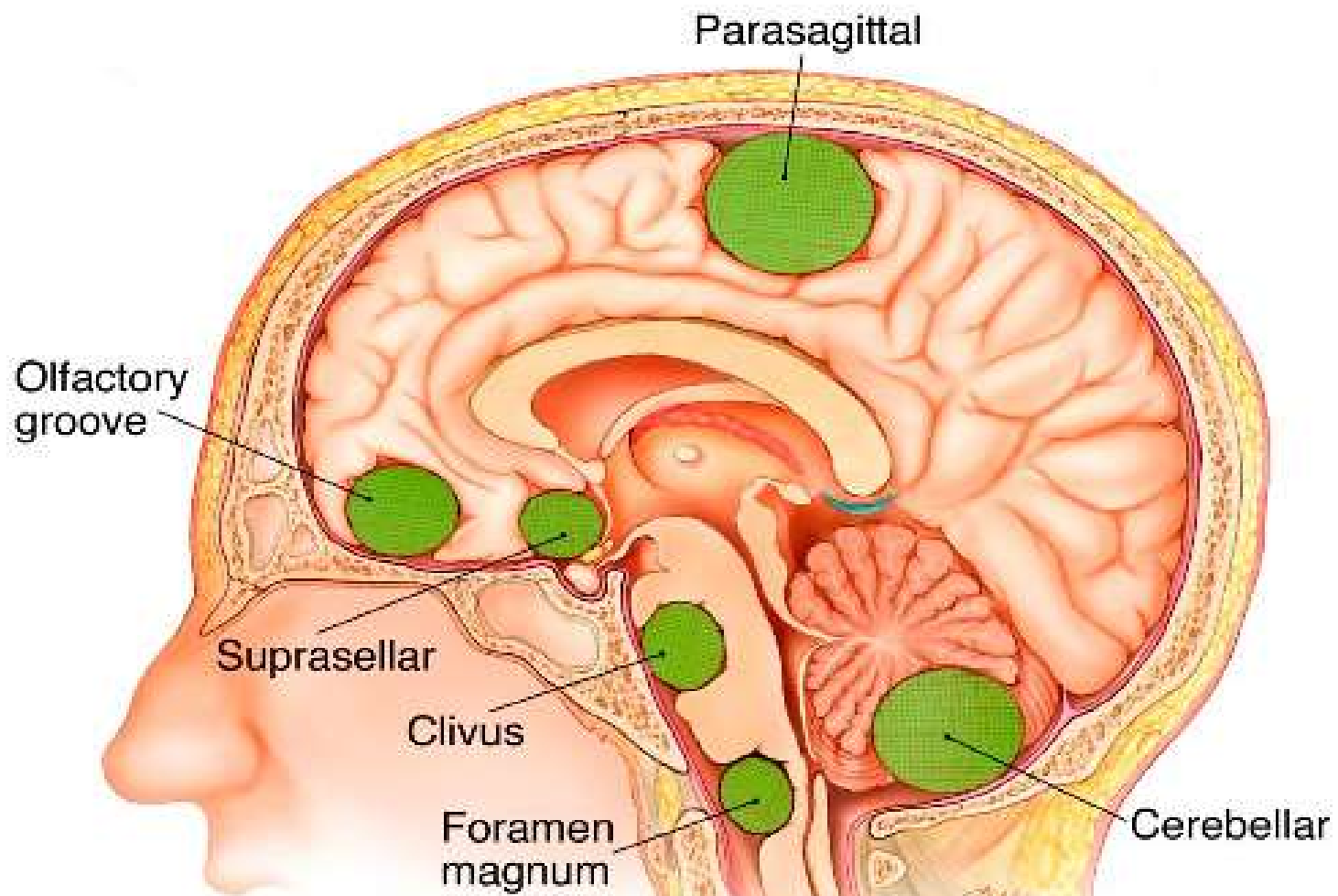
- ◉ Most common benign primary brain tumor in adults
- ◉ Sex: ♀ > ♂
- ◉ Age: most common in patients > 65 years of age
- ◉ Afroamerican can be more risk

ETIOLOGY

- ◉ Mostly idiopathic
- ◉ Exposure to ionizing radiation:
radiotherapy for head and neck tumors,
dental x-rays
- ◉ Genetic mutation in chromosome 22
(neurofibromatosis type 2)

