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THE CLINICAL AND PARACLINICAL FEATURES AND TREATMENT OUTCOMES OF PLACENTA PREVIA AT A THAI NGUYEN HOSPITAL

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ABSTRACT

Objective: To describe clinical and paraclinical characteristics and outcomes of managing pregnant women with placenta previa at A Thai Nguyen Hospital.

Methods: A cross-sectional descriptive study of 84 pregnant women with placenta previa based on clinical and ultrasound findings, with a gestational age of 28 weeks or more, conducted from 01 June 2022 to 31 May 2025 at A Thai Nguyen Hospital.

Results: Placenta previa is most common in pregnant women aged 25–34 years old, accounting for 56.0%, 72.6% were multigravida, 64.3% were previous cesarean. Clinical features included vaginal bleeding in 59.5% of all cases, 47.6% had complete placenta previa. The cesarean delivery rate was 95.2%. X-stitch sutures at the placental attachment site, accounting for 58.8%. The mean gestational age at delivery was 37.2 ± 1.9 weeks.

Conclusion: Vaginal bleeding is a common symptom of placenta previa. The rate of successful hemostasis in the study was high (95.0%).

Keywords: Placenta previa, cesarean section, complete placenta previa.

1. PROBLEM STATEMENT

Placenta previa is when the placenta partially or completely attaches to the lower segment of the uterus, obstructing the fetal exit during labor. Placenta previa is one of the placental location disorders and is one of the causes of bleeding in the last 3 months of pregnancy, during labor, and postpartum. The rate of placenta previa is 3–5 cases per 1000 pregnancies worldwide. It tends to increase, possibly due to the increasing rate of cesarean section as well as the development of assisted reproductive technologies. In Viet Nam, recently, the rate of placenta previa tends to rise; in 2013, the study by author Tran Bang Huyen reported a placenta previa rate of 2.12% [1], and in 2023, according to author Lam Duc Tam and co-authors, the overall rate of placenta previa was 7.36% [2].

Placenta previa is a disorder causing many severe complications for both mother and child, among which about one-third of prenatal bleeding cases are due to placenta previa, leading to blood transfusion, increased transfusion-related complications, hysterectomy due to uncontrolled bleeding, and increased rates of surgical complications: 98% of placenta previa cases require cesarean section [3, 4]. Previously, placenta previa caused a relatively high maternal mortality rate. Nowadays, along with the development of prenatal care systems and cesarean section techniques, close pregnancy management, advances in emergency resuscitation techniques, and public awareness have significantly reduced mortality due to placenta previa. Regarding the child, research by Adere and co-authors showed that compared to cases without placenta previa, mothers with placenta previa have an 8-fold higher risk of preterm birth [5], which is one of the leading causes of neonatal mortality. The study by Truong Thi Linh Giang and co-authors in 2023 reported a neonatal mortality rate of 3.1% [6], and, according to Nguyen Thi Hong and co-authors in 2025, this rate was 2.9% [7].

To enable early diagnosis of placenta previa for timely, appropriate, and rational management, ensuring safety for both mother and fetus, and minimizing complications, we conducted the study “Clinical and Paraclinical Characteristics and Treatment Outcomes of

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Patients with Placenta Previa at A Thai Nguyen Hospital" with the objective: To describe the clinical and paraclinical characteristics and analyze the management outcomes of patients with placenta previa at A Thai Nguyen Hospital.

2. METHODS

2.1. Research design

- Research method: descriptive study.

- Study design: cross-sectional study.

2.2. Research location and time

- Research period: from 01 June 2022 to 31 May 2025.

- Research location: Department of Obstetrics, A Thai Nguyen Hospital.

2.3. Study subjects

Pregnant women diagnosed with placenta previa clinically and by ultrasound with gestational age from 28 weeks or more, who were treated at the Department of Obstetrics, A Thai Nguyen Hospital.

2.3.1. Inclusion criteria

- Live gestational age ≥ 28 weeks (calculated by last menstrual period or by first-trimester ultrasound).

- Diagnosed with placenta previa based on clinical and paraclinical findings.

- Fully monitored and treated at the hospital.

- Medical records are fully documented.

** Diagnostic criteria for placenta previa*

- Clinical:

+ Vaginal bleeding occurs spontaneously and suddenly without warning signs, bright red blood mixed with clots, recurring multiple times.

+ After placental expulsion, measure the distance from the edge of the ruptured membranes to the nearest edge of the placenta < 10 cm.

- Paraclinical:

+ Ultrasound: perform an ultrasound with a full bladder to determine the placental attachment site, measure the distance from the placental edge to the internal cervical os:

+ Low-lying placenta: distance from the lower edge of the placenta to the internal cervical os is less than 20 mm.

