



The Arterial Odyssey: Navigating Pregnancy in Takayasu Arteritis - A Case Series

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Abstract

Background: Takayasu Arteritis (TA) is a chronic, idiopathic, granulomatous vasculitis primarily affecting the aorta and its branches. The disease predominantly affects young women of reproductive age, creating unique challenges during pregnancy. **Objective:** To describe the clinical profile, disease characteristics, and pregnancy outcomes in women with Takayasu arteritis, and to evaluate factors associated with adverse maternal and fetal outcomes. **Methods:** This retrospective case series was conducted at Government Rajaji Hospital, Madurai, over one year. Six pregnant women diagnosed with Takayasu arteritis based on American College of Rheumatology (ACR) criteria were included. Data were collected from case sheets and high-risk registers. **Results:** The mean age was 24.1 years (range 21-28). Three women (50%) had active disease during pregnancy. Hypertension was the most common maternal complication (87%), with severe preeclampsia observed in two cases. Fetal complications included fetal growth restriction, stillbirth, and miscarriage. One patient developed azathioprine-induced pancytopenia postpartum. Cesarean section was performed in three cases for obstetric and maternal indications, while one patient had an instrumental vaginal delivery. **Conclusion:** Pregnancy in Takayasu arteritis is high risk and requires multidisciplinary management. Preconceptional optimisation of disease activity, strict blood pressure control, and the use of safe immunosuppressive therapy are critical for improving maternal and fetal outcomes.

Keywords: Hypertension, Pregnancy Outcomes, Takayasu Arteritis, Vasculitis

1. Introduction

Takayasu Arteritis (TA) is a rare, chronic granulomatous vasculitis of the aorta and its major branches, predominantly affecting young women of reproductive age^{1,2}. Owing to absent or diminished pulses, it is also termed “pulseless disease”¹.

The disease typically presents in two phases:

Inflammatory Phase - with nonspecific symptoms such as fever, malaise, and weight loss.

Occlusive Phase - with limb claudication, unequal arm blood pressure, vascular bruits, and hypertension^{1,2}.

Diagnosis is based on the American College of Rheumatology (ACR) criteria², and angiographic classification defines the arterial segments involved.

Abdominal aorta and renal artery disease are strongly associated with adverse pregnancy outcomes^{3,4}.

Pregnancy in TA is high risk, complicated mainly by hypertension, preeclampsia, Intrauterine Growth Restriction (IUGR), and stillbirth^{5,6}. Maternal risks include severe hypertension, aortic aneurysm, dissection, and stroke.

Management requires multidisciplinary care, preconception counselling, optimisation of blood pressure, and use of safe drugs such as corticosteroids and azathioprine. Early diagnosis and careful monitoring are essential for favourable maternal and fetal outcomes.

2. Aim and Objectives

- To describe the clinical profile and disease characteristics of Takayasu Arteritis in pregnancy.

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- To assess the impact of disease activity and vascular lesions on pregnancy outcomes.
- To evaluate maternal and fetal outcomes.
- To identify factors associated with adverse pregnancy outcomes.

3. Review of Literature

Takayasu Arteritis (TA) is a rare, chronic, large-vessel vasculitis of the aorta and its major branches. It predominantly affects women under 40 years of age^{1,2}, thereby posing unique challenges in reproductive health. The disease typically progresses from an early systemic inflammatory phase to a later occlusive phase, characterised by claudication, absent or diminished pulses, vascular bruits, and hypertension.

The American College of Rheumatology (1990) criteria remain the cornerstone for diagnosis², requiring at least three of six features, while the angiographic classification (Types I-V) defines the extent of vascular involvement. Renal and abdominal aortic lesions have consistently been associated with poorer pregnancy outcomes.

