



## Case Report

## Anaesthetic management of a parturient with Takayasu's arteritis coming for emergency caesarean section

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## ABSTRACT

Takayasu's arteritis (TA) also known as pulseless disease is a rare disease that involves aorta and its main branches.<sup>1</sup> It can cause inflammatory reaction of tunica media and adventitia of the arteries involved causing stenosis, occlusion or aneurysm.<sup>2,3</sup> Anaesthesia for caesarean section in a parturient with Takayasu's arteritis is complicated by associated hypertension, end organ dysfunction, stenosis of major blood vessels and overall vasculopathy.<sup>1</sup>

The optimal anaesthetic management in a parturient with Takayasu's arteritis is controversial, but avoidance of regional anaesthesia has been recommended by some authors because of the risk of hypotension and the subsequent need for vasopressors.<sup>4,5</sup> We herein report the use of general anaesthesia in a term parturient with Takayasu's arteritis coming for emergency Lower segment caesarean section (LSCS).

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## 1. Introduction

Takayasu's arteritis also known as pulseless arteritis / aortoarteritis / young female arteritis is a rare chronic inflammatory disease of unknown aetiology involving progressive large vessel vasculitis.<sup>6</sup> Although it is more commonly seen in Asia it is not restricted geographically.<sup>7</sup> It is seen more commonly in young females, 80% in their childbearing age group of 15-40 years.<sup>2,5</sup> It is the most common cause of renovascular hypertension in India.<sup>8</sup> It was first described by Japanese ophthalmologists Mikito Takayasu and Onishi in 1908.<sup>6,7,9</sup> Incidence is reported to be 13 cases per million population.<sup>6</sup>

Chronic inflammation of the large vessels leads to narrowing, occlusion and aneurysm of systemic and pulmonary arteries.<sup>6</sup> It particularly affects the brachiocephalic arteries arising from the arch of aorta. It may also affect the thoracic and descending part of aorta,

coronary arteries and renal arteries.<sup>2</sup> About 2/3<sup>rd</sup> of the patients have systemic findings of malaise, fever, arthralgia, weight loss and claudication pain.<sup>2</sup> On examination one or more peripheral pulses will be absent and blood pressure varies in two limbs. However computed tomography (CT) or magnetic resonance angiography (MRA) can detect Takayasu's arteritis even before complications occur.<sup>6</sup>

Pregnancy in women with Takayasu's arteritis does not affect the inflammatory evolution of the disease but increases the risk of exacerbation of pre-existing chronic hypertension.<sup>3</sup> Thus such parturients need special attention during peripartum period owing to the likelihood of complications such as hypertension, multiple organ dysfunction and stenosis leading to decreased regional blood flow, intra uterine growth retardation (IUGR) and low birth weight.<sup>6</sup>

Ideal anaesthetic management of these pregnant mothers with Takayasu's arteritis still poses a stringent challenge to anaesthesiologist. Here we present a case report of anaesthetic management of a parturient with Takayasu's

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arteritis.

## 2. Case Report

A 25-year old female with term gestation (39 weeks), weighing 77 kgs, height 158 cm, gravida 2 and para 1, who was a diagnosed case of Takayasu's arteritis was posted for emergency LSCS. At the age of 20 years she had developed on and off fever with myalgia, pain in the left upper limb and abdomen. On evaluation her CT Aortic Angiogram revealed circumferential wall thickening and mild narrowing of descending thoracic aorta and abdominal aorta up to the inferior mesenteric artery origin. The ascending aorta and arch of aorta were normal. The angiogram report also showed severe osteal narrowing of celiac trunk and superior mesenteric artery origin (>90%). Mild wall thickening in bilateral renal artery origin was noted. The right brachiocephalic trunk, left common carotid artery showed normal calibre. The left subclavian artery showed significant luminal narrowing with a calibre of 3 mm. Her 2D Echocardiography (ECHO) was normal. She underwent Percutaneous Transluminal Angioplasty (PTA) to the left subclavian artery and was started on tablet Clopidogrel 75mg once daily (OD), tablet Cilostazol 100mg twice a day, tablet Azathioprine 75mg OD, tablet Aspirin 150mg OD, tablet Rosuvastatin 20 mg OD following PTA.

Regarding her first pregnancy which was 3 years back, she gives history of delivering a term healthy baby vaginally. During this pregnancy she had taken regular antenatal check-ups in a primary health care centre and now she came with complaints of pain abdomen and leaking per vaginally from 1 day. Tablet Azathioprine and tablet Rosuvastatin were stopped at 3<sup>rd</sup> month of gestation. Tablet Aspirin was stopped 1 day prior.

On clinical examination, patient was moderately built and nourished, with a heart rate of 112 beats per minute (bpm), saturation was 95% at room air. Her blood pressure in right upper limb was 110/60mmHg whereas blood pressure in right lower limb was 120/84 mm of Hg. In left upper arm radial pulse was not felt and left brachial artery pulse was feeble, left carotid artery was felt. Her routine investigations were within normal limits and ECG showed sinus rhythm. She was nil per oral for more than 6 hours. Airway examination showed Mallampati class III, mouth opening and neck extension were adequate. Her cardiovascular and respiratory system examination were normal.

She was posted for emergency lower segment caesarean section in view of prolonged rupture of membranes with foetal distress. As she did not give consent for regional anaesthesia administering general anaesthesia was planned.

