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RESEARCH ARTICLE

THE OPTIMAL TIMING FOR DELIVERY: ANALYSIS OF NEONATAL OUTCOMES BY GESTATIONAL AGE IN PATIENTS WITH PLACENTA PREVIA

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ABSTRACT

Introduction: Placenta previa is an obstetric complication in which the placenta is inserted partially or wholly in the lower uterine segment. It is a leading cause of antepartum haemorrhage (vaginal bleeding). It affects approximately 0.4-0.5% of all labours. Women with placenta previa often present with painless, bright red vaginal bleeding. This commonly occurs around 32 weeks of gestation, but can be as early as late mid-trimester. Much debate has been given to the optimal timing of delivery in cases of placental abnormalities. Given these risks, numerous official organizations have been proponents of active medical management in cases of placenta previa, as well as placenta accreta, increta, and percreta. In particular a prophylactic, elective cesarean delivery prior to the onset of labor is theorized to reduce the rates of spontaneous hemorrhage, which increase proportionally with advancing gestational age. The optimal timing of delivery in placenta previa is an important issue that is understudied in the literature. After all, with the increasing rate of cesarean deliveries, an increase in the incidence of placenta previa is expected to be observed.

Materials and Methods: A retrospective study, data files and the case notes was retrieved from the medical records department at Aswan university hospital from January 1/2013 to December 31/2013. in the form of data relating to the age, parity, gestational age, method of termination, perinatal outcomes, and related maternal complications. We sought to compare neonatal outcomes among pregnancies with placenta previa delivered at the late-preterm period, namely 35 and 36 weeks gestation, relative to the early-term period at 37 and 38 weeks gestation, taking 38 weeks gestation as reference. The data was entered in the computer for statistical analysis using one proprietary statistical package which is statistical packages for the social science (SPSS).

Results: There were 4284 deliveries during the period under review of these 67 patients had placenta previa the age of the patients ranged from 20- 40 years with average 30 years .The gestational age at delivery ranged from 28 – 39 wksAs regard perinatal morbidity and mortality, 2 cases complicated by IUFD which represents (2.98%). Birth at 35, 36 and 37 weeks was associated with no greater odds of meconiumpassage, fetal distress, fetal anemia, neonatal seizures, increased ventilator needs, or infant death. However, APGAR scores<7 were more common at 35 and 36 weeks 4cases (33%) and 3cases (21%) respectively; as were NICU admission rates:3 cases(25%) and 2 cases(14%)

Conclusion: Barringmaternal indications, early-term deliveryin placenta previa appears to be associated with fewerneonatal complications and no greater risk than late-pretermneonatal complications and no greater risk than late-pretermdelivery

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INTRODUCTION

Placenta previa is an obstetric complication in which the placenta is inserted partially or wholly in the lower uterine segment. (Arulkumaran, 2009) It is a leading cause of antepartum haemorrhage (vaginal bleeding). It affects approximately 0.4-0.5% of all labours. (Faiz and Ananth, 2003) Women with placenta previa often present with painless, bright red vaginal bleeding. This commonly occurs around 32 weeks of gestation, but can be as early as late mid-trimester. (Callander and Kevin P. Hanretty, 2004) This bleeding often starts mildly and may increase as the area of placental separation increases. Previa should be suspected if there is bleeding after 24 weeks of gestation. Women may also present as a case of failure of engagement of fetal head. (Brinsden *et al*., 2006) Exact cause of placenta previa is unknown. It is hypothesized to be related to abnormal vascularisation of the endometrium caused by scarring or atrophy from previous trauma, surgery, or infection. These factors may reduce differential growth of lower segment, resulting in less upward shift in placental position as pregnancy advances. (Dashe *et al*., 2002) Much debate has been given to the optimal timing of deliveryin cases of placental abnormalities. (American College of O, Gynecologists, 2013) Indeed, the risk of spontaneous hemorrhage and emergent delivery in cases of inadequate placentation may confer potentially adverse consequences, which include but are not limited to massive transfusions, hysterectomy, transfer to the ICU, and in rare cases, even fetal or maternal demise. (Schneiderman and Balayla, 2013; Crane

