International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Yadava PA et al. Int J Reprod Contracept Obstet Gynecol. 2019 Dec;8(12):4842-4846
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20195331

Original Research Article

Placenta previa: risk factors, feto-maternal outcome and complications

Pushpa A. Yadava, Riya R. Patel*, Anushka S. Mehta

Department of Obstetrics and Gynecology, Smt. NHL Municipal Medical College, Ahmadabad, Gujarat, India

Received: 04 October 2019
Accepted: 12 November 2019

***Correspondence:**
Dr. Riya R. Patel,
E-mail: riyupatel1994@gmail.com

ABSTRACT

Background: Placenta previa is defined as placenta that is implanted somewhere in the lower uterine segment either over or very near the internal cervical os. Placenta previa and coexistent accrete syndromes contribute substantively to maternal and perinatal morbidity and mortality.
Methods: All This is a retrospective study of 88 cases of placenta previa, which were admitted under department of obstetrics and gynecology in our institute during July 2017 to June 2019. All patients of placenta previa with gestational age > 28 weeks up to full term were included in the study. All cases were confirmed by ultrasound examination. Outcome measures prevalence of placenta previa, maternal and neonatal outcomes, and case fatality rate.
Results: The total number of deliveries performed during the study period was 16330, of them, 88 cases were placenta previa. Thus, the prevalence of PP was 0.53%. Multiparity was one of the etiological factors in 84.09%, whereas previous LSCS was 47.73%, previous H/O D and E was 14.73%, previous H/O placenta previa was 7.95%. Obstetric hysterectomy was done in 7 (7.95%) patients out of 88 patients. 92.04% of patients delivered with cesarean section and 7.95% patients delivered with normal vaginal delivery. 22 (26.50%) babies out of 83 live born were admitted in NICU.
Conclusions: Advancing maternal age, multiparity, prior cesarean section, and prior abortions are independent risk factors for placenta previa. Placenta previa remains a risk factor for adverse maternal and perinatal outcome. The detection of placenta previa should encourage a careful evaluation with timely delivery to reduce the associated maternal and perinatal complications. Measures to reduce the primary caesarean section rate should be adopted.

Keywords: Antepartum hemorrhage, Bleeding per vaginum, Maternal and perinatal outcome, Placenta previa, Risk factors

INTRODUCTION

Obstetric hemorrhage is one of the most common causes of maternal morbidity and mortality worldwide. About one third of the all cases of ante partum hemorrhage belongs to placenta previa.[1] Placenta previa is defined as implantation of placenta in lower uterine segment, overlying or approaching internal cervical os.[2] Placenta previa affects approximately 0.4-0.5% of all labours.[3] It is further classified into four types according to William's as below. Each of the first three type is subdivided into type A and B, depending on whether the placenta mainly lies on the anterior or posterior wall respectively.

*Type 1- Low lying placenta***:** The major part of the placenta is attached to the upper segment and only the lower margin encroaches onto the lower segment.

Type 2- Marginal placenta previa: The placenta reaches the margin of the internal os, but does not cover it.

Type 2a- Anterior type: Type 2b-posterior type. It is also called stallworthy's dangerous placenta because placenta gets compressed between the head and the sacral promontory causing fetal distress.

Type 3- Incomplete or partial placenta previa: The placenta partially covers the os, but does not cover it completely after full cervical dilatation.

Type 4- Complete or central placenta previa: The placenta is almost centrally placed over internal os and likely to cover it even at full dilatation.

Posterior is slightly more common and more dangerous, because it discourages engagement of the head more often and the placenta is likely to be compressed in labour impairing placental perfusion.

The most characteristic event in placenta previa is sudden, painless and apparently causeless hemorrhage, which usually does not appear until near end of second trimester.[4] Incidence of placenta previa is estimated to be 4 to 5 per 1000 pregnancies.

There are several factors, especially obstetrical, which has been found to be associated with placenta previa. Advancing maternal age, multiparity, previous cesarean delivery, previous abortions, previous history of placenta previa etc; has been associated with increased risk of placenta previa.

Placenta previa is considered high risk pregnancy because of the adverse maternal outcome like postpartum hemorrhage, cesarean hysterectomy, increased need for blood transfusion.[3] Higher risk of preterm birth, low Apgar score, congenital malformation increases the perinatal morbidity and mortality.[5,6]

METHODS

The present study is a retrospective descriptive study conducted at tertiary medical center, Ahmedabad. Total 88 cases of placenta previa were included in this study which were admitted at our institute during July 2017 to June 2019. Total 16330 patients delivered during this study period at our institute. Placenta previa was defined as ultrasonographic detection of placenta previa before delivery or by clinical examination during caesarean section or vaginal delivery. Objective of this study is to determine the incidence, demographic features, obstetric risk factors, obstetric management, maternal mortality and morbidity, perinatal outcome in women presenting with placenta previa.

