

Maternal and Perinatal Outcomes of Placental Abruption in a Rural African Setting

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Abstract

Introduction: Placental abruption is a severe and unpredictable obstetric emergency that threatens both maternal and fetal life. The aim of this study was to describe the epidemiological, clinical, and therapeutic aspects of Placental abruption in a rural setting in Mali.

Materials and Methods: This was a prospective case-control study conducted at the Reference Health Center of Sikasso, southern Mali, over 15 months (July 2020–August 2021). Fifty-one (51) cases of Placental abruption were compared with 102 controls (1:2 ratio). Data were collected prospectively and analyzed using SPSS version 25. The Chi-square test was used to assess associations between qualitative variables.

Results: Out of 6,387 deliveries, 51 cases of Placental abruption were recorded (0.79%). Vaginal bleeding was the main reason for admission (54.9%). According to Sher's classification, grade IIIa was the most frequent (58.8%). Cesarean section was performed in 90.2% of cases (OR=42.9; $p=0.001$), including 25 procedures for maternal rescue. Blood transfusion was required in 43.1% of cases (OR=37.9; $p=0.001$). Maternal complications were dominated by anemia (68.6%), postpartum hemorrhage (23.5%), coagulation disorders (2%), and shock (2%). Perinatal complications included low birth weight, prematurity, and stillbirth (62.7%; OR=55.57; $p=0.000$), with 7.8% neonatal deaths. **Conclusion:** Placental abruption remains a major obstetric emergency due to its sudden and unpredictable onset. Cesarean section and blood transfusion are the main therapeutic interventions. Maternal morbidity is mainly due to anemia and postpartum hemorrhage, while perinatal mortality remains high. Preventive strategies should focus on strengthening antenatal care, improving delivery planning in rural areas, ensuring efficient referral systems, establishing functional blood banks and intensive care units, and enhancing neonatal care services.

Introduction

Pregnancy is a natural process, yet it carries multiple risks. According to the World Health Organization (WHO), maternal mortality is estimated at 317 deaths per 100,000 live births per year, while neonatal mortality reaches 9.6 million deaths annually [1]. Placental abruption, is one of the leading causes of perinatal mortality and morbidity in Mali, particularly in rural areas, due to delayed management and limited resources [2]. The proportions of maternal and neonatal deaths attributed to placental abruption are 5.3% and 71.4%, respectively [3]. Although several risk factors or predictors are known, the exact cause of placental abruption often remains unclear [4,5]. Given its frequency and the management challenges it poses in our maternity wards, this study was conducted to analyze the epidemiological, clinical, and therapeutic profile of placental abruption in a rural setting in Mali.

Materials and Methods

This was a case-control study with prospective data collection conducted from July 2020 to August 2021 (15 months). A total of 51 women diagnosed and managed for placental abruption at the Reference Health Center of Sikasso were included as cases, while 102 parturients without placental abruption, admitted immediately before each case, served as controls (ratio 1:2). Data were entered and analyzed using SPSS version 25. The Chi-square test was used to assess associations between qualitative variables. Confidentiality and anonymity were maintained throughout the study.

Results

During the 15-month study period, 51 cases of RPH and 102 controls were recorded out of 6,387 deliveries, giving a frequency of 0.79% (Figure 1). The gestational age ranged from 29–36 weeks in 51% of cases, while it

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exceeded 36 weeks in 65.7% of controls (Figure 2). Vaginal bleeding was observed in 54.9% of RPH cases versus 11.8% of controls, corresponding to a ninefold increased risk (Table 1). Most cases were classified as Sher grade IIIa (58.8%) (Figure 3). The most common antecedent was hypertension (23.5% in cases vs. 7.5% in controls), followed by previous cesarean section (5.9% vs. 20.6%) (Table 1). At clinical examination, hypertension, vaginal bleeding, and absence of fetal heart sounds were the most frequent findings. Blood transfusion was required in 43.1% of RPH cases versus 2% of controls. Cesarean section was performed in 90.2% of women with RPH compared to 17.6% of controls (Table 2), with an odds ratio (OR) of 4.92 [3.49–6.93]; $\chi^2 = 59.76$; $p < 0.001$. A hemoglobin level between 7 and 10 g/dL was observed in 56.9% of patients. The main maternal complications were anemia (68.6%) and postpartum hemorrhage (23.5%), with risks increased by 25.7 and 3.6 times, respectively, among cases (Table 2). No maternal deaths were recorded. Women with placental abruption were 56 times more likely to have a newborn with an Apgar score of 0 (Table 3). Low birth weight (< 2500 g) was found in 62.7% of cases versus 26.5% of controls. Prematurity occurred in 49% of cases compared to 9.8% of controls. Neonatal resuscitation was required in 23.5% of placental abruption cases versus 5.9% of controls. Fresh stillbirths were recorded in 56.9% of cases compared to 2% of controls (Table 3).

