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Fetal and maternal outcome in emergency delivery cases related to antepartum hemorrhage in tikrit teaching hospital

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Abstract

Background: Antepartum hemorrhage (APH) is characterized by bleeding originating from or into the genital tract, occurring from 24 weeks of gestation until the onset of labor. The objective of this study is to assess the incidence, etiological factors, and maternal and fetal outcomes associated with APH.

Methods: The Tikrit Teaching Hospital Department of Obstetrics and Gynaecology conducted a cross-sectional study from October 1, 2023, to June 30, 2024. An easy sample of 50 antepartum haemorrhages was obtained. Emergency antepartum haemorrhage patients with vaginal bleeding after 24 weeks of gestation are eligible. Ultrasound has detected placenta previa, abruptio placentae, placenta accreta, and others as antepartum haemorrhage beyond 24 weeks.

Results: Most women had 1-4 parity 35 (70%) and > 5 parity 10 (20%), BMI 25-29.9 excess weight 39 (78%) and > 30 obesity 11 (22%). Medical history was positive in 16 (32%), diabetes mellitus in 1 (2%), and hypertension in 16 (32%). APH causes were unknown for 3 (6%), placenta previa 23 (46%), abruptio 13 (26%), and accrete 22%. Previous scare 36(72%), gestational hypertension 13(26%), 8(16%), twin pregnancy 2(4%), age >35 11(22%), mal-presentation 8(16%). Maternal outcomes were Caesarean hysterectomy (4%), postpartum anaemia (54%), blood transfusion (72%), blood units received (≤ 2 in 58%, ≥ 3 in 14%), caesarian section (88%), and no maternal deaths. Neonatal outcomes included low birth weight (30%), stillbirth (2%), birth asphyxia (6%), ICU admission (46%), and preterm (54%).

Conclusion: To prevent harm to women and newborns, labour and delivery facilities must provide complete assistance. This includes ensuring the facility has well-organised equipment and friendly staff. In addition, it is important to quickly identify potential complications, prepare families for blood donation in the event of a blood transfusion, have skilled anaesthesia staff, and have all necessary human resources to manage antepartum haemorrhage.

Keywords: Outcome of Emergency Delivery with APH, APH in Tikrit Teaching Hospital

Introduction

Antepartum hemorrhage (APH) is characterized by bleeding originating from or into the genital tract, occurring from 24 weeks of gestation until the onset of labor ^[1]. The primary etiologies of APH include placenta previa and placental abruption, with additional, albeit less common, causes such as vasa previa, succenturiate lobe, and placental infections. APH complicates approximately 3–5% of pregnancies and remains a significant contributor to perinatal and neonatal mortality ^[2]. In developed countries, perinatal mortality rates are generally below 10 per 1,000 total births, whereas in India, these rates are significantly higher, reaching 60 per 1,000 total births ^[3]. Placenta previa (PP) involves the partial or complete implantation of the placenta over the lower uterine segment, covering or being adjacent to the internal os. Placental abruption refers to bleeding caused by the premature separation of a normally implanted placenta prior to delivery. Non-obstetric causes of APH include cervical polyps, cervical carcinoma, varicose veins, local trauma, and cervical erosion ^[4]. Several obstetric conditions are associated with an increased risk of APH, including multifetal gestation, abnormal fetal presentation, preterm labor, preeclampsia, eclampsia, polyhydramnios, and chorioamnionitis ^[4]. Maternal complications arising from APH include postpartum hemorrhage (PPH), shock, sepsis, and disseminated intravascular coagulation (DIC). Fetal complications may include preterm birth, low birth weight, intrauterine fetal demise, congenital anomalies, and birth asphyxia. The objective of this study is to assess the incidence, etiological factors, and maternal and fetal outcomes associated with APH.

