18th International Conference of the
Research Institute of Ophthalmology

RIO 2026

22 -23 JANUARY 2026
ROYAL MAXIM PALACE KEMPINSKI, CAIRO

ORBIT AND BEYOND

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Orbital Meningioma

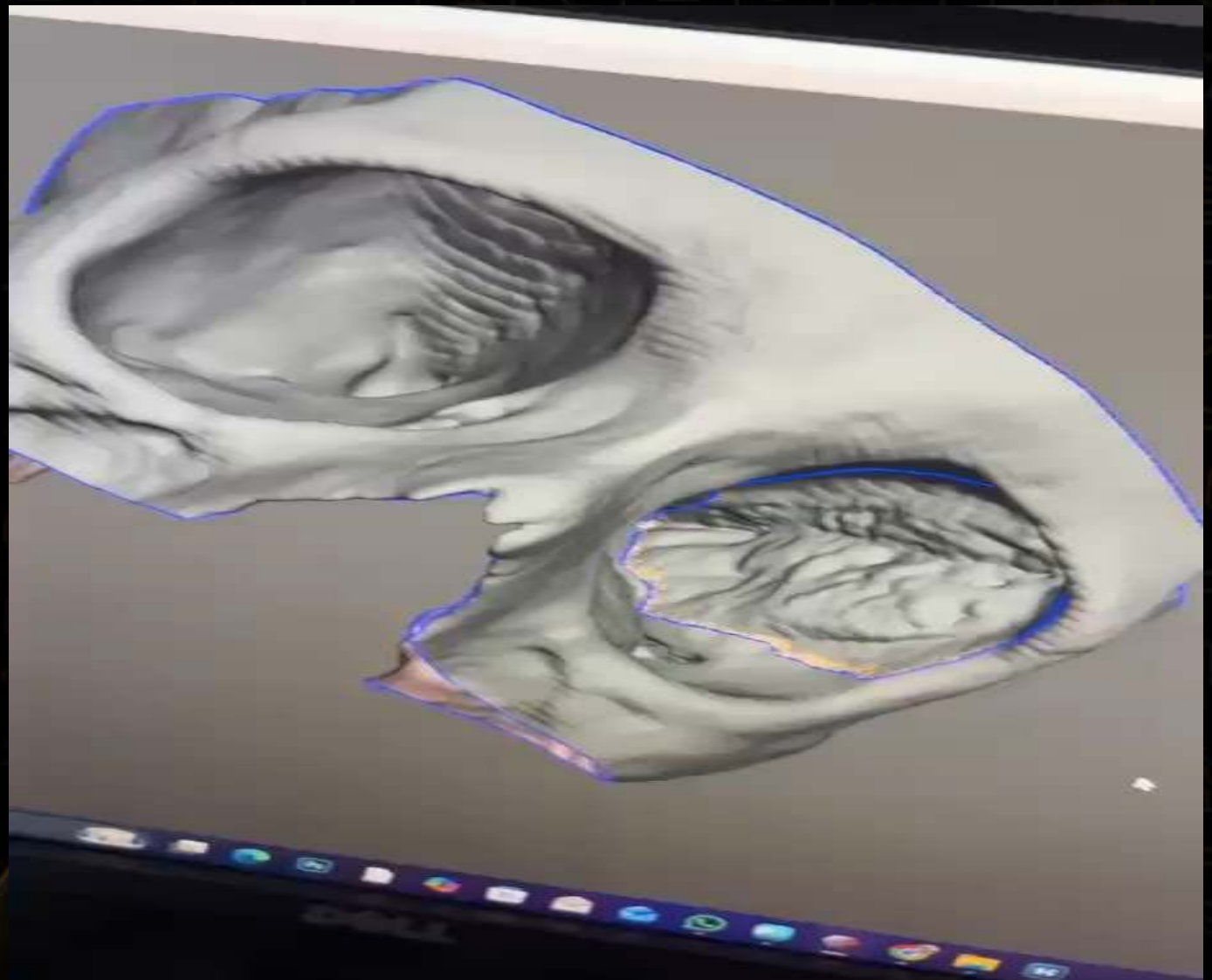
- Meningiomas
  - Arise from meningothelial cells (arachnoid cap cells)
  - Comprising
    - 13%–20% of all brain tumors
    - 34–36% of all primary brain tumors.
  - Make up 4% of all orbital tumors

