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A Study On Maternal And Neonatal Outcomes In Placenta Previa In A Tertiary Level Hospital In India

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ABSTRACT:
Background: Placenta previa should be suspected in any woman beyond 20 weeks of gestation who presents with painless vaginal bleeding. Rapid and significant loss of intravascular volume can lead to hemodynamic instability, decreased tissue perfusion, cellular hypoxia, organ damage, and death. The aim of this study was to describe the clinical outcomes in placenta previa patients.
Methods: We enrolled patients presenting to our emergency ward or outpatient clinic with diagnosis of placenta previa from October 1, 2013 till September 30, 2015. Detailed maternal history and demographic profile was obtained for all included patients. Results of all ordered laboratory and ultrasound examination were noted for all included patients.
Results: 44 patients satisfied our inclusion and exclusion criteria during the study period. With 3.8 as the mean parity and 35.7 years as the mean age at delivery, 13 had previous vaginal deliveries, 14 had lower section cesarean sections and 10 had a history of abortions. 8 patients had type I placenta previas, 12 type II, 9 type III and 10 type IV placenta previa. Estimated blood loss was approxiamtely 811.7 mL. 2 mothers had to admitted to the intensive care unit after delivery and 14 were admitted to the maternal indoor unit. Mean post-operative hospital stay was 4.2 days. During the study period there were 27 live births, 7 neonatal deaths, 8 were still births. There were 12 babies who were admitted in the neonatal intensive care unit. Mean birth weight of the neonates was 3.8 kgs. There were 13 neonates with an APGAR score of less than 7.
Conclusion: Placenta previa increases the risk of antepartum intrapartum and postpartum hemorrhage. In this article we have described our experience of maternal and neonatal outcomes in patients presenting with placenta previa at a tertiary level hospital in Aurangabad.

Keywords: maternal, neonatal, outcomes, placenta previa

BACKGROUND

Placenta previa refers to the presence of placental tissue that extends over the internal cervical os. Sequelae include the potential for severe bleeding and preterm birth, as well as the need for cesarean delivery. Placenta previa should be suspected in any woman beyond 20 weeks of gestation who presents with painless vaginal bleeding.[1] For women who have not had a second trimester ultrasound examination, antepartum bleeding after 20 weeks of gestation should prompt sonographic determination of placental location before digital vaginal examination is performed because palpation of the placenta can cause severe hemorrhage.[2] Placenta previa affects approximately 0.4-0.5% of all labors.[1]

Although the etiology the placenta previa remains debatable, several risk factors associated with this condition have been identified. The diagnosis of placenta previa is based on identification of placental tissue covering the internal cervical os on an imaging study, typically ultrasound. Transabdominal ultrasound examination is performed as the initial examination; if it shows placenta previa or the findings are uncertain, transvaginal sonography should be performed to better define placental position.[3] Placenta previa increases the risk of antepartum (relative risk 9.8), intrapartum (relative risk 2.5), and postpartum hemorrhage (relative risk 1.9).[4] Rapid, significant loss of intravascular volume can lead to hemodynamic instability, decreased oxygen delivery, decreased tissue perfusion, cellular hypoxia, organ damage, and death.[5] The maternal mortality rate associated with placenta previa is less than 1 percent in resource-rich countries but remains high in resource-poor countries where maternal anemia, lack of medical resources, and home births are common.[6] Infants born to such patients are also at increased risk of premature deliveries, increased perinatal mortality than in general population

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This study is aimed at assessing the maternal and neonatal outcomes in placenta previa at a tertiary level care hospital in India.

