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Original Research Article

## The bleeding mother and her baby: a study to determine the fetomaternal outcome in cases of placenta previa

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### ABSTRACT

**Background:** Placenta previa is one of the major causes for obstetric hemorrhagic morbidity and mortality with increasing incidence in recent times. This study aims at determining risk factors, maternal and fetal outcome associated with placenta previa.

**Methods:** This was an observational, retrospective study conducted at a tertiary care hospital in Mumbai from May 2017 to March 2020. A total of 102 women with placenta previa during the study period were included, their case records critically analyzed to identify risk factors, maternal outcome in relation with blood transfusion required, ICU admission, obstetric hysterectomy and fetal outcome pertaining to prematurity, asphyxia and mortality.

**Results:** A total of 102 patients were analyzed. Placenta previa was more common in >26 years of age, multipara (64.7%), with previous history of caesarean sections (21.5%) and previous curettage (11.7%), 44.2% babies born were preterm, 4.4% stillbirths and 8.5% neonatal deaths. Maternal complications like antepartum hemorrhage was seen in 58.8% patients and postpartum hemorrhage in 33.3%, blood transfusion was required in only 18 patients post operatively, bladder rent was seen in 3 patients and there was no maternal mortality. 44 patients required uterine artery ligation, Ashok Anand stitch was taken in 37 patients, uterus compression sutures in 10, obstetric hysterectomy in 7 patients and internal iliac artery ligation in 2 patients.

**Conclusions:** Early identification of women at risk, obstetric preparedness and simple techniques like uterine artery ligation, Ashok Anand stitch and uterine compression sutures can help in effectively reducing need for multiple blood transfusions and morbidity.

**Keywords:** Antepartum hemorrhage, Ashok Anand stitch, Obstetric hemorrhage, Placenta previa

### INTRODUCTION

Child birth is like a new life for the mother. Pregnancy and parturition can be associated with many life endangering complications, that having a healthy mother and a healthy baby is a bliss. Obstetric hemorrhage is a major cause for maternal mortality and morbidity in the world with placenta previa being an independent risk factor for maternal haemorrhagic morbidity.<sup>1</sup>

Placenta previa is defined as an obstetric complication characterized by placental implantation into the lower

segment of the uterine wall, covering part of or the entire cervix. It was originally described using transabdominal scan and graded according to the relationship and/or the distance between the lower placental edge and the internal os of the uterine cervix.<sup>2</sup>

Type I or minor previa is lower edge of placenta inside the lower uterine segment; type II or marginal previa as a lower edge reaching the internal os; type III or partial previa when the placenta partially covers the cervix; and type IV or complete previa when the placenta completely covers the cervix.<sup>2</sup>

Recently, American Institute of Ultrasound in Medicine (AIUM) has suggested that the term true placenta previa be used when the placenta lies directly over the internal os and for pregnancies greater than 16 weeks of gestation, the placenta should be reported as 'low lying' when the placental edge is less than 20 mm from the internal os, and as normal when the placental edge is 20 mm or more from the internal os on TVS or TAS.<sup>3</sup> This new classification could better define the risks of perinatal complications, such as antepartum haemorrhage and major postpartum haemorrhage (PPH), and has the potential of improving the obstetric management of placenta previa.<sup>4</sup>

The rates of placenta previa and accreta have increased as a result of rising rates of caesarean deliveries, increased maternal age and use of assisted reproductive technology (ART), straining the maternity-related resources.<sup>2</sup> Placenta previa has also been linked to maternal complications like emergency hysterectomies, multiple blood transfusions, urogenital injuries, sepsis, intensive care unit (ICU) and prolonged hospital stay as well as adverse fetal outcomes such as prematurity, low birth weight, congenital abnormalities, stillbirth, and early neonatal death.<sup>5</sup>

The aim of this study to determine the obstetric risk factors, maternal complications, mortality and perinatal outcome in women presenting with placenta previa and aid in better management and prevention of adverse fetomaternal outcome in these women.

## METHODS

This was a retrospective, observational study conducted at a tertiary care hospital in Mumbai for a period of 3 years, from April 2017 to March 2020. A total of 102 women with ultrasonography suggestive of placenta previa were included and those with placental abruption or other antepartum hemorrhage causes excluded. Case records were critically analysed to identify risk factors, type of placenta previa, maternal outcome in relation to mode of delivery, blood transfusion required, ICU admission, additional surgical procedures required, obstetric hysterectomy, sepsis, wound gapes and fetal outcome with fetal weight, prematurity, congenital anomalies, asphyxia and mortality.

## RESULTS

In this study, maximum cases (33.3%) with placenta previa were seen in age group 26-30 years, followed by 28.4% in age group 31-35 years. 28% cases were registered.