- Orbital meningiomas are divided into:
  - Primary Orbital Meningioma
  - Optic Nerve Sheath Meningioma
  - Sphenoid Wing Meningioma with Orbital Involvement

- **Primary Orbital Meningioma**
  - Very rare tumours
  - Intraorbital ectopic meningioma,
  - Ariseing from ectopic arachnoid without any optic nerve sheath or meningeal connection.
  - present around 30 years of age,
  - Located Superomedially, medially, or inferomedially in the orbit.
  - Trauma is thought to be responsible for some of these tumors,

- **Optic Nerve Sheath Meningioma**
  - Arise from the optic nerve sheath arachnoid layer
  - make up 2% of all orbital tumors and 1–2% of all meningiomas
  - proptosis with classic triad of
    - vision loss,
    - optic atrophy, and
    - optociliary shunt vessels.
  - 5%of cases are bilateral.
  -
  - CT scans show classic tram-track appearance.
  - Managed conservatively or with Fractionated radiotherapy

Sphenoid Wing Meningioma with Orbital Involvement



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- **Sphenoid Wing Meningioma with Orbital Involvement**

  - Spheno-orbital meningiomas (SOM), AKA
    - Orbitosphenoid meningiomas,
    - Meningiomas en plaque of the sphenoid wing
    - Sphenoid wing meningiomas with osseous involvement.

  - Makes up 9% of all intracranial meningiomas

  - Often associated with sphenoidal wing hyperostosis

  - Meningiomas have two growth patterns:
    - Meningioma en masse which forms a space-occupying lesion
    - Meningioma en plaque, which is a flat spreading tumor.

Pathophysiology

- Ionized Radiation
- Genetic Abnormalities’
- Hormonal Factors
- Viruses
- Head Injury and Electromagnetic Fields

Epidemiology

- The average age at onset is 63 years
- The annual incidence of meningiomas can be as
  - low as 0.74 per 100,000 individuals younger than 34 years
  - high as 18.86 per 100,000 individuals older than 85 years.
- F:M 2.5:1
- NO racial privilege

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Clinical Features

- Proptosis (86%). usually painless;
- Visual impairment (78%) . usually gradual but acute in 12%
- Ocular paresis (20%) with double vision .
- Papilledema and eventual optic atrophy .
- Headache is also a common manifestation
- Nausea if there is raised intracranial pressure.

Differential Diagnosis

- **Fibrous dysplasia**
- Paget disease
- Brown tumor
- Osteogenic sarcoma
- Eosinophilic granuloma
- Aneurysmal bone cyst
- **Osteoma**
- Hemangioma
- **Hemangiopericytoma**
- Epidermoid tumor and dermoid
- Multiple myeloma
- Plasmacytoma
- Giant cell tumor
- Metastatic cancer
- Exuberant arachnoid hyperplasia
- Fibrous histiocytoma
- **Juvenile ossifying fibroma**
- Solitary fibroustumor

