

Treat first, deliver second: management of aneurysmal subarachnoid haemorrhage in late pregnancy

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Background

Subarachnoid haemorrhage (SAH) occurs in approximately 1 in 10,000 pregnancies and may be more common in the third trimester (1). Management in advanced gestation is challenging and requires complex multidisciplinary (MDT) decision-making, balancing maternal and fetal risks. The literature is limited, with most cases describing delivery prior to definitive SAH treatment (2).

Case Report

A 33 year old nulliparous woman presented at 36+5 weeks gestation with sudden-onset severe headache. Her pregnancy had been uncomplicated until this point. Past medical history was unremarkable except for a strong family history of SAH. GCS was 15 and she had no focal neurological deficit.

CT imaging revealed a Fisher grade 3 SAH with intraventricular extension and mild hydrocephalus secondary to an aneurysm. She was urgently transferred to our centre which provides obstetric, neonatal and neurosurgical services on a single site.

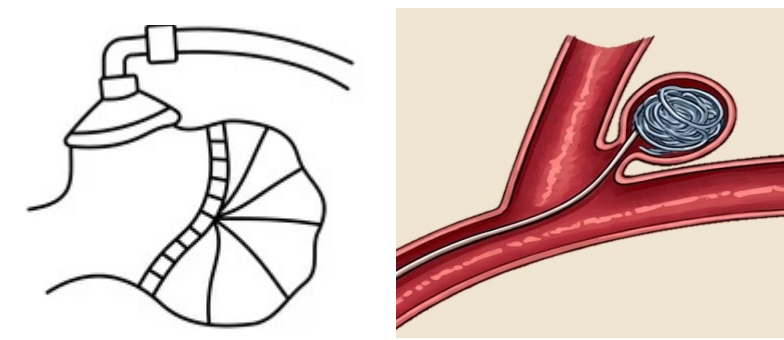
Following urgent MDT discussion, the decision was made to secure the aneurysm through endovascular coiling under general anaesthesia (GA) prior to delivery as caesarean section with an unsecured aneurysm posed an increased risk of neurological deterioration for the mother.



Figure 1: Left posterior communicating artery aneurysm. Fisher grade 3 Subarachnoid Haemorrhage (3)

Management and Outcomes

1. Endovascular Coiling under GA



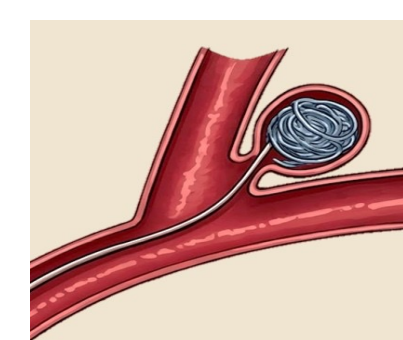
2. Uneventful transfer to obstetric theatre under GA



3. Caesarean section under GA



4. Vasospasm and additional endovascular intervention



5. 6 weeks post-discharge

- RSI. TIVA, Videolaryngoscopy
- Meticulous BP control (SBP 120-140) using metaraminol infusion and crystalloid
- Aortocaval compression minimized using lateral displacement with wedged pillows
- Successful embolization of culprit left posterior communicating artery aneurysm.
- 5000 IU heparin was administered during the procedure.

- Intraoperative blood loss of 1600mls
- Neonate required intubation due to respiratory depression.
- Neonatal extubation the following day and discharge home in good condition on day 5.
- Patient had GCS 15 on extubation immediately postoperatively.

- Patient developed cerebral vasospasm with evidence of a left temporal infarct. She underwent endovascular stentoplasty and intra-arterial nimodipine with good results
- Patient was discharged 25 days after her presentation with GCS 15, mild neck stiffness and word-finding difficulty.

- Patient and baby remain stable

Discussion

The optimal management of SAH in pregnancy is not well established with poorly documented outcomes for patients in whom delivery occurred prior to SAH treatment (1,2). Significant changes in intracranial venous and arterial blood pressure may occur during labour and delivery due to pain, Valsalva manoeuvre, fundal pressure, GA, RA and haemorrhage. These factors may increase the risk of rebleeding and/or vasospasm.

Neuraxial procedures are associated with a risk of cerebrospinal fluid pressure changes, which may increase the risk of rebleeding. General anaesthesia also risks haemodynamic changes and increases in intracranial pressure at endotracheal intubation and extubation and is associated with an elevated risk of morbidity and mortality in pregnancy.

In this case, early treatment of the aneurysm was deemed a priority over delivery to prevent rebleeding and maximise the mother's chance of neurological recovery. Concerns about performing interventions in this order included:

- IR tables are non-tilting, necessitating the use of wedge pillows to reduce aortocaval compression. This may complicate the interventional procedure.
- Administration of heparin may increase the risk of obstetric haemorrhage.
- Delaying delivery may complicate subsequent neurosurgical or neuroradiological interventions.
- Fetal exposure to radiation.

Conclusions

This case demonstrates the safe management of a mother presenting with SAH in the third trimester. Despite limited literature to support this approach, early treatment of the aneurysm was prioritized over delivery to optimize the mother's neurological recovery. Effective multidisciplinary and coordination guided this decision making.

References

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