

# **Original Research Article**

# **PREVALENCEOFTHROMBOCYTOPENIAINPREGNANCY AND ITS FETOMATERNAL OUTCOME**

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#### ABSTRACT

**Background:** Thrombocytopenia in pregnant women has been defined as platelet count less than 150 X 109/L. It is the second most common haematological abnormality during pregnancy, after anaemia. Thrombocytopenia, defined as a low platelet count (platelet count < 150 x 109/L), is observed in approximately 7% to 12% of all pregnancies, with gestational thrombocytopenia (GT) being the most common cause.

**Materials and Methods:** A prospective observational study was conducted in all pregnant women >/28 weeks of gestation coming at NDMC Medical College & Hindu Rao Hospital after meeting inclusion and exclusion criteria. A total of 150 patients were taken.

**Results:** Out of 150 patients enrolled for study 37 women were found to be having thrombocytopenia and 113women had normal platelet count. The prevalence of thrombocytopenia was 24.67%. Mild thrombocytopenia was the most common (48.65%) followed by moderate (45.95%). Severe thrombocytopenia was seen only in 5.41%.

**Conclusion:** The prevalence of thrombocytopenia was 24.67%. Out of which mild thrombocytopenia was most common. Thrombocytopenia is adversely associated with fetomaternal outcome.

**Keywords:** Thrombocytopenia, Gestational Thrombocytopenia, Postpartum Haemorrhage.

# **INTRODUCTION**

Thrombocytopenia in pregnant women has been defined as platelet count less than 150 X 109/L.<sup>[1]</sup> It is the second most common haematological abnormality during pregnancy, after anaemia. Prevalence of gestational thrombocytopenia is 7-12% pregnancies at the time of delivery,<sup>[1]</sup> Women in third trimester of pregnancy have significantly lower mean platelet count than non-pregnant women.<sup>[2]</sup> Thrombocytopenia can may be specific to pregnancy including HELLP syndrome [haemolysis, elevated liver enzymes and low platelets], severe preeclampsia and acute fatty liver of pregnancy or pregnancy-unrelated and poses maternal and foetal morbidity.<sup>[2-4]</sup> Thrombocytopenia in pregnancy can lead to serious bleeding complications in the mother and neonates during delivery or postpartum period. Severity depends upon the cause and grading of thrombocytopenia.<sup>[5,6]</sup>

This study aims to determine the prevalence of thrombocytopenia and its foetomaternal outcome in patients attending antenatal clinic at North DMC Medical College & Hindu Rao Hospital, Delhi. **Objectives** 

- To determine the prevalence of thrombocytopenia in pregnancy
- Identify risk factors associated with of thrombocytopenia in pregnancy
- To evaluate impact of thrombocytopenia on maternal and foetal outcome.

# **MATERIALS AND METHODS**

Study Design: Cross-sectional study.

**Period of Study:** One year from March 2023 to February 2024.

**Study Population:** All consecutive patients in the third trimester of pregnancy attending antenatal clinic

at North DMC Medical College & Hindu Rao Hospital, Delhi.

**Sample Size:** A sample size of 150 has been calculated with a reported prevalence of 8-9% thrombocytopenia in third trimester of pregnancy, to achieve 80% power with 0.05 level of significance.

#### Inclusion Criteria

- Women in third trimester of pregnancy (> 28 weeks)
- Women willing to participate.

#### **Exclusion Criteria**

• Women with known haematological disorders

Data collection: Blood samples will be collected from all participants and analyzed for platelet count. Participants will also be asked to complete a survey to collect demographic and clinical data, including gestational age, hypertension, and anaemia.

**Outcomes:** Primary outcome will be the prevalence of thrombocytopenia. Secondary outcome will include maternal and foetal outcomes, such as maternal bleeding, preterm birth, and low birth weight.

**Statistical Analysis:** The presentation of the Categorical variables was done in the form of number

and percentage (%). On the other hand, the quantitative data were presented as the means  $\pm$  SD and as median with 25th and 75th percentiles (interquartile range). The association of the variables which were qualitative in nature were analysed using Chi-Square test. If any cell had an expected value of less than 5 then Fisher's exact test was used.

The data entry was done in the Microsoft EXCEL spreadsheet and the final analysis was done with the use of Statistical Package for Social Sciences (SPSS) software, IBM manufacturer, Chicago, USA, ver 25.0.

For statistical significance, p value of less than 0.05 was considered statistically significant.