METHODOLOGY

Setting

This prospective study was conducted in the urban city of Aurangabad, Maharashtra where we included patients who presented to our emergency ward or outpatient clinics. Institutional ethics review was obtained before commencing this study. The city municipal area has total population of 11,71,260 while population including metropolitan area counts to 14,13,711.[7]

Study design

The study duration was from October 1, 2013 till September 30, 2015. We included all patients, aged 18 years or above, who presented to our emergency ward or outpatient with placenta previa. Antenatal women with gestational age of more than 28 weeks presenting with a complaint of painless vaginal bleeding or those who are diagnosed as having placenta previa on routine ultrasound examination were included in this study. Detailed maternal history and demographic profile was obtained for all included patients. Results of all ordered laboratory and ultrasound examination were noted for all included patients. Type of placenta previa was ascertained on ultrasound examination. The patients were delivered by lower uterine segment cesarean section at 37 weeks of gestation or when there is an acute episode of bleeding per vaginum.

Data collection and analysis

Data obtained from hospital was codified and entered into Microsoft excel sheets. Data were then imported in to Statistical Package for Social Sciences (SPSS) version 21 and descriptive analysis was performed using appropriate statistical analysis.

RESULTS

44 patients satisfied our inclusion and exclusion criteria and were thus included in the study. Mean age of patients was 36.2 years, with 3.8 as the mean parity. 18 patients belonged to rural areas. Mean age at delivery was 35.7 years, 13 had previous vaginal deliveries, 14 had lower section cesarean sections and 10 had a history of abortions. Based on ultrasound examinations, 8 had type I placenta previas, 12 had type II, 9 had type III and 10 had type IV placenta previa. An estimated blood loss was seen around 811.7 mL. 20 patients underwent elective surgeries and 24 had to undergo emergency surgeries at the time of deliveries. 21 patients had to receive blood transfusions. Only 2 mothers had to admitted to the intensive care unit after delivery and 14 were admitted to the maternal indoor unit. Mean post operative hospital stay was 4.2 days. During the study period there were 27 live births, 7 neonatal deaths, 8 were still births. There were 12 babies who were admitted in the neonatal intensive care unit. Mean birth weight of the neonates was 3.8 kgs. There were 13 neonates with an APGAR score of less than 7.

DISCUSSION

The pathogenesis of placenta previa is unknown. One hypothesis is that the presence of areas of suboptimal endometrium in the upper uterine cavity due to previous surgery or pregnancies promotes implantation of trophoblast in, or unidirectional growth of, trophoblast toward the lower uterine cavity.[8] Another hypothesis is that a particularly large placental surface area, as in multiple gestation or in response to reduced uteroplacental perfusion, increases the likelihood that the placenta will cover or encroach upon the cervical os. Placental bleeding is thought to occur when gradual changes in the cervix and lower uterine segment apply shearing forces to the inelastic placental attachment site, resulting in partial detachment. Vaginal examination or coitus can also disrupt the intervillous space and cause bleeding. Bleeding is primarily maternal, but fetal bleeding can occur if a fetal vessel is disrupted.

One to 6 percent of pregnant women display sonographic evidence of a placenta previa between 10 and 20 weeks of gestation when they undergo obstetrical ultrasound examination for assessment of gestational age, fetal anatomic survey, or prenatal diagnosis. The later in gestation the previa persists, the more likely it will be present at delivery. In one series of 714 placenta previas in singleton gestations with a liveborn infant $\geq$ 25 weeks of gestation, the previa was present at delivery in 12 percent of those identified at 15 to 19 weeks, 34 percent of those identified at 20 to 23 weeks, 49 percent of those identified at 24 to 27 weeks, 62 percent of those identified at 28 to 31 weeks, and 73 percent of those identified at 32 to 35 weeks.[9] The likelihood of resolution by the time of delivery is also high in twin gestations, and also dependent on the gestational age of diagnosis. If the previa persists with advancing gestational age, it is less likely to resolve.

The distance the placenta extends over the internal cervical os is the best predictor of placenta previa at delivery. However, available data correlating gestational age, millimeters of extension over the cervical os, and outcome are insufficient to make precise predictions. Based on available data, at 18 to 23 weeks of gestation, a distance of at least 14 to 15 mm appears to be associated with a 20

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percent risk of placenta previa at delivery, and when the distance is at least 25 mm, 40 to 100 percent of previas will be present at delivery.[10] In the third trimester, a distance over 20 mm is highly predictive of persistence.[11] An anterior placenta previa appears to resolve more often and more quickly than posterior placenta previa.[12] In the second half of pregnancy, the characteristic clinical presentation is painless vaginal bleeding, which occurs in 70 to 80 percent of cases.[13] An additional 10 to 20 percent of women present with both uterine contractions and bleeding, which is similar to the presentation of abruptio placenta.