CLINICAL FEATURE

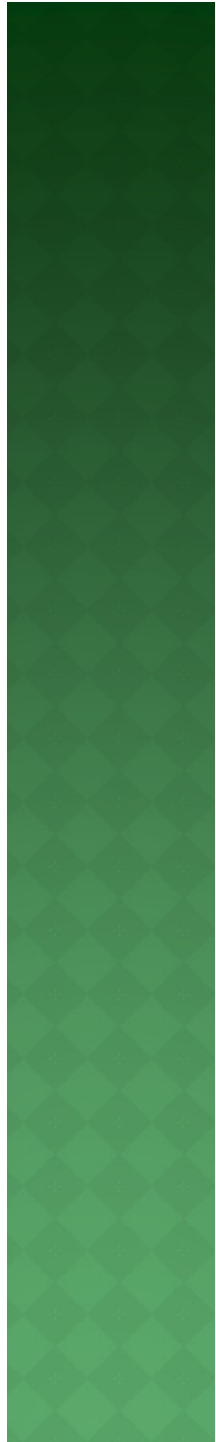
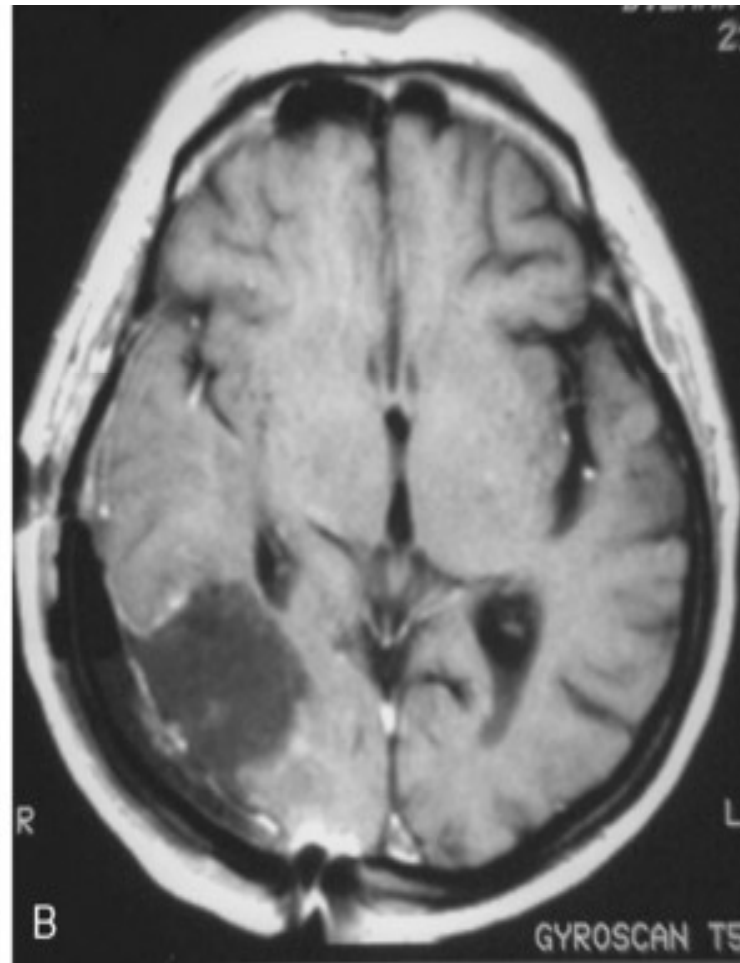
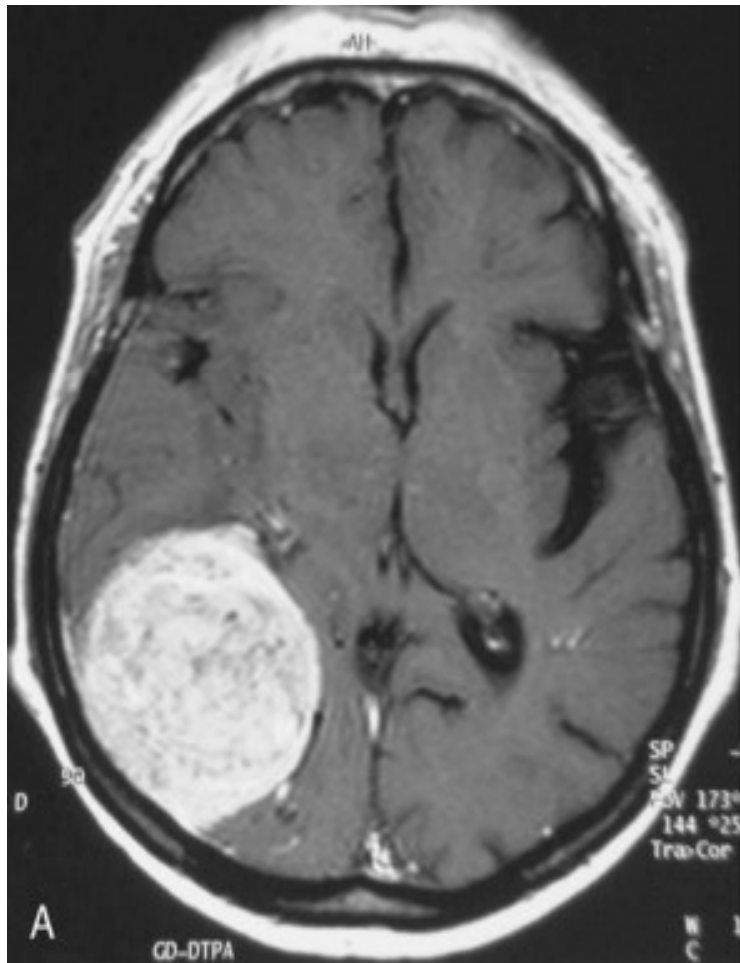




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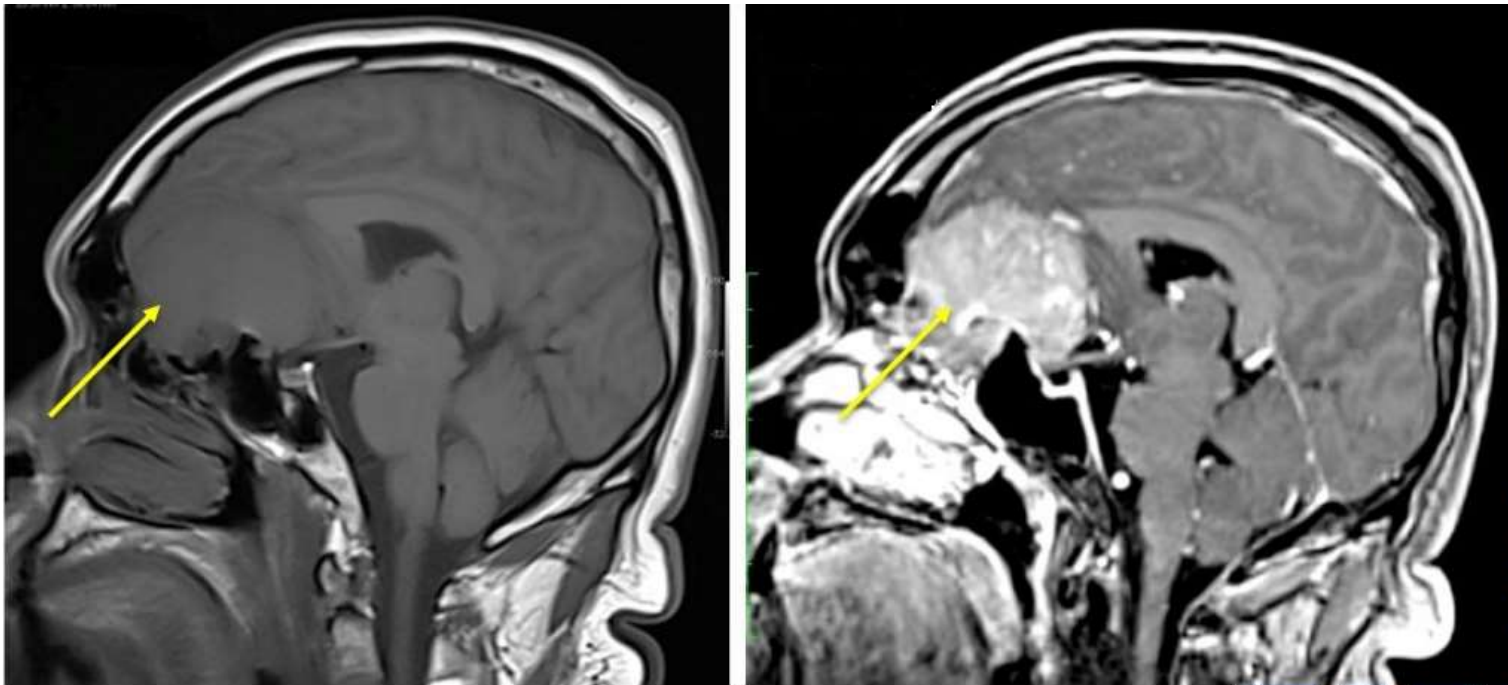
CONVEXITY MENINGIOMA



