Balancing Maternal and Fetal Risk: Preterm Cesarean to Facilitate Neurosurgical Resection of a Giant Craniopharyngioma

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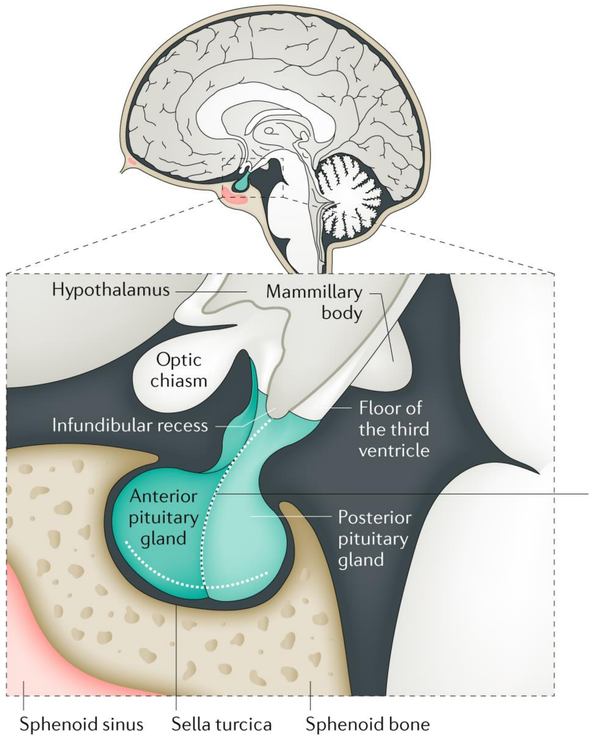
Case Background

Craniopharyngiomas

- Most common pediatric intracranial tumor (5-10%)
- Bimodal age distribution, occurring in adults 45 – 60 years old (1-3%)
- Adamantinomatous craniopharyngioma driven by a somatic mutation

Usual Presentation of craniopharyngioma

- Slow growing, benign tumor
- Mixed solid and cystic components

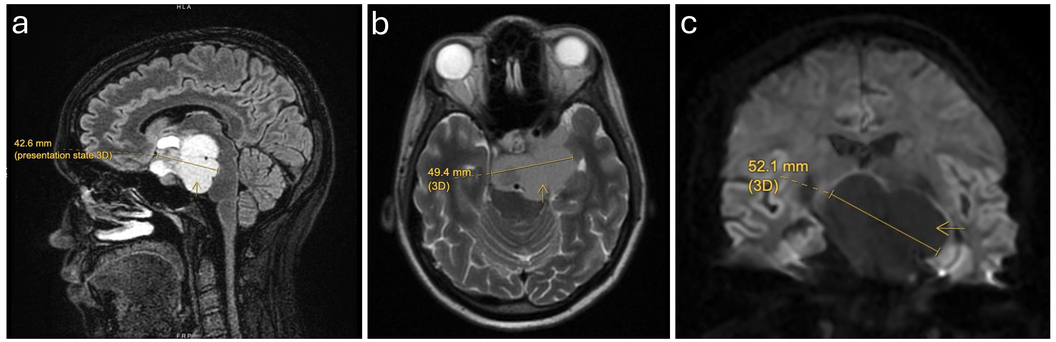


Nature Review, DOI 10.1038/s41572-019-0125-9

Preoperative Course

31F G1P0 at 29w4d admitted to Neurosurgery for management of suprasellar mass causing progressive loss of vision and confusion

- **History:** 3-4 months of fatigue with pregnancy, exercise induced headaches, forgetfulness and acute confusion
- **Unusual presentation:** suddenly her vision went dark, thought it was nighttime outside when it was 1PM
- **MRI brain without contrast:** showed multilobulated solid and cystic suprasellar mass 4.6cm x 5.2cm x 5.5 cm
- The size and extent of this tumor (giant > 5 cm) could explain symptoms



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Perioperative Course

Multidisciplinary Discussions of Options

Teams involved: Neurosurgery, NICU, Endocrinology, MFM, OB Anesthesia

1. **Expectant Management until Postpartum**
   - Defer neurosurgical intervention for a later gestational age
2. **Neurosurgery During Pregnancy**
   - Fetal monitoring during procedure
3. **Delivery Prior to Neurosurgery**
   - Scheduled Preterm delivery prior to neurosurgical intervention