+ Marginal placenta previa: distance from the lower edge of the placenta to the internal cervical os is at the margin.

+ Subtotal placenta previa: placental edge reaches the internal cervical os.

+ Complete placenta previa: placenta covers the internal cervical os.

2.3.2. Exclusion criteria

- Multiple pregnancies.

- Pregnant women diagnosed prenatally with placenta previa but found not to have placenta previa after delivery.

- Accompanying internal medicine, surgical, or psychiatric disorders.

2.4. Study sample size

All cases diagnosed with placenta previa from 01 June 2022 to 31 May 2025 at A Hospital were included. Of these, 84 cases had a gestational age of 28 weeks or more, meeting the inclusion criteria for this study.

2.5. Variables, indicators, content, and research topic

- General characteristics of pregnant women: maternal age, number of pregnancies, history of abortion or uterine evacuation, and history of cesarean section.

- Clinical and paraclinical characteristics: vaginal bleeding, fetal presentation, classification of placenta previa.

- Management outcomes of placenta previa: gestational age at admission and delivery, method of pregnancy termination, and hemostatic method during cesarean section.

2.6. Techniques, tools, and data collection procedures

Data were collected retrospectively from electronic medical records stored in the hospital's software. The keyword "Placenta previa" was used to select medical records. Eligible records were selected for data collection. The data were recorded in information collection forms.

2.7. Data processing and analysis

Data were entered and analyzed using the statistical software SPSS 25 and Epi Info 7.

Statistical methods: descriptive statistics with frequency (N) and percentage (%) for qualitative variables, mean and standard deviation ($\bar{X} \pm SD$) for quantitative variables.

2.8. Research ethics

The study was approved by the Ethics Committee of the University of Medicine and Pharmacy, Thai Nguyen University, and A Hospital, Thai Nguyen. The research records were kept confidential, without disclosing any information about the pregnant women's names or other personal characteristics.

3. RESULTS

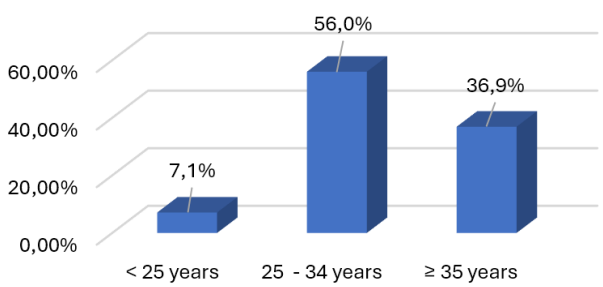

Chart 1. Distribution by maternal age group

The rate of placenta previa in the age group 25–34 was the highest at 56.0%.

Table 1. Distribution of the obstetric history of the studied pregnant women

		Quantity (n)	Ratio (%)
Number of pregnancies	0	23	27.4
	1	29	34.5
	≥ 2	32	38.1
	Total	84	100
Suction abortion	0	48	57.2
	1	18	21.4
	≥ 2	18	21.4
	Total	84	100
Surgical abortion	0	54	64.3
	1	20	23.8
	≥ 2	10	11.9
	Total	84	100

The rate of placenta previa in women with a second or higher pregnancy was the highest at 38.1%. The rate of pregnant women with placenta previa who had never had an abortion/uterine evacuation was the highest at 57.2%. The rate of pregnant women with placenta previa who had never had a cesarean section was the highest at 64.3%.

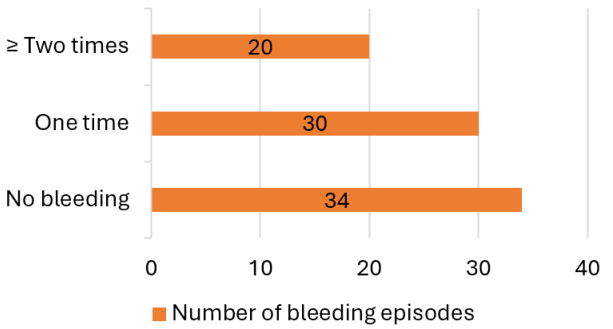

Chart 2. Distribution of recurrent bleeding in the studied pregnant women

There were 59.5% of cases with bleeding at least once during the entire pregnancy.

Table 2. Paraclinical characteristics

Characteristics	Quantity (n = 84)	Ratio (%)
Fetal presentation		
Cephalic presentation	71	84.5
Abnormal presentation	13	15.5
Classification of placenta previa		
Complete placenta previa	40	47.6
Subtotal placenta previa	12	14.3
Marginal placenta previa	19	22.6
Low-lying placenta	13	15.5

The rate of abnormal fetal presentation was 15.5%. The rate of complete placenta previa was the highest at 47.6%.