Inclusion criteria

- All the patients already diagnosed as placenta previa by ultrasonography irrespective of age, parity, socioeconomical status, demographic status is included
- Patients only with gestational age more than 28 weeks are included
- Both emergency and registered cases are included. Some patients which are referred from other hospitals are also included
- Some patients came with the complaint of vaginal bleeding. While some are diagnosed antenatally during routine sonography examinations. All cases are followed till termination of pregnancy
- Some patients went into labour spontaneously, while others are electively terminated due to heavy bleeding or fetal heart abnormalities.

Exclusion criteria

- Patients with gestational age of 28 weeks with previa were excluded from this study
- Other causes of antepartum hemorrhage.

Data were collected regarding delivery data (presentation of fetus, mode of delivery and gestational age at delivery), neonatal data (birth weight, APGAR score at 1 and 5 minute and NICU admission) and maternal complications (post-partum hemorrhage, need for post-partum blood transfusion and peri-partum hysterectomy). Patient's demographic details, history of previous pregnancy and risk factors, past medical surgical history and family history were noted. An analysis of maternal mortality and morbidity was done with respect to development of hypovolemic shock, DIC, anemia, acute kidney injury, septicemia and maternal deaths.

RESULTS

The following data was obtained from the present study. During the study period, there were 16330 deliveries, of which, 0.53% were complicated with placenta previa.

Out of total 88 cases 22 (25%) were referred cases from other facilities and 66 (75%) were registered patients of our institute.

Table 1: Parity and risk of placenta previa.

Parity	Primigravida	Multigravida
No of cases	14	74
Percentage	16.47%	83.53%

Table 2: Etiological factors.

Risk factors	No. of cases	Percentage
Multiparity	74	84.09%
Previous cs	42	47.73%
Abortion f/b D and E	13	14.73%
Previous history of previa	7	7.95%
Uterine anomaly	1	1.13%

Multiparous patients have higher incidence of placenta previa than primipara. Out of total 88 cases of placenta

previa 74 were multigravida (83.53%) and 14 were primigravida (16.47%). This shows risk of having previa increases with parity (Table 1).

Out of total 88 patients, 74 were multiparous, 42 patients had history of previous delivery by cesarean section, 13 patients had induced or spontaneous abortions which were followed by dilatation and evacuation and 7 patients had previa in their previous pregnancy. It was found that one patient had uterine anomaly.

In present study data analysis shows multiparity (84.09%), previous caesarean section (47.73%) and history of abortion followed by D and E (14.73%) as etiological factors for placenta previa. Data from our study is nearly comparable to other studies regarding etiological factors for placenta previa (Table 2).

Table 3: Duration of pregnancy.

Gestation	28-34 weeks	34-37 weeks	>37 weeks
No of cases	23	43	22
Percentage	26.13%	48.86%	25%

Patients only with completed 28 weeks of gestation were included in the study. out of total 88 patients, 23 patients' gestation at the time of delivery was less than 34 weeks. Maximum number of patients were between completed 34 weeks and 37 weeks at the time of delivery. Only 22 patients completed 37 weeks of gestation. It was observed that 75% of patient with placenta previa delivered before 37 weeks of pregnancy and 25% after completion of 37 weeks (Table 3).

Table 4: Types of placenta previa diagnosed by ultrasound.

Type of placenta previa	Present study (no of cases)	Present study %
Type 1 low lying	21	23%
Type 2 marginal	24	27.27%
Type 3 partial	30	34.09%
Type 4 central	13	14.77%

In present study type 3 placenta previa is most common (34.09%) followed by type 2 (27.27%) and the least common is type 4 (14.77%). All the patients went under ultrasound examination to determine type of placenta previa and to rule out placenta accrete (Table 4).

USG plays the key role in accurate typing of placenta previa and management accordingly to type can be done.

Table 5: Mode of delivery and fetal outcome.

Mode of deliver	Total deliveries	Percentage	Fetal outcome		NICU admission
			Live birth	IUD	
Cesarean	81	92.04%	77	4	19
Vaginal	7	7.95%	6	1	3
Total	**88**		**83**	**5**	**22**

Table 6: Maternal complications.

Complications	No. of cases	Percentage of complications in present study
Antepartum hemorrhage	46	52.27%
Postpartum hemorrhage	15	17.04%
Hypovolemic shock	10	11.36%
Multiple blood transfusion (> 1unit PCV)	32	36.36%
DIC	3	3.40%
Renal failure	2	2.27%
Wound infection	3	3.40%
Fever	3	3.40%
Maternal death	2	2.27%

A total 92.04% of patients were delivered by caesarean section. Out of 81 pts delivered by cs, 8 had malpresentation (3 had transverse lie and 5 were breech presentation), 13 were cases of central placenta previa and 30 had type 3 partial placenta previa. 10 patients had type 2b placenta previa which is a dangerous type. Out of 81, 20 patients had to undergo emergency cs due to uncontrollable antepartum hemorrhage. Out of caesarean delivered patients (81), 77 were live born and 4 were IUD. 19 babies delivered by caesarean section were admitted to NICU (Table 5).