Discussion

Our study was conducted in a secondary-level facility responsible for managing obstetric emergencies referred from 47 functional health areas, operating 24 hours a day. During the 15-month study period, 51 cases of for placental abruption and 102 controls were recorded out of 6,387 deliveries, giving a frequency of 0.79%. This rate is lower than that reported by

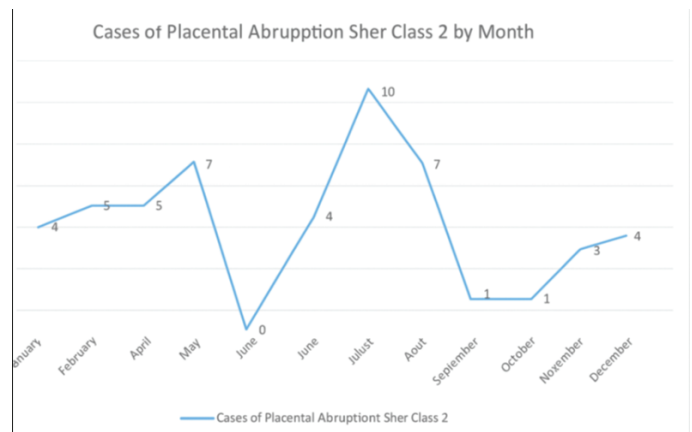


Figure 1: Monthly frequency of placental abruption

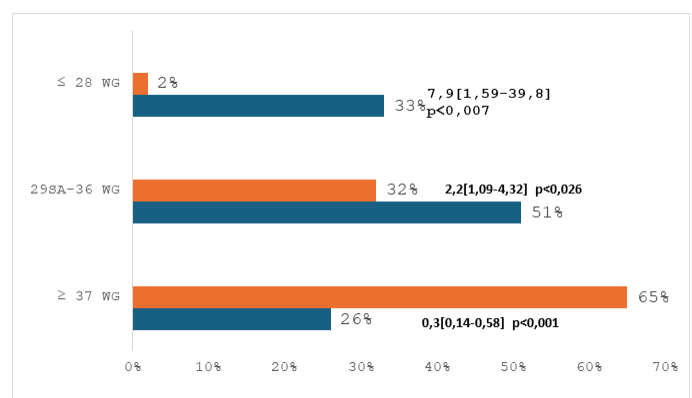


Figure 2: Distribution of cases according to gestational age

Table 1. Distribution of Patients According to Clinical Findings at Admission

Clinical Findings	Cases (%)	Controls (%)	OR	95% CI	χ^2	P-value
Hypertension	56.9	36.3	2.31	1.16–4.59	5.87	0.000
Uterine hypertonia	34.0	0.0	7.00	4.50–10.87	87.42	0.000
Fetal heart sounds absent	56.9	2.9	43.5	12.15–155.00	59.76	0.000
Fetal heart rate <120 bpm	88.9	11.1	56.0	6.50–482.00	32.67	0.000
Cephalic presentation	98.0	93.1	3.68	0.44–30.78	1.64	0.19
Intact membranes	74.4	78.4	0.80	0.36–1.76	0.29	0.58
Vaginal bleeding	70.6	12.7	16.43	7.11–37.90	52.25	0.000

Table 2. Maternal Outcomes

Parameters	Cases (%)	Controls (%)	OR	95% CI	P-value
Cesarean section	90.2	17.6	42.9	14.9–123.1	0.001
Hemoglobin <7 g/dL	15.7	0.0	3.4	2.62–4.33	0.001
Hemoglobin 7–10 g/dL	56.9	38.2	2.1	1.05–4.21	0.029
Hemoglobin ≥11 g/dL	27.5	61.8	0.2	0.11–0.49	0.001
Anemia	68.6	7.8	25.7	10.10–65.35	0.000
Postpartum hemorrhage	23.5	0.0	3.6	2.76–4.72	0.000
Shock	2.0	0.0	3.0	2.42–3.81	0.156
No complication	3.9	92.2	0.0	0.00–0.01	0.000

NB: No maternal deaths were recorded during the study period.