Table 3. Distribution of gestational age at admission and at delivery

Time point	Gestational age					
	28 - 32		33 - 36		≥ 37	
	QTY	%	QTY	%	QTY	%
At admission	7	8.3	31	36.9	46	54.8
At delivery	3	3.6	21	25.0	60	71.4

Average Gestational age at admission: 36.1 ± 2.5 weeks

Gestational age at delivery: 37.2 ± 1.9 weeks

The rate of term fetuses at admission was 54.8%, and the rate of term newborns at delivery was 71.4%. The mean gestational age at delivery was 37.2 ± 1.6 weeks.

Table 4. Methods of pregnancy termination in placenta previa

Indication for surgery	Quantity	Ratio %
Emergency cesarean section		
Placenta previa with bleeding	32	38.1
Placenta previa + premature rupture of membranes	2	2.4
Elective cesarean section		
Term placenta previa	29	34.5
Placenta previa + previous cesarean section	5	6.0
Placenta previa + abnormal fetal presentation	9	10.6
Placenta previa + other reasons	3	3.6
Vaginal delivery		
	4	4.8
Total		
	84	100

The rate of emergency cesarean section was 40.5%, of which the main reason was bleeding, accounting for 94.1%. The rate of elective cesarean section was 54.7%, with the most common indication being term placenta previa, accounting for 63.0%.

Table 5. Hemostatic methods during cesarean section for placenta previa (n = 80)

Hemostatic method	Quantity	%
No intervention required	8	10.0
Uterotonic drugs	15	15.8
X- or U-shaped suturing of the placental bed	47	58.8

Hemostatic method	Quantity	%
Combined suturing and bilateral uterine artery ligation	6	7.5
Hysterectomy	4	5.0
Total	80	100

The most frequently applied hemostatic method was X- or U-shaped suturing of the placental bed, accounting for 58.8%. There were four hysterectomies, accounting for 5.0%, all of which were complete placenta previa.

4. DISCUSSION

4.1. Maternal age

In our study, the mean age of pregnant women with placenta previa was 32.4 ± 5.6 years. The rate of placenta previa in the age group 25–34 was the highest at 56.0%. In Ngo Thuy Huong's study, among pregnant women with placenta previa, the age group 25–35 accounted for the highest proportion, 49.83% [8]. Nguyen Ngoc Hoang Mai reported that the age group most affected by placenta previa was 25–34 years, accounting for 49.4% [4]. This is because the age group 25–34 is typically the group having their second pregnancy.

4.2. Obstetric history

In our study, among the placenta previa group, the rate of multiparous women was 72.6%, higher than that of primiparous women at 27.4%. In Le Hoai Chuong's study, multiparous women in the placenta previa group accounted for 70.2% [3]. The survey by Truong Thi Linh Giang showed that the rate of multiparous women in the placenta previa group was 87.5% [6]. In the study by Lam Duc Tam and co-authors, multiparous women had a 3.9-fold higher risk of placenta previa compared with primiparous women, with a statistically significant difference ($p < 0.05$) [2]. This indicates that placenta previa occurs more frequently in multiparous women. After multiple pregnancies and deliveries, the endometrium (where the placenta attaches) can be damaged or altered (scars, thinning, fibrosis...), making the placenta less likely to attach in the normal uterine fundus and more likely to attach in the lower uterine segment, causing placenta previa.

Nowadays, the increasing rate of abortion is also a factor causing placenta previa due to endometrial damage after each uterine evacuation. Table 1 shows that the rate of pregnant women with placenta previa who had a history of abortion was 42.8%, among whom the rate of women with ≥ 2 abortions was 21.4%. According to the literature, a history of abortion is considered a related factor for placenta previa. Nguyen Ngoc Hoang Mai reported that the rate of pregnant women with a history of abortion was 33.7%, of which 31.3% had one abortion and 2.4% had two or more abortions; compared with women without a history of abortion, women with a history of abortion had a 1.76-fold higher risk of placenta previa [4].

Many authors have identified an association between a history of cesarean section and placenta previa. According to Lam Duc Tam and co-authors, a uterus with a previous cesarean scar had a 1.9-fold higher risk of placenta previa compared to those without a scar [2]. According to Adere and co-authors, a history of cesarean section increased the risk of placenta previa by 2.7 times[5]. Table 1 shows 30 cases with previous cesarean scars; the rate of placenta previa in women with one cesarean scar was 23.8%, and in women with ≥ 2 cesarean scars was 11.9%. Our results are consistent with those of Nguyen Thi Hong and co-authors [7] and Dang Hoang Le [9].