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et al., 2000) Given these risks, numerous official organizations have been proponents of active medical management in cases of placenta previa, as well as placenta accreta, increta, and percreta. In particular a prophylactic, elective cesarean delivery prior to the onset of labor is theorized to reduce the rates of spontaneous hemorrhage, which increase proportionally with advancing gestational age. (Spong *et al*., 2011) Some of these recommendations suggest that delivery be undertaken prior to the gestational term of 37 weeks, which confers another set of risks, namely, those associated with prematurity. (Schneiderman and Balayla, 2013) The optimal timing of delivery in placenta previa is an important issue that is understudied in the literature. After all, with the increasing rate of cesarean deliveries, an increase in the incidence of placenta previa is expected to be observed. (Miller *et al*., 1997) the Society for Maternal Fetal Medicine (SMFM) recommends an elective cesarean delivery between 36 and37 weeks of gestation, without documentation of fetal lungmaturity by amniocentesis (level of evidence: Grade B). (Spong *et al*., 2011) On the other hand, The Royal College of Obstetrics and Gynaecology (ROGC) recommends that elective delivery by cesarean section in asymptomatic women be performed beyond 38 weeks of gestation (level of evidence: Class D) These opposing recommendations, largely based on expert opinion, stem from balancing the maternal risks of continuing a pregnancy with placenta previa with the neonatal risks associated with prematurity. Late-prematurity is the period defined between 34 and36 weeks of gestation. Though infants born during this period were previously considered to be functionally and medically similar to term infants, research has consistently demonstrated this population to be at higher risks of adverse outcomes such as respiratory distress syndrome (RDS), jaundice, hypoglycemia, and poor feeding. (Raju *et al*., 2006; Wang *et al*., 2004; Young *et al*., 2007) Long-term outcomes, such as adverse neurological development, poor school performance, and infant mortality appear to be increased as well. (Petrini *et al*., 2009; Chy *et al*., 2008) Hence, electing to deliver women at this gestational age should therefore take into account these findings, and be justified.

MATERIALS AND METHODS

A retrospective study, data files and the case notes was retrieved from the medical records department at Aswan university hospital from January 1/2013 to December 31/2013. in the form of data relating to the age, parity, gestational age, method of termination, perinatal outcomes, and related maternal complications. We limited our evaluation to singleton pregnancies at delivery with a confirmed case of placenta previa, and restricted our analysis to deliveries accomplished at 35, 36, 37 or 38 completed weeks of gestation., we excluded all entries with congenital anomalies, chromosomal abnormalities, other inadequate placentation, and all those carrying a multiple pregnancy. Finally we sought to compare neonatal outcomes among pregnancies with placenta previa delivered at the late-preterm period, namely 35 and 36 weeks gestation, relative to the early-term period at 37 and 38 weeks gestation, taking 38 weeks gestation as reference. The data was entered in the computer for statistical analysis using one proprietary statistical package which is statistical packages for the social science (SPSS).

RESULTS

There were 4284 deliveries during the period under review of these 67 patients had placenta previa the age of the patients ranged from 20- 40 years with average 30 years. The peak age group was 25 – 34 years which accounted for 42 cases (62%). As regards to patient's parity 10 cases (14.92%) were nulliparous and 54 cases were multiparous (80.59%), 3cases were grand multiparous representing (4.47%). The gestational age at delivery ranged from 28 – 39 wks. History of caesarean sections were 33 cases (49.25%) history of abortion 23 cases (34.32%). As regard perinatal morbidity and mortality, 2 cases complicated by IUFD which represents (2.98%). So we analyzed 65 cases 12 cases of placenta previa at 35 Weeks, 14 cases at 36 weeks and 17at 37 weeks, against 22 cases at 38 weeks gestation. The highest quality of prenatal care was experienced by those delivered at the late pretermPeriod, and as expected, birth weight progressively increased with advancing gestational age at an average rate of200 g per week, from an average 2651.0 g at 35 weeks, to3204.1 g at 38 weeks. Relative to neonates born at 38 weeks, birth at 35, 36 and 37 weeks was associated with no greater odds of meconium passage, fetal distress, fetal anemia, neonatal seizures, increased ventilator needs, or infant death. However, APGAR scores<7 were more common at 35 and 36 weeks 4cases (33%) and 3cases (21%) respectively; as were NICU admission rates:3 cases(25%) and 2 cases(14%).