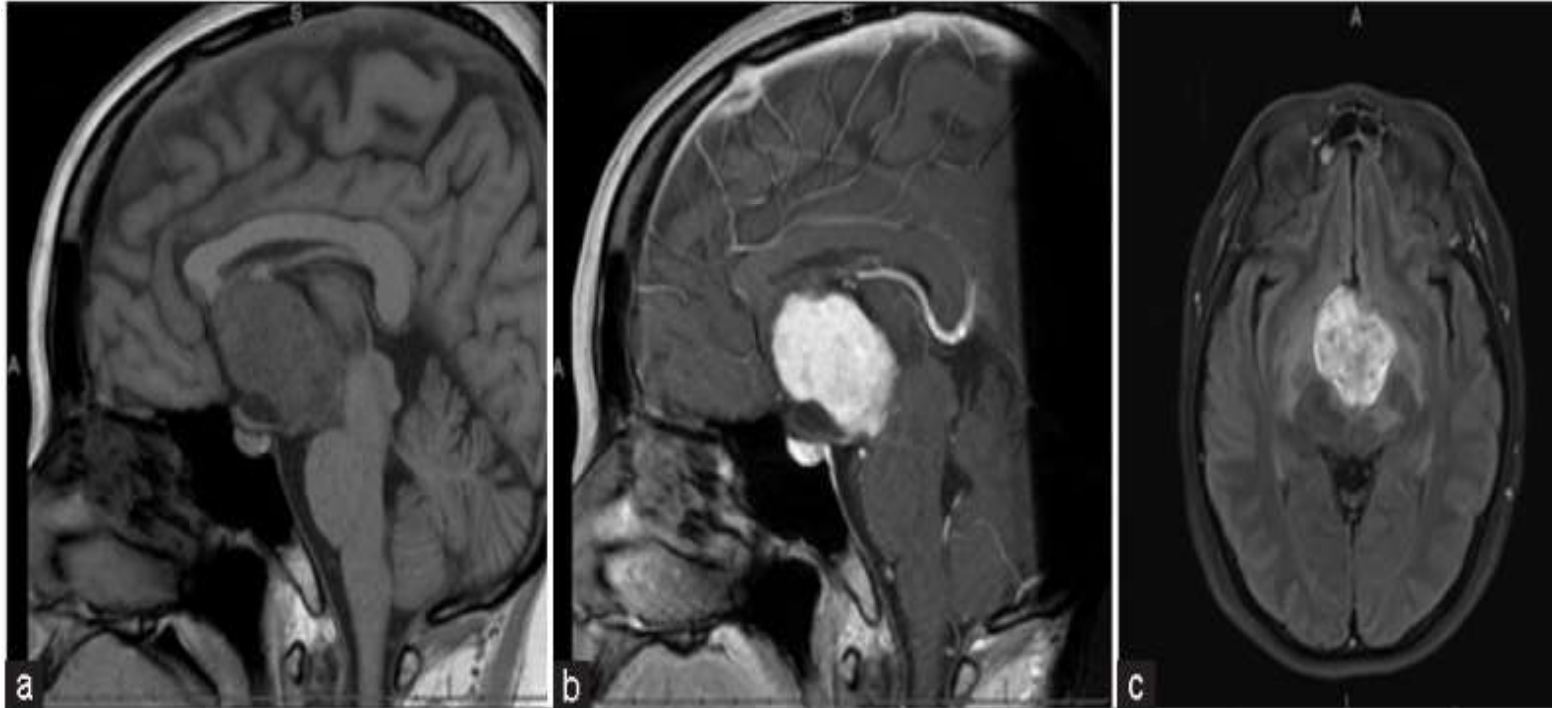
SPHENOID MENINGIOMA



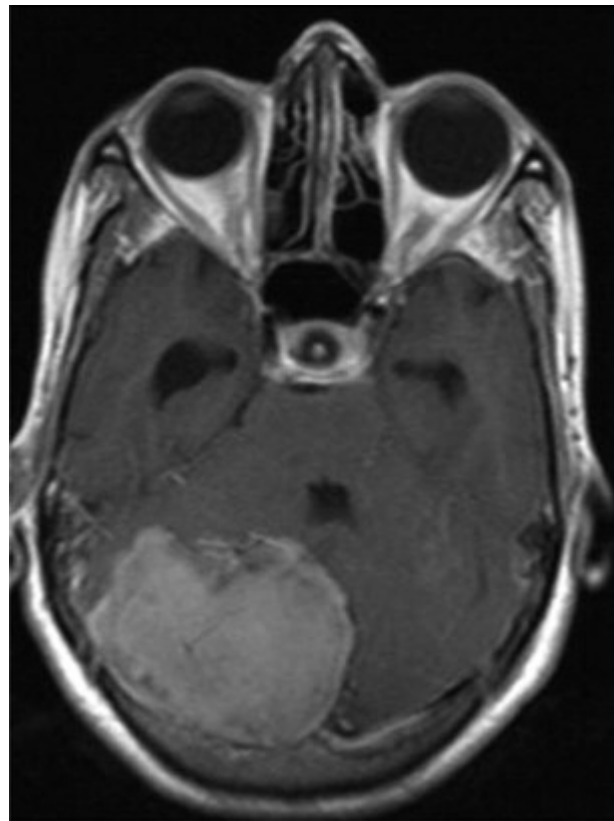
OLFATORY GROOVE MENINGIOMA



SUPRASELLAR MENINGIOMA



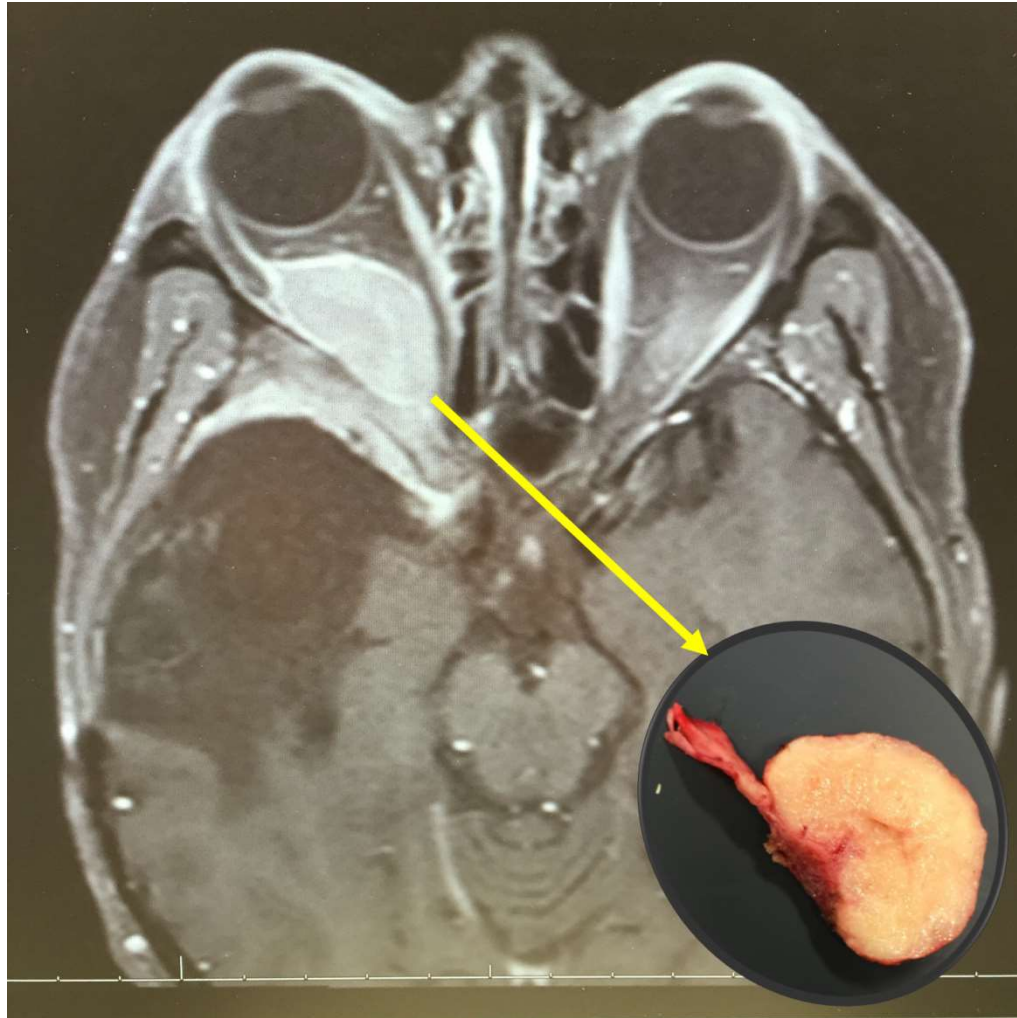
POSTERIOR MENINGIOMA



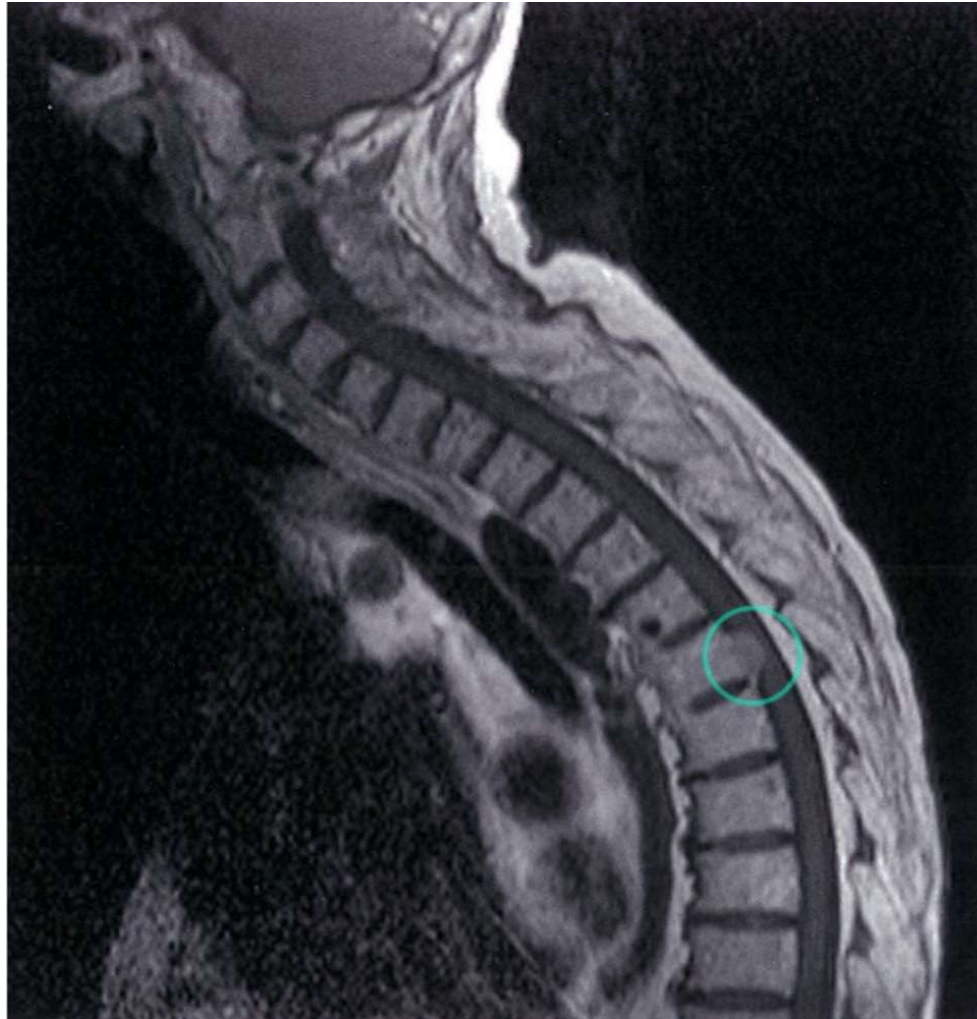