After obtaining written informed consent she was shifted to operation theatre in left lateral position after giving anti-aspiration prophylaxis with injection ranitidine 50 mg and injection metoclopramide 10 mg

intravenously. Multi-parameter-monitor with non-invasive blood pressure monitoring (NIBP), Electrocardiogram (ECG), pulse oximeter and end tidal carbon dioxide (ETCO<sub>2</sub>) were attached. NIBP cuff and pulse oximeter were connected to right upper limb. Parturient was pre oxygenated with 100% oxygen for 5 minutes. Rapid sequence induction was performed with injection Thiopentone 250 mg IV, Succinylcholine 75mg IV and intubated with cuffed endotracheal tube of size 7.0mm. Anaesthesia was maintained with oxygen and nitrous oxide mixture at 50:50 ratio with Sevoflurane at 1-1.5%. Vecuronium 3 mg was given. A 2.75kg male baby with Apgar score of 8 was extracted. Later Midazolam 1mg, fentanyl 80 mcg, Paracetamol 1g were given intravenously. Surgery was completed uneventfully. Local infiltration 10 ml of 0.25% Bupivacaine was given at the incision site for postoperative analgesia. She was extubated after reversing the neuromuscular blockade with inj. neostigmine 3mg and Glycopyrrolate 0.7mg. Extubation was uneventful. Patient was shifted to ICU for continuous monitoring. Postoperative recovery was uneventful.

## 3. Discussion

Takayasu's arteritis, a disease of unknown aetiology, is a chronic progressive obstructive arteritis. Clinical features may vary based on the difference in the site and extent of involvement of aorta and its branches. The disease is often fatal usually from cerebral ischemia or heart failure.<sup>4</sup> The exact aetiology though remains unknown certain patients do have history of tuberculosis, streptococcal infection or rheumatoid arthritis in the past.<sup>1</sup> Since it occurs in childbearing age group in women, hormonal aetiology is also thought of as a causative factor.<sup>7</sup>

Takayasu's arteritis is classified based on the distribution of affected vessels<sup>7,8</sup> as Type **I** – Involves aortic arch and its main branches, Type **II** – Restricted to descending thoracic and abdominal aorta, Type **III** – Shows features of both type I and type II and Type **IV** – Shows additional involvement of pulmonary artery.

Ishikawa K et al<sup>10</sup> graded Takayasu's arteritis depending on the presence or absence of four major complications like hypertension, retinopathy, aortic or arterial aneurysm formation and aortic regurgitation. Stage **I** – Uncomplicated Takayasu's disease with or without involvement of pulmonary artery, Stage **II** – Single complication. Presence of one of the above mentioned complication along with uncomplicated Takayasu's disease, Stage **II A** – Mild to moderate complication, Stage **II B** – Severe complication, Stage **III**: Multiple complications – two or more complications together with uncomplicated Takayasu's disease.

Takayasu's arteritis may improve or worsen during pregnancy. It usually does not affect the pregnancy outcome much and hence pregnancy in a patient with Takayasu's

arteritis should not be dissuaded. However, pregnancy might worsen the symptomatology. There is no contraindication for vaginal delivery, however it is advisable to cut down or shorten the second stage of labour.<sup>2</sup> LSCS is done mostly due to obstetric reasons in these parturients with Takayasu's arteritis. The choice of anaesthesia is still controversial. Some authors prefer general anaesthesia over regional anaesthesia as spinal anaesthesia causes severe and sudden fall in blood pressure and resultant hypotension which may further hamper blood flow to the organs through already narrowed vessels due to arteritis.<sup>1</sup> The stenotic and non-compliant vessels interfere with the compensatory mechanisms to increase blood pressure after spinal anaesthesia or central neuraxial techniques.<sup>4,7</sup>

Obtaining reliable blood pressure measurement when peripheral pulses in upper limbs are not felt is a problem. In our patient we monitored NIBP in right upper limb. We opted not to place an arterial line because blood pressure was easily recorded in right upper limb and thus inflicting trauma in a patient with diffuse arteritis was not justified.<sup>4</sup> The maintenance of blood pressure close to preoperative value should be a goal to achieve favourable outcome.<sup>7</sup>

General anaesthesia also poses lot of challenges in these parturients. Difficult airway, risk of aspiration with fluctuations in blood pressure during intubation, extubation and lighter planes of anaesthesia can cause problems leading to even cerebral haemorrhage, rupture of aneurysms and cardiac dysfunction in these parturients.<sup>3,8</sup> Our parturient belonged to Type III and Stage I of Takayasu's Arteritis and since she did not give consent for any form of regional anaesthesia, we opted for general anaesthesia as the choice of anaesthetic management. Many authors prefer regional anaesthesia over general anaesthesia as it allows monitoring of brain perfusion through the level of patients consciousness which is lost in general anaesthesia.<sup>1</sup> Neurologic monitoring is of paramount importance while providing general anaesthesia in patients with Takayasu's arteritis with common carotid artery involvement.<sup>1</sup> Our parturient did not have common carotid artery involved and no previous CNS symptoms like Transient ischemic attack, stroke, syncopal attacks.

#### 4. Conclusion

Parturients with Takayasu's Arteritis vary greatly in terms of clinical presentation. So careful preoperative evaluation, intra operative planning and post operative management

are necessary. The most important goal here is to avoid haemodynamic changes and maintain organ perfusion during the peri-operative period.

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None.

#### 6. Conflict of Interest

The authors declare no conflict of interest.

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