## **RESULTS**

Thrombocytopenia was absent in 113 (75.33%) cases and present in 37 (24.67%) cases. Among those with thrombocytopenia, 18(48.65%) had mild, 17(45.95%) had moderate and 2(5.41%) had severe thrombocytopenia. Mean  $\pm$  SD platelet count was 211.6  $\pm$  90.4 cells/µL, with median (25th–75th percentile) of 211 (150.25–248) cells/µL [Table 1]

Fable 1: Platelet count distribution.							
Platelet count	N (%)	Mean ± SD	Median(25th-75th percentile)	Range			
Thrombocytopenia							
No	113 (75.33%)	-	-	-			
Yes	37 (24.67%)						
Platelet count (cells/µL)							
Mild thrombocytopenia	18 (48.65%)	$211.6\pm90.4$	211(150.25-248)	45-550			
Moderate thrombocytopenia	17 (45.95%)						
Severe thrombocytopenia	2 (5.41%)						

#### Table 2: Maternal outcome distribution.

Motormal outcome	Motomol outcome Executionary Demonstrate							
Maternal outcome	Frequency	Percentage						
Maternal outcome								
Alive	150	100%						
Complications in mother								
Nil	143	95.33%						
ICU	1	0.67%						
PPH	6	4.00%						
Mode of delivery								
NVD	106	70.67%						
LSCS	44	29.33%						

All mothers survived. Complications were absent in 143 (95.33%) cases, while 6 (4.00%) had postpartum haemorrhage (PPH) and 1 (0.67%) required ICU admission. Mode of delivery was normal vaginal

delivery (NVD) in 106 (70.67%) cases and lower segment caesarean section (LSCS) in 44 (29.33%) cases [Table 2].

Table 3: Fetal outcome {NICU admission} distribution.						
Fetal outcome (NICU admission)	Frequency	Percentage				
No	134	89.33%				
Yes	16	10.67%				
Total	150	100.00%				

Fetal outcome in terms of NICU admission was not required in 134 (89.33%) cases, while 16 (10.67%) cases required NICU admission [Table 3].

Fable 4: Association of maternal outcome with thrombocytopenia.							
Maternal outcome	Patients with	thrombocytopenia	Patients with	out 7	Fotal	P value	
	(n=37)		thrombocytopenia (n=113	3)			
Maternal outcome							
Alive	37 (100%)		113 (100%)	1	150 (100%)	NA	
Complications in mother	•						

Nil	31 (83.78%)	112 (99.12%)	143 (95.33%)	0.0009*
ICU	0 (0%)	1 (0.88%)	1 (0.67%)	1*
PPH	6 (16.22%)	0 (0%)	6 (4%)	0.0002*
Mode of delivery				
NVD	16 (43.24%)	90 (79.65%)	106 (70.67%)	<.0001†
LSCS	21 (56.76%)	23 (20.35%)	44 (29.33%)	

\* Fisher's exact test, † Chi square test

Compared to patients without thrombocytopenia, those with thrombocytopenia had significantly higher PPH (16.22% vs. 0%, p value = 0.0002). Distribution of ICU admission was comparable, with no ICU admission observed in patients with thrombocytopenia (0%) compared to 0.88% in patients without thrombocytopenia (p value = 1). Mode of delivery demonstrated significant variation with respect to thrombocytopenia status (p value <

0.0001). Proportion of patients undergoing LSCS was significantly higher in those with thrombocytopenia (56.76% vs. 20.35%), whereas rate of NVD was significantly lower (43.24% vs. 79.65%) compared to patients without thrombocytopenia.

Survival rate of mothers was 100% in both thrombocytopenia and non-thrombocytopenia groups [Table 4].

Table 5: Association of foetal outcome {NICU admission} with thrombocytopenia.							
Foetal outcome {NICU	Patients	with	Patients	without	Total	P value	
admission}	thrombocytopenia(n=37)		thrombocytope	nia(n=113)			
No	27 (72.97%)		107 (94.69%)		134 (89.33%)	0.0002†	
Yes	10 (27.03%)		6 (5.31%)		16 (10.67%)		
Total	37 (100%)		113 (100%)		150 (100%)		

Compared to patients without thrombocytopenia, those with thrombocytopenia had significantly higher proportion of NICU admissions (27.03% vs. 5.31%)

and significantly lower proportion of neonates not requiring NICU admission (72.97% vs. 94.69%) (p value = 0.0002) [Table 5]

Fable 6: Association of maternal outcome with severity of thrombocytopenia.							
Maternal	Mild thrombocytopenia	Moderate	Severe	Total	Р		
outcome	(n=18)	thrombocytopenia (n=17)	thrombocytopenia (n=2)		value		
Maternal outcom	me						
Alive	18 (100%)	17 (100%)	2 (100%)	37 (100%)	NA		
Complications	in mother						
Nil	16 (88.89%)	13 (76.47%)	2 (100%)	31 (83.78%)	0.582*		
PPH	2 (11.11%)	4 (23.53%)	0 (0%)	6 (16.22%)			
Mode of deliver	ry						
NVD	7 (38.89%)	9 (52.94%)	0 (0%)	16 (43.24%)	0.428*		
LSCS	11 (61.11%)	8 (47.06%)	2 (100%)	21 (56.76%)			
* 1. 1							

\* Fisher's exact test

Maternal complications were comparable across thrombocytopenia severity (p value = 0.582): No complications were observed in 88.89% in mild cases vs. 76.47% in moderate vs. 100% in severe thrombocytopenia and PPH in 11.11% vs. 23.53% vs. 0% respectively. Mode of delivery was also

comparable (p value = 0.428): NVD in 38.89% vs. 52.94% vs. 0% and LSCS in 61.11% vs. 47.06% vs. 100% respectively. Maternal outcome was favorable in all cases, with 100% alive across mild, moderate and severe thrombocytopenia groups [Table 6].

Fable 7: Association of foetal outcome {NICU admission} with severity of thrombocytopenia.							
Foetal outcome	Mild	Moderate	Severe	Total	P value		
{NICU	thrombocytopenia	thrombocytopenia	thrombocytopenia				
admission}	( <b>n=18</b> )	( <b>n=17</b> )	(n=2)				
No	12 (66.67%)	13 (76.47%)	2 (100%)	27 (72.97%)	0.848*		
Yes	6 (33.33%)	4 (23.53%)	0 (0%)	10 (27.03%)			
Total	18 (100%)	17 (100%)	2 (100%)	37 (100%)			

\* Fisher's exact test

Distribution of fetal outcome in terms of NICU admission was comparable with severity of thrombocytopenia (p value = 0.848). NICU admission was not required in 66.67% of mild vs. 76.47% of moderate vs. 100% of severe thrombocytopenia cases, while admission was required in 33.33% vs. 23.53% vs. 0% respectively [Table 7].

# DISCUSSION

In the present study prevalence of thrombocytopenia was found to be 24.67%. Prevalence of thrombocytopenia in several other studies varies from 6 to 12%. In initial studies by Burrows RF and Kelton JG,<sup>[3]</sup> prevalence was reported as around

7.6%. Singh J et al,<sup>[7]</sup> found incidence of thrombocytopenia to be 34%.

In our study, majority of the women had mild grade of thrombocytopenia i.e. 18 (48.65%%) followed by 17 (45.95%) than with severe grade and 2(5.41%%) had mild grade of thrombocytopenia.

Singh N et al,<sup>[8]</sup> reported prevalence of 74.7% 17.9% and 7.4% of mild, moderate and severe thrombocytopenia in their study.

Borna et al,<sup>[9]</sup> reported prevalence of 54% 30% and 16% of mild, moderate and severe thrombocytopenia in their study.

Chauhan V et al,<sup>[10]</sup> found that 63% of the women had mild thrombocytopenia while 35.4% and 1.5% of women were moderate and severe thrombocytopenic respectively.

In our study as compared to patients without thrombocytopenia, those with thrombocytopenia had significantly higher PPH (16.22% vs. 0%, p value = 0.0002).

Webert et al,<sup>[11]</sup> found that women with thrombocytopenia had moderate to severe bleeding in 21.5% of cases, and 31.1% of their patients required treatment to increase platelet counts.

Mode of delivery demonstrated significant variation with respect to thrombocytopenia status (p value <0.0001). Proportion of patients undergoing LSCS significantly higher in those was with thrombocytopenia (56.76% vs. 20.35%), whereas rate of NVD was significantly lower (43.24% vs. 79.65%) compared to patients without thrombocytopenia.

In a study conducted by Kadiyala T et al,<sup>[12]</sup> showed that 45.7% underwent Caesarean section (CS), 52.17% had spontaneous vaginal delivery (SVD) and 2.17% had vacuum-assisted vaginal delivery (VAVD).

In our study compared to patients without thrombocytopenia, those with thrombocytopenia had significantly higher proportion of NICU admissions (27.03% vs. 5.31%) and significantly lower proportion of neonates not requiring NICU admission (72.97% vs. 94.69%) (p value = 0.0002)

Tas and Gunenc et al,<sup>[13]</sup> reported no significant association between NICU admissions and GT. Elveđi-Gašparović and colleagues,<sup>[14]</sup> conducted a retrospective analysis comparing gestational thrombocytopenia with a control group and observed notable increase in need for NICU admission, lower 1st minute APGAR scores than control group.

In our study distribution of fetal outcome in terms of NICU admission was comparable with severity of thrombocytopenia (p value = 0.848). NICU admission was not required in 66.67% of mild vs. 76.47% of moderate vs. 100% of severe thrombocytopenia cases, while admission was required in 33.33% vs. 23.53% vs. 0% respectively. Similar study was found in a study conducted by Singh J et al.<sup>[7]</sup>

### CONCLUSION

Thrombocytopenia is the second most common hematological disorder. Mild thrombocytopenia is the commonest. There is a positive correlation between thrombocytopenia with adverse fetomaternal outcome. Therefore, platelet count periodically should be monitored. Proper antenatal care and institutional deliveries enable obstetricians to diagnose thrombocytopenia and its complication at an early stage and early intervention results in better outcome. Further studies are the need of hour to screen high risk population with thrombocytopenia to make the effective screening and management programme.

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