Hormone Therapy for Sphenoorbital Meningiomas
Evidence, Challenges, and Prospects

Kivanc Yangi MD[1], Jarett E. Prince BS[1], Michell Goyal BS[1], Kashif Qureshi BS[1], Jack T. Olson BS[1], Doga D. Demir Yangi MD[1], Egemen Gok[1], Mark C. Preul MD[1]

1: The Loyal and Edith Davis Neurosurgical Research Laboratory Department of Neurosurgery, Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, Phoenix, Arizona, United States

Introduction

- Sphenoorbital meningiomas (SOMs) = ~9% of intracranial meningiomas
- Complex anatomy, involving bone and soft tissue → proptosis, ↓ vision, cranial nerve deficits
- Surgical challenge → gross total resection not always possible, recurrence 35–50%
- High progesterone receptor (PR) positivity → hormonal sensitivity
- Hormone therapy (HT), especially progestins, increasingly linked to SOM growth
- No specific clinical guidelines for SOMs with HT exposure

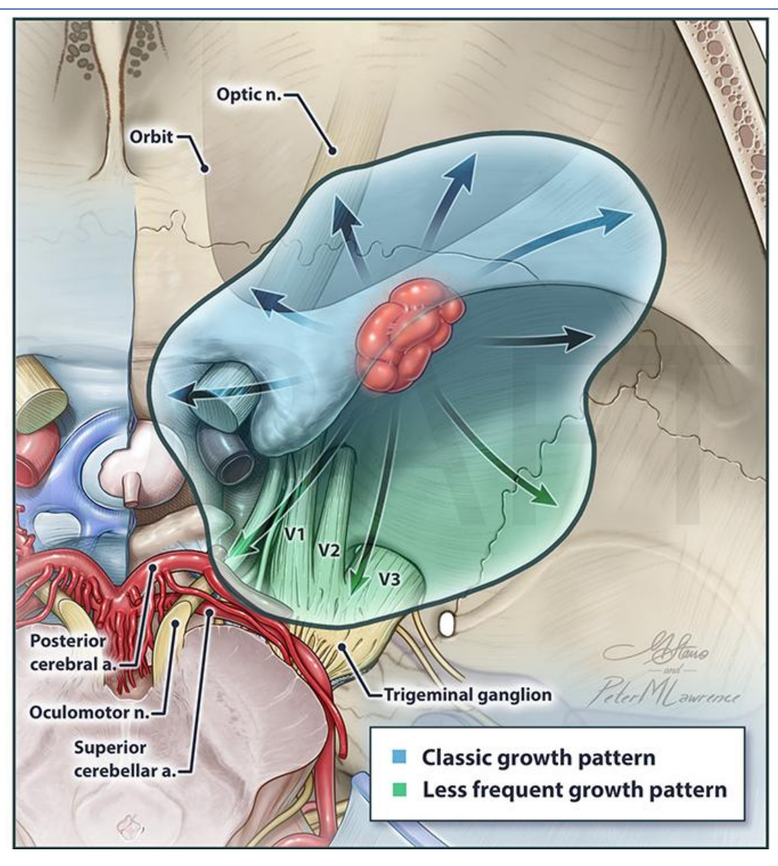

Fig. 1: Illustration of a superior view of the middle cranial fossa highlighting a common point of origin of SOMs (red lesion) as well as potential areas of soft tissue and intraosseous growth, with blue and green shadings depicting classic and less frequent growth patterns

Methods

- Systematic review (PubMed, Embase, SCOPUS, Cochrane) using PRISMA guidelines (May 2025)
- 10 studies, comprising 315 patients
- Data collected: HT exposure, tumor behavior, treatment, outcomes

Results

Patient / HT Data

- Mean age: 49.6 ± 4.47 years
- Majority female (258 of 315 patients).
- Average HT exposure: 12.6 ± 3.7 years
- Most were progestin-based (90%); cyproterone acetate (CPA) most common, followed by nomegestrol acetate (NOMAC) and chlormadinone acetate (CMA)
- PR status was reported in only three studies, but its positivity in SOMs was universal (70–100%)

Tumor Behavior After HT Cessation

- Six studies reported ↓ tumor volume after stopping hormone therapy
- Regression seen most consistently in soft tissue component
- Intraosseous component usually stable or continued growth
- One case showed regression of both, an exception
- Findings suggest hormone sensitivity largely limited to soft tissue portion of SOMs

Results (Continued)

Treatment Outcomes

- Seven studies described surgical management
- Subtotal resection was more frequent than gross total, reflecting skull base complexity
- Subtotal resections carried higher recurrence risk, especially with residual soft tissue
- Three studies reported conservative care (hormone stop + surveillance), ineffective with intraosseous disease
- One study described hybrid care (hormone stop + surgery), which may lower tumor burden and morbidity
- Radiotherapy reported in few studies; role remains uncertain