Table 1. Patient age

	Averge	Range
Patient age	30	20 – 4o
The peak age	29.5	25 - 34

Table 2. Patient parity

Parity	No	%
NulliParous	10	14.92 %
Multiparous	54	80.59 %
Grand Multiparous	3	4.47 %

Table 3. Risk – Factors among the study group

Risk Factor	No	%
History of Cs	33	49.25%
History of abortion	23	34.32%
No risk factor	11	16.41%

DISCUSSION

The main concern associated with placenta previa is the development of spontaneous hemorrhage, which may confer major adverse consequences for both mother and fetus, as well as require emergent medical intervention. The rate of hemorrhage is highest in the third trimester, and it is said to be proportional to gestational age (Spong *et al*., 2011). To decrease the risks and effects of unprompted hemorrhage, numerous expert committee opinions have suggested that elective cesarean delivery, prior to the onset of labor, be offered to these patients. However, these recommendations are conflicting and certain suggest that early delivery, even prior to the gestational term (37 weeks) be offered. In this study we compare the neonatal risks associated with late-preterm delivery relative to early-term delivery, taking 38 weeks gestation as reference controls. We find that delivery at the early-term period is associated with similar rates of complications, except for NICU admissions as well 5-min APGAR scores<7, which were higher at the late-preterm period. Our study's question rose out of the increasingly

compelling evidence regarding the risks of ‘‘late prematurity’’ (Kramer *et al*., 2000). Now more than ever, the effects of iatrogenic premature delivery have been well established (Brown *et al*., 2013). Infants delivered at the late-preterm period have higher morbidity and mortality rates than term infants (gestational age > or =37 weeks) due to their relative physiologic and metabolic immaturity, even though they are often the size and weight of some term infants (Wang *et al*., 2004). Given that the current guidelines for the timing of delivery in placenta previa suggesting premature delivery arebased largely on expert opinion, studies are required to justify these recommendations. Though it is likely that a patient with placenta previa will exhibit some form of hemorrhage during the course of pregnancy, is not possible to accurately predict whether a bleed will occur, nor the gestational age, volume, or frequency of the bleeding. This is why a patient with placenta previa can be classified into one of three categories: (1) asymptomatic: a patient with placenta previa that does not bleed throughout pregnancy; (2) stable after hemorrhage: patients that do experience active bleeding, and that exhibit both maternal and fetal stability following the episode, regardless of the amount of bleeding; (3) symptomatic: a patient that experiences a hemorrhagic episode and requires medical intervention and prompt delivery for either fetal or maternal indications (Jacques Balayla *et al*., 2015). Another important finding that we draw in this study is related to the odds of NICU admission, which is often taken as a proxy for neonatal health. We find an increased rate of NICU admission at 35 and 36 weeks gestation relative to the 38-week controls. This finding has been corroborated in other studies, which show that late-preterm neonates are at increased risk for hypothermia, hypoglycemia, hyperbilirubinemia, and respiratory morbidity requiring NICU care relative to term infants (Mally *et al*., 2013).

In conclusion, barringmaternal indications, early-term delivery in placenta previa appears to be associated with fewer neonatal complications and no greater risk than late-preterm delivery. Though we cannot make suggestions about management based simply on these findings, this information may be helpful in the development of future guidelines, which are currently needed to guide the management of these pregnancies.

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