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Maternal Prognosis of Abruptio Placenta Classified SHER Grade III in the N'Djamena Mother and Child University Hospital

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Abstract

Introduction: Abruptio placenta is an unpredictable obstetric complication. SHER Grade III classification is the most common and is associated with severe maternal complications. **Objective:** Study factors associated with a good maternal prognosis. **Patients and methods:** This was a descriptive and analytical cross-sectional study conducted from April 1st to September 30, 2025, performed in N'Djamena Mother and Child University Hospital. This series included parturient admitted and treated for an abruption placenta Grade III of SHER. Studied variables were sociodemographic, clinical, paraclinical, and prognostic. The data were analyzed using Jamovi software. Fisher's exact test and Pearson's chi-square test were used to compare proportions. The Relative Risk (RR), Odds Ratio (OR) with its 95% confidence interval (CI), and the p-value with a significance level set at 5% were the statistical tests used. **Results:** The incidence of abruptio placenta was 1.7%, and 1% were in SHER grade III. The mean age was 28.4 years, ranging from 16 to 42 years. The clinical presentation was dominated by abruptio placenta IIIa representing 71.4%. The management consisted of rapid uterine evacuation by cesarean section in 76.5%, preventive and therapeutic vascular ligation was performed in 50% and blood transfusion in 27.1%. The rate of cesarean delivery was 2.5 times higher in the SHER grade IIIa group ($p = 0.017$), but there was no significant correlation between mode of delivery and a favorable maternal outcome. Maternal complications were dominated by postpartum anemia (95.9%). We found a significant association ($p = 0.037$) between referral as the mode of admission and hemodynamic instability. An admission delay of more than six hours was significantly associated with hemostatic disorders ($p = 0.005$). Hemorrhagic

shock was observed three times more frequently in the SHER grade IIIb group ($p = 0.033$). Patients who received a massive blood transfusion had a favorable maternal outcome (RR = 0.9; $p < 0.001$). **Conclusion:** Abruptio placenta remains an unpredictable and serious obstetric condition. Grade III SHER is the most common. Appropriate management could reduce maternal morbidity and mortality.

Keywords

Grade III Abruptio Placenta, Maternal Prognosis, N'Djamena, Chad

1. Introduction

Abruption placenta is the premature detachment of a normally inserted placenta, leading to the interruption of maternal-fetal exchange [1] [2]. It is a sudden event with a serious prognosis for both the mother and the fetus. It requires obstetric management combined with medical resuscitation. Its prevalence varies according to different authors: it ranges from 0.25% to 1% in industrialized countries [1]-[3] and from 1% to 9% in developing countries [1].

In Chad, Foumsou L *et al.* reported a prevalence of 2.1% in 2016, with a maternal case-fatality rate of 2.4% [4].

Abruptio placenta remains an unpredictable condition despite known risk factors. It sometimes occurs even in the absence of these risk factors [1] [2]. Its diagnosis is primarily clinical, typically involving: metrorrhagia consisting of blackish blood, uterine contractions associated with sudden-onset abdominal pain, and, most often, the absence of fetal heart sounds [1] [2]. This condition occurs primarily in the third trimester of pregnancy and is associated with significant complications, constituting a life-threatening emergency for both the mother and the fetus [1]. Maternal mortality related to this condition is approximately 1 per 100,000 live births in industrialized countries, but can reach 6% in developing countries [3] [5] [6].

Perinatal mortality, meanwhile, is approximately 10% to 20% in European countries [1] [2] but can reach 60% to 75% in developing countries [5] [6].

Despite advances in medicine, it remains one of the most dangerous obstetric conditions, associated with significant maternal and fetal complications. In most studies on abruptio placenta, SHER grades I and II are associated with a good maternal and fetal prognosis, as there is no ambiguity regarding treatment for these stages. In contrast, SHER grade III is the most common, and most serious maternal complications are associated with it.

To this end, we undertook this study to analyze the factors associated with a favorable maternal prognosis in SHER grade III abruptio placenta at the Department of Obstetrics and Gynecology of the Mother and Child Hospital in N'Djamena.

Objective: study factors associated with a good maternal prognosis.

2. Patients and Methods

This was a transversal cross-sectional study with an analytical focus, covering a period of 6-month from April 1st to September 30th, 2025. The study included all pregnant women and women in labor treated in the N'djamena Mother and Child University hospital for abruption placenta (grade III of SHER) with a gestational age of pregnant for at least 28 weeks, who had consented to participate in the study.

The Sher classification is a system used to assess the severity of obstetric hemorrhages, including retroplacental hematoma. It consists of three stages:

Stage 1: Retroplacental hematoma with unexplained metrorrhagia and a retrospective diagnosis of a small hematoma.

Stage 2: Retroplacental hematoma with uterine hypertonicity and a live infant.