Methods

A cross-sectional study was conducted in the Department of Obstetrics and Gynecology at Tikrit Teaching Hospital between October 1, 2023, and June 30, 2024. A convenient sample of 50 cases of antepartum hemorrhage was selected for the study. The inclusion criteria encompassed all cases presenting to the labor ward as an emergency with vaginal bleeding at or beyond 24 weeks of gestation. Additionally, cases diagnosed with antepartum hemorrhage via ultrasonography at or after 24 weeks of gestation were included. The study considered various causes of antepartum hemorrhage, such as placenta previa, placental abruption, placenta accreta, and others.

Results

The most common maternal age range was 20-34 years, accounting for 36 cases (72%). Regarding maternal education, 13 women (26%) were able to read and write, while 21 women (42%) had completed secondary school. Parity distribution showed that 35 women (70%) had 1-4 deliveries, and 10 women (20%) had more than 5 deliveries. The majority of women had a body mass index (BMI) between, 25-29.9 categorizing them as overweight (39 cases, 78%), followed by 11 women (22%) who were classified as obese (BMI > 30). Gestational age at birth was greater than 37 weeks in 23 newborns (46%), 34-36 weeks in 15 newborns (30%), and less than 34 weeks in 12 newborns (24%), as outlined in Table 1.

A positive medical history was noted in 16 cases (32%). Among the patients, 1 case (2%) had diabetes mellitus, 16 cases (32%) had hypertension, and no patients (0%) were found to have asthma. Surgical history was present in 2 cases (48%), as indicated in Table 2. The causes of APH were undetermined in 3 cases (6%), with placenta previa observed in 23 cases (46%), placental abruption in 13 cases (26%), and placenta accreta in 11 cases (22%), as depicted in Figure 1.

In terms of risk factors, a previous uterine scar was found in 36 patients (72%), gestational hypertension in 13 patients (26%), multiparity in 8 patients (16%), twin pregnancy in 2 patients (4%), advanced maternal age (>35 years) in 11 patients (22%),

and malpresentation in 8 patients (16%), as shown in Table 3. The most common blood group was O+ (19 cases, 38%), followed by A+ (15 cases, 30%), B+ (6 cases, 12%), O- (5 cases, 10%), A- (2 cases, 4%), B- (2 cases, 4%), and AB+ (1 case, 2%), as illustrated in Figure 2.

Table 1: The general characteristics of the sample

General characteristics		Frequency	Percent
Age	< 20 years	1	2.0
	20-34 years	36	72.0
	> 35 years	13	26.0
Mother education	Illiterate	2	4.0
	Read & write	13	26.0
	1ry school	7	14.0
	2ndry school	21	42.0
Parity	College	7	14.0
	Nulliparous	5	10.0
	1-4 para	35	70.0
BMI	>5 para	10	20.0
	25-29.9 (over weight)	39	78.0
GA	>30 (Obese)	11	22.0
	<34 week	12	24.0
	34-36 week	15	30.0
	>37 week	23	46.0
Total		50	100.0

Table 2: The medical and surgical history of the sample

Medical and surgical history		Frequency	Percent
Medical history	Yes	16	32.0
	No	34	68.0
DM	Yes	1	2.0
	No	49	98.0
Hypertension	Yes	16	32.0
	No	34	68.0
Asthma	No	50	100.0
surgical history	Yes	24	48.0
	No	26	52.0
Total		50	100.0

