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ORIGINAL ARTICLE

# Fetal Outcomes in Neonates Born to Women with Major Degree Placenta Previa At Zagazig University Hospitals: Cohort study

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## ABSTRACT

**Background**: Placenta previa is the most co mmon cause of po hemorrhage, which is associated with either maternal or fetal morbi mortality. Placenta previa is considered as a major risk factor for perinatal events.

**Aim of the study:** we aimed to evaluate the fetal outcomes among pregna with major degree placenta previa at Zagazig University Hospitals.

**Materials and Methods:** An observational cohort study has been held at t Risk Pregnancy Unit at Zagazig University Hospitals, Egypt, from January June 2019. A total of 80 pregnant women diagnosed with placenta previ with placenta accreta or not) after 20 weeks of pregnancy. All analys conducted using IBM SPSS software package version 20.0.

**Results:** Eighty pregnant women were included in our study. The mean age was 32.3 (5.01) years, while the mean gestational age was 36.2 (2.03) weeks. Central placenta previa was detected in most of the included patients (52.5%), while placenta accrete was reported in 39 women (48.8%). Fifty-six women had a completely covered internal cervical os. Most of the neonates (70%) were males with a mean birth weight of 2912.5 (490) gm and a good APGAR score (85.0%). Thirteen neonates had Jaundice, and 17 neonates required neonatal intensive care unit admission. Only five neonates (6.3%) died. Placenta previa centralis was associated with a higher incidence rate of bad APGAR score, admission to neonatal intensive care unit, stillbirth, and neonatal morbidity; however, we detected no statistically significant difference among the three types of placenta previa regarding all fetal outcomes and complications (all P>0.05)

**Conclusions:** Placenta previa should be considered as a marker for possible obstetric complications, and a careful evaluation with timely delivery to reduce the associated complications should be considered as well as developing a prenatal screening protocol.

**Keywords:** placenta previa**;** placenta accreta; hemorrhage**;** fetal.

## INTRODUCTION

Placenta previa is one of the primary causes of obstetric hemorrhage after the second half of pregnancy, and this obstetric hemorrhage has led to an increased need for subsequent hysterectomy when the measures to stop this bleeding fail [1,2]. In Cresswell et al., the prevalence of placenta previa is estimated to be 5.2 per 1000 pregnancies [3]. Major degree placenta previa is considered as a risk factor for an enhanced rate of perinatal morbidity and mortality. The commonly reported perinatal adverse events are respiratory distress

syndrome, the need for neonatal intensive care unit (NICU) admission, anemia, neonatal Jaundice, and death. In contrast, the most prevalent maternal complications reported were postpartum hemorrhage, sepsis, anemia, and hypovolemic shock [4].

Regarding the placentation of the placenta, previous studies suggested that the placentation may affect the perinatal outcomes where anterior placentation is linked with poorer adverse events such as restriction of fetal growth and preterm births [5,6]. Moreover, it was linked with increased rates of premature rupture of membranes (PROM). Furthermore, to prevent uncontrolled bleeding, it was associated with an increased need for cesarean delivery, which is a considerable risk factor for an immature fetal lung (known as neonatal respiratory distress syndrome) [7]. Prenatal screening programs showed an advantage because many patients are now aware of the consequences of major degree complete placenta previa either on maternal or fetal outcomes, and they undergo termination of pregnancy during the second half of pregnancy because of the possible maternal complications or fetal malformations [8].

In our study, we aimed to evaluate the fetal outcomes among pregnant women with major degree placenta previa at Zagazig University Hospitals.

## MATERIALS AND METHOD

### Materials included in the study

Eighty pregnant women diagnosed with placenta previa after 20 weeks of pregnancy presented at the High-Risk Pregnancy Unit at Zagazig University Hospitals, Egypt, within the period from January 2019 to June 2019 were included in our study.

**Eligibility criteria**: We included pregnant women with a singleton pregnancy with a certain date of last menstrual period who had gestational age (GA) more than 20 weeks diagnosed by ultrasound with major degree placenta previa either with placenta accreta or not. Patients who were lost during follow up were excluded from our study.