Stage 3: Severe retroplacental hematoma with fetal death, which is subdivided into stage 3A (without coagulopathy) and stage 3B (with coagulopathy).

This classification helps determine the prognosis and guide patient management.

An individual, anonymous, standardized data collection form containing a questionnaire was developed to collect the data. Data were collected from medical records, hospitalization and admission registries, and surgical report registries. The study variables were prognostic.

The Kobo Toolbox software was used for data collection, and Microsoft Word 2016, Excel, and Jamovi were used for data entry and analysis. Results were presented as proportions for qualitative variables and as means and standard deviations for quantitative variables. Fisher's exact test and Pearson's chi-square test were used to compare proportions. The univariate analysis involved examining the relationship between the variable of interest and the explanatory variables. To investigate the nature of the association between the variable of interest and the explanatory variable, the Relative Risk (RR), the odds ratio (OR) with its 95% confidence interval (CI) and the p-value with a statistical significance threshold set at 5% were the statistical tests used.

3. Results

3.1. Frequency

During the study period, we identified 85 cases of abruptio placenta including 49 grade III cases (59.8%), out of a total of 4777 deliveries, representing an overall frequency of 1.7% and a specific frequency of 1.0% for grade III.

3.2. Age

The mean age of the patients was 28.4 years, ranging from 16 to 40 years (**Figure 1**).

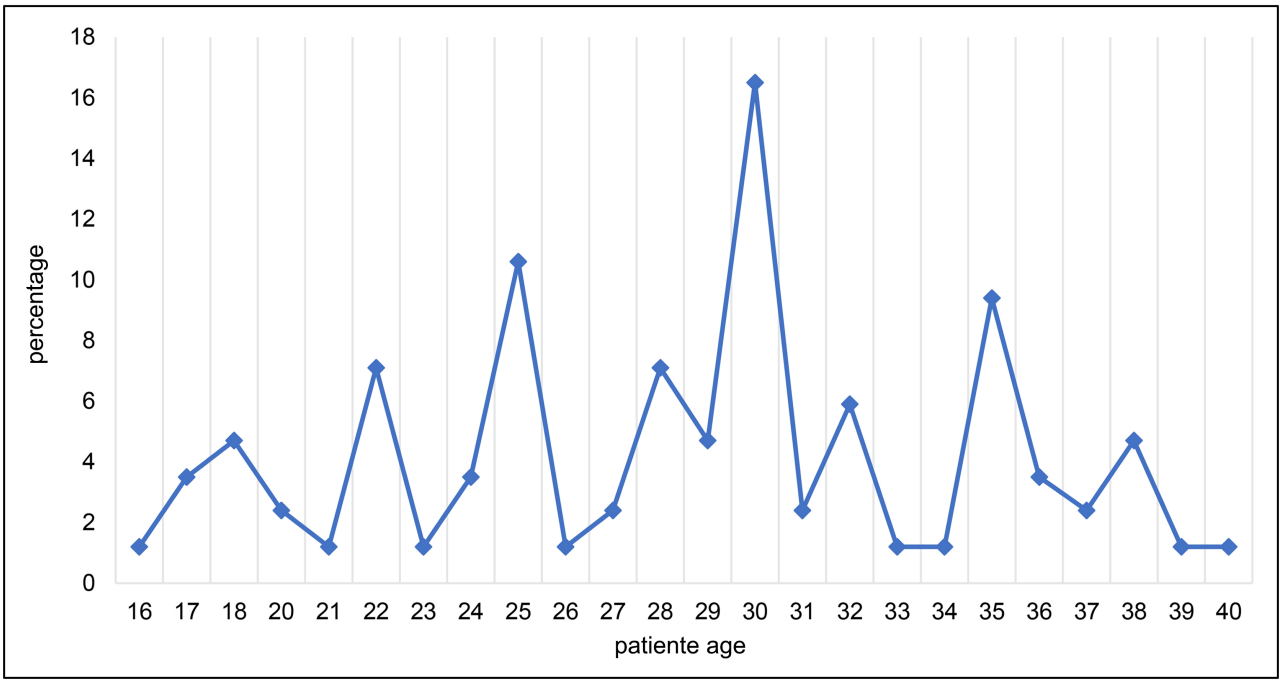

Figure 1. Age of patient.

3.3. Clinical Findings

Metrorrhagia was the most common reason for admission with 96.5%.

Referred patients accounted for 77%. In 57.6% of cases, patients were admitted within six hours of symptom onset. Considering antecedent 2.0% had a history of hypertension. In 95.3% patients carried a singleton pregnancy and 63.5% had had three prenatal visits. Pregnant women were admitted in 45.9% with a stable hemodynamical condition. Patient in the latent phase of labor accounted for 57.2%, and with Grade IIIa preeclampsia (71.4%). Abnormalities observed in blood tests included anemia and moderate thrombocytopenia in 53.1% and 40.8% of cases, respectively, with impaired coagulation in 28.6% of cases (Table 1).