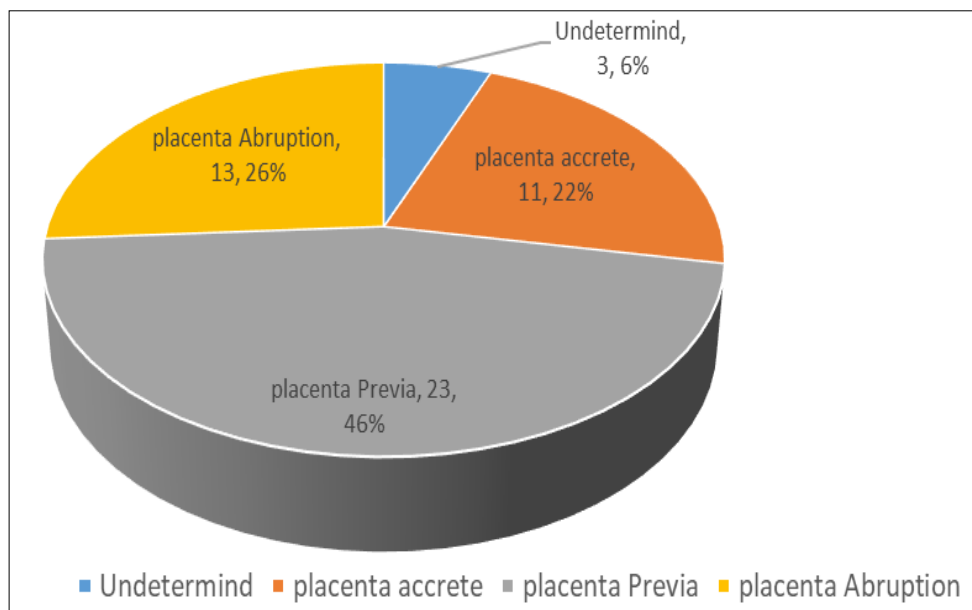


Fig 1: The causes of APH among study sample

Table 3: The risk factors of the APH among the study sample

Risk factors		Frequency	Percent
Previous scar	Yes	36	72.0
	No	14	28.0
Gestational Hypertension	Yes	13	26.0
	No	37	74.0
Multiparity	Yes	8	16.0
	No	42	84.0
Twins	Yes	2	4.0
	No	48	96.0
age > 35	Yes	11	22.0
	No	39	78.0
Malpresentation	Yes	8	16.0
	No	42	84.0
Total		50	100.0

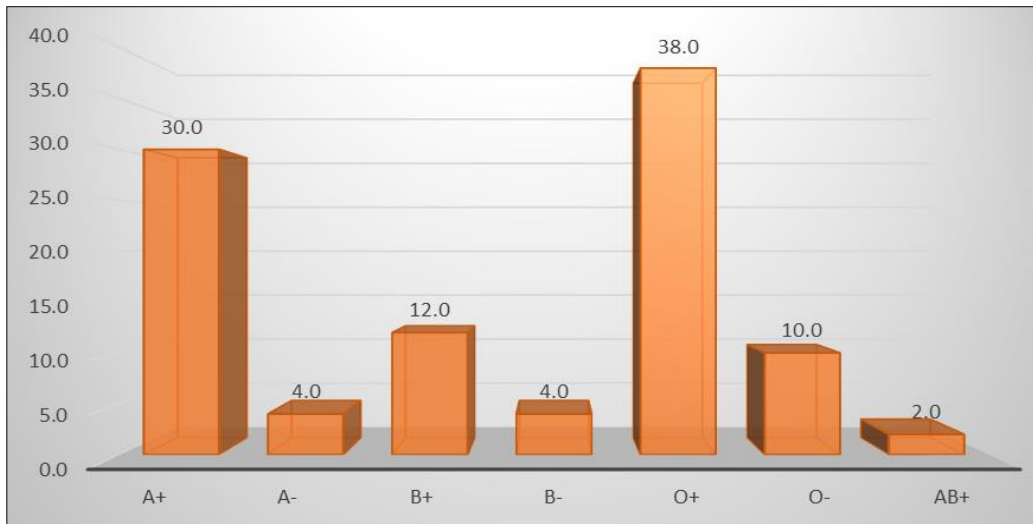


Fig 2: The blood group among the study sample

Among the placenta previa cases, complete placenta previa was the most frequent, observed in 24 cases (48%), while partial placenta previa was found in 1 case (2%). Placenta accreta primarily presented as placenta adherent in 10 cases (20%), placenta increta in 2 cases (4%), and placenta percreta in 1 case

(2%). Partial placental abruption was noted in 12 cases (24%), as detailed in Table 4. An anterior placental location was identified in 40 patients (80%), whereas a posterior location was found in 10 patients (20%), as shown in Figure 3.