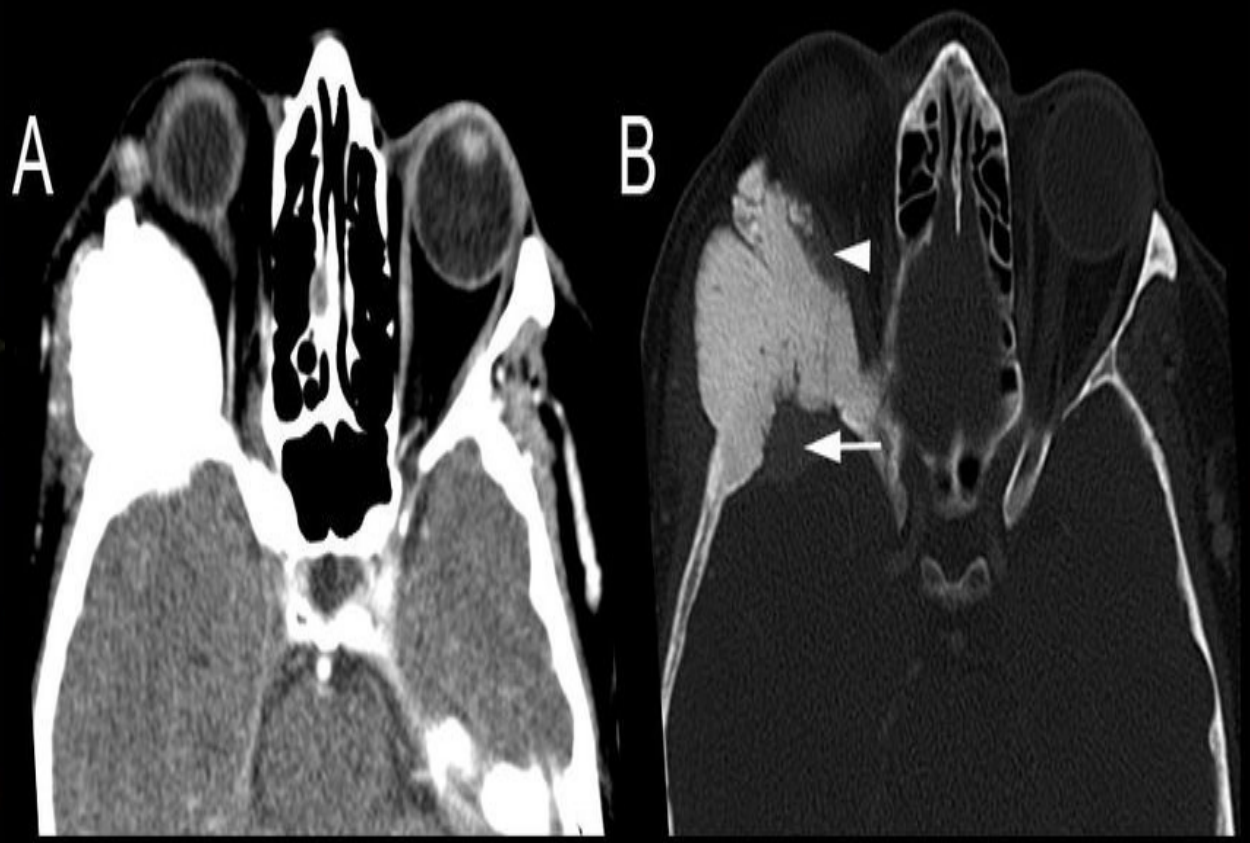
Diagnostic Evaluation

- Laboratory Studies
  - Calcium, bone-specific alkaline phosphatase, urine hydroxyproline)
- Imaging
  - CT ,MRI
- Other Tests
  - VEP, visual field, PET scan

Imaging

- CT Scan

- Bone windows shows a thick, hyperdense, intra-diploic lesion expanding the calvaria and destroying the cortical layers of the skull.
- The bony expansion with ground-glass appearance of sphenoid wing, with irregularity of the inner table associated with a dural reaction compered to smooth inner surface in fibrous dysplasia



Imaging

- MRI Scan

- MRI allows better delineation of the soft tissue component of the tumor and dural involvement, as well as delineation of intraorbital extension.
- A dural tail in sphenoid wing meningioma is typically identified but can be absent especially in the en plaque variant.