Table 1. Distribution of maternal morbidity and mortality by abruptio placenta grade.

	Grade IIIa		Grade IIIb		Total	p value
	n	%	n	%	n	
Acute renal felure	2	40.0	**3**	**60.0**	**5**	0.101
Anemia	**33**	**67.3**	14	28.7	**47**	0.361
PPH	**18**	**64.3**	10	35.7	**28**	0.201
Death	0	0.0	**1**	**100**	**1**	0.110

Maternal complications were dominated by postpartum anemia (95.9%).

Patients had a hospital stay ranging from 3 to 7 days (77.6%).

We found a significant association ($p = 0.037$) between referral as the mode of

admission and hemodynamic instability (Table 2).

There was a statistically significant correlation between a favorable maternal prognosis and admission within six hours of symptom onset. An admission delay of more than six hours was significantly associated with hemostatic disorders (p = 0.005) and, to a lesser extent, with PPH (p = 0.048).

Table 2. Correlation between admission delay and maternal complications.

Predictor	Estimation	Standard Error	p	OR	Confidence interval at 95%	
					<	
Time from admission > 6 hours	0.405	0.373	0.277	1.500	−0.325	1.136
PPH: yes	1.361	0.481	**0.005**	**0.256**	−2.303	−0.419
Hemostasis panel	1.198	0.611	**0.048**	**3.312**	1.001	10.961

3.4. Management

Delivery was by cesarean section (76.5%), decided upon within 3 hours of admission (64.7%). Half of the patients with PPH received conservative surgical treatment, compared with 9.3% who received radical treatment, including massive blood transfusion (27.1%).

The rate of cesarean delivery was 2.5 times higher in the SHER grade IIIa group (p = 0.017), but there was no significant correlation between mode of delivery and a favorable maternal outcome.

Vascular ligation, as both a preventive and therapeutic surgical procedure (performed in 50%), was significantly associated with a favorable maternal outcome (RR = 0.8; p < 0.001). This helped to reduce the uterine flow rate (Table 3).

Hemorrhagic shock was observed three times more frequently in the SHER grade IIIb group (p = 0.033). Patients who received a massive blood transfusion had a favorable maternal outcome (RR = 0.9; p < 0.001). This made the compensation of blood loss and help to normalize the blood pressure.

Table 3. Distribution by hemodynamic status and abruptio placenta grade.

Predictor	Estimation	Standard error	p	OR	Confidence interval at 95%	
					<	>
Obstetric Shock Index	−0.154	0.321	0.631	0.857	0.457	1.61
Unstable	0.511	0.588	0.385	1.667	0.526	5.28
Shock	1.119	0.525	0.033	3.062	1.094	8.57

4. Discussion

We observed an overall prevalence of 1.7% and a specific prevalence of 1% for Grade III of placenta. The overall prevalence is comparable to that reported by

many authors in the literature. Biaye [5], Nwaeze [7], and Sibraogo [8] reported rates of 1.9% in Senegal in 2016, 1.7% in Nigeria in 2023, and 1% in Burkina Faso in 2024, respectively. Foumsou in Chad, in their study on the epidemiological, therapeutic, and prognostic aspects of retroplacental hematoma at the Mother and Child Hospital in N'Djamena, reported a prevalence of 2.1% [4]. However, we did not find a specific prevalence of Grade III of abruptio placenta in the literature.

In this study, 77% of patients were referred, and 32.4% were admitted more than six hours after the onset of symptoms. The study found that this mode of admission (referral) is significantly associated with hemodynamic instability at admission ($p < 0.037$). We also observed a significant increase in hemostatic disorders ($p = 0.048$) and the HPPI ($p = 0.005$) among patients admitted after a relatively long delay. Biaye [5] found results similar to ours, with 85% of cases being referred—a rate similar to that reported by Thieba (85.9%) [9] and Ouedraogo (88%) [10]. Bamba et al. report a rate of 72.1% and emphasize that this mode of admission was identified in their study as a factor associated with poor maternal prognosis because, in most cases, patients were often admitted in poor clinical condition without any supportive measures (non-medical transport without prior stabilization) [11].

With regard to therapeutic management, given the severity of retroplacental hematoma for both the mother and the fetus, hospitalization in a specialized unit with a multidisciplinary team comprising an obstetrician, an anesthesiologist-intensivist, and a pediatrician is essential. The objectives of this management are: correction of hypovolemia and coagulation disorders, and early and rapid evacuation of the uterine cavity, which constitutes the basic obstetric treatment.