Pregnancy in TA is considered high risk. Published series report hypertension as the most frequent maternal complication, occurring in 30-80% of cases^{3,4}, followed by preeclampsia in 10-15% of cases³. Maternal risks such as stroke, aortic dissection, and heart failure are less common but potentially life-threatening. On the fetal side, studies have demonstrated increased rates of miscarriage (15-20%), intrauterine growth restriction (20-30%), preterm birth, and stillbirth^{4,7} compared to the general obstetric population. Importantly, active disease at conception and renovascular involvement are recognised predictors of adverse outcomes^{3,4}.

Medical management during pregnancy emphasises the use of corticosteroids and azathioprine, which are considered relatively safe in pregnancy^{2,6}, while teratogenic agents such as methotrexate and mycophenolate mofetil are strictly contraindicated^{2,6}. In refractory disease, calcineurin inhibitors like tacrolimus or cyclosporine have been employed. Antihypertensive therapy with labetalol, nifedipine, or methyldopa forms the backbone of management, alongside low-dose aspirin for preeclampsia prevention.

With regard to delivery, vaginal birth is preferred in stable cases, whereas cesarean section is reserved for obstetric indications or severe vascular/cardiac complications. Epidural anaesthesia is usually recommended due to better hemodynamic stability.

4. Materials and Methods

Study Design: Retrospective case series.

Setting: Government Rajaji Hospital, Madurai.

Duration: 1 year.

Sample Size: 6 pregnant women.

Inclusion Criteria: Pregnant women with Takayasu arteritis diagnosed using American College of Rheumatology (ACR) criteria and managed during pregnancy.

Exclusion Criteria: Non-pregnant TA cases and patients with other autoimmune/vasculitic disorders. *Data Source:* Case sheets and high-risk registers.

5. Results (Including Observations)

A total of six pregnant women with Takayasu arteritis were included in this retrospective case series. The clinical profile, angiographic classification, management, and outcomes were analysed.

5.1 Demographic and Clinical Characteristics

The demographic and clinical characteristics of the study population are summarised in Table 1.

- *Age Range:* 21-28 years.
- *Parity:* Five patients were primigravidae; one was a second gravida with a previous abortion.
- *Time of Diagnosis:* Two patients were diagnosed prior to conception, one at 8 weeks, two during early pregnancy (12-20 weeks), and one at 32 weeks of gestation.
- *Symptoms at Presentation:* Hypertension was the most common symptom (4/6). Claudication was noted in three cases. Two patients were asymptomatic and diagnosed on routine evaluation.
- *Pulse Abnormalities and Blood Pressure:* Absent or feeble pulses were observed in all patients: absent femoral in one, absent radial in four, feeble radial in one, and carotid bruits in two.

Table 1. Demographic and clinical characteristics

Case No.	Age (years)	Gravida	Time of diagnosis	Presenting symptoms	Comorbidities
1	21	Primi	20 weeks	Asymptomatic	Chronic HTN, Hypothyroidism, Moderate Anaemia
2	22	Primi	32 weeks	Hypertension	Chronic HTN, Hypothyroidism
3	25	Primi	12 weeks	Asymptomatic	None
4	27	G2A1	8 weeks	Hypertension, Claudication	Chronic HTN, Hypothyroidism
5	28	Primi	Pre-conception	Claudication	Chronic HTN
6	22	Primi	Pre-conception	Claudication	Chronic HTN

Table 2. Disease characteristics, angiographic classification and management

Case No.	Angiographic Type	Active Disease	Pulse Abnormality	Antihypertensives	Immunosuppression
1	Type 2a	Yes	Absent radial	Labetalol	Steroids + AZA
2	Type 1	Yes	Absent radial, Carotid bruit	Labetalol	Steroids + AZA
3	Type 1	No	Feeble Radial	-	Steroids
4	Type 2a	No	Absent Femoral	Labetalol+ Nifedipine	Steroids + AZA
5	Type 4	Yes	Absent Radial, Carotid bruit	Labetalol + Nifedipine	Steroids + AZA
6	Type 2b	Yes	Absent Radial	Labetalol + Nifedipine	Steroids + AZA

- Blood pressure recordings showed severe hypertension in five patients (systolic ≥ 160 mmHg in at least one limb). One patient had a significant inter-limb BP discrepancy.
- *Comorbidities:* Four patients had chronic hypertension. Three patients had hypothyroidism, and one had moderate anaemia in addition.