Table 3. Perinatal Outcomes

Parameters	Cases (%)	Controls (%)	OR	95% CI	P-value
Apgar score 0 (1 min)	62.7	2.9	55.6	15.4–200.0	0.0001
Apgar 1–6 (1 min)	15.7	3.9	4.6	1.30–15.95	0.011
Apgar ≥ 7 (1 min)	21.6	93.1	0.02	0.007–0.05	0.0001
Birth weight <2500 g	62.7	26.5	4.7	2.28–9.59	0.0001
Birth weight 2500–3999 g	37.3	72.5	0.2	0.11–0.45	0.0001
Birth weight ≥ 4000 g	0.0	1.0	1.5	1.34–1.69	0.999
Alive newborn	37.3	97.1	0.01	0.001–0.65	0.001
Fresh stillbirth	56.9	2.0	65.9	14.6–296.9	0.001
Macerated stillbirth	5.9	1.0	6.3	0.64–62.28	0.108

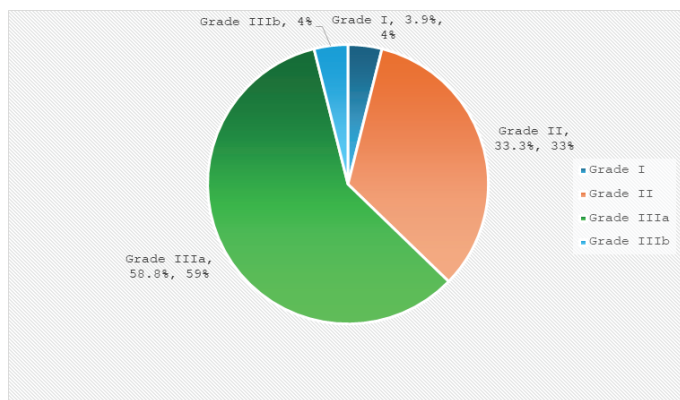


Figure 3: Classification of placental abruption cases according to Sher's classification

Thiam O. et al. in Senegal, who found 6% [2]. Similarly, Biaye B. et al. reported a frequency of 1.97% [6]. In Niger Nayama found the frequency ranges from 0.4% to 1% [7]. This difference may be explained by our facility being a second-level referral center, where most complicated cases are referred to the regional hospital of Sikasso. Uneducated women were twice as likely to experience placental abruption although this association was not statistically significant ($p=0.059$). We found a significant association between parity and the occurrence of for placental abruption. In Thiam O. et al., multiparous (4–6) and grand multiparous (≥ 7) women represented 25.6% and 37.8% of cases, respectively [2]. Biaye B. et al. reported a mean parity of 4.8, with 66% of multiparous women [6]. The literature confirms that the risk of for placental abruption increases with multiparity (≥ 3 deliveries) regardless of age. Multiparity contributes to vascular fragility caused by microangiopathy [3,5]. This is less frequent in developed countries, where pregnancies are fewer and often occur at a younger age [8]. In our study, hypertension increased the risk of placental abruption almost fourfold ($OR=3.6$). The predominant clinical signs at admission were vaginal bleeding (72.5%), followed by uterine hypertonia and absence of fetal heart sounds. Similar findings were reported by Biaye B. et al., with 97.7% bleeding, 77.1% uterine hypertonia, 76% fetal death, and 10% shock [6]. Thiam O. et al. found 41.7% bleeding, 27.2% uterine rigidity, 21.1% absent fetal heart activity, and 10% shock [2]. In our study, cesarean section was performed in 90.2% of women with placental abruption compared with 17.6% of controls. Notably,

25 cesarean sections were done for maternal rescue. The risk of cesarean delivery for maternal survival was $OR=4.92$ [3.49–6.93]; $\chi^2=59.76$; $p<0.001$. One case of vascular ligation was recorded. Cesarean section was the preferred mode of delivery when the fetus was alive, as also observed by Ouabo S., who reported 80.3% cesarean deliveries in live fetuses versus 61.4% in controls ($p=0.003$) [9]. Women with placental abruption had 65.9 times higher risk of fresh stillbirth compared with controls. Several African authors have emphasized that delayed referral and the extent of placental separation are major determinants of poor prognosis. Similar findings were reported by Ouedraogo in Burkina Faso [10].

