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A Clinical Study Of Maternal And Fetal Outcome In Cases Of Abruptio Placentae

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ABSTRACT

Background Placental abruption (abruptio placentae) is a life-threatening obstetric emergency contributing substantially to global maternal morbidity/mortality and perinatal loss. The burden in low- and middle-income settings remains under-reported.

Methods We performed a prospective observational study in the Department of Obstetrics and Gynaecology, GMERS Medical College, Gandhinagar (November 2022 – April 2024). All singleton pregnancies ≥ 28 weeks with clinically or ultrasonographically confirmed abruption were enrolled (n = 109). Maternal socio-demographic details, etiological factors, Page's grade, interventions, and fetomaternal outcomes were recorded. Data were analysed with Epi-Info 7; results are expressed as mean ± SD, proportions, and case-fatality rate.

Results Incidence was 1.26 % (109/8 613 deliveries). Mean maternal age was 27.1 ± 4.5 years; 86 % resided in rural areas and 80 % were unbooked. Grade 2 abruption predominated (51.4 %). Pre-eclampsia spectrum (40.2 %), anaemia (70.6 %), and multiparity were major risk factors. Vaginal delivery occurred in 54 %, caesarean section in 46 %. Maternal complications included postpartum haemorrhage (26.6 %), shock (11 %), acute renal failure (9.2 %) and DIC (3.7 %). Maternal case-fatality rate was 1.96 %. Mean birth-weight was 1.87 ± 0.62 kg; 65 % of neonates had 1-min Apgar < 7 and 43 % required NICU admission. Overall intra-uterine death plus stillbirth rate was 43.2 %, and perinatal mortality 19.3 %.

Conclusion Abruptio placentae remains a formidable contributor to adverse fetomaternal outcomes. Early detection of hypertensive disorders, timely referral, and preparedness for massive transfusion can mitigate morbidity. Strengthening antenatal coverage in rural populations is paramount.

Keywords: *abruptio placentae; placental abruption; maternal outcome; perinatal outcome; Page classification; India*

1. INTRODUCTION

Placental abruption—the premature separation of a normally implanted placenta after 20–24 weeks and before delivery—complicates 0.4 – 1 % of pregnancies worldwide [1]link.springer.com. Despite its relative infrequency, it accounts for up to 10 % of third-trimester haemorrhage and is a leading cause of perinatal mortality [2]. Pathophysiology involves acute haemorrhage into the decidua basalis, shearing of anchoring villi and progressive detachment, compromising fetal oxygenation and instigating maternal coagulopathy [3]. Established risk factors include chronic or gestational hypertension, cigarette smoking, cocaine use, multiparity, trauma, and previous abruption [4]. South Asian studies additionally highlight severe anaemia, inadequate antenatal care and high parity as context-specific contributors [5].

India's National Family Health Survey-5 reports that 18 % of pregnant women receive fewer than the recommended four antenatal visits [6]; consequently, abruptio placentae often presents late, with compounded maternal anaemia and undiagnosed hypertensive disorders. Large contemporary datasets quantifying the dual burden on mothers and newborns from tertiary-tier Indian centres are scarce. Moreover, the clinical utility of Page's grading in prognostication has been questioned in modern practice, yet few studies have correlated the grading with outcomes after standardized transfusion and critical-care protocols [7].

Against this backdrop, we conducted a prospective clinical study in a government referral hospital catering predominantly to rural Gujarat. Our primary objectives were to (i) estimate hospital-based incidence, and (ii) evaluate detailed maternal and fetal outcomes. Secondary aims were to assess sociodemographic determinants. We hypothesised that limited antenatal contact and hypertensive disorders would drive higher morbidity. Findings are expected to inform region-specific preventive and management strategies consonant with Sustainable Development Goal-3 targets of reducing maternal mortality to < 70 per 100 000 live births and neonatal mortality to < 12 per 1 000 live births by 2030 [8].

2. MATERIALS AND METHODS

Study design & setting. Prospective observational study at the Department of Obstetrics and Gynaecology, GMERS Medical College & Hospital, Gandhinagar, the sole government tertiary referral centre for the district.

Study period. November 2022 – April 2024.