5.2 Angiographic Classification

Disease characteristics, angiographic classification, and medical management are detailed in Table 2.

Type 1: Two cases.

Type 2a: Two Cases.

Type 2b: One case.

Type 4: One case.

Renal/abdominal involvement (Type 4 and 2b) was associated with adverse outcomes.

5.3 Disease Activity

Stable Disease: 2/6 (33%)

Active Disease: 4/6 (67%)

Active disease at conception correlated with poor maternal and fetal outcomes.

5.4 Medical Management

Immunosuppressive Therapy: Five patients (83%) received steroids plus azathioprine; one patient (17%) was managed on steroids alone.

Antihypertensives: Labetalol was used in all hypertensive cases, with nifedipine added in three patients.

Drug Toxicity: One patient developed azathioprine-induced pancytopenia, managed successfully with drug withdrawal, transfusions, and G-CSF support.

5.5 Maternal Complications

Maternal and fetal outcomes, including mode of delivery and neonatal status, are presented in Table 3.

Hypertension was observed in five patients (87%).

Severe preeclampsia occurred in two cases.

Uncontrolled hypertension persisted in two cases despite therapy.

No maternal deaths were reported.

Table 3. Maternal and fetal outcomes

Case No.	Mode Of Delivery	Gestational Age	Birth Weight	Maternal Complications	Fetal Outcome	Postpartum Complications
1	LSCS	36 weeks	1.7 kg	Severe preeclampsia	Still birth	None
2	LSCS	36 weeks	2.3 kg	Severe preeclampsia	Live birth (FGR)	Drug-Induced Pancytopenia
3	Instrumental delivery	38 weeks	3.1 kg	None	Live birth	None
4	LSCS	37 weeks	2.56 kg	Hypertension	Live birth	None
5	MTP	8 weeks	—	Uncontrolled hypertension	Termination	None
6	Miscarriage	7 weeks	—	Uncontrolled hypertension	Miscarriage	None

5.6 Fetal and Neonatal Outcomes

One case of Fetal Growth Restriction (FGR). One stillbirth at 36 weeks.

One miscarriage at 7 weeks.

One termination of pregnancy (MTP) at 8 weeks due to active disease. Two-term live births with normal birth weight (2.56 kg and 3.1 kg).

One preterm live birth at 36 weeks with low birth weight (2.3 kg).

5.7 Mode of Delivery

Cesarean Section (3/6): Indications were cephalopelvic disproportion, severe preeclampsia, and abruption placentae.

Vaginal delivery (1/6): Instrumental delivery under epidural anaesthesia. *MTP (1/6)*: At 8 weeks of gestation.

Miscarriage (1/6): Early pregnancy loss.

5.8 Postpartum Complications

One patient developed drug-induced pancytopenia postoperatively. No other major postpartum complications were noted.

6. Discussion

Pregnancy in women with TA is rare but poses significant challenges for both the obstetrician and rheumatologist. The disease is most prevalent in women of reproductive age, and the associated vascular lesions, hypertension, and immunosuppressive therapy can adversely affect maternal and fetal outcomes.

In the present series of six cases, hypertension emerged as the most frequent maternal complication, affecting 87% of patients, which is consistent with previous studies where hypertension was observed in up to 90% of pregnancies with TA³. Severe preeclampsia was seen in two women, while uncontrolled hypertension persisted in two others despite therapy, underscoring the importance of early detection and strict blood pressure control.

Disease activity at conception was an important determinant of outcome. Half of our patients had active disease, and these cases were associated with adverse events such as fetal growth restriction, stillbirth, miscarriage, and need for medical termination of pregnancy. This observation is in line with published literature, which emphasises that conception during disease remission is associated with more favourable maternal and perinatal outcomes^{3,4}.