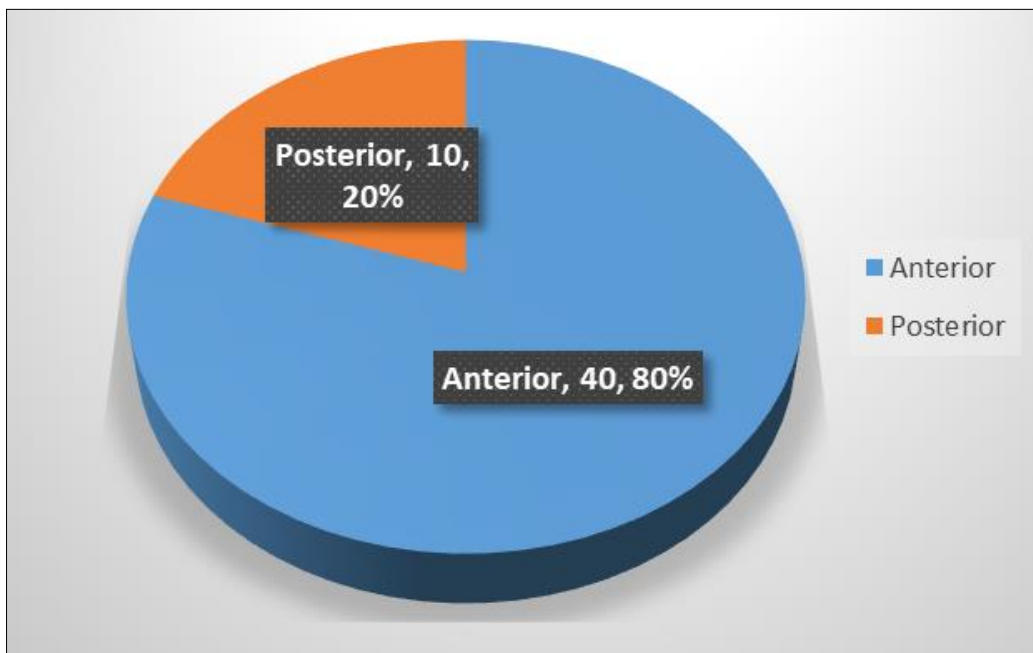


Fig 3: The placental location among study groups

Table 4: The sub types of the cause of the APH among the study sample

		Frequency	Percent
Type of placenta previa	No Placenta Previa	25	50
	Partial PP	1	2
	complete PP	24	48
Type of placenta accrete	No placenta accreta	37	74
	Placenta adherenta	10	20
	Placenta increta	2	4
	Placenta percreta	1	2
Type of placenta abruption	No placenta abruption	36	72
	partial	12	24
	complete	2	4
Total		50	100

Maternal outcomes included cesarean hysterectomy in 2 cases (4%), postpartum anemia in 27 cases (54%), and blood transfusions in 36 cases (72%) with 9 women (18%) receiving blood intraoperatively and 27 women (54%) postoperatively. The number of blood units received was ≤ 2 in 29 women (58%) and ≥ 3 in 7 women (14%). The mode of delivery was cesarean section in 44 cases (88%) and vaginal delivery in 6 cases (12%). No maternal deaths were reported, as outlined in Table 5.