The diagnosis of placenta previa was made by ultrasound and confirmed at the time of delivery.

The management plan included a routine obstetric ultrasound for all pregnant women at 20-week gestation. Asymptomatic cases were allowed to stay at home after being cautioned. If the diagnosis was confirmed by repeated scan at (28-30 weeks gestation), or the incidence of vaginal bleeding, the included cases were confined to the hospital until delivery. Data were collected for maternal age, parity, GA, and fetal outcomes.

**Ethical Considerations:** A written consent was obtained from all cases. This work has been carried out following the Code of Ethics of the World Medical Association (Helsinki Declaration of 1975, as revised in 2000) for humans' studies [9]. Institutional Review Board (IRB) of the faculty of Medicine Zagazig University affirmed the study protocol.

**Statistical analysis:** We collected data included patients' history, clinical examination, laboratory investigations, and outcome. All analyses were undertaken using Statistical Package for the Social Sciences (SPSS) software version 20.0. We reported continuous data as mean and standard deviation or median and range for normally and non-normally distributed data, respectively. Categorical data were presented as frequencies and percentages. The chi-square test was used for comparison of categorical variables. P-value was set at $<0.05$ for significant results and at $<0.001$ for high significant results.

## RESULTS

We included 80 pregnant women (mean age= 32.3 (5.01) years, mean GA= 36.2 (2.03) weeks). Fifty-three women (66.30%) had gravida (range 3 to 5), and 45 women had a parity $\leq 2$. 56.30% of the included patients had a previous abortion, 83.8% had antepartum bleeding, and 75% had previous Cs delivery, as shown in **Table 1**.

Forty-two women (52.5%) had central placenta previa, and 56 women had a completely covered internal cervical os. Placenta accrete was reported in 39 women (48.8%), as shown in **Table 2.**

The mean birth weight of neonates was 2912.5 (490) gm. The majority (70%) were males with a good APGAR score (85.0%). Jaundice was reported in 13 neonates (16.25%). Only 17 out of 80 neonates required NICU admission. Neonatal morbidity was reported in 25%of neonates, while only five neonates (6.3%) died, as shown in **Table 3**.

Among the three types of placenta previa, we detected no statistically significant difference regarding all fetal outcomes and complications (all $P>0.05$). However, placenta previa centralis was associated with a higher incidence rate of bad APGAR score, admission to NICU,

stillbirth, and neonatal morbidity, as shown in **Table 4.**

**Table 1. Demographics and obstetric data distribution among the studied group (n=80).**

| | | | |
|---|---|---|---|
| Maternal age in years<br>Mean (SD)<br>Median (Range) | | 32.3 (5.01)<br>33.0 (23-41) | |
| Gestational age in weeks<br>Mean (SD)<br>Median (Range) | | 36.2 (2.03)<br>36.0 (28-38) | |
| Gravidity, n (%) | ≤ 2 | 8 | 10% |
| | 3-5 | 53 | 66.30% |
| | > 5 | 19 | 23.70% |
| Parity, n (%) | 0 | 4 | 5% |
| | ≤ 2 | 45 | 56.30% |
| | >2 | 31 | 38.70% |
| Previous Abortion, n (%) | No | 35 | 43.80% |
| | Yes | 45 | 56.30% |
| Antepartum Bleeding, n (%) | No | 13 | 16.3% |
| | Yes | 67 | 83.8% |
| Previous deliveries, n (%) | Caesarean | 60 | 75% |
| | Vaginal | 2 | 2.5% |
| | Mixed | 18 | 22.5% |
| Consanguinity, n (%) | No | 75 | 93.8% |
| | Yes | 5 | 6.3% |
| DM, n (%) | No | 75 | 93.8% |
| | Yes | 5 | 6.3% |
| Preeclampsia, n (%) | No | 72 | 90% |
| | Yes | 8 | 10% |
| Renal, n (%) | No | 75 | 93.8% |
| | Yes | 5 | 6.3% |
| Operation, n (%) | No | 55 | 68.8% |
| | Yes | 25 | 31.3% |