Management

- Surgery
  - Trans cranial
  - Trans-orbital
- Medical Treatment
  - Reserved for atypical and malignant meningiomas
  - Tamoxifen, an antioestrogen hormone
  - Mifepristone, (Mifeprex), is an antiprogesterone agent.
- Radiotherapy
  - Not indicated as primary treatment unless surgical resection is not possible,

Histology

- According to the WHO, three types of meningiomas exist based on malignant behaviour:
  - Grade I (benign), with a recurrence rate of 7%–25%, does not meet atypical or malignant
  - Grade II (atypical), with a recurrence rate of 29%–52%, includes atypical, increased mitotic activity (4–19 mitoses per 10 high-powered fields) or brain invasion
  - Grade III (malignant), with a recurrence rate of 50%–94%, Anaplastic with 20 or more mitoses per 10 high-powered fields

Prognosis

- Following complete excision patients should be followed closely for recurrence rates can be as high as 27.7%

Transorbital and Endoscopic Approaches

- Superior Eyelid Approach (SEA)
  - Relief of proptosis and optic nerve compression are the primary goals of surgery
- Inferolateral Transorbital Endoscopic Approach (ILTEA)
  - Efficiently manage the infraorbital component of the lesions in cases of limited intracranial extension and without involvement of the optic canal
- Combined Multiportal Approaches
  - Multiportal transorbital and transnasal approaches have been proposed and described in order to overcome some limits of the pure transorbital or lateral approaches

Superior Eyelid Approach (SEA)

- **Incision:** Superior eyelid crease with lateral extension; skin-orbicularis flap raised
- **Orbital dissection:** Suborbicularis dissection supero-laterally to orbital rim;
- **Exposure landmarks**: (SOF), (IOF), optic canal identified.
- **Periorbita**: Must remain intact to prevent orbital fat protrusion.
- **Vessels**: Bridging vessels may be sacrificed; Hyrtl's (meningo-orbital) foramen vessel cauterized and cut if present.
- **Extended approaches**: Lateral orbital rim osteotomy, wider incision,
- **Bone drilling**: Greater sphenoidal wing (GSW) drilled laterally → medially to dura; temporalis muscle landmark.
- **Boundaries**:
  - Superomedial → SOF
  - Inferomedial → IOF
  - Lateral → temporalis muscle
- **Intracranial work**: Dura opened under neuronavigation;
- **Orbital tumors:** Periorbit opened if involved; preserve extraocular muscles and neurovascular structures to avoid diplopia.