Placenta previa was more common in women >3 gravida (49), multipara (64.7%) and with previous history of caesarean section (21.5%), abortion (12.3%) and curettage (11.7%).

In this study, most common type of placenta was complete placenta previa (42%). Placenta accreta was found in 7.8% patients. According to AIUM classification, 79.3% had true placenta previa.

**Table 1: Incidence of placenta previa according to maternal age.**

Age (in years)	Number of cases	Percentage
21-25	22	21.5
26-30	34	33.3
31-35	29	28.4
>35	17	16.6
<b>Total</b>	<b>102</b>	<b>100</b>

**Table 2: Correlation with risk factors.**

Risk factors	Number of cases
<b>Gravida</b>	
Gravida 1	28
Gravida 2	23
>Gravida 3	49
<b>Parity</b>	
Nulliparous	36
Para 1	27
Para 2	35
Para 3	4
<b>Previous LSCS</b>	22
<b>Previous abortions</b>	13
<b>Previous check curettage</b>	12
<b>Infertility</b>	4
<b>Twins</b>	3

**Table 3: Classification according placental localisation.**

Placenta type	Number of cases	Percentage
<b>Type 1</b>	3	2.9
<b>Type 2</b>	18	17.6
<b>Type 3</b>	38	37.2
<b>Type 4</b>	43	42.1

A total 93% delivered by caesarean section and 7% who had placenta >2 cm away from the internal os, delivered vaginally.

A total 42.9% babies were preterm with 8.2% born before 28 weeks. A total 16.1% babies born were <1.5 kg and 33.3% of 2.5-3.5 kg.

There were 52 males, 53 females, 8 babies with malpresentation (5 breech and 3 transverse lie) and 2 babies had congenital anomalies.

There were 5 still births and 9 neonatal deaths between day 2 and 8. 32 babies were admitted to NICU especially for low birth weight in 25 and respiratory distress in 12.

**Table 4: Neonatal outcome.**

Neonatal outcome	Number of babies	Percentage
<b>Gestational age (in weeks)</b>		
<28	9	8.5
29-32	13	12.3
33-36	23	21.9
>37	60	57.1
<b>Birth weight</b>		
<1.5	17	16.1
1.6-2	12	11.4
2-2.5	41	39.0
2.5-3.5	35	33.3
<b>Gender</b>		
Male	52	49.5
Female	53	50.6
<b>Congenital anomalies</b>		
Asphyxia	25	24.0
Still birth	FSB-4	3.6
	MSB-1	0.8
NND	9 (day 2-8)	8.5
NICU admission	32	30.4

**Table 5: Surgical management.**

Surgical management	Number of cases
Uterine artery ligation	44
ARA stitch	37
B lynch	10
Obstetric hysterectomy	7
Internal iliac artery ligation	2

**Table 6: Maternal complications associated with placenta previa.**

Maternal complications	Number of cases	Percentage
Antepartum hemorrhage	60	58.8
Blood transfusion	Intra op-34	32.3
	Post op-18	17.1
FFP transfusion	9	8.5
Postpartum hemorrhage	34	33.3
Post op hb <9 gm%	48	47
Shock	1	0.9
Bladder rent	3	2.9
Icu admission	6	5.8
Prolonged hospital stays (>5 days)	27	26.4
Wound gape	11	10.7
Sepsis	1	0.9

A total 44% patients required uterine artery ligation, Ashok Anand stitch was taken in 37 patients, uterus compression sutures in 10, obstetric hysterectomy in 7 patients and internal iliac artery ligation in 2 patients.

In the present study, placenta previa was associated with antepartum hemorrhage in 58.8% patients and postpartum hemorrhage in 33.3%, blood transfusion was required in 34 patients intra operatively and in 18 patients post operatively. FFP transfusion was required in 9 patients. Post-operative hemoglobin was <9 in 48 patients, a bladder rent was seen in 3 patients, 6 patients required ICU admission, 27 patients had prolonged hospital stay >5 days. 11 patients had wound gape and 1 had sepsis. There was no maternal mortality.

## DISCUSSION

Placenta previa is one of the most dreadful obstetric complications because of its association with high maternal and neonatal mortality and morbidity. Early recognition of women with risk factors, timely diagnosis and intervention can help improve management of these women.