INTRAVENTRICULAR MENINGIOMA



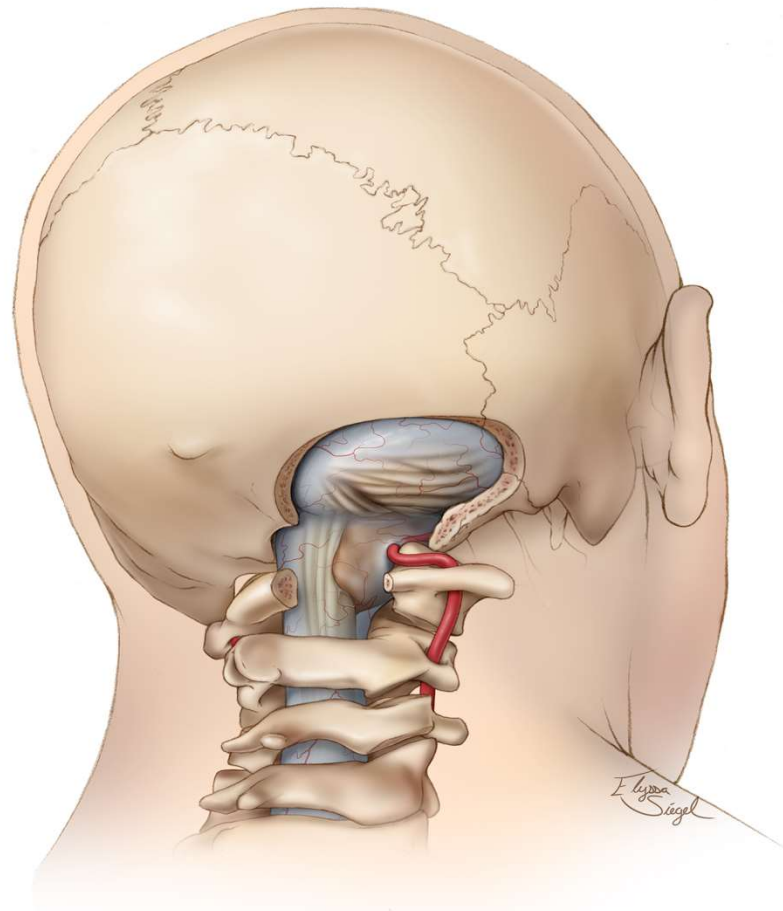
INTRAORBITAL MENINGIOMA



SPINAL MENINGIOMA



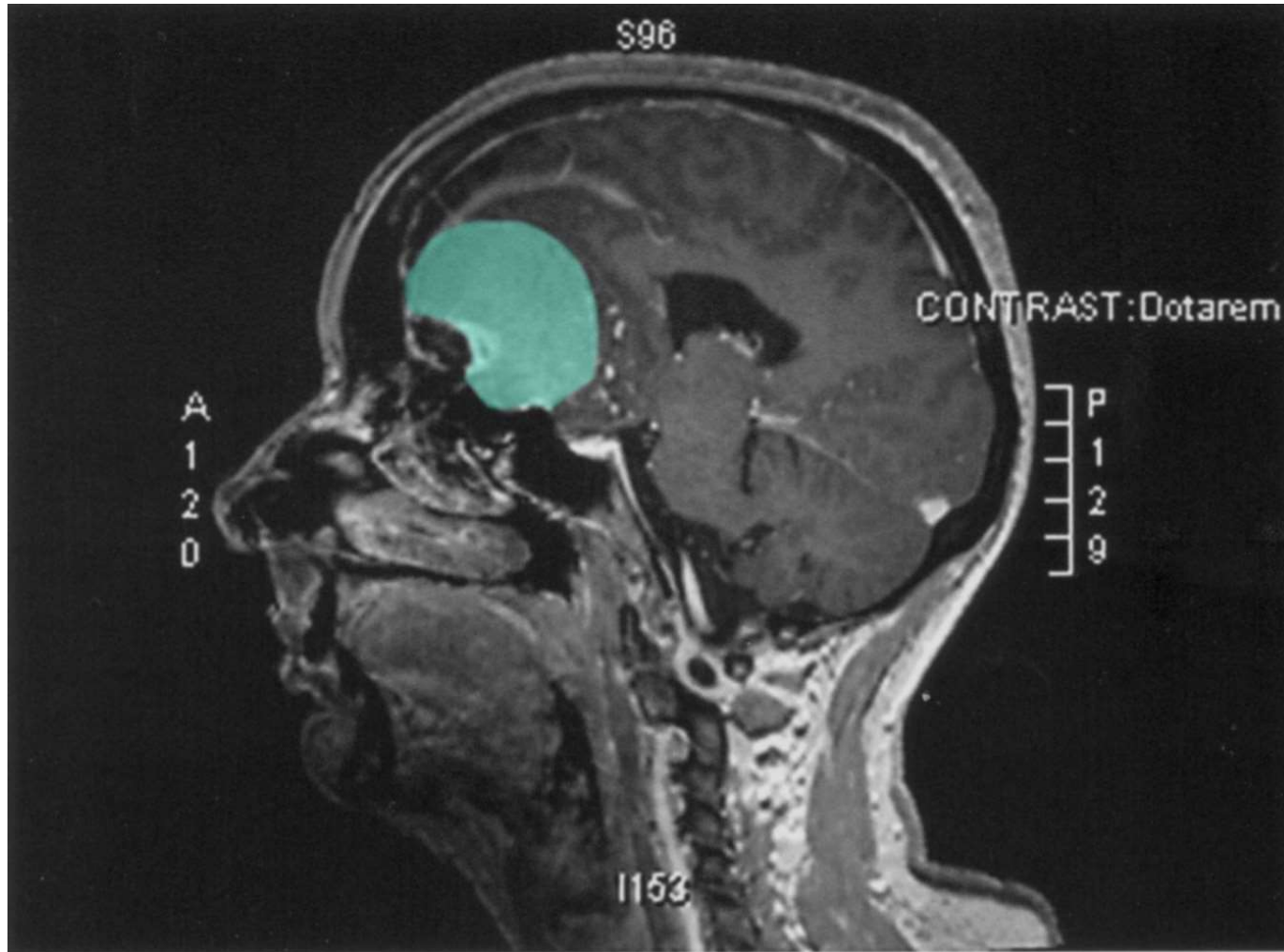
FORAMEN MAGNU

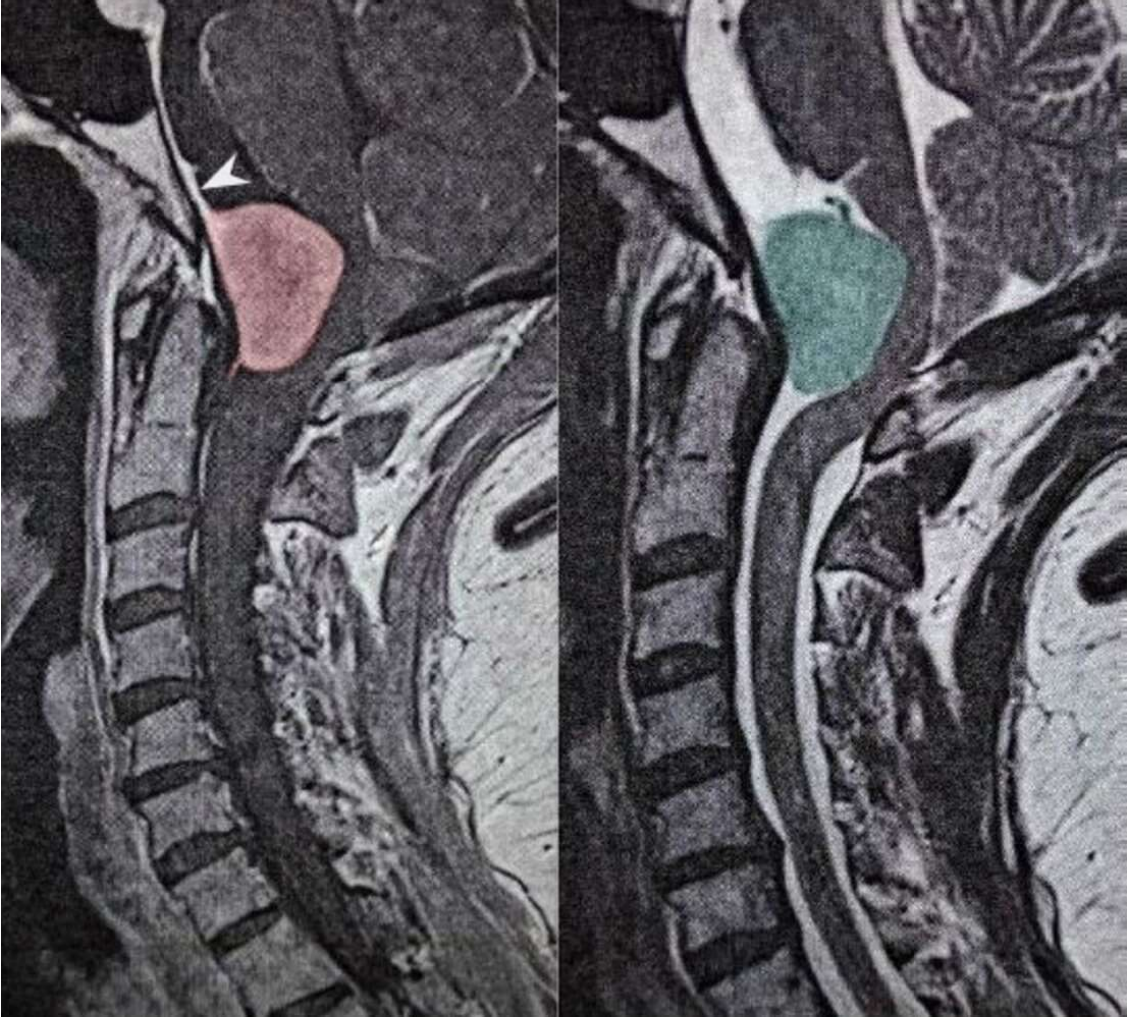


DIAGNOSTIC