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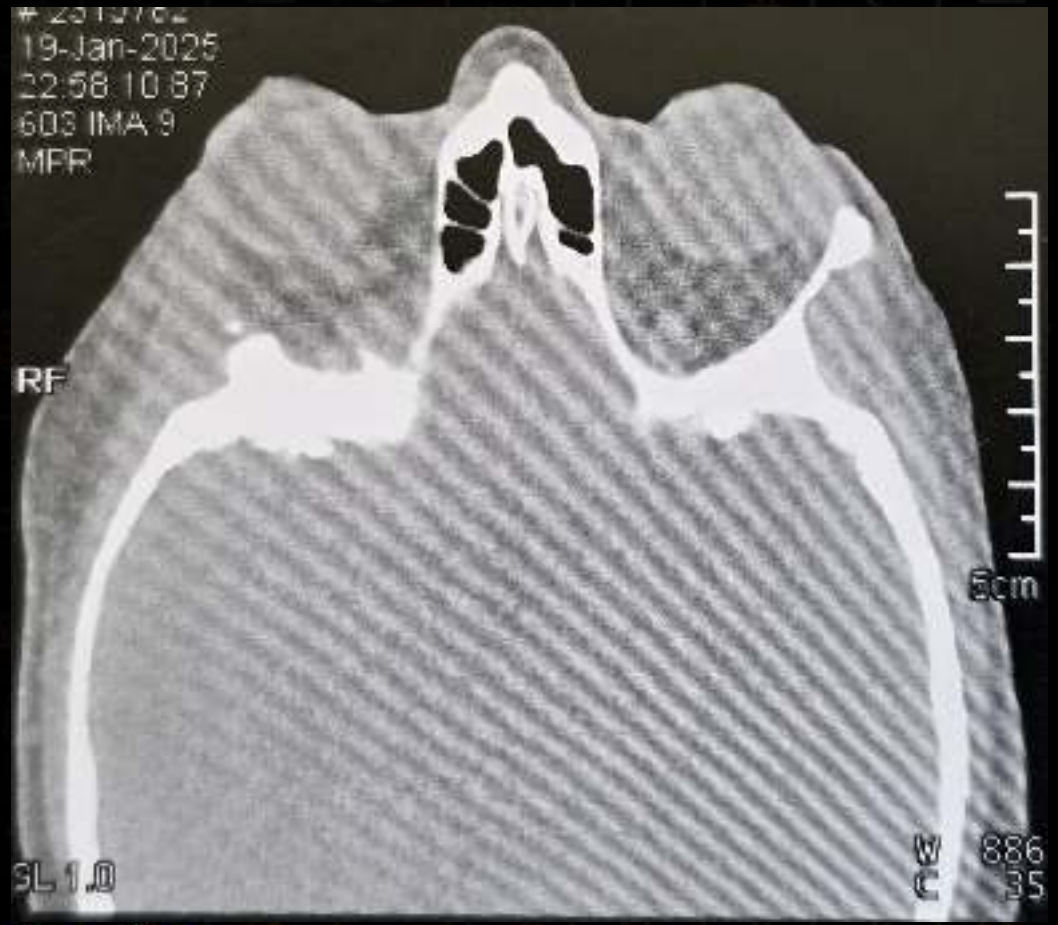
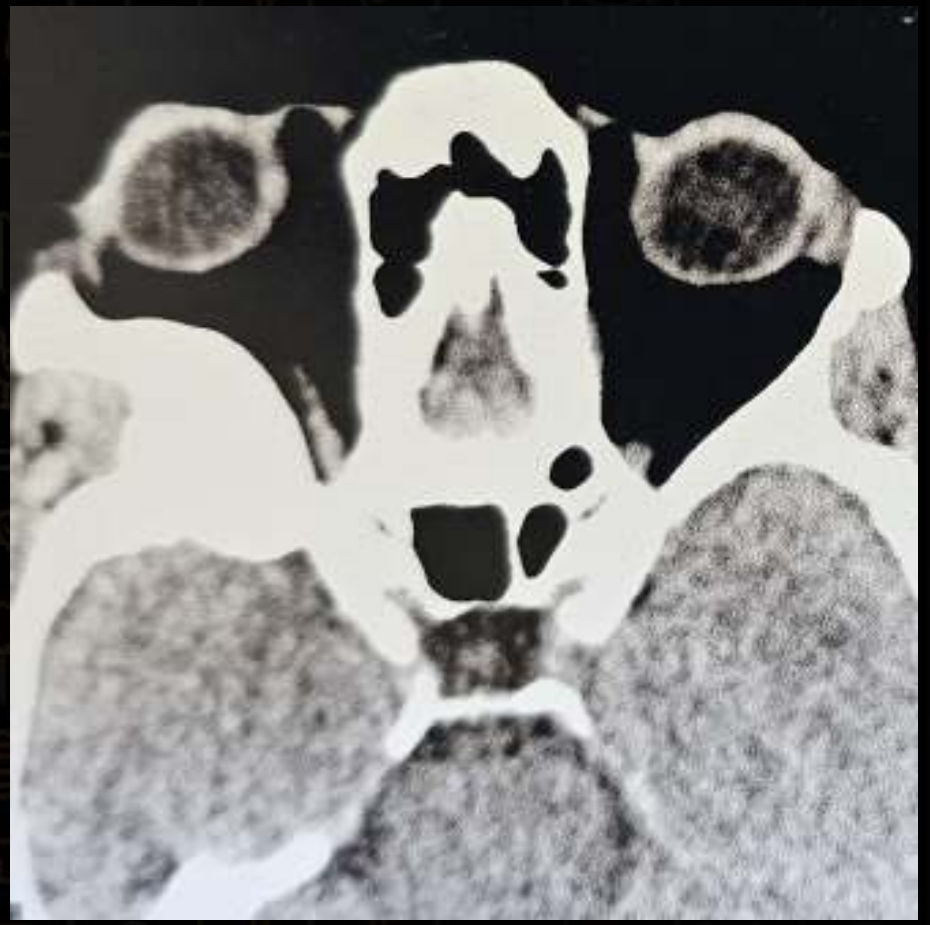
Meeting our limits