Increasing age and multiparity are important risk factors for development of placenta previa. In this study 45% women were more than 30 years of age out of which 15% were more than 35 years in comparison around 1/4th patients were more than 30 years old in study done by Sarojini et al.<sup>6</sup>

An association could be made with increasing number of pregnancies as 72% patients were multigravida, with 39% having >2 gravidity consistent with findings reported by Hafeez et al with 92% multigravida and 38% >3 parity and Rangaswamy et al with 76% multigravida and 42% of >2 gravidity.<sup>7,8</sup>

The increased risk of placenta previa among multigravida women may be explained by degenerative change to the uterine vasculature, leading to under perfusion of the placenta and hence compensatory enlargement leading to increased likelihood of implantation on the lower segment.<sup>9</sup>

Previous history of caesarean section is a key risk factor with 48.64% in study by Hafeez et al, 36.7% by Sarojini et al and 21.5% in the present study had a history of previous caesarean section.<sup>6,7</sup> 11.7% had history of abortion followed by curettage in this study. Other factors increasing risk of placenta previa like infertility treatment, found in 4 patients and twin gestation found in 3 patients in this study were comparable to findings in similar studies.<sup>10,11</sup>

In this study the placenta was low lying in 17.6% patients, true placenta previa in 79.3% and placenta accreta was found in 8 patients similar to findings of Sarojini et al with 60.4% having major placenta previa.<sup>6</sup>

A total 93% cases underwent cesarean delivery, main indication being major degree placenta previa and results are comparable to the study conducted by Sarojini et al where 85.8% underwent caesarean section.<sup>6</sup>

In this study, 42.9% babies were preterm with 8.2% born before 28 weeks mainly due to antepartum hemorrhage. 1.7% babies had congenital anomalies. 30.4% had NICU admissions largely for low birth weight followed by respiratory distress. The results were consistent with findings of Sarojini et al and Hafeez et al.<sup>6,7</sup>

A total 67% were of low birth weight (birth weight <2.5 kg) out of which 16.1% were <1.5 kg, little more than that reported by other studies.<sup>6-8</sup>

Malpresentations were present in 7.4% (5 breech and 3 transverse lie), lesser than found in study by Rangaswamy (40%).<sup>8</sup> In a study by Senkoro, 12 fetal malpresentation had 3-fold higher odds of having placenta previa as compared to those with normal fetal presentation. The association between placenta previa and fetal malpresentation may be explained by the fact that the placenta in the lower segment obstructs the engagement of the head; this may cause the transverse or breech lie in the womb.

Looking at the perinatal mortality, there were around 4.4% stillbirths with 4 fresh still births and 1 macerated still birth and 8.5% neonatal deaths between days 2 and 8 lesser than found by Rangaswamy et al.<sup>8</sup>

Placenta previa has nine times increased risk of antepartum, threefold higher odds of blood transfusion and fivefold higher odds of prolonged hospital stay (Senkoro).<sup>12</sup> In this study, placenta previa presented with antepartum hemorrhage in 58.8% patients.

Uterine artery ligation was done in 44 patients. Ashok Anand's stitch is a simple and effective technique followed in authors study institution to control lower uterine segment blood loss in placenta previa.<sup>13</sup> A stitch is taken bilaterally above the lateral fornices and just below the uterine angles, occluding the collaterals supplying the lower segment. As these are end arteries, their occlusion leads to apparent devascularization of the lower segment, thus helping in control of postpartum hemorrhage. In this study, Ashok Anand stitch was performed in 37 patients and uterus compression sutures taken in 10 patients. Obstetric hysterectomy was needed in only 7 patients which had morbidly adherent placenta and internal iliac artery ligation in 2 patients, which was similar or lower than other similar studies.<sup>6,7</sup>

The increased risk of postpartum hemorrhage in women with placenta previa is well known necessitating blood transfusion. Therefore, it is important that blood transfusions and the obstetric emergency care be readily available at any facility treating women with placenta previa.

Only 34 patients intra operatively and 18 post operatively required blood transfusion. FFP transfusion was required in 9 patients. The need for blood and blood products was significantly less in this study compared to studies by

Rangaswamy et al and Hafeez et al, where all patients with placenta previa received blood transfusions and 83% in study by Sarojini et al.<sup>6-8</sup> Prompt use of uterotonics and conservative uterine surgeries avoided need for blood transfusion.

Maternal complications like bladder rent was seen in 3 patients, 27 patients had prolonged hospital stay >5 days, 11 had wound gape and 1 sepsis. These findings were comparable to findings of Hafeez et al and Sarojini et al.<sup>7,8</sup> In this study only 7 patients required ICU admission which was significantly less than that seen in study by Sarojini et al (86.8%).<sup>6</sup> There was no maternal mortality.

## CONCLUSION

Placenta previa is one of the main causes for maternal and perinatal morbidity and mortality leading to antepartum haemorrhage, postpartum hemorrhage, increased operative interference, increased blood transfusion requirement, wound gape, perinatal birth asphyxia, morbidity and mortality. Early identification of women at risk, obstetric preparedness and simple techniques like uterine artery ligation, Ashok Anand stitch and uterine compression sutures can help in effectively reducing need for multiple blood transfusions and morbidity.

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