- ① computed tomography (CT or CAT scan)
- ① magnetic resonance imaging (MRI).
Intraoperative MRI is also used during surgery to guide tissue biopsies and tumor removal.
- ① Magnetic resonance spectroscopy (MRS) may be used to examine the tumor's chemical profile and determine the nature of the lesions seen on the MRI.
- ① Biopsy

PLAIN MRI FINDING



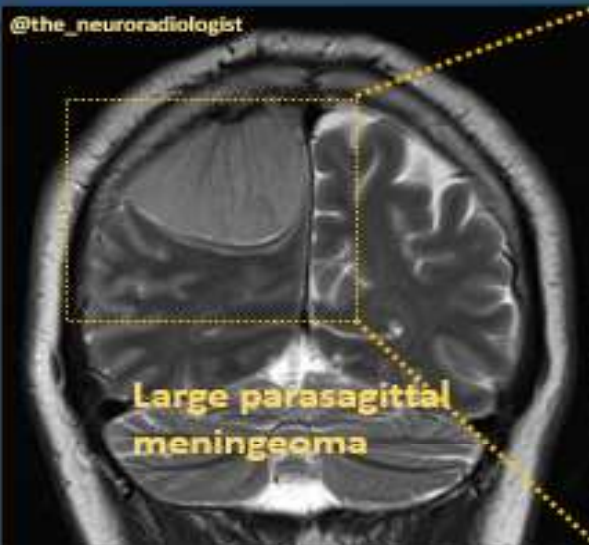


CONTRAST FINDING

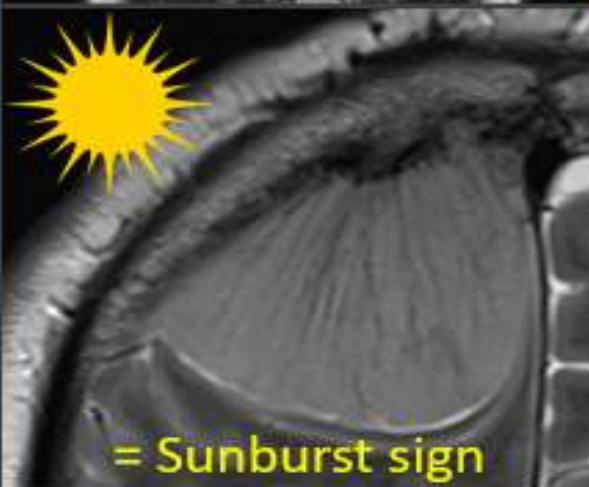
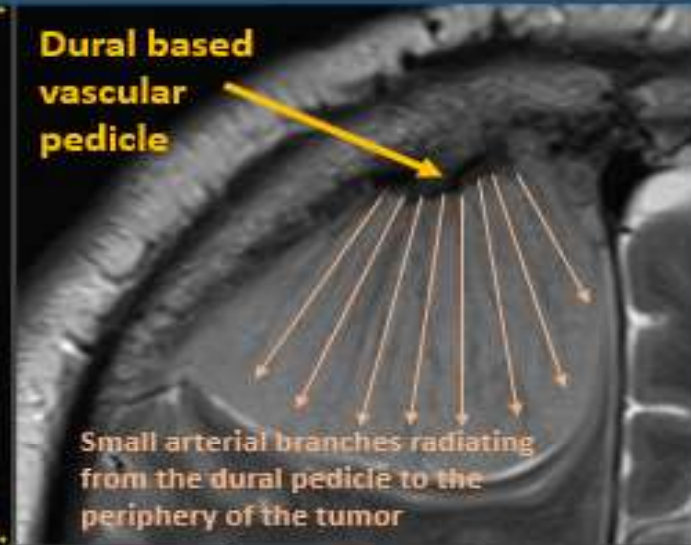


