

Anesthetic Management of a Parturient with Moyamoya Disease for Vaginal Delivery

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Background

- Moyamoya disease (MMD) is a chronic vasculopathy characterized by **intracranial arterial narrowing** (esp. internal carotid arteries & Circle of Willis) → **collateral vessel formation**.¹
- Most commonly manifests with cerebral ischemic events. Can also present with intracerebral hemorrhage (2^o to collateral vessels).¹
- Physiologic changes of pregnancy, including hyperventilation and hypercoagulable state, may increase the risk of ischemic stroke.²
- Cesarean delivery is more commonly described in the literature → Here we present the case of a parturient with MMD who delivered vaginally.

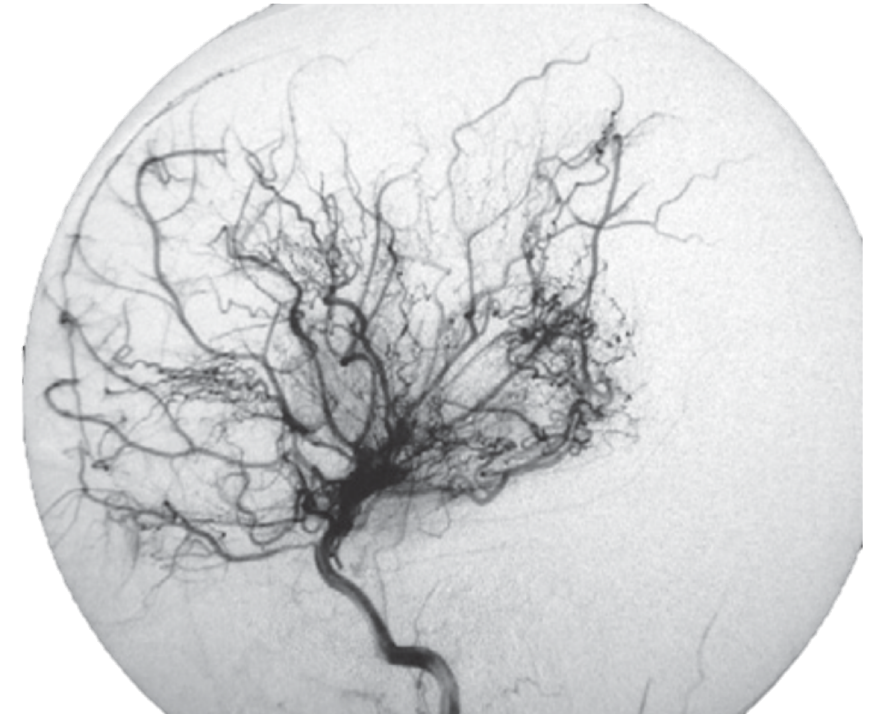


Figure 1: Cerebral Angiography, Moyamoya Disease, Right ICA³

1. Kato R et al. Anesthetic management for cesarean section in moyamoya disease: a report of five consecutive cases and a mini-review. *Int J Obstet Anesth.* 2006;15(2):152-158
2. Maragkos GA et al. Moyamoya disease in pregnancy: a systematic review. *Acta Neurochir (Wien).* 2018;160(9):1711-1719
3. Kuroda S, Houkin K. Moyamoya disease: current concepts and future perspectives. *Lancet Neurol.* 2008;7(11):1056-1066.

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Case Description

- A 33-year-old primigravida with incomplete prenatal care presented at 34w4d gestation with PPROM and a fully dilated cervix.
- Medical History: MMD complicated by ischemic left MCA stroke (s/p STA-MCA bypass), seizures, and chronic HTN.
- Obstetric Plan: Vaginal delivery, with vacuum-assistance if necessary to minimize valsalva.
- Anesthetic Plan: Labor epidural, providing analgesia to maintain normotension and normocapnia in labor.
- Vital signs remained within normal limits throughout; no vasopressors or invasive monitoring were utilized.
- The delivery was uncomplicated, without need for vacuum assistance.

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Learning Points

- Managing MMD and the physiologic changes in labor can be challenging → Primary goals are to **maintain CBF** and **control BP**.
- **Neuraxial Anesthesia:**
 - Blunts the sympathetic response to pain, promoting normocapnia while reducing risk of intracranial bleeding 2^o to HTN.
 - Allows ongoing neurological assessments.
 - Facilitates an assisted second stage of labor.
 - Minimizes risk of maternal aspiration and neonatal depression due to anesthetics.
 - Avoids the increase in cerebral metabolic rate with tracheal intubation.
- **Vaginal delivery** mitigates the higher blood loss and thromboembolic risk of a C-section.
 - **Vacuum-assistance** could help prevent increases in systemic and intracranial pressure with valsalva.
- If **General Anesthesia** is required:
 - Adequate plane of anesthesia before laryngoscopy to avoid HTN.
 - Avoid hypocapnia, alkalosis, hypothermia, or hemorrhage-induced hypotension → all could worsen cerebral ischemia.