Only 6 (7.95%) patients with low lying placenta were delivered vaginally which were type 1 and type 2a. Among them 5 babies were live and 1 baby was IUD and 3 babies were admitted to NICU (Table 5).

Out of 22 NICU admissions, 15 were due to low birth weight attributed to prematurity, 2 for RDS, 2 for jaundice, 2 for septicemia and 1 was due to MSL. Out of 22 admitted babies 7 babies expired due to various conditions. Total perinatal mortality was 12/88.

Out of 88 patients, 46 presented with bouts of bleeding, some of which were controlled by conservative management and others were needed to be terminated. 32 (36.36%) patients needed multiple blood transfusion. Out of 88, 3 (3.40%) patients developed DIC and 2 (2.27%) patients developed acute renal failure during their immediate post-operative period. Out of 88, 10 (11.36%) patients went into hypovolemic shock which was managed vigorously with fluid and blood resuscitation and ionotropic support. Unfortunately, two (2.27%) maternal deaths occurred due to above mentioned complications (Table 6).

Table 7: Additional procedures required for controlling the bleeding.

Mode of treatment	No. of cases in present study
Medical management	6
B/L uterine artery ligation	46
Hemostatic sutures over placental site and b-lynch and chow sutures	6
Intra uterine packing	4
B/L internal iliac ligation	3
Obstetric hysterectomy	7

Placenta previa has greater risk for post-partum hemorrhage due to imperfect retraction of lower uterine segment and higher rate of placenta accrete and percreta. In present study 15 patients developed postpartum hemorrhage which required following additional procedures to control bleeding.

For management of PPH, different modalities of treatment were used with simultaneous use of one or more mode of treatments required. Six patients were managed conservatively with medical management. Bilateral uterine artery ligation and intrauterine packing was done in four patients. In three patient, internal iliac artery ligation was done along with hemostatic sutures over placental implantation site and bilateral uterine artery ligation for PPH (Table 7).

A total 7 patients had undergone obstetric hysterectomy, out of which 4 patients had placenta accrete and 3 for PPH when other modalities of treatment (Figure-of-eight sutures over placental implantation site and bilateral uterine artery ligation) failed (Table 7).

DISCUSSION

Out of total 88 cases 22 (25%) were referred cases from other facilities and 66 (75%) were registered patients of our institute.

Out of total 88 cases of placenta previa 74 were multigravida (83.53%) and 14 were primigravida (16.47%). This shows risk of having previa increases with parity (Table 1).

In our study, data analysis shows multiparity (83.53%), previous caesarean section (47.73%), history of abortion followed by D and E (14.77%), history of previous placenta previa (7.95%) as etiological factors for placenta previa (Table 2). Data from our study is nearly comparable to other studies regarding etiological factors for placenta previa such as as Rajeshwari RR et al, Shinde V et al, Ojha N, Kaur B et al.[7-10]

It was observed that 75% of patients with placenta previa delivered before 37 weeks of pregnancy showing high incidence of prematurity. High incidence of prematurity in this study may be because of greater incidence of emergency cases who came to hospital with bleeding or in labour (Table 3).

In present study type 3 placenta previa is most common (34.09%) followed by type 3 (27.27%) and the least common is type 4 (14.77%) (Table 4).

In present study, 92.04% of patients were delivered by caesarean section which is quite high, but that has decreased perinatal morbidity and mortality which satisfies aim of the study. High rate of caesarean delivery in our study is attributed to high number of referred emergency cases, higher number of type 3 and type 4 placenta previa and malpresentations. It is comparable to Rangswamy M et al study.[11] Out of caesarean delivered patients (81), 77 were live born and 4 were IUD. 19 babies delivered by caesarean section were admitted to NICU (Table 5).

Only 6 (7.95%) patients with type 1 and type 2a placenta previa were delivered vaginally. Among them 5 babies were live and 1 baby was IUD and 3 babies were admitted to NICU (Table 5).

A total 17.04% of cases suffered from postpartum hemorrhage (Table 6), which is quite common in placenta previa.[12] 7.95% cases underwent obstetric hysterectomy (Table 7), which is comparable to Rangaswamy M et al study and Maiti S et al study.[11,13]

A total 52% patients suffered from antepartum hemorrhage and 17.04% suffered from post-partum hemorrhage. 3% of total patients developed DIC and 2% developed acute renal failure. Above data regarding the complications of previa entity is comparable to Thakkar JK, Thakkar SