



## RESEARCH ARTICLE

### ANAESTHETIC MANAGEMENT OF A PARTURIENT WITH TAKAYASU ARTERITIS FOR CAESAREAN DELIVERY: A CASE REPORT

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#### ABSTRACT

We present the successful anaesthetic management of a 26-year-old primigravida with extensive Takayasu arteritis undergoing caesarean delivery. The patient had multiple arterial stents and significant left common carotid stenosis. Low-dose spinal anaesthesia combined with epidural volume expansion provided stable hemodynamics with minimal vasopressor support. This case demonstrates that individualized neuraxial techniques can effectively balance surgical anaesthesia requirements with hemodynamic stability in high-risk vascular disease patients during caesarean delivery.

## INTRODUCTION

Takayasu arteritis (TA) is a rare chronic inflammatory vasculitis affecting large vessels, with an incidence of 1-2 per million annually and a strong predilection for women of childbearing age<sup>(1)</sup>. The disease causes stenosis, occlusion, and aneurysm formation in major arteries, creating significant challenges when it coincides with pregnancy. Pregnancy-induced hemodynamic changes—including increased cardiac output and decreased systemic vascular resistance—compound these risks, leading to complications such as hypertension (37%), preeclampsia (14%), miscarriage (16%), and preterm delivery<sup>(2,3)</sup>.

### ORGANIZATIONAL CONTEXT

Our tertiary care centre manages high-risk pregnancies through a multidisciplinary team approach. For patients with complex vascular disease, this includes rheumatology, cardiology, obstetrics, and anaesthesiology consultations. Our anaesthesia department has established protocols for neuraxial techniques in high-risk populations, emphasizing individualized approaches based on detailed preoperative assessment. The availability of advanced monitoring and immediate access to critical care resources supports management of these challenging cases.

### PERSONAL CONTEXT

The patient, a 26-year-old primigravida at 37 weeks' gestation, had been diagnosed with TA several years prior. Her vascular disease had required multiple interventions, including stent placements in the left subclavian, bilateral common carotid, left renal, and left infrarenal arteries. Despite these interventions, she maintained 50.5% stenosis in the left common carotid artery. She was managed medically with labetalol, prazosin, prednisolone, and aspirin. The pregnancy had been closely monitored with regular foetal surveillance and maternal vascular assessments.

### PROBLEM

The primary challenge was selecting an anaesthetic technique that would provide adequate surgical conditions while maintaining hemodynamic stability and cerebral perfusion in a patient with multiple arterial stenosis<sup>(3,4)</sup>. Conventional spinal anaesthesia risks profound hypotension from sympathetic blockade, potentially compromising already limited blood flow to vital organs. General anaesthesia poses intubation-related hemodynamic risks and prevents neurological monitoring<sup>(5)</sup>. Preoperative assessment revealed significant blood pressure differentials between extremities, highlighting vascular asymmetry. Doppler ultrasonography confirmed substantial left common carotid stenosis with elevated peak systolic

velocity (108.77 cm/sec) and post-stenotic turbulence, raising concerns about cerebral perfusion during any hypotensive episodes.



**Figure 1. Intraoperative Multisite Monitoring In A Parturient With Takayasu Arteritis**

## SOLUTION

**We implemented a low-dose spinal anaesthesia with epidural volume expansion technique:** Technique: After identifying the epidural space at L3-L4 using loss-of-resistance to saline, we administered 1.5 ml hyperbaric bupivacaine (0.5%) with 5 mcg dexmedetomidine intrathecally through a 27-G Whitacre needle. An epidural catheter was threaded 4 cm, and after positioning the patient supine with left uterine displacement, 8 ml preservative-free normal saline was administered through the epidural to promote cephalad spread. Rationale: The reduced bupivacaine dose minimized sympathetic blockade while dexmedetomidine prolonged analgesia without additional local anaesthetic<sup>(6)</sup>. Epidural volume expansion enhanced spinal spread to achieve T4 sensory level with reduced drug dosing, preserving hemodynamic stability<sup>(4,5)</sup>. Monitoring: Dual-site blood pressure monitoring on both upper extremities accounted for vascular asymmetry<sup>(3,5)</sup>. Regular neurological assessments monitored consciousness, speech, and upper extremity motor function throughout the procedure. Outcome: Hemodynamic stability was maintained with only a single 50 mcg phenylephrine bolus required intraoperatively. The surgical procedure was completed successfully with excellent anaesthetic conditions. Both maternal and foetal outcomes were excellent without complications.

## UNRESOLVED QUESTIONS AND LESSONS FOR THE FIELD

### Unresolved Questions

- What is the optimal intrathecal dose range for patients with varying degrees of vascular compromise?
- How do different adjuvants compare in maintaining hemodynamic stability in this population?
- What preoperative vascular parameters best predict intraoperative hemodynamic response?

### Lessons for the Field

Individualization is paramount: Standard anaesthetic protocols must be modified based on specific vascular involvement patterns. Detailed preoperative vascular mapping guides technique selection and dosing strategies<sup>(3,4)</sup>. Low-dose

neuraxial techniques work: Combining reduced-dose spinal anaesthesia with epidural volume expansion can achieve surgical anaesthesia while minimizing hemodynamic perturbations in vascular disease patients<sup>(4,5)</sup>. Regional anaesthesia enables monitoring: Maintaining patient consciousness allows continuous neurological assessment—critical in patients with cerebrovascular compromise where subtle changes may indicate impending complications<sup>(5)</sup>. Multidisciplinary collaboration is essential: Success in managing high-risk pregnancies with complex comorbidities requires coordinated care involving obstetrics, anaesthesiology, rheumatology, and cardiology from conception through delivery and postpartum<sup>(3,7,8)</sup>. This case demonstrates that thoughtfully individualized anaesthetic management can produce excellent outcomes in high-risk pregnancies complicated by severe vascular disease. The success achieved here provides a framework for managing similar complex cases, emphasizing the importance of comprehensive assessment, technique modification, vigilant monitoring, and team collaboration. Further research should focus on establishing evidence-based protocols for optimizing perioperative care in this challenging population.

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