Table 5: The maternal outcome among the study sample

Maternal outcome		Frequency	Percent
Caesarean hysterectomy	Yes	2	4.0
	No	48	96.0
Postpartum Anemia	Yes	27	54.0
	No	23	46.0
Blood transfusion requirement	None	14	28
	Intraoperatively	9	18
	Postoperatively	27	54.0
Blood units needed	0	14	28
	≤ 2	29	58
	≥ 3	7	14.0
Mod of delivery	CS	44	88.0
	NVD	6	12.0
Maternal death		0	0
Total		50	100.0

Neonatal outcomes included low birth weight in 15 newborns (30%), stillbirth in 1 newborn (2%), and birth asphyxia in 3 newborns (6%). Additionally, 23 newborns (46%) were admitted to the neonatal intensive care unit (NICU). Prematurity was observed in 27 newborns (54%), with 12 newborns (24%) born before 34 weeks of gestation and 15 newborns (30%) born between 34-36 weeks of gestation, as detailed in Table 6.

Table 6: The neonatal outcome among the study sample

		Frequency	Percent
Birth weight	< 2500 g	15	30.0
	>2500 g	35	70.0
Still birth	Yes	1	2
	No	49	98
Birth asphyxia	Yes	3	6.0
	No	47	94.0
Admission to NICU	Yes	23	46.0
	No	27	54.0
Gestational age	<34 week	12	24.0
	34-36 week	15	30.0
	>37 week	23	46.0
Total		50	100.0

Discussion

Antepartum hemorrhage (APH) was most frequently observed in

women aged 20-34 years, accounting for 72% of cases (36 cases). This finding is consistent with the study by Agarwal S. *et al.* (2023), which reported that the majority of patients, 46.05%, were between 26-30 years old, with an additional 23.68% falling within the 20-25 years' age range [14]. Similarly, Sharmila G. and Prasanna [5] also observed that most patients were within the 20-30 years' age group. However, one Indian study reported contrasting results, indicating that a higher proportion of patients were of advanced maternal age (>30 years) [6]. In the present study, 70% of women (35 cases) had a parity of 1-4, and 20% (10 cases) had a parity greater than 5. This aligns with the findings of Agarwal S. *et al.* (2023), who reported that 30.26% of patients were in their second pregnancy, while 25% were in their fourth pregnancy [4]. Bhola DB and KH, PP (2019) similarly noted that 56% of cases involved multigravida women [7]. APH has been shown to be significantly higher among multiparous women with a history of at least one vaginal delivery compared to nulliparous women, with an adjusted odds ratio of 3.42 [8]. This association may be attributed to endometrial damage from previous childbirth, dilation and curettage, and other factors. One of the key risk factors for APH, particularly in cases of placenta accreta spectrum, is uterine scarring from previous surgeries, which predisposes the placenta to attach or invade the myometrium [9]. The majority of women in this study had a body mass index (BMI) of 25-29.9, classifying them as overweight (78%, 39 cases), followed by obesity (BMI >30) in 22% of cases (11 cases). These findings are consistent with the study by Choudhary J. *et al.* [10], who found that 7% of APH cases were overweight and 11.1% were obese. The primary causes of APH in this study were placenta previa (46%, 23 cases), placental abruption (26%, 13 cases), and placenta accreta (22%, 11 cases). This is consistent with findings by Hamadameen A.I. (2018) in Iraq, where 36.7% of APH cases were due to placental abruption, and 58% were attributed to placenta previa, with 7.03% of placenta previa cases being associated with placenta accreta [11]. Tyagi P. (2016) similarly reported that placenta previa accounted for 80% of APH cases, followed by placental abruption (19%) and undetermined causes (1%) [12]. Behera R. *et al.* (2022) found similar trends, with placenta previa contributing to 71% of cases, placental abruption to 27%, and undetermined causes to 2% [13]. However, Gelan M. *et al.* (2020) identified placental abruption as the leading cause of APH at Jimma University Medical Center, accounting for 74.5% of cases [14]. In South Africa, Heitkamp A. found that placental abruption was the primary cause of APH, accounting for 37.8% of cases [15]. Kulkarni AR, *et al.* (2021) reported that 60% of APH cases involved placental abruption, 37% were due to placenta previa, and 3% had unknown causes [16]. The high incidence of placenta accreta in this study, at 22%, is higher than reports from other regions, with Hamadameen AI (2018) in Iraq

