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Original Research Article

An Observational Study Assessing Maternal and Fetal Outcomes in Pregnant Women with Isolated Thrombocytopenia

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Abstract:

Background: After anemia, thrombocytopenia is the second most frequent hematological disorder that occurs during pregnancy. Depending on severity and origin, isolated thrombocytopenia may be linked to unfavorable outcomes for both the mother and the fetus, even though most cases are benign. To avoid difficulties, early detection and proper monitoring are crucial.

Objective: To evaluate the effects of isolated thrombocytopenia on both the mother and the fetus.

Methods: Over the course of six months, from March 2025 to September 2025, this prospective observational study was carried out at Patna Medical College and Hospital (PMCH), Patna. 120 pregnant patients with isolated thrombocytopenia were included in the study. Analysis was done on platelet counts, obstetric outcomes, fetal outcomes, and maternal demographics. Descriptive statistics were used for statistical analysis.

Results: The most prevalent cause was gestational thrombocytopenia. Most women had good results and minimal thrombocytopenia. On the other hand, poor neonatal outcomes and greater maternal bleeding issues were linked to moderate to severe thrombocytopenia.

Conclusion: Although isolated thrombocytopenia during pregnancy is usually benign, careful monitoring is necessary to maximize outcomes for both the mother and the fetus, especially in moderate to severe cases.

Keywords: Isolated Thrombocytopenia, Pregnancy, Maternal Outcome, Fetal Outcome, Gestational Thrombocytopenia.

Introduction

A platelet counts of less than 150,000/µL is known as thrombocytopenia, which complicates 7–10% of pregnancies and is a common diagnostic problem in obstetric practice [1]. The illness might range from mild, self-limiting conditions to serious pathological conditions that could endanger the health of both the mother and the fetus.

A decrease in platelet counts without any underlying systemic sickness or other hematological abnormalities, such as leukopenia or anemia, is referred to as isolated thrombocytopenia [2]. About 70–80% of cases are caused by gestational thrombocytopenia, which is followed by hypertensive disorders of pregnancy and immune thrombocytopenic purpura (ITP) [3].

Even though prenatal thrombocytopenia is typically regarded as benign, it is crucial to distinguish it from pathological reasons since severe thrombocytopenia can impact newborn platelet counts and put women at risk for antepartum, intrapartum, or postpartum hemorrhage [4]. Preterm birth, intrauterine growth restriction, and neonatal thrombocytopenia are among the fetal concerns, especially in immune-mediated disorders [5]. This study was conducted to assess maternal and fetal outcomes associated with isolated thrombocytopenia during pregnancy due to the paucity of data from eastern India, particularly from tertiary care facilities serving a sizable referral population.

Materials and Methods

Study Design and Setting: This prospective observational study was carried out at Patna Medical College and Hospital (PMCH), a tertiary care referral facility in Bihar, in the Department of Obstetrics and Gynecology.

Study Duration: The investigation was carried out from March 2025 to September 2025, a span of six months.

Study Population and Sample Size: The study included 120 pregnant women who had been diagnosed with isolated thrombocytopenia.

Inclusion Criteria

- Women with a platelet count of less than 150,000/μL who are pregnant, regardless of gestational age.
- Women who have isolated thrombocytopenia but no leukopenia, anemia, or systemic disease.
- Singleton pregnancy.

Exclusion Criteria

- Women with hematological problems, such as pancytopenia.
- Pregnant women who already have autoimmune diseases, renal illness, liver disease, or infections that might induce thrombocytopenia.
- Multiple pregnancy.

Data Collection: Age, parity, gestational age at diagnosis, and prenatal problems were all noted in the comprehensive obstetric and demographic histories. Throughout pregnancy, platelet counts were tracked. Thrombocytopenia was categorized as severe (<50,000/μL), moderate (50,000–99,000/μL), or mild (100,000–149,000/μL) [6].

The manner of birth, intrapartum and postpartum hemorrhage, requirement for blood or platelet transfusions, and maternal morbidity were among the maternal outcomes evaluated. Birth weight, gestational age at delivery, Apgar scores, admission to the neonatal intensive care unit (NICU), and neonatal thrombocytopenia were all considered fetal outcomes.

Statistical Analysis: Descriptive statistics were used to evaluate the data once it was imported into Microsoft Excel. Frequencies, percentages, means, and standard deviations were used to express the results.

Ethical Considerations: The Institutional Ethics Committee of PMCH, Patna, granted ethical permission. Every participant provided written informed permission.