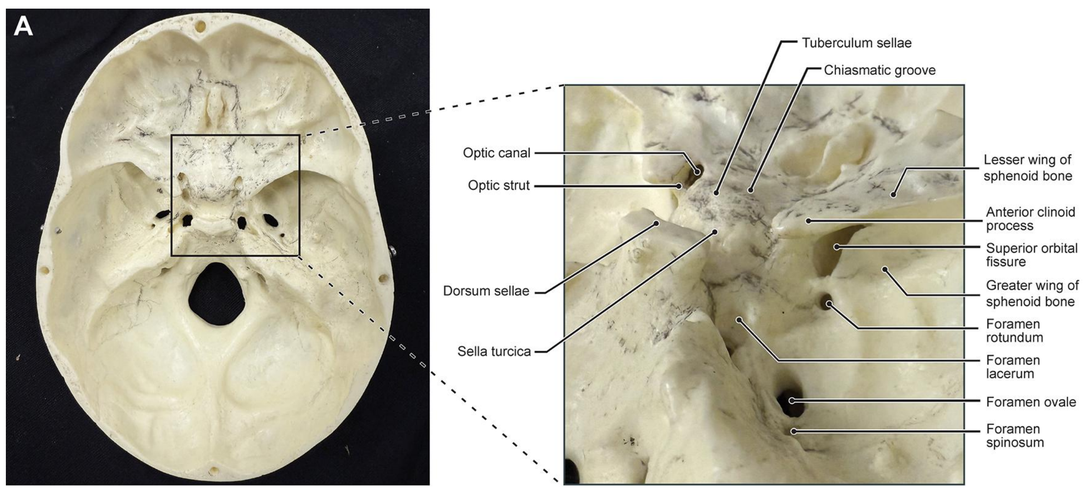

Fig. 2: (A) Axial and oblique (inset) views of a skull base model demonstrating the lesser wing of sphenoid (common point of origin of SOMs) and middle cranial fossa, highlighting the related foramina

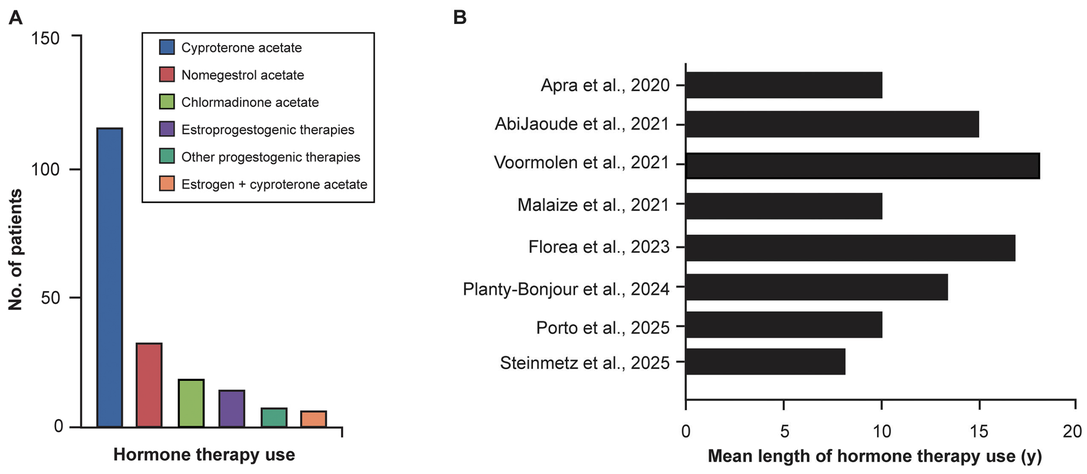

Fig. 3: Trends in hormone therapy use and recent publications on its relation to SOMs **(A)** Number of patients with a history of hormone therapy and the specific therapies they used **(B)** Patients' mean length of hormone therapy before SOM diagnosis

Conclusions

- Evidence shows strong link between long-term HT (esp. progestins) and SOMs
- Tumor regression after HT stop mainly in soft tissue; bone disease persists
- Dual behavior → conservative care alone insufficient with bone involvement
- Surgery = standard of care; technically difficult; subtotal resection → ↑ recurrence
- HT stop + surgery may ↓ operative risk, esp. with cavernous sinus / SOF tumors
- Limited evidence: PR antagonists (e.g., mifepristone) may help in select cases
- Minimally invasive options (e.g., endoscopic transorbital) for smaller, bone-dominant tumors after HT cessation.

Contact

Kivanc Yangi, M.D.
Dept. of Neurosurgery, Barrow Neurological Institute
St. Joseph's Hospital and Medical Center
2910 N 3rd Ave, 85013, Phoenix, Arizona, USA
kivancyangi@gmail.com
602-767-9802

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