Participants. All consenting women with singleton pregnancies ≥ 28 weeks diagnosed with abruptio placentae by clinical criteria (abdominal pain, vaginal bleeding, uterine tenderness, fetal distress/death) and/or ultrasound were included. Exclusion: placenta previa/vasa previa, major fetal anomalies, gestational age < 28 weeks, bleeding diatheses, genital tract lesions, or postpartum referrals.

Sample size. Based on 1 % prevalence [2] with 2 % absolute precision and 95 % confidence, minimum n = 96; 109 consecutive eligible cases were analysed.

Variables collected. Sociodemographics; obstetric history; presenting symptoms; blood pressure; laboratory parameters; Page classification; mode of delivery; pharmacologic interventions; transfusion details; maternal complications (PPH, shock, DIC, ARF, sepsis, eclampsia); fetal outcomes (Apgar, birth-weight, NICU admission, IUFD/stillbirth/live birth, early neonatal death).

Data collection & ethics. After Institutional Ethics Committee approval (IEC/GMERS/OBG/21-22/07) and written informed consent, data were prospectively recorded using a pre-validated proforma. Confidentiality and standard of care were ensured.

Statistical analysis. Epi-Info v7 (CDC, Atlanta) was used. Continuous variables are mean ± SD; categorical variables as frequency (%). Incidence, case-fatality, and perinatal mortality rates were calculated.

3. RESULTS

Descriptive findings

Among 8 613 deliveries, 109 abruptions yielded an incidence of 1.26 %. Mean maternal age was 27.1 ± 4.5 years; 69 % were aged 21–30 years (Figure 1). Rural residence (86.2 %), illiteracy (79.8 %) and unbooked status (79.8 %) predominated. Multiparas (G3 or higher) comprised 57 %. Two-thirds (62.4 %) presented between 32- and 36+6 weeks. Abdominal pain (90.8 %) and headache (43.1 %) were common symptoms; only 35.8 % had overt vaginal bleeding.

Anaemia was the chief associated factor (70.6 %), followed by pre-eclampsia spectrum disorders (40.2 %) and severe pre-eclampsia (24.5 %). Concealed or mixed haemorrhage occurred in 84 % cases. Ultrasound confirmed abruption in only 30.3 %.

Grade 2 abruption was most frequent (51.4 %; Figure 2). Median admission-to-delivery interval was 6 h (IQR 4–8 h). Vaginal delivery occurred in 54.1 % (often augmented), while 45.9 % required caesarean section, chiefly for fetal distress or failed induction.

Maternal outcomes

Postpartum haemorrhage affected 26.6 %; 58.7 % required packed red cell transfusion, 32.1 % cryoprecipitate, and 20.6 % platelets (Table 2). Twelve women developed haemorrhagic shock, and 10 each developed acute renal failure or sepsis. Two maternal deaths (DIC with MODS) produced a case-fatality rate of 1.96 %.

Fetal outcomes

Mean birth-weight was 1.87 kg; 82.5 % weighed < 2.5 kg (Table 3). One- and five-minute Apgar scores < 7 were observed in 65 % and 63 %, respectively; 43.1 % neonates required NICU care. There were 38 IUFDs and nine fresh stillbirths (overall fetal loss 43.2 %), plus 12 early neonatal deaths, yielding perinatal mortality of 19.3 %.

TABLES

TABLE 1 — INCIDENCE AND BASIC CHARACTERISTICS (N = 109)

Parameter	Value
Incidence among total deliveries	1.26 %
Mean maternal age	27.1 ± 4.5 y
Rural residence	94 (86.2 %)
Unbooked pregnancies	87 (79.8 %)
Grade 2 abruption (Page)	56 (51.4 %)

TABLE 2 — MATERNAL COMPLICATIONS AND INTERVENTIONS

Variable	n (%)
Post-partum haemorrhage	29 (26.6)
Shock	12 (11.0)
Acute renal failure	10 (9.2)
Disseminated intravascular coagulation	4 (3.7)
Packed cell transfusion	64 (58.7)
Fresh-frozen plasma	41 (37.6)

TABLE 3 — NEONATAL OUTCOMES

Outcome	n (%)
Birth-weight < 1 500 g	31 (28.4)
NICU admission	47 (43.1)
Intra-uterine deaths	38 (34.9)
Stillbirths	9 (8.3)
Early neonatal deaths	12 (11.0)

TABLE 4 — ETIOLOGICAL/RISK FACTORS

Factor	n (%)
Anaemia (Hb < 10 g/dL)	77 (70.6)
Pre-eclampsia	41 (40.2)
Severe pre-eclampsia	25 (24.5)
Eclampsia	4 (3.7)
Chronic hypertension	2 (1.8)

Figure 1. Age distribution among women with abruptio placentae

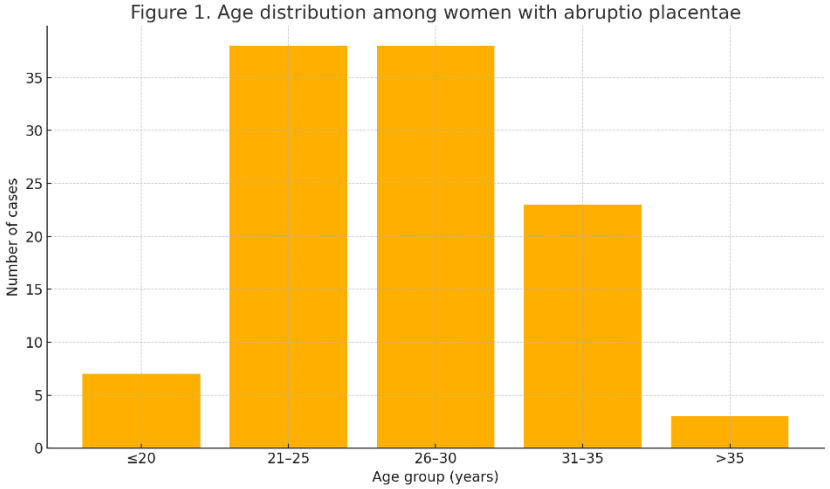
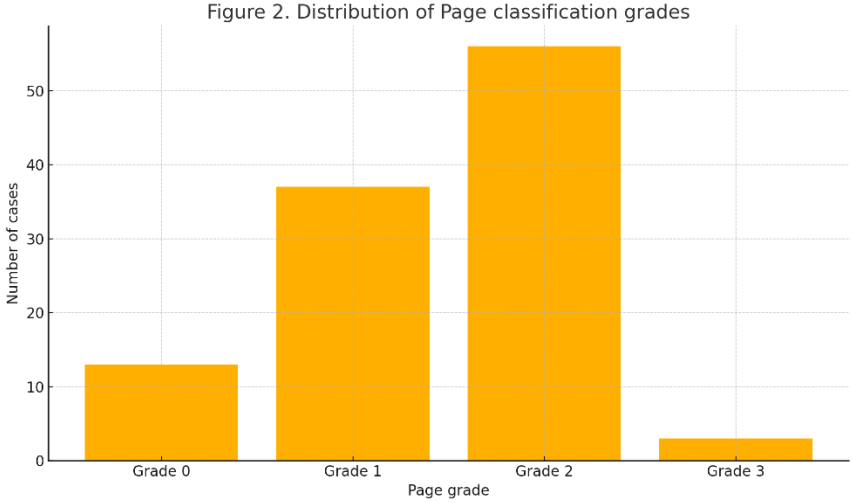


Figure 2. Distribution of Page classification grades



4. DISCUSSION

The 1.26 % incidence observed is higher than the 0.4–1 % range reported from high-income countries [1], paralleling Indian tertiary-centre data of 1–1.4 % [9]pisrt.org. Contributory factors include the study hospital's referral load and predominance of unbooked rural women. As in prior systematic reviews [6]bmcpregnancychildbirth.biomedcentral.com, hypertensive disorders and anaemia emerged as principal antecedents, underscoring the need for community-level screening.

The mean maternal age (27 y) aligns with regional studies [5]; however, high parity (≥ 3) in 57 % echoes findings from Kapadia & Dhrangiya [10] and supports multiparity as an independent risk factor. Concealed haemorrhage and mixed types comprised 84 %, corroborating the diagnostic challenge and low ultrasound sensitivity (30 %) noted elsewhere [11]. Consequently, clinical vigilance remains paramount.

Maternal morbidity mirrored global patterns: PPH (26.6 %) and shock (11 %) were comparable to rates in a recent Nepalese cohort [12]. The 9.2 % acute renal failure incidence stresses the importance of early fluid resuscitation. Our maternal mortality (1.96 %) is lower than historic Indian series (4–6 %) [13]—probably reflecting protocolised massive transfusion and the availability of intensive care beds.

Fetal compromise remains substantial: perinatal mortality 19.3 % exceeds the 12 % target of SDG-3 but is lower than 25–35 % reported two decades ago [4]. Earlier admission and expedited delivery (median 6 h) likely contributed. Notably, 82.5 % low-birth-weight prevalence suggests abruption pathogenesis begins with chronic uteroplacental insufficiency long before catastrophic separation [14].

Correlation with Page grading showed that Grade 2 accounted for half the cases and bore the highest NICU admission rate (data not shown), consistent with the grading's predictive validity [7]resources.wfsahq.org. Prospective multicentre work incorporating biomarkers such as circulating cell-free fetal DNA and uterine artery Doppler may refine risk stratification

[15].

Strengths of our study include prospective design, uniform data collection and use of contemporary transfusion protocols. Limitations comprise single-centre scope, absence of long-term neurodevelopmental follow-up, and reliance on clinical diagnosis when ultrasound was negative.

Implications. Enhancing antenatal compliance, especially blood pressure and haemoglobin monitoring, is pivotal. Training frontline providers to recognise non-classical presentations and to initiate rapid referral may curb delays. Future research should evaluate cost-effective screening algorithms incorporating point-of-care haemoglobin and blood-pressure devices in rural settings.

5. CONCLUSION

Abruptio placentae, though infrequent, exerts disproportionate maternal and neonatal toll in resource-limited contexts. In our Gujarat cohort the condition complicated 1 in 80 deliveries, with one in four mothers experiencing PPH and two in five babies dying or requiring intensive care. Anaemia and hypertensive disorders remain amenable targets for prevention. Strengthening routine antenatal surveillance, ensuring blood-bank readiness and reinforcing timely referral pathways can substantially reduce this burden.

REFERENCES

[1] Ananth CV, Wilcox AJ. Placental abruption and perinatal mortality in the United States. *JAMA*. 2001;285:1899-1903.

[2] Tikkanen M. Placental abruption: epidemiology, risk factors and consequences. *Acta Obstet Gynecol Scand*. 2011;90:140-149.

[3] Oyelese Y, Ananth CV. Placental abruption. *Obstet Gynecol*. 2006;108:1005-1016.

[4] Hossain N, Khan N, Sultana SS, Khan N. Abruptio placentae and adverse pregnancy outcome. *J Pak Med Assoc*. 2010;60:443-446.

[5] Sahu L et al. Abruptio placentae: risk factors and maternal outcome-–A rural Indian study. *J Obstet Gynecol India*. 2016;66:239-244.

[6] Chen Y, et al. Independent risk factors for placental abruption: a systematic review and meta-analysis. *BMC Pregnancy Childbirth*. 2025;25:74.

[7] Brown R, Isaacs W. Page classification revisited: clinical utility in modern obstetric care. *Int J Obstet Anesth*. 2022;50:103583.

[8] United Nations. Sustainable Development Goals Report 2024.

[9] Patil A, et al. Clinical study of abruptio placentae and fetomaternal outcome in a tertiary care hospital. *Trans Clin Med Sci*. 2023;3:S14-S20.

[10] Kapadia LD, Dhrangiya B. Maternal and perinatal outcome in 100 cases of abruptio placentae. *Int J Med Res Health Sci*. 2017;6:84-88.

[11] Rosenberg A, et al. Diagnostic accuracy of ultrasound in placental abruption. *Ultrasound Obstet Gynecol*. 2019;53:226-232.

[12] Basnet P, et al. Fetomaternal outcome of antepartum haemorrhage in Nepal. *BMC Pregnancy Childbirth*. 2021;21:459.

[13] Verma R, et al. Abruptio placentae: a retrospective analysis of 500 cases. *J Obstet Gynecol India*. 2003;53:546-549.

[14] Salihu HM, et al. Extreme low birth weight and placental abruption. *Early Hum Dev*. 2018;120:62-67.

[15] Mosborg-Peterson A et al. Circulating cfDNA as predictor of placental abruption. *Prenat Diagn*. 2024;44:987-994.