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Amal Shaker Gowrge
HPR
STUDY 10/23/2024
Results CT ViewBOX
FP
RT

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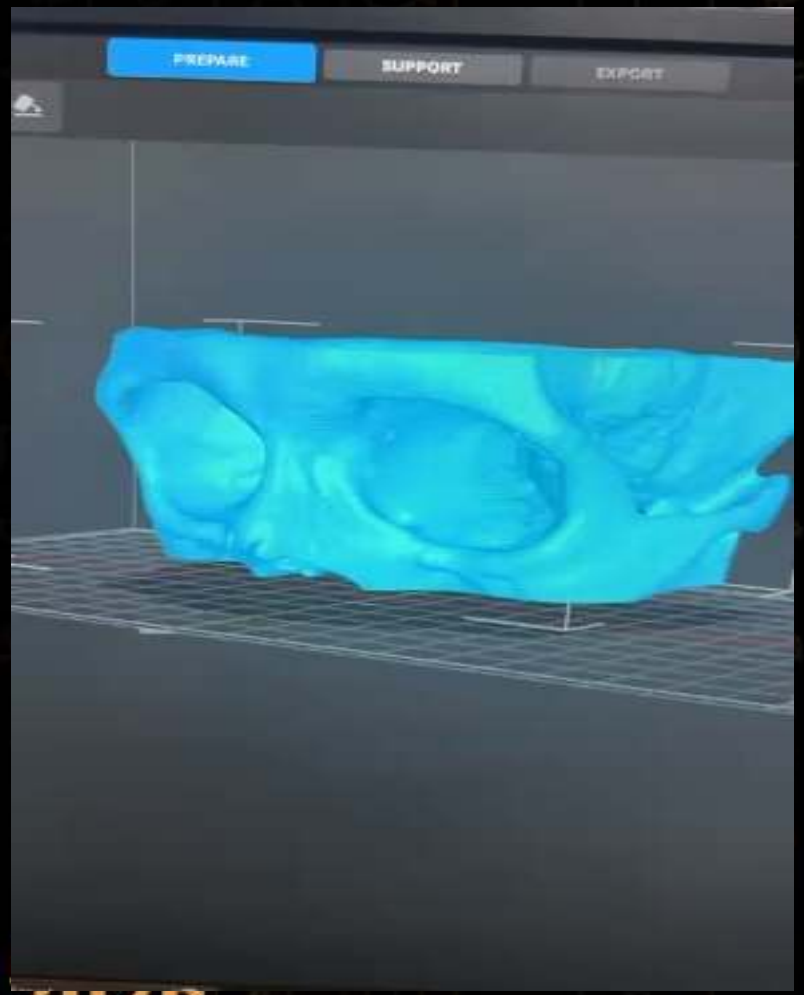
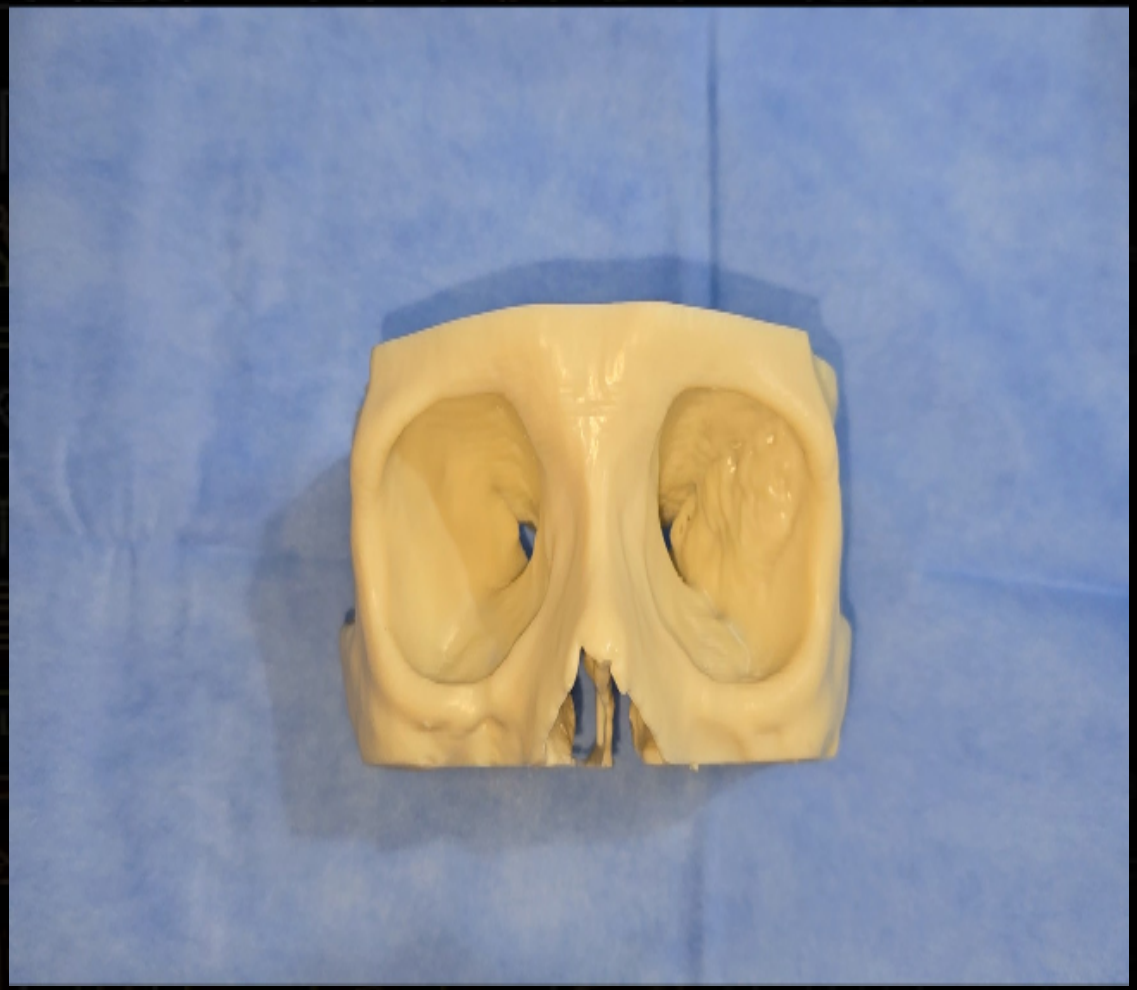
Poor man navigator