Sunburst-Sign in Meningeoma

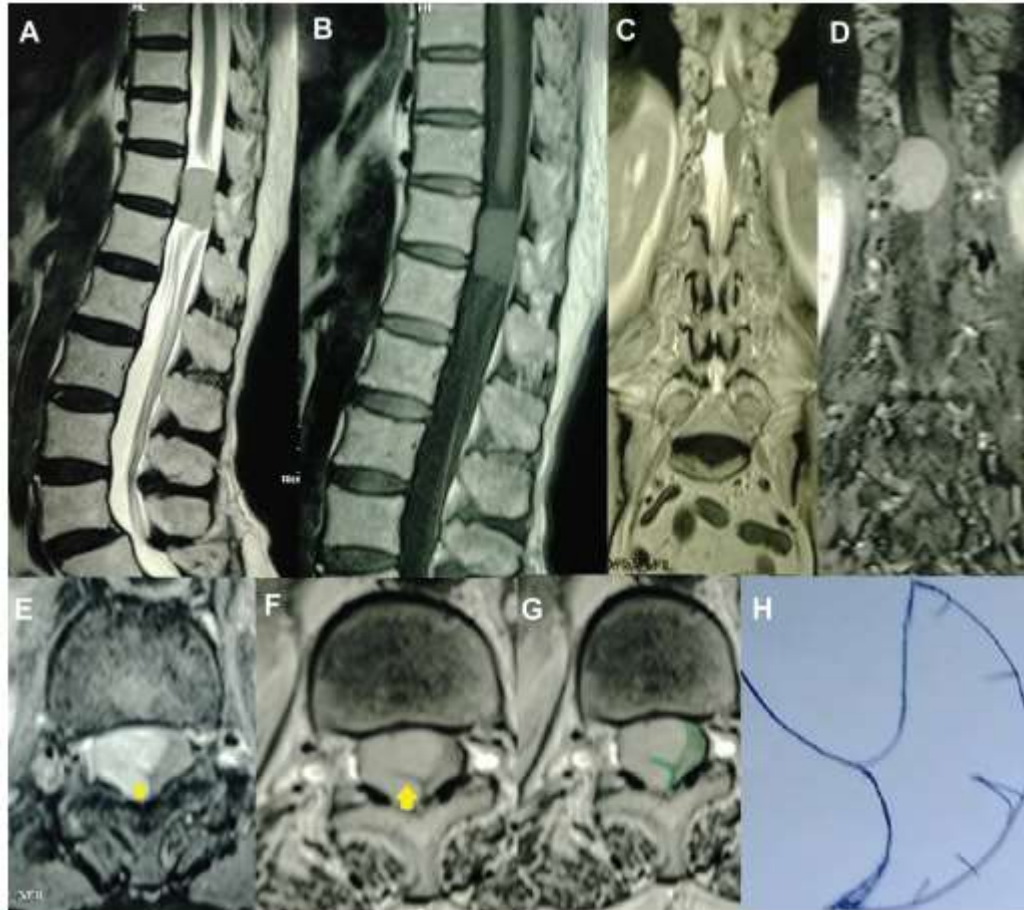
@the_neuroradiologist



Dural based vascular pedicle



SPINAL MENINGIOMA: GINKGO-LEAF SIGN



DIFERENCIAL DIAGNOSIS

- ① **Leiomyosarcoma**
- ① **Dural Metastatic Tumors**
- ① **Intracranial Hodgkin Lymphoma**

PATHOLOGY

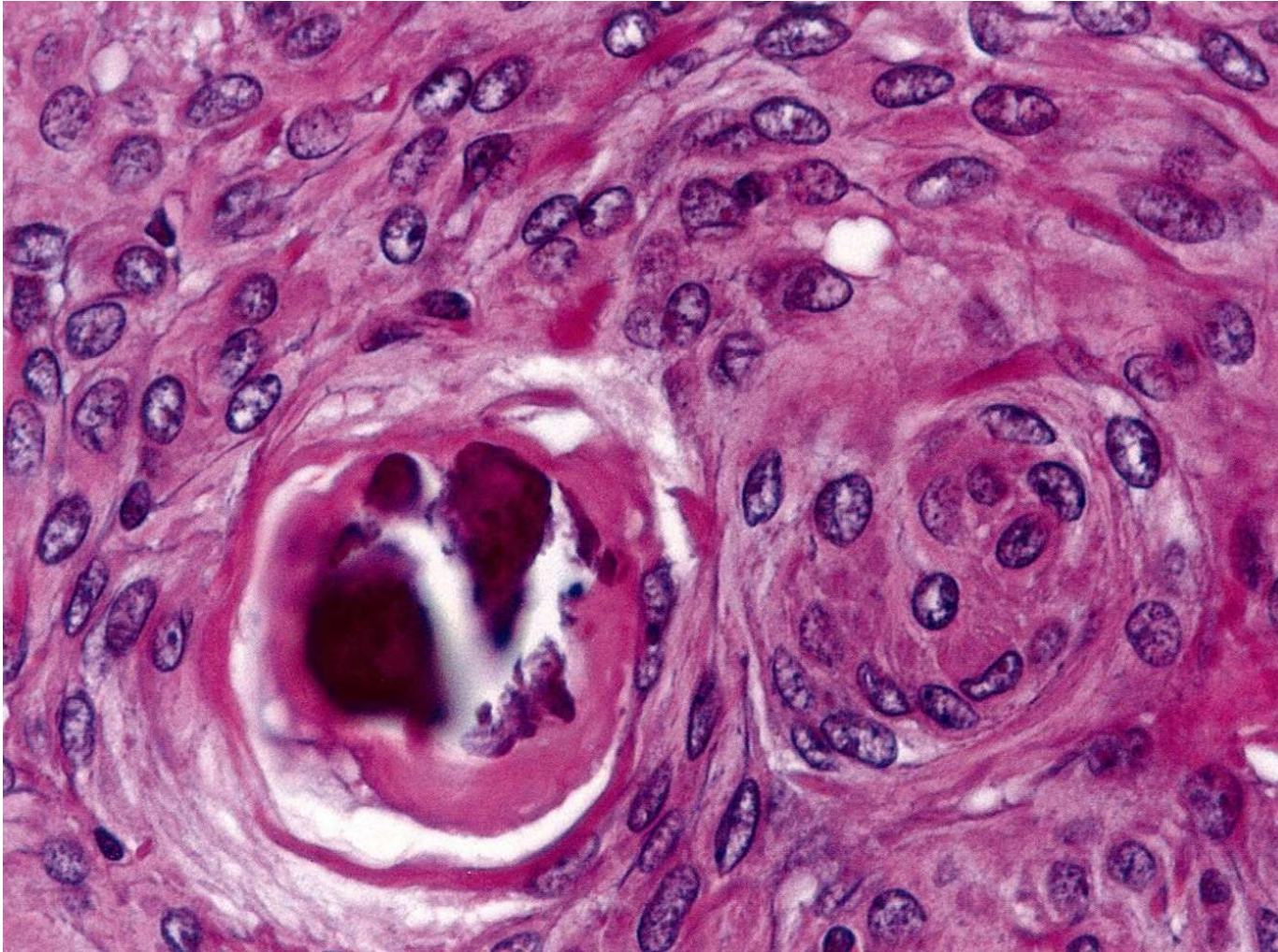
Gross Finding

- ⦿ Encapsulated, round, grayish-white tumor
- ⦿ Firm to hard consistency
- ⦿ Cross-sectional surface: gray, granular