The diagnosis of placenta previa is based on identification of placental tissue covering the internal cervical os on an imaging study, typically ultrasound. Transabdominal ultrasound examination is performed as the initial examination; if it shows placenta previa or the findings are uncertain, transvaginal sonography should be performed to better define placental position. If the placental edge covers the internal os, the placenta is labeled a previa. If the placental edge is <2 cm from, but not covering, the internal os, the placenta is labeled as low-lying. Placenta previa should be described by the distance (millimeters) that the placenta covers the internal cervical os. A low lying placenta should be described by the distance (millimeters) between the internal cervical os and the inferior edge of the placenta. The overall false positive rate of transabdominal ultrasound for diagnosis of placenta previa is high (up to 25 percent), so the diagnosis should be confirmed by transvaginal ultrasound unless the previa is clearly central. Randomized trials and prospective comparative studies have established the superior performance of transvaginal sonography (TVS) over transabdominal sonography for diagnosis of placenta previa. TVS generally provides a clearer image of the relationship of the edge of the placenta to the internal cervical os than transabdominal ultrasound. In one study of 100 suspected cases, sensitivity, specificity, and positive and negative predictive values of TVS for diagnosis of placenta previa were 87.5, 98.8, 93.3, 97.6 percent, respectively. Magnetic resonance imaging (MRI) is well-suited to the assessment of placental-cervical relationships because of the differing magnetic resonance characteristics of the two tissues. However, it is not used for diagnosis of placenta previa because of its high cost, limited availability, and the well-established safety and accuracy of transvaginal sonography.[3]

Neonatal morbidity and mortality rates in pregnancies complicated by placenta previa have fallen over the past few decades because of improvements in obstetrical management (eg, antenatal corticosteroids, delayed delivery when possible), the liberal use of cesarean delivery, and improved neonatal care. The principal causes of neonatal morbidity and mortality are related to preterm delivery, rather than anemia, hypoxia, or growth restriction.[14] Preterm birth is common: in a population-based study of women with previa, 28 percent delivered between 34 and 37 weeks of gestation and 17 percent delivered before 34 weeks of gestation.

CONCLUSIONS

Placenta previa increases the risk of antepartum intrapartum and postpartum hemorrhage. In this article we have described our experience of maternal and neonatal outcomes in patients presenting with placenta previa at a tertiary level hospital in Aurangabad. Further study is needed to assess the prevalent risk factors and management options for such patients.

Table 1. Profile in maternal patients

Variable	***n* = 44**
Age (mean ± SD)	36.2 ± 3.04 years
Parity (mean ± SD)	3.8 ± 2.12 years
Residence (rural)	18
Age at delivery (mean ± SD)	35.7 ± 2.44 years
Previous obstetric history	
Primigravida	7
Vaginal	13
Lower section cesarean section	14

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Abortion	10
Types of placenta previa on ultrasound	
I	8
II	12
III	9
IV	10
No scan done	5

Table 2. Maternal outcomes after delivery

Variable	*n* = 44
Estimated blood loss	811.7 ± 118.4 mL
Patients receiving transfusion	21
Elective surgery	20
Emergency surgery	24
Admission to intensive care unit	2
Admission to maternal unit	14
Post-operative hospital stay	4.2 ± 0.23 days

Table 3. Neonatal outcomes

Variable	***n* = 44**
Status	
Alive	27
Neonatal deaths	7
Still born	8
Neonatal intensive care admissions	12
Mean birth weight	3.84 ± 0.81 kgs
APGAR score at 5 minutes	
< 7	13
≥ 7	31

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