**Table 2. Ultrasonography findings and results distribution among the studied group (n=80).**

| | | | |
|---|---|---|---|
| Amniotic Fluid, n (%) | Average | 73 | 91.2% |
| | Decreased | 7 | 8.8% |
| Placenta previa, n (%) | Anterior | 22 | 27.5% |
| | Central | 42 | 52.5% |
| | Posterior | 16 | 20% |
| Cervical internal OS, n (%) | Incomplete | 24 | 30% |
| | Complete Covered | 56 | 70% |
| Placenta accreta, n (%) | Negative | 41 | 51.3% |
| | Positive | 39 | 48.8% |

**Table 3: Baby outcomes and complications (n= 80)**

| | | | |
|---|---|---|---|
| Birth weight in gm<br>Mean (SD)<br>Median (Range) | | 2912.5 (490.5)<br>3000.0 (1500 to 3500) | |
| Sex, n (%) | Male | 56 | 70.0% |
| | Female | 24 | 30.0% |
| APGAR score, n (%) | Bad | 12 | 15.0% |

| | | | |
|---|---|---|---|
| Birth weight in gm<br>Mean (SD)<br>Median (Range) | | 2912.5 (490.5)<br>3000.0 (1500 to 3500) | |
| | Good | 68 | 85.0% |
| NICU admitted, n (%) | No | 63 | 78.8% |
| | Yes | 17 | 21.2% |
| Still birth, n (%) | | 2 | 2.5% |
| Neonatal mortality, n (%) | | 5 | 6.3% |
| Neonatal morbidity, n (%) | | 20 | 25.0% |
| Congenital anomalies, n (%) | | 1 | 1.3% |
| Prematurity, n (%) | | 7 | 8.75% |
| Neonatal jaundice, n (%) | | 13 | 16.25% |

**Table 4. Baby Outcome and complication relation with Different of placenta previa**

| | | Placenta previa | | | Total | P-value |
|---|---|---|---|---|---|---|
| | | Anterior (n= 22) | Central (n= 42) | Posterior (n= 16) | | |
| APGAR score, n (%) | Bad | 4 (18.2%) | 6 (14.3%) | 2 (12.5%) | 12 (15.0%) | |
| | Good | 18 (81.8%) | 36 (85.7%) | 14 (87.5%) | 68 (85.0%) | 0.27 |
| NICU admission, n (%) | No | 18 (81.8%) | 32 (76.2%) | 13 (81.2%) | 63 (78.8%) | |
| | Yes | 4 (18.2%) | 10 (23.8%) | 3 (18.8%) | 17 (21.2%) | 0.84 |
| Still birth, n (%) | No | 22 (100.0%) | 40 (95.2%) | 16 (100%)) | 78 (97.5%) | 0.39 |
| | Yes | 0 (0.0%) | 2 (4.8%) | 0 (0.0%) | 2 (2.5%) | |
| Neonatal mortality, n (%) | No | 21 (95.5%) | 40 (95.2%) | 14 (87.5%)) | 75 (93.8%) | |
| | Yes | 1 (4.5%) | 2 (4.8%) | 2 (12.5%) | 5 (6.2%) | 0.511 |
| Neonatal morbidity, n (%) | No | 18 (81.8%) | 29 (69.0%) | 13 (81.2%) | 60 (75.0%) | |
| | Yes | 4 (18.2%) | 13 (31.0%) | 3 (18.8%) | 20 (25.0%) | 0.43 |
| Congenital anomalies, n (%) | No | 21 (95.5%) | 42 (100.0%) | 16 (100.0%) | 79 (98.8%) | 0.26 |
| | Yes | 1 (4.5%) | 0 (0.0%) | 0 (0.0%) | 1 (1.2%) | |