In this series, cesarean section was the most commonly used mode of delivery (76.5%) and was statistically significant among patients who were not in labor and those in the latent phase ($p < 0.001$). However, cesarean delivery was not significantly associated with a favorable maternal prognosis, unlike an admission time of less than six hours ($p = 0.005$). There are no clear recommendations regarding the mode of delivery in cases of abruptio placenta. Some authors, such as Krauss [12] and Prochazka [13], advocate for routine cesarean section regardless of the fetus's condition. In contrast, Bohec [14] recommends a wait-and-see approach in cases of fetal death and hemorrhagic disorders. However, in developing countries such as Chad, where medical facilities lack adequate resuscitation resources and patients are often admitted in serious clinical condition, it is important to reduce the time to delivery by resorting to surgical management, as Foumsou [4] has noted since 2016. The results of Conte's study, in which 100% of patients underwent a cesarean section, support this observation. Maternal morbidity was low, and no maternal deaths were recorded [15].

Most patients (57.1%) experienced immediate postpartum hemorrhage; of these, 40.7% received medical treatment, and 59.3% received surgical treatment. Prophylactic vascular ligation was performed in half of the cases (50%) and was significantly associated with a favorable maternal prognosis in this study (RR =

0.8; $p < 0.001$). The study by Sadjoli *et al.*, conducted in 2025 at the N'Djamena University Hospital for Mother and Child, which examined the benefits of triple vascular ligation in reducing postpartum hemorrhage, reported a significant 70% reduction in HPPI (RR = 0.3; $p < 0.05$) [16].

In this study, 72.9% of patients received a blood transfusion, including 27.1% who received a massive transfusion, and this was significantly associated with a favorable maternal prognosis (RR = 0.9; $p < 0.001$). A similar need for blood transfusions is reported by Félix [17], with a rate of 43.9%. Most authors observe an increasing trend toward blood transfusions.

In terms of prognosis, in this series, the average length of hospital stay was 5 days, ranging from 3 to 7 days. The maternal complications observed were postpartum hemorrhage (57.1%), anemia (95.9%), coagulation disorders (16.4%), and renal failure (5.9%). We recorded one maternal death, representing 2%. These results are similar to those reported by Makoyo [18] in Libreville in 2020, who reported an average length of hospital stay of 4 days, ranging from 1 to 12 days.

Maternal morbidity was dominated by anemia (37.9%), acute renal failure (10.4%), and DIC. One case of maternal death was recorded (1.7%). In the study by Nwaeze et al. [7], the maternal complications observed were immediate postpartum hemorrhage (9%), postpartum anemia (15%), puerperal sepsis (3%), and maternal death (2%). In 2019, Fatimetou et al. [19], in their study examining epidemiological, clinical, and therapeutic aspects at the National Hospital Center of Nouakchott in Mauritania, reported a favorable outcome in 80.4% of cases. Couvelaire's uterus was observed intraoperatively in 57.5% of cases, of which 10.3% had presented with uterine atony accompanied by postpartum hemorrhage requiring a hemostatic hysterectomy (6.2%). Other complications included DIC (2%), hemorrhagic shock (3%), and acute renal failure (10.3%), with a 2% maternal mortality rate. In the study by Conte et al. [15] on clinical aspects, management, and maternal-fetal prognosis in the gynecological department of the Hassan II University Hospital in Fez, Morocco, in 2020, the time from diagnosis of HRP to fetal extraction averaged 45 minutes for cases of HRP with positive BCF and 3 hours and 30 minutes on average for cases with negative BCF.

All patients had delivered by cesarean section. Complications included PPH in 24.4% of cases, of which 16.2% underwent a triple ligation supplemented by a modified Blynch procedure and 3.3% underwent a hemostatic hysterectomy. Maternal morbidity was dominated by postpartum anemia (68.6%). No maternal deaths were recorded in this study. Regarding mortality, in this study, maternal morbidity—particularly PPH—and anemic complications were statistically associated with Grade IIIb of abruptio placenta ($p < 0.001$). This finding is nearly identical to that of other series, except in the study by Conte conducted at Hassan II University Hospital in Fez, where these complications were observed at lower rates [15]. Whether in this study or those by other authors, the risk factors, clinical presentation, type of abruptio placenta (Grade III), and maternal morbidities are nearly identical and characteristic of severe forms, as described in the literature.

In this study, the factors associated with a favorable maternal prognosis were, from a clinical perspective, prompt hospital admission within less than six hours (RR = 0.8; p = 0.005); therapeutically: prophylactic vascular ligation during cesarean section (RR = 0.8; p < 0.001) and blood transfusion (RR = 0.9; p < 0.001).

5. Conclusions

Abruptio placenta remains a serious and concerning obstetric condition due to its unpredictability, the variability of its clinical presentation, and the rapidity with which it develops.

Prompt hospital admission, preventive vascular ligation during cesarean section, and blood transfusion were the factors associated with a favorable maternal prognosis in this study.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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