Results

120 pregnant women with isolated thrombocytopenia were included in the trial, and they were tracked until birth. All enrolled participants completed the study, and outcome data were available for both maternal and neonatal measures.

Demographic and Obstetric Characteristics: With a mean maternal age of 26.8 ± 4.2 years, the bulk of the study population (60% of cases) were in the 21–30 age range. Thirty percent of the cohort were women over thirty, and the percentage of adolescent pregnancies was lower. Most individuals (61.7%) were multigravida women, suggesting a higher incidence of thrombocytopenia detection in future pregnancies. In terms of gestational age upon diagnosis, 56.7% of the women received a diagnosis in the third trimester. The normal prenatal screening that revealed decreasing platelet counts toward term was primarily responsible for this delayed manifestation. Only 15% of instances were diagnosed in the first trimester, indicating that isolated thrombocytopenia is more commonly found as pregnancy progresses.

Table 1: Demographic and Obstetric Profile of Study Participants (n = 120)

Parameter	Number (%)
Age <20 years	12 (10.0)
Age 21–30 years	72 (60.0)
Age >30 years	36 (30.0)
Primigravida	46 (38.3)
Multigravida	74 (61.7)
Diagnosis in 1st trimester	18 (15.0)
Diagnosis in 2nd trimester	34 (28.3)
Diagnosis in 3rd trimester	68 (56.7)

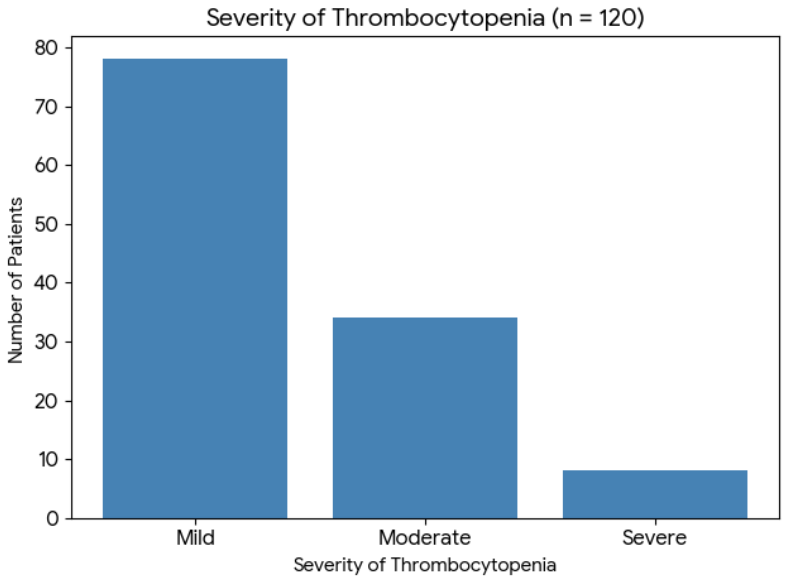

Figure 1: Distribution of severity of thrombocytopenia among pregnant women.

Severity and Etiology of Thrombocytopenia: 65% of women had mild thrombocytopenia, which was the most common presentation based on platelet counts. Only 6.7% of the study group had severe thrombocytopenia, whereas 28.3% of cases had moderate thrombocytopenia. At diagnosis, the average platelet count was 108,400 ± 24,600/µL. With 73.3% of cases, gestational thrombocytopenia was shown to be the most common cause. Preeclampsia and other hypertensive diseases of pregnancy accounted for 8.4% of cases, whereas immune thrombocytopenic purpura (ITP) was detected in 18.3% of women. Compared to women with gestational thrombocytopenia, those with ITP had a disproportionately greater rate of severe thrombocytopenia.

Table 2: Severity and Etiology of Thrombocytopenia

Parameter	Number (%)
Mild thrombocytopenia	78 (65.0)
Moderate thrombocytopenia	34 (28.3)
Severe thrombocytopenia	8 (6.7)
Gestational thrombocytopenia	88 (73.3)
Immune thrombocytopenic purpura	22 (18.3)
Hypertensive disorders	10 (8.4)

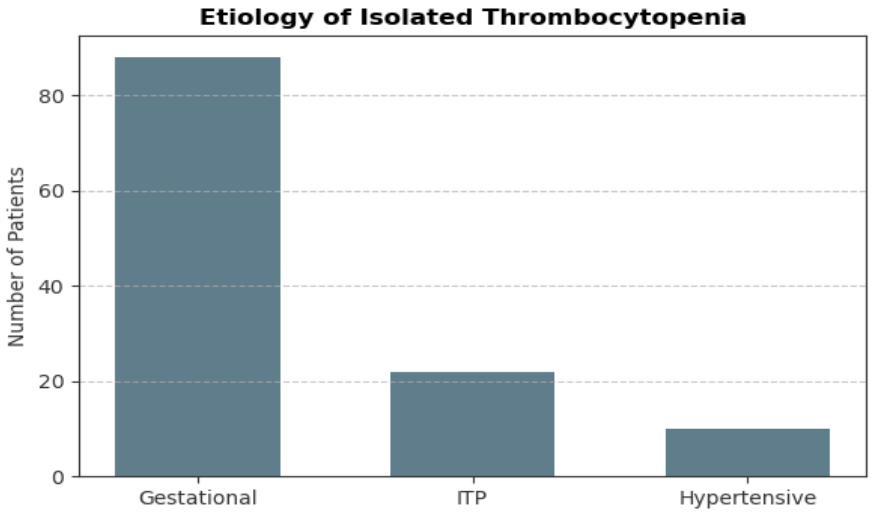

Figure 2: Etiological distribution of isolated thrombocytopenia in pregnancy.

Maternal Outcomes: 38.3% of women had a cesarean section, whereas 61.7% of women delivered their babies vaginally. Rather than only thrombocytopenia, obstetric factors such fetal distress, prior cesarean sections, and non-progress of labor were the main indications for cesarean deliveries.

11.7% of individuals had postpartum hemorrhage (PPH), which was much more likely in women with moderate to severe thrombocytopenia. 8.3% of women, primarily those with platelet counts below 50,000/μL, needed platelet transfusions either therapeutically in the event of bleeding or prophylactically before to birth. Ten percent of women needed blood transfusions, mostly because of PPH.A little percentage of women (3.3%) needed to be admitted to the maternal critical care unit, mostly for the treatment of severe thrombocytopenia made worse by bleeding or related hypertension problems. During the study period, there were no reports of maternal death.

Table 3: Maternal Outcomes

Outcome	Number (%)
Vaginal delivery	74 (61.7)
Cesarean section	46 (38.3)
Postpartum hemorrhage	14 (11.7)
Platelet transfusion required	10 (8.3)
Blood transfusion required	12 (10.0)
Maternal ICU admission	4 (3.3)

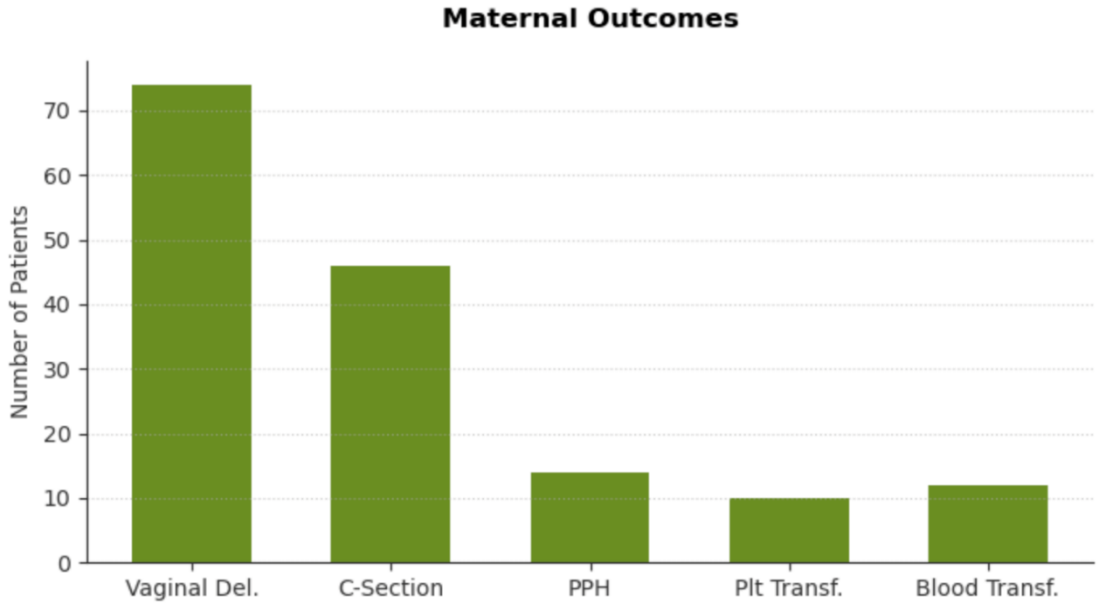

Figure 3: Maternal outcomes in pregnant women with isolated thrombocytopenia.

Fetal and Neonatal Outcomes: Eighty percent of births were at term, while twenty percent were premature. 18.3% of newborns had low birth weight, especially those whose mothers had hypertensive problems and moderate to severe thrombocytopenia. 16.7% of newborns needed to be admitted to the NICU, primarily because of prematurity, low birth weight, or neonatal thrombocytopenia. Ten percent of neonates had neonatal thrombocytopenia, which was more common in babies born to moms with ITP. Two cases (1.7%) of perinatal mortality were noted; both were linked to severe maternal illness and extreme preterm.

Table 4: Fetal and Neonatal Outcomes

Outcome	Number (%)
Term delivery	96 (80.0)
Preterm delivery	24 (20.0)
Low birth weight	22 (18.3)
NICU admission	20 (16.7)
Neonatal thrombocytopenia	12 (10.0)
Perinatal mortality	2 (1.7)

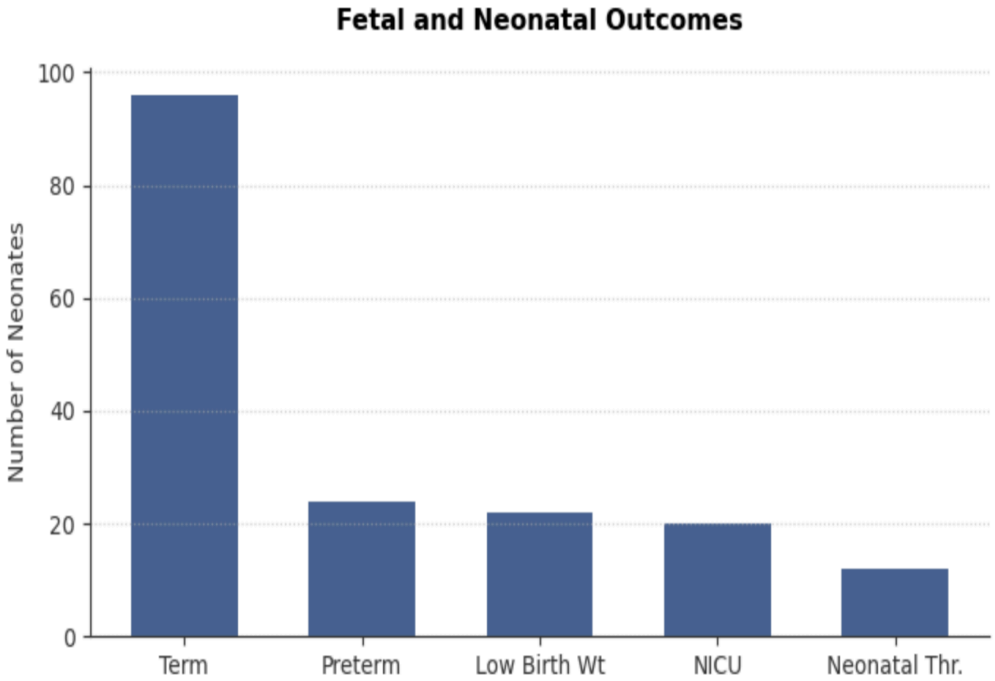

Figure 4: Fetal and neonatal outcomes associated with isolated thrombocytopenia.

Discussion

Due to its many causes and unpredictable clinical consequences, thrombocytopenia continues to be one of the most common hematological disorders during pregnancy and presents a diagnostic and treatment challenge. The current observational study assessed the outcomes for both the mother and the fetus in pregnant patients with isolated thrombocytopenia at a tertiary care facility in eastern India, offering important information about the clinical range and consequences of this condition. The preponderance of women in the 21–30 age range found in this study is in line with results from previous research carried out in comparable contexts [1,3] and represents the typical reproductive age distribution in India. The greater percentage of multigravida women raises the possibility that thrombocytopenia will be found more often in subsequent pregnancies, perhaps as a result of increased prenatal monitoring or a return of gestational thrombocytopenia.

The fact that over half of the cases were diagnosed in the third trimester was one of the study's noteworthy findings. This finding is consistent with previous research showing that hemodilution, increased platelet consumption, and rapid clearance are the main causes of gestational thrombocytopenia, which frequently appears or becomes apparent late in pregnancy [2,4]. Immune-mediated etiologies such ITP were more commonly linked to early trimester diagnosis, which was very rare.

The majority of women had moderate thrombocytopenia, which is consistent with earlier observations that characterize gestational thrombocytopenia as a benign and self-limiting disease [3,7]. Severe thrombocytopenia was rare and mostly linked to pregnancy-related hypertension diseases and ITP. This differential is therapeutically significant since platelet counts below 50,000/µL significantly increase the risk of bleeding problems [6].

With approximately three-fourths of instances, gestational thrombocytopenia was shown to be the most frequent cause. This percentage is similar to what Burrows and Kelton and other population-based studies have reported [1,4]. Crucially, the benign nature of pregnant thrombocytopenia was reinforced by the fact that women with this illness typically maintained stable platelet counts and did not have substantial hemorrhagic consequences. Women with ITP, on the other hand, showed lower platelet counts and a greater need for platelet transfusions, highlighting the necessity of customized care.

In the current study, maternal outcomes were generally positive. The most common birth method was vaginal delivery, and thrombocytopenia by itself was not regarded as a reason for a cesarean section. International guidelines, which stress that obstetric indications rather than platelet count alone should determine the route of delivery, support this strategy [9]. However, women with moderate to severe thrombocytopenia had a greater incidence of postpartum hemorrhage, underscoring the significance of anticipating and planning for hemorrhagic problems in this subgroup.

Women with severe thrombocytopenia were the only ones who needed blood and platelet transfusions. Preventive platelet transfusion prior to delivery reduced bleeding problems, which is in line with existing guidelines for high-risk patient care [6]. The lack of maternal mortality in this study illustrates the advantages of prompt diagnosis, careful observation, and interdisciplinary care in a tertiary care environment.

In general, fetal and neonatal outcomes were encouraging, especially when mild thrombocytopenia was present. Most newborns had acceptable birth weights and were delivered on schedule. However, women with moderate to severe thrombocytopenia and those with related hypertension diseases had higher rates of preterm birth and low birth weight, indicating an indirect impact of maternal disease severity on fetal growth and gestational duration [5,8].

Ten percent of patients had neonatal thrombocytopenia, mostly in babies born to women with ITP. This result is in line with other research showing antiplatelet antibody transplacental transit in immune-mediated thrombocytopenia [10]. Even though the majority of afflicted newborns showed no symptoms, early detection and observation are still crucial to avoiding hemorrhagic consequences.

This study's low perinatal mortality rate highlights the value of institutional delivery and newborn care facilities and compares well with previous results. However, the need for early risk classification and referral is highlighted by unfavorable results in cases of extreme preterm.

Overall, this study supports the idea that isolated thrombocytopenia during pregnancy is typically benign but needs to be carefully examined to rule out pathogenic reasons. Optimizing results requires regular prenatal platelet count monitoring, adequate delivery planning, and collaboration between obstetricians, hematologists, and neonatologists.

Limitations

While interpreting the results, it is important to recognize the limitations of the current study. First, the study was only carried out at one tertiary care facility, which would restrict how broadly the findings can be applied, especially to primary or secondary healthcare settings. Second, delayed postpartum problems and long-term neonatal outcomes could not be evaluated due to the study's brief duration and lack of long-term mother and neonatal follow-up. Third, not all participants had access to modern immunological tests for conclusive distinction of immune-mediated thrombocytopenia, even though cases were categorized based on clinical and laboratory results. Furthermore, the study's descriptive observational methodology and lack of a control group of pregnant women with normal platelet counts made it more difficult to determine causal relationships. Notwithstanding these drawbacks, the study offers insightful information about the clinical characteristics and consequences of isolated thrombocytopenia in pregnancy in an actual tertiary care setting.

Conclusion

A common hematological finding during pregnancy is isolated thrombocytopenia, which often manifests as moderate thrombocytopenia due to gestational reasons. The results of this study show that most women with isolated thrombocytopenia have good outcomes for both the mother and the fetus, especially if platelet counts stay over 100,000/μL. However, moderate to severe thrombocytopenia is linked to a higher risk of maternal bleeding difficulties, the need for transfusions, preterm birth, and unfavorable neonatal outcomes, particularly when linked to immune-mediated etiologies or hypertensive diseases.

Early identification, regular monitoring of platelet counts, and appropriate risk stratification are essential to optimize outcomes. Multidisciplinary management involving obstetricians, hematologists, anesthesiologists, and neonatologists plays a crucial role in reducing morbidity. Thrombocytopenia alone should not dictate the mode of delivery, and obstetric indications should guide decision-making. Overall, with vigilant antenatal surveillance and timely intervention, isolated thrombocytopenia in pregnancy can be managed safely with favorable maternal and fetal outcomes.

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