## DISCUSSION

Eighty pregnant women, with a mean age of 32.3 (5.01) years and mean GA= 36.2 (2.03) weeks, gave birth to 80 neonates. A total of 42 women (52.5%) had central placenta previa, 56 women had a completely covered internal cervical os, and 39 women (48.8%) had positive placenta accrete. The 80 neonates (mean birth weight= 2912.5 gm, range 300 to 1500 gm) were 56 males and 24 females. Of them, 68 had good APGAR scores, and Jaundice was reported in 13 neonates. Seventeen neonates needed NICU admission, and five neonates died. We compared the fetal outcomes and complications among the three types of placenta previa, and we detected no statistically significant difference regarding all outcomes. However, placenta previa centralis was associated with a higher incidence rate of bad APGAR score, admission to NICU, stillbirth, and neonatal morbidity. Two cases (2.5%) were stillbirth, and only one case with congenital anomaly (1.3%). A percent of 25% of the neonates had neonatal morbidity, and seven neonates (8.75%) were premature.

Our results are contrary to findings reported by Ahmed et al., 2015 [10]. The authors documented that 13.5% of the neonates were premature, 13.2% were fresh stillborn, and 17% required a NICU admission. This can be justified by the fact that at term delivery is associated with increased neonatal adverse events in women with placenta previa. There is controversy regarding the association between placenta previa and fetal growth as some physicians suggest that placenta previa may lead to impaired birth weight. In contrast, others documented no significant difference between neonates born to mothers with placenta previa and their matched group of mothers with the normal implementation of the placenta [11,12]. In a previous study conducted by Kassem and Alzahrani, 2013 [13], the authors documented significant neonatal morbidity. Moreover, 50%

of the neonates were born before 37 weeks, and the need for NICU admission was reported in 28% of neonates. A low 1-minute Apgar score was observed while the 5-minute Apgar score was improved. The score of 7 was documented in only 4.1% of the newborns. The newborns delivered before 34 weeks had marked morbidities.

According to Devarmani and Tallur, 2016 [14], of the 50 pregnancies, the perinatal deaths were reported in 14 neonates. Approximately 42.85%, 28.5%, and 14.2% of the neonates had prematurity, RDS, and aspiration. The authors documented a similar perinatal mortality rate between minor and major placenta previa with a higher rate among the group with GA of 28-33 weeks when compared to the group with GA of 34-36 weeks and more than 37 weeks (51% vs. 34.28% and 14.28%, respectively). A good survival rate was accounted for neonates weighing more than 2500 grams, while a reduced survival rate was accounted for neonates weighing less than 1000 grams. The malpresentation of the placenta inside the lower segment can interfere with the normal engagement of the fetal head; thus, fetal malpresentation, either transverse or breech lie, occurs. An enhanced rate of poor Apgar scores (lower than 7), fetal malpresentation, low birth weight, and intrauterine neonatal death are reported in neonates born to placenta previa cases. This comes in line with previous studies conducted by Bhutia et al., 2011 & Ojha, 2013 [15,16].

This can be explained by the blood loss in placenta previa cases is associated with hypoxia, prematurity, and fetal growth restriction. In our study, we detected no statistically significant association between placenta previa and congenital malformations. Raees et al., 2015 [4] reported that regarding the fetal outcome, 42 neonates (84%) were alive, and eight neonates (16%) died. The birth weight of the neonates ranged from 1.8 to 4 kg, with a mean of 2.75 (0.58) kg. Eighteen neonates (36%) were admitted to NICU, and 12 neonates (24%) developed Jaundice. The main limitation of our study was a single-center study with the lack of a control group in order to detect the possible risk factors for placenta previa.

In conclusion, placenta previa should be considered as a marker for possible obstetric complications, and a careful assessment with timely delivery should be put into consideration to reduce the possible associated adverse events. Placenta accreta should be excluded in cases of placenta previa, particularly in cases with probable risk factors such as advanced maternal age, high parity, and previous uterine surgery. Developing a prenatal screening protocol should be put into consideration. Because the fetal morbidities and mortalities in cases with placenta previa are preventable, efforts should be performed to diminish these rates by the better spacing between pregnancies, and antenatal registration of all pregnant women with routine ultrasonography and referral of high-risk pregnant women to a tertiary care center.

**Disclosure of potential conflicts of interest**

No conflicts of interest. The authors fully funded this study.

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