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Background:

SOAP 2025 ANNUAL MEETING

- Moyamoya (MMD) is a rare disease characterized by the occlusion of the intracranial internal carotid arteries, prompting the development of fragile collateral blood vessels due to chronic brain ischemia (1).
- Side effects include brain hemorrhage, ischemic strokes, transient ischemic attacks (TIA), seizures, headaches, or cognitive impairment.
- Anesthesia management in MMD is complex, requiring maintenance of normotension (relative to a patient's baseline), normocarbia, and normothermia, which is further complicated by physiological changes in pregnancy (2). This case outlines the anesthetic challenges of managing a Moyamoya patient with severe preeclampsia requiring an urgent C-section.

New "emergency" blood vessels Cerebral Internal carotid artery Cosed artery with no blood flow

Moyamoya disease

References

1.Ovando Jr., D., Ntekim, A. and Xiong, M. (2023) Anesthetic and Obstetric Considerations of Moyamoya Disease in Pregnancy after Intracranial Bypass Grafting: A Case Report and Literature Review. Open Journal of Anesthesiology, 13, 101-107. doi: 10.4236/ ojanes.2023.135010.

2. Anesthetic management for cesarean section in moyamoya disease: a report of five consecutive cases and a mini-review Kato, R. et al.International Journal of Obstetric Anesthesia, Volume 15, Issue 2, 152 - 158

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Case Presentation:

- 33-year-old G2P0010 at 32 weeks gestation was admitted with preeclampsia with severe features.

-She had a history of MMD with two prior strokes in 2022, multiple TIAs, a seizure disorder, and a right cerebral artery bypass in 2023.

-Despite being on a multi-drug blood pressure regimen, she developed sustained hypertension at 33 weeks, accompanied by fetal heart decelerations. Ultrasound showed the fetus in breech position. Due to recent enoxaparin administration (60mEq within 24 hours), the risks of neuraxial anesthesia were high, and general anesthesia was chosen as the safest option.

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Anesthetic Management:

- Midazolam was used for anxiolysis and reduction of hyperventilation.

- A preinduction a-line was placed followed by rapid sequence induction.

- Propofol infusion maintained anesthesia. Esmolol and clevidipine boluses controlled hypertensive responses to laryngoscopy and surgical incision while a norepinephrine infusion prevented hypotension.

-Hydromorphone boluses facilitated smooth emergence and extubation.

-The fetus was delivered without complications, and the patient was discharged five days later without new MMD-related issues.



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Discussion:

Though MMD is rare, anesthesiologists must understand the anesthetic challenges in obstetric patients.

Maintaining normal cerebral perfusion pressures is challenging given potential for disautoregulation, but is critical to prevent devastating neurological sequelae.

This case highlights the safe induction of general anesthesia in a MMD patient, where management centered around normotension, normocarbia, and vigilant monitoring to minimize risk of brain hemorrhages, ischemic strokes and neurologic deficits.