Decision made to proceed with Preterm Delivery

Anesthetic Management During Cesarean Delivery

Decision to Proceed with Cesarean Delivery + General Anesthesia
- Fatal risk of brainstem herniation with neuraxial anesthesia and vaginal delivery (Valsalva)
- Drawback inability to monitor mental status intraoperatively under GA

Fetal Considerations
- Antepartum Betamethasone two doses for fetal lung maturity
- Magnesium sulfate 4g bolus given prior to skin incision for fetal neuroprotection

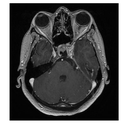
Optimizing Mother for Induction and Intubation
- Preoperative cortisol 28 µg/dL (increased in pregnancy) but cesarean delivery moderate-to-major surgical stress
- Hydrocortisone 100mg at induction, per endocrine recommendations
- Rapid sequence intubation with video laryngoscopy

Continuous Hemodynamic Monitoring with Arterial Line
- Maintain cerebral perfusion pressure (CPP = MAP-ICP)
- Monitor BP with possible adrenal insufficiency
- Draw labs and T&S

Pain Management
- Remifentanil gtt intraoperatively
- Regional techniques: bilateral TAP blocks, OnQ pump in subcutaneous space with 0.5% bupivacaine

Uncomplicated primary cesarian delivery, EBL ~ 350cc, viable female infant delivered with vigorous cry, APGARs 4 and 7, weighing 3lbs 2oz

Anesthetic Management During Neurosurgery



Neurosurgery planned on POD2
- Stereotactic endoscopic endonasal approach for tumor resection and reconstruction
- POD1-2 – labile hemodynamics, volume overload, chance for pulmonary edema, hypercoagulable

Intraoperative Neuromonitoring Planned

Endocrine Recommendations
- Hydrocortisone 100mg with anesthesia induction, followed by 50 mg q8h standing out of the OR

Airway edema
- RSI and video laryngoscopy

Overall, 13h Intraoperative Course (08:00 – 21:00), EBL 350cc. Pathology confirmed: Adamantinomatous craniopharyngioma

Post-operative Recovery and Follow-up

Monitoring for Central Diabetes Insipidus

Pituitary stalk sacrifice so high risk of panhypopituitarism (Na 150-155 out of the OR)
- Started on DDAVP, levothyroxine, and stress dose steroids

As of April 2026
- Her vision improved tremendously, left eye with central residual defect
- Discussing with radiation oncology to radiate residual tumor
- Repeat MRIs q6months to monitor for growth

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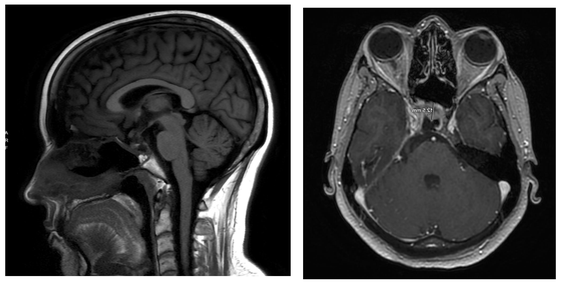
Discussion

Early Detection
- Initially referred to ophthalmology + neurology
- Presented at third trimester

Discussion of Surgery
- Surgical approach
- Urgency
- Hemodynamic considerations
- Intraoperative blood loss
- Timing of delivery and surgery
- Balancing risks of prematurity with benefits of expediting surgical resection of mass for mother

Mode of anesthesia for delivery and surgery
- Concern for Valsalva with a vascular intracranial mass, recommended delivery by C-section
- Given risks of brain stem herniation, proceeded with general anesthesia

Early symptom recognition in obstetric patients → Multidisciplinary Discussions for Maternal and Fetal Benefits → Optimizing Mother and Fetus → Individualized Perioperative Care



MRI 3 months after neurosurgical intervention

Overall, with multidisciplinary team input and superb communication, outcomes for mother and baby were excellent.

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