finding a 7% incidence of placenta accreta [11]. Although the true incidence of placenta accreta is challenging to determine, it is estimated to be approximately 1 in 1,000 deliveries, with reports ranging from 1 in 500 to as high as 1 in 111 [17]. The increasing incidence of placenta accreta is likely related to the rise in associated risk factors, including placenta previa, previous cesarean sections, the use of assisted reproductive technologies, uterine surgeries, and advanced maternal age. Uterine conservation and a history of retained placenta or placenta accreta have also emerged as significant risk factors [17]. In this study, a previous uterine scar was identified in 72% of patients (36 cases), gestational hypertension in 26% (13 cases), multiparity in 16% (8 cases), twin pregnancy in 4% (2 cases), advanced maternal age (>35 years) in 22% (11 cases), and malpresentation in 16% (8 cases). These findings are consistent with Dibaba B. [18], who found that women with a previous cesarean section were 4.7 times more likely to experience APH compared to those without a cesarean history. Additionally, Dibaba B. reported that 7.1% of APH cases involved twin pregnancies, compared to 5.7% in the control group [18]. Maternal outcomes in this study included cesarean hysterectomy in 4% of cases (2 cases), postpartum anemia in 54% (27 cases), and blood transfusions in 72% of cases (36 cases), with 18% of transfusions occurring intraoperatively (9 cases) and 54% postoperatively (27 cases). The majority of patients received ≤ 2 units of blood (58%, 29 cases), while 14% received ≥ 3 units (7 cases). Cesarean section was the mode of delivery in 88% of cases (44 cases), with vaginal delivery occurring in 12% (6 cases). No maternal deaths were reported. These outcomes align with the findings of Hamadameen A.I. (2018) in Iraq, who reported blood transfusions of ≥ 5 units in 5% of cases, cesarean section in 78.4% of cases, cesarean hysterectomy in 0.9%, and a maternal mortality rate of 0.3% [11]. Similarly, Choudhary J. *et al.* (2018) observed higher rates of adverse pregnancy outcomes among women with APH (83.3% vs. 49.2%, $P = .0001$) [10], while Agarwal S. *et al.* (2023) reported blood transfusion in 70% of cases, peripartum hysterectomy in 17.1%, and maternal death in 2.63% of cases [4]. Neonatal outcomes in this study included low birth weight in 30% of cases (15 newborns), stillbirth in 2% (1 newborn), birth asphyxia in 6% (3 newborns), and NICU admission in 46% (23 newborns). Prematurity was observed in 54% of cases (27 newborns), with 24% (12 newborns) born before 34 weeks of gestation and 30% (15 newborns) born between 34-36 weeks. These findings are consistent with the study by Choudhary J. *et al.* (2018), which found worse neonatal outcomes among neonates born to women with APH (59.1% vs. 23.9%, $P = .0001$) [10]. Hamadameen A.I. (2018) similarly reported a neonatal outcome of 39.9% low birth weight, 47.8% prematurity, 42.9% NICU admission, and 24.2% perinatal mortality [11]. Agarwal S. *et al.* (2023) reported that 34% of neonates had preterm or low birth weight, with stillbirth in 12%, neonatal death in 9%, and NICU admission in 45% [4]. Khandasu S. *et al.* [19] also found a perinatal and stillbirth rate of 21% among APH patients.

Conclusion

It is imperative that institutions offer comprehensive services at their labour and delivery facilities to reduce the negative consequences for both mothers and infants. This encompasses guaranteeing that the facility is furnished with well-organised equipment and personnel who provide courteous assistance. Furthermore, it is crucial to promptly identify any potential complications, prepare families for blood donation in the event of a blood transfusion, have skilled anaesthesia personnel

available, and ensure that all necessary human resources are in place to effectively manage cases of antepartum hemorrhage.

Conflict of Interest

Not available

Financial Support

Not available

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