With regard to angiographic classification, abdominal and renal artery involvement (Types 4 and 2b) correlated with poorer outcomes, supporting the evidence that vascular distribution significantly impacts prognosis. Preconception surgical repair of affected arteries has been recommended in some reports to improve outcomes, although this was not performed in our series.

Pharmacological management was largely based on corticosteroids and azathioprine, both considered relatively safe in pregnancy^{2,6}. Five out of six women (83%) required combined therapy, while one was maintained on steroids alone. However, one patient

developed azathioprine-induced pancytopenia, which was managed successfully with drug withdrawal, transfusion support, and granulocyte colony-stimulating factor. This highlights the importance of vigilant monitoring for drug toxicity. Antihypertensives used included labetalol and nifedipine, consistent with standard recommendations.

Fetal outcomes were variable. Two patients delivered healthy term neonates, but complications included one case each of intrauterine growth restriction, stillbirth, miscarriage, and early termination. This variability reflects the burden of active disease and renovascular involvement, which compromise uteroplacental perfusion and increase the risk of fetal compromise.

Mode of delivery was individualised: Three women underwent cesarean section for obstetric or medical indications, while one achieved instrumental vaginal delivery under epidural anaesthesia. Vaginal delivery is feasible in stable disease without major cardiovascular involvement, while cesarean is reserved for obstetric or high-risk vascular indications^{5,6}.

Overall, our findings reinforce the consensus that pregnancy outcomes in TA are largely determined by disease activity, blood pressure control, and vascular distribution of lesions. Preconception counselling with optimisation of disease status, timely switching to pregnancy-safe medications, and close multidisciplinary monitoring throughout gestation remain the cornerstones of management.

7. Summary

This case series analysed six pregnancies complicated by Takayasu arteritis. Hypertension was the predominant maternal issue (87%), with severe preeclampsia and uncontrolled hypertension contributing to morbidity.

Half the women had active disease at conception, correlating with adverse outcomes including fetal growth restriction, stillbirth, miscarriage, and medical termination. Most required steroids with azathioprine; one developed drug-induced pancytopenia. Deliveries included three cesarean sections and one vaginal birth.

8. Conclusion

Pregnancy in TA is high risk, largely influenced by disease activity, vascular involvement, and blood pressure control. Preconception counselling, safe immunosuppression, strict monitoring, and multidisciplinary care are vital for achieving favourable maternal and fetal outcomes.

9. References

1. Wike WS. Large vessel vasculitis (giant cell arteritis, Takayasu arteritis). *Baillieres Clin Rheumatol.* 1997; 11(2):285-313.
2. Cunningham FG, Leveno KJ, Bloom SL, *et al.* *Williams Obstetrics.* 25th ed. New York: McGraw Hill; 2018.
3. James DK, Steer PJ, Weiner CP, Gonik B, Crowther C, Robson S. *High Risk Pregnancy.* 5th ed. Philadelphia: Elsevier; 2017.
4. Firestein GS, Budd RC, Gabriel SE, McInnes IB, O'Dell JR. *Kelley and Firestein's Textbook of Rheumatology.* 9th ed. Philadelphia: Elsevier Saunders; 2013.
5. Hidaka N, Yamanaka Y, Fujita Y, Fukushima K, Wake N. Clinical manifestations of pregnancy in patients with Takayasu arteritis: experience from a single tertiary center. *Arch Gynecol Obstet.* 2012; 285:377-85.
6. He S, *et al.* Pregnancy outcomes in Takayasu arteritis patients. *Semin Arthritis Rheum.* 2020; 55:15201.
7. Borchers AT, Naguwa SM, Keen CL, Gershwin ME. The implications of autoimmunity and pregnancy. *J Autoimmunity.* 2010; 34:J287-99.