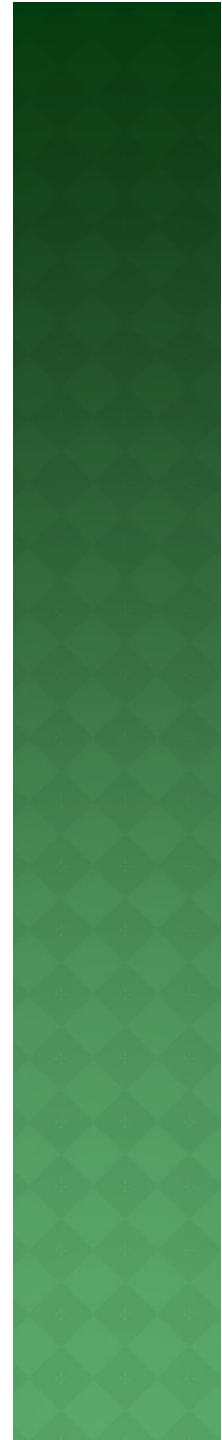
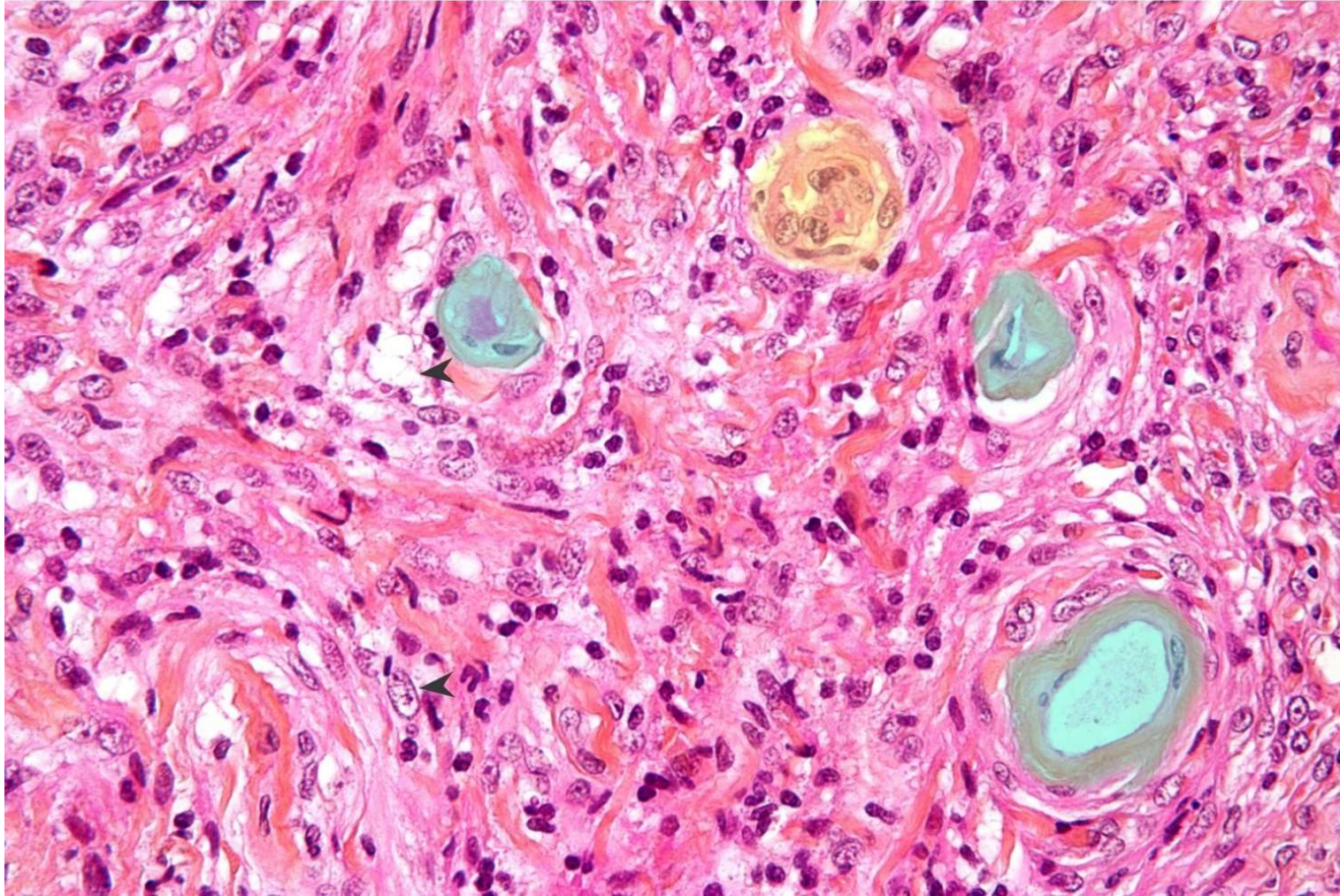
Microscopic findings

- ◉ Mesenchymal origin (arachnoid cap cells)
- ◉ Whorls of meningotheelial cells (onion peel arrangement)
- ◉ Psammoma bodies
- ◉ Increased vascularity

SAMOMA BODY



VASCULARITY



WHO CLASSIFICATION OF MENINGIOMAS

◎ GRADE 1:

- Fr. 80-85%

- No dysplastic features < 4 mitoses/10 hpf

- Subtype: Transitional (mixed type), Meningothelial (classical meningioma), Fibrous , Psammomatous , Angiomatous , Microcystic, Lymphoplasmacytic, Secretory and Metaplastic

◎ Grade 2:

-Fr 15-20%

- 4-19 mitoses/10 hpf

-Subtype: Chordoid, Clear cell and Atypical

◎ Grade 3

- Fr <2%

- > 20 mitoses/10 hpf

- Subtype: Papillary, Rhabdoid, Anaplastic (most aggressive subtype)

TREATMENT

- ◎ **Surgical resection:**
 - first-line treatment
 - Preoperative embolization in the case of highly vascular tumor
 - Skull base meningiomas have a high recurrence risk .
- ◎ **Radiotherapy**
 - In the case of inoperable tumors
 - Postoperatively, if the tumor was incompletely resected
 - As an adjuvant therapy in the case of grade II and III meningiomas
 - Small tumors (usually < 3 cm): stereotatic radiosurgery (gamma knife)
- ◎ **Active surveillance:** consider in a slow-growing asymptomatic tumor in an elderly patient

PROGNOSIS

Meningioma recurrence rate based on the extent of <u>tumor</u> resection		
Simpson grade ^[22]	Extent of <u>tumor</u> resection ^[22]	Recurrence rate after 10 years ^[27]
Grade I	<ul style="list-style-type: none">• Complete <u>tumor</u> resection• Resection of the underlying <u>dura</u> and abnormal bone	<ul style="list-style-type: none">• ~ 5%
Grade II	<ul style="list-style-type: none">• Complete <u>tumor</u> resection• Cauterization of the dural attachment	<ul style="list-style-type: none">• ~ 20%
Grade III	<ul style="list-style-type: none">• Complete <u>tumor</u> resection only	<ul style="list-style-type: none">• ~ 30%
Grade IV	<ul style="list-style-type: none">• Subtotal resection	<ul style="list-style-type: none">• ~ 35%
Grade V	<ul style="list-style-type: none">• <u>Tumor biopsy</u>	<ul style="list-style-type: none">• 100%

REFERENCE

- ① <https://www.aans.org/en/Patients/Neurosurgical-Conditions-and-Treatments/Meningiomas>
- ① <https://read.qxmd.com/read/27138052/variants-of-meningiomas-a-review-of-imaging-findings-and-clinical-features?redirected=slug>
- ① <https://www.ncbi.nlm.nih.gov/books/NBK560538/>

THANK YOU