Conclusion

Over 15 months, 51 cases of RPH (0.79%) were recorded among 6,387 deliveries. Vaginal bleeding was the main reason for admission (54.9%), with the classic triad present in 90% of cases. Sher grade IIIa was the most frequent (58.8%). Cesarean section was performed in 90.2%, and blood transfusion in 43.1% of women. The main maternal complications were anemia (68.6%) and postpartum hemorrhage (23.5%). Perinatal mortality included 62.7% stillbirths and 7.8% neonatal deaths. The main risk factors identified were hypertension, multigravidity, multiparity, short umbilical cord, and inadequate or absent antenatal care. RPH remains a major obstetric emergency due to its sudden and unpredictable onset and the difficulty of diagnosis in low-resource settings. Preventing feto-maternal mortality requires strengthening antenatal care, improving delivery planning, particularly in rural maternity units, enhancing referral systems, and ensuring the availability of functional blood banks, adequate resuscitation units, and neonatal intensive care services.

References

1. UNICEF Mali. Annual Report 2023. National Institute of Statistics of Mali; 2023.
2. Thiam O, Mbaye M, Diouf AA, Touré FB, Gueye M, Niang M, et al. Aspects épidémiologiques, pronostiques et thérapeutiques de l'hématome retro placentaire (HRP) dans une maternité de référence en zone rurale. Pan Afr Med J. 2014;17:11.
3. Ngbale NR, Kogboma-Wongo GRDL, Koirakpi A, Gaunefet CE, Ouakoua GDKK, Ouapou S, et al. Materno-fetal prognosis of retro-placental hematoma at the Centre Hospitalier Universitaire Communautaire. Open J Obstet Gynecol. 2020;10(10):1351-1357.
4. Zahra LF, S M, S B, N B, N1 Z, A L, et al. Retroplacental hematoma at the Souissi Maternity Hospital in Rabat (about 60

- cases). *Sch Int J Obstet Gynecol.* 2022;6(4):155-161.
5. Tikkanen M. Placental abruption: epidemiology, risk factors and consequences. *Acta Obstet Gynecol Scand.* 2011;90(2):140-149.
 6. Biaye B, Gassama O, Gueye MDN, Diallo M, Niass A, Cisse M, et al. Epidemiology and prognosis of retroplacental hematoma in a maternity ward at a regional hospital center in Southern Senegal. *Open J Obstet Gynecol.* 2019;9(2):149-157.
 7. Nayama M, Tamakloé-Azamesu D, Garba M, Idi N, Djibril B, Kamayé M, et al. [Abruptio placentae: Management in a reference Nigerien maternity. Prospective study about 118 cases during one year]. *Gynecol Obstet Fertil.* 2007;35(10):975-981.
 8. Ananth CV, Peltier MR, Kinzler WL, Smulian JC, Vintzileos AM. Chronic hypertension and risk of placental abruption: is the association modified by ischemic placental disease? *Am J Obstet Gynecol.* 2007;197(3):273.e1-273.e7.
 9. Ouabo S, Dauphin F. Étude des aspects épidémio-cliniques et thérapeutiques de l'hématome rétroplacentaire avec fœtus vivant au CHU-GT. 2013.
 10. Ouédraogo I, Sawadogo YA, Kain DP, Zamane H, Sib SR, Kientore S, et al. Placental abruption in the Obstetrics and Gynecology Service of Regional Hospital Center of Ouahigouya: Epidemiological, clinical and therapeutic aspects about 89 cases collected from 1st January 2013 to 31st December 2015. *Open J Obstet Gynecol.* 2016;7(1):86-94.