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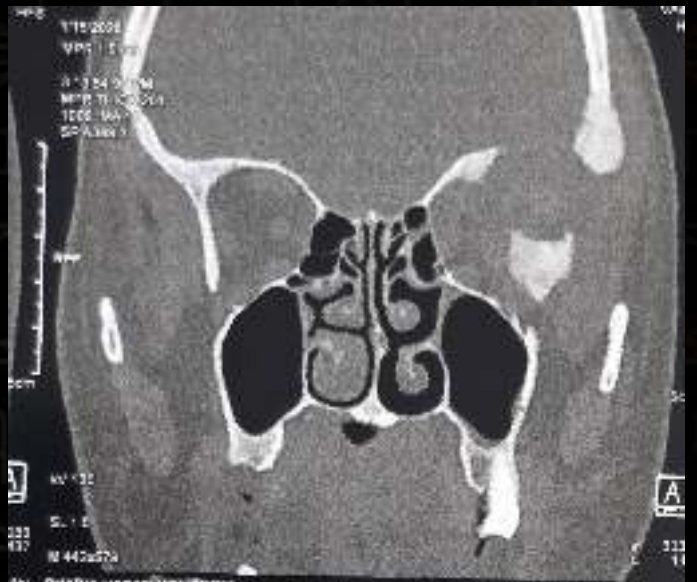
Digging Deeper


MPR 1mm Range[5]
RPH
kV 130
SL 1.0
M 500x1084
SHADIA HASAN MOHAMED
18437
*12/15/1983 F 42Y
12/15/2025
HA


MPR 1mm Range[5]
RPH




RPP

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Thank you

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