4.3. Vaginal bleeding

The number of recurrent bleeding episodes in placenta previa, as shown in Chart 1, included 19 cases with bleeding once (22%) and 50 cases with recurrent bleeding (≥ 2 times) (59.5%). According to the study by Nguyen Ngoc Hoang Mai, the rate of recurrent bleeding (≥ 2 times) was 47.0%, and author Dang Hoang Le reported that 64.1% of pregnant women had recurrent vaginal bleeding[9]. Our study results show that vaginal bleeding in placenta previa often recurs multiple times. Vaginal bleeding is both a clinical symptom and a complication of placenta previa. However, placenta previa does not always present with vaginal bleeding. Therefore, regular prenatal examination and ultrasound to determine the placental location for diagnosing placenta previa are very important.

4.4. Paraclinical findings

One of the critical signs of placenta previa is abnormal fetal presentation, such as breech or shoulder presentation. In Table 2, cephalic presentation accounted for the highest rate at 84.5%, while abnormal presentation accounted for 15.5%. Similarly, the study by Truong Thi Linh Giang and co-authors reported 15.6% [6], and Ngô Thuỳ Hương reported 15.79% [8]. The reason is that in placenta previa, the placenta attaches to the lower uterine segment, obstructing the normal alignment of the fetal presentation. This increases the indication for cesarean section in women with placenta previa.

Our study recorded complete placenta previa as the most common type, accounting for 47.6%. This result is similar to Ngô Thuỳ Hương's report, who found that complete placenta previa accounted for the highest proportion among placenta previa types (49.12%), and to the study by Kumari and co-authors, who reported that complete and partial placenta previa together accounted for 78.6% [10]. Classification of placenta previa is essential because it guides appropriate obstetric and anesthesia management to minimize maternal and fetal complications.

4.5. Treatment results

According to Table 2, the mean gestational age at admission was 36.1 ± 2.5 weeks, and at delivery it was 37.2 ± 1.9 weeks. The study by Dang Hoang Le reported gestational ages at admission and delivery of 36.04 ± 2.56 weeks and 37.0 ± 2.11 weeks, respectively [9], which are similar to our results. Most fetuses were maintained until term, demonstrating the progress of medical

treatment methods and the professional expertise and effort of physicians in prolonging pregnancy to fetal maturity.

Our study showed that the rate of pregnancy termination by vaginal delivery was 4.8%. In comparison, the rate of cesarean section was 95.6%, among which the rate of emergency cesarean section was 40.5%, mainly due to placenta previa with bleeding (32/34 cases); the rate of elective cesarean section was 54.7%, with the most common indication being term placenta previa, accounting for 34.5%. The high rate of elective cesarean section is a favorable factor for reducing maternal and fetal complications due to placenta previa. Also, it supports the subsequent care and nourishment of the newborn.

Table 6. Comparison of cesarean section rates with other authors

Authors	Year of study	Rate (%)
Nguyen Hoang Ngoc Mai[4]	2018	69.9
Lam Duc Tam and co-authors [2]	2023	93.8
Nguyen Thi Hong and co-authors [7]	2025	97.1
Nguyen Hong Quang	2025	95.6

Thus, the cesarean section rate in our study is comparable to previous studies. Nowadays, the cesarean section rate tends to increase due to broader indications for cesarean delivery because of advances in anesthesia and resuscitation, surgical techniques, neonatal resuscitation, and increased awareness; many pregnant women choose cesarean delivery at term even if they have any placenta previa.

Clinically, most cases of bleeding at the placental site are managed with local suturing using X- or U-shaped stitches. If suturing fails to control bleeding, uterine artery or hypogastric artery ligation is performed, and the last resort is subtotal hysterectomy. Our study showed that hemostasis using X- or U-shaped suturing of the placental bed accounted for the highest rate at 58.8%, the rate of unsuccessful suturing requiring uterine artery ligation was 7.5%, and there were 4 cases of subtotal hysterectomy for hemostasis (5.0%), similar to the study by Nguyen Thi Hong and co-authors, in which the hysterectomy rate for hemostasis was 5.7% [7]. Dang Hoang Le reported a hysterectomy rate of 2.2% in placenta previa cesarean sections[9]. Hysterectomy is considered the last emergency measure to save women with placenta previa.

5. CONCLUSION

The study results showed that placenta previa is common in women who have previously given birth, with a history of cesarean section or multiple abortions. The main clinical symptom is vaginal bleeding. Complete placenta previa accounts for the highest proportion among placenta previa types. Regarding pregnancy outcomes, the cesarean section rate was 95.6%; the primary hemostatic method during placenta previa cesarean section was suturing of the placental bed. The hemostasis success rate (without hysterectomy) was 95%.

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