



SILENT RISK TO CRITICAL CARE: MATERNAL AND PERINATAL OUTCOMES IN THROMBOCYTOPENIC PREGNANCIES

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ABSTRACT

Thrombocytopenia affects up to 10% of pregnancies and can range from benign gestational thrombocytopenia to life-threatening conditions such as HELLP syndrome. This prospective study aimed to evaluate the incidence, aetiology, and fetomaternal outcomes of thrombocytopenia in pregnancy. Among 13,567 deliveries, 100 women with platelet counts $<150,000/\mu\text{L}$ beyond 28 weeks gestation were studied. Gestational thrombocytopenia was the most common cause (53%). Mild thrombocytopenia was seen in 42%, moderate in 40%, and severe in 18%. Vaginal delivery was observed in 66%, and transfusion was required in 53% of cases. Maternal complications included DIC (11%) and PPH (8%). Neonatal complications included NICU admission (33%) and low birth weight (24%). Early identification and multidisciplinary management are key to favourable outcomes.

KEYWORDS : Thrombocytopenia, Pregnancy, Gestational Thrombocytopenia, Fetomaternal Outcome, Beyond 28 weeks.

INTRODUCTION

Pregnancy is a unique physiological state characterized by profound hematological, immunological, and cardiovascular adaptations that support fetal growth and development. Among these changes, alterations in the hematological system are particularly significant, including increased plasma volume, physiological anemia, and mild reductions in platelet count. Despite these expected changes, thrombocytopenia remains one of the most common hematological abnormalities encountered during pregnancy.

Thrombocytopenia, defined as a platelet count of less than $150,000/\mu\text{L}$, complicates approximately 7–10% of all pregnancies and is second only to anemia in frequency. While in many cases it represents a benign physiological variation, it can also be a manifestation of serious underlying pathology with significant implications for both maternal and fetal outcomes.

The etiology of thrombocytopenia in pregnancy is diverse and can broadly be classified into gestational (physiological) and pathological causes. Gestational thrombocytopenia accounts for nearly 70–80% of cases and is typically mild, asymptomatic, and detected incidentally during routine antenatal screening. It usually occurs in the late second or third trimester and resolves spontaneously in the postpartum period without adverse consequences.

In contrast, pathological thrombocytopenia encompasses a wide spectrum of conditions including:

- Hypertensive disorders of pregnancy such as preeclampsia, eclampsia, and HELLP syndrome
- Immune-mediated disorders such as immune thrombocytopenic purpura (ITP)
- Infectious causes including dengue and malaria
- Systemic and autoimmune disorders such as systemic lupus erythematosus (SLE)
- Obstetric emergencies like disseminated intravascular coagulation (DIC) and acute fatty liver of pregnancy (AFLP)

These conditions are often associated with moderate to severe thrombocytopenia and can lead to life-threatening complications including hemorrhage, coagulopathy, multi-organ dysfunction, and increased perinatal morbidity and mortality.

Clinically, thrombocytopenia in pregnancy poses several challenges. The condition is often asymptomatic until platelet

counts fall to critically low levels, and its presentation may overlap with other obstetric complications. Furthermore, the differentiation between benign gestational thrombocytopenia and pathological causes is crucial, as management strategies and prognostic implications differ significantly.

From an obstetric perspective, thrombocytopenia has important implications for:

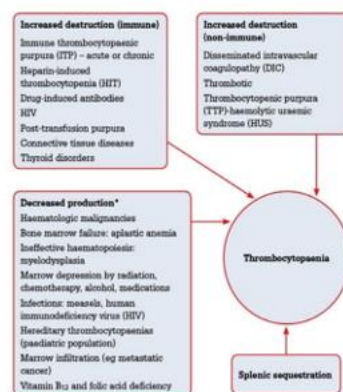
- Mode of delivery
- Use of regional anesthesia
- Risk of postpartum hemorrhage (PPH)
- Need for blood and platelet transfusion

From a fetal standpoint, certain conditions such as ITP may result in neonatal thrombocytopenia due to transplacental passage of maternal antibodies, increasing the risk of neonatal bleeding complications.

Given the wide clinical spectrum and potential for adverse outcomes, early identification, accurate etiological diagnosis, and timely intervention are essential. A multidisciplinary approach involving obstetricians, hematologists, anesthesiologists, and neonatologists is often required to optimize care.

The present study was undertaken to evaluate the incidence, etiological profile, and fetomaternal outcomes of thrombocytopenia in pregnancy in a tertiary care setting. By analyzing the severity and underlying causes, this study aims to contribute to improved risk stratification and evidence-based management of thrombocytopenia in pregnancy.

Causes:



MATERIALS AND METHODS

Study Design:

- Type: Prospective observational study
- Duration: March 2023 – March 2024
- Location: Department of Obstetrics and Gynaecology, tertiary care hospital, Maharashtra

Sample Size:

- Total deliveries: 13,567
- Study group: 100 pregnant women with platelet counts < 150,000/ μ L beyond 28 weeks

Inclusion Criteria

- Pregnant women > 28 weeks of gestation
- Platelet count < 150,000/ μ L
- Consent for participation

Exclusion Criteria

- < 28 weeks gestation
- Known drug-induced thrombocytopenia
- Non-consenting patients

Methodology

- Detailed history and clinical examination
- Platelet counts and complete blood workup
- Assessment of maternal and fetal outcomes
- Data analysis using GraphPad InStat v3.0

RESULTS

1. Incidence

- Thrombocytopenia incidence: 0.74% (100 out of 13,567)

2. Gravida Status

- Primigravida: 45%
- Multigravida (G2–G4): 48%
- Grand multipara (>G4): 7%

3. Gestational Age at Admission Table 2: Gestational Age Distribution

Gestational Age (Weeks)	Frequency (%)
29–32	5
33–36	32
37–40	61
>40	2

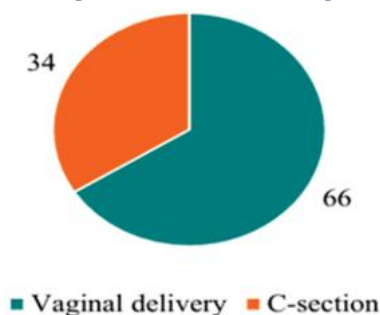
4. Causes of Thrombocytopenia Table 3: Etiological Distribution

Cause	Frequency (%)
Gestational Thrombocytopenia	53
Preeclampsia	18
HELLP Syndrome	10
Immune Thrombocytopenic Purpura	7
Eclampsia	6
Dengue	3
Acute Fatty Liver of Pregnancy	2
Systemic Lupus Erythematosus (SLE)	1

5. Severity of Thrombocytopenia Table 4: Severity Distribution

Severity	Platelet Count (μ L)	Frequency (%)
Mild	100,000 – 150,000	42
Moderate	50,000 – 100,000	40
Severe	< 50,000	18

6. Mode of Delivery Table 5: Mode of Delivery



7. Maternal Complications Table 6: Maternal Outcomes

Complication	Frequency (%)
Uneventful	61
DIC	11
Postpartum Haemorrhage (PPH)	8
Abruptio Placentae	6
ICU Admission	6
Wound/Episiotomy Hematoma	4
Pulmonary Edema, Re-exploration	2 each

8. Transfusion Requirement

- Required Transfusion: 53%
 - Platelets only: 24%
 - Blood + Platelets + FFP: 29%

9. Neonatal Outcomes Table 7: Neonatal Outcomes

Outcome	Frequency (%)
NICU Admission	33
Low Birth Weight (<2.5 kg)	24
Neonatal Thrombocytopenia	6
Neonatal Death	2

DISCUSSION

This study reaffirms that gestational thrombocytopenia is the most common cause of thrombocytopenia in pregnancy, accounting for the majority of cases and typically associated with a benign course and favorable outcomes. This observation is consistent with existing literature, where gestational thrombocytopenia contributes to nearly 70–80% of cases.

However, the study highlights that pathological thrombocytopenia—particularly hypertensive disorders and immune etiologies—significantly increases fetomaternal risk. Hypertensive disorders such as preeclampsia, eclampsia, and especially HELLP syndrome were strongly associated with severe thrombocytopenia and adverse outcomes.

HELLP syndrome, in particular, showed a clear association with severe thrombocytopenia, disseminated intravascular coagulation (DIC), and abruptio placentae, underscoring its role as a major contributor to maternal morbidity. Similarly, immune thrombocytopenic purpura (ITP) cases required active management with corticosteroids and/or intravenous immunoglobulin (IVIg) and were associated with neonatal thrombocytopenia, likely due to transplacental transfer of maternal antibodies.

Infectious and metabolic causes such as dengue and acute fatty liver of pregnancy (AFLP) were associated with systemic involvement and coagulopathy, further increasing the complexity of management.

A key finding of this study is that severity of thrombocytopenia directly correlates with maternal complications, with conditions such as DIC and postpartum hemorrhage (PPH) being significantly more common in patients with severe thrombocytopenia. This emphasizes the importance of platelet count as both a diagnostic and prognostic marker.

Overall, these findings are in agreement with multiple previous studies and strongly emphasize the need for etiology-based risk stratification rather than relying solely on platelet count. Early identification of high-risk cases and timely multidisciplinary intervention can significantly improve both maternal and neonatal outcomes.

CONCLUSION

Thrombocytopenia in pregnancy is a multifactorial condition with outcomes dependent on its cause and severity. While gestational thrombocytopenia poses minimal risk, pathological thrombocytopenia can lead to significant fetomaternal morbidity.

Routine screening, early diagnosis, and cause-specific

management—including availability of transfusion support and ICU care—are essential for improving maternal and neonatal outcomes. Multidisciplinary care involving obstetricians, hematologists, and neonatologists plays a pivotal role in high-risk cases.

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