

Anesthetic and Other Management Considerations of Moyamoya Disease in Pregnancy after Intracranial Bypass Grafting: A Case Report and Literature Review

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INTRODUCTION

Moyamoya disease (MD) is a chronic idiopathic vasculopathy characterized by bilateral stenosis of the distal internal carotid arteries with subsequent formation of abnormal collateral vessels. The underlying etiology is unknown¹. Patients with MD are predisposed to intracranial hemorrhage or cerebral ischemia given the fragile nature of the collateral circulation. Although there is no curative treatment for MD, there are surgical palliative procedures that can augment cerebral blood flow to areas of impaired perfusion and circumvent the abnormal collateral circulation. Medical management exists for patients who are not surgical candidates. Because the incidence of MD peaks during the second and third decades of life, it can potentially affect women of childbearing age. However, the optimal anesthetic and obstetric management of the parturient with MD remains controversial. We present a case of a primigravida with a history of MD who underwent intracranial bypass grafting prior to conception and subsequently had a successful cesarean delivery that was complicated by transient ischemic attacks (TIA) in the postpartum period.

CASE REPORT

A 28-year-old female with a past medical history of mild intermittent asthma and MD s/p bilateral superior temporal artery-middle cerebral artery (STA-MCA) bypass grafting on ASA presented for a scheduled Cesarean section. She had an uneventful delivery of a healthy female infant. Twenty-four hours after her surgery, the patient began to experience “numbness and tingling” to her left cheek, lips, and tongue. The episode lasted approximately five minutes and subsided. One hour later, the patient reported feeling a similar sensation of left-sided facial numbness but this time lasting approximately three minutes. The rest of her neurological exam was unremarkable. There was concern for TIA's. Brain MRI and MRA (Figure 1) showed stable, chronic findings consistent with the patient's known history of MD. She was continued on ASA and her neurological exam was serially monitored. She did not experience any further episodes of facial numbness or abnormal sensation and was subsequently discharged home.

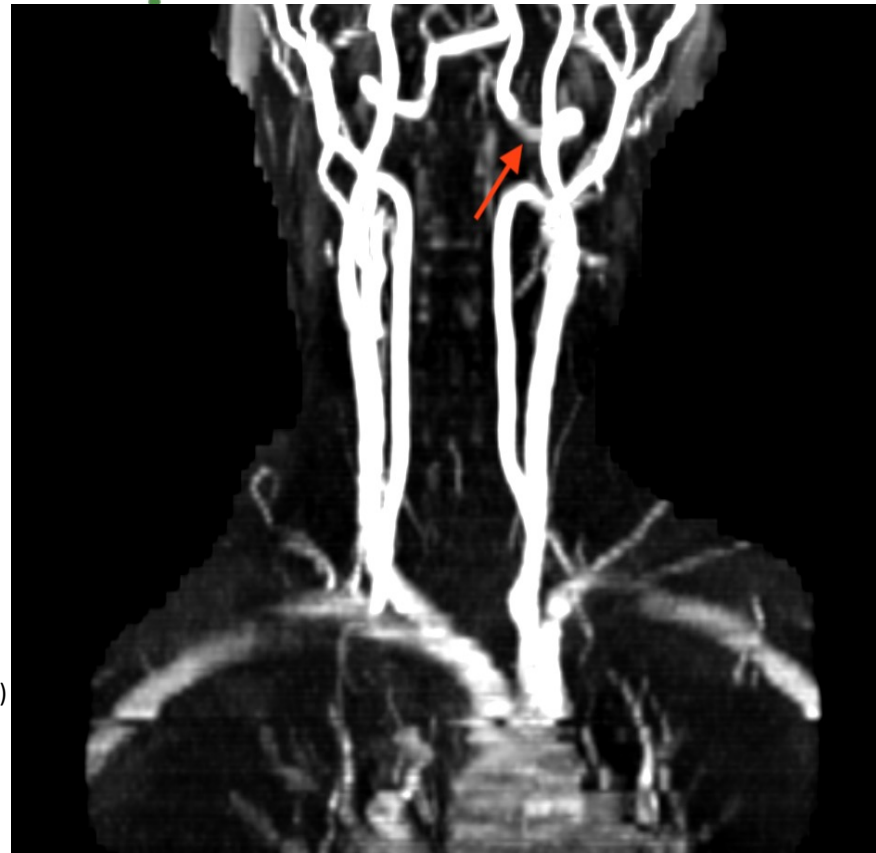


Figure 1. MRA obtained during the patient's admission. The red arrow indicates the high-grade stenosis of the patient's right supraclinoid internal carotid artery (ICA) consistent with the patient's clinical history of MD. The stenosis of the left ICA is not clearly visualized in this MRA image.

DISCUSSION

Anesthetic considerations:

- Baseline neurologic exam prior to administration of any anesthetic
- Maintain balance between CMRO₂ and CBF²
- Avoid hypertension/hypotension
- Maintain euvolemia and normothermia
- Minimize pain and hyperventilation (avoid decreases in P_{CO2})
- Neuraxial preferred over general anesthesia³

Obstetric considerations:

- No prospective trials addressing safest method of delivery, however cesarean section is preferred over vaginal delivery⁴

Medical considerations:

- Need for long-term antiplatelet therapy given increased risk of ischemic stroke
- Monitor for anemia as it can increase risk of ischemic stroke

Surgical considerations:

- No definitive surgical treatment, only palliative procedures exist for MD
- Absolute benefit of surgical interventions (i.e. STA-MCA bypass, EMS, EDAS) prior to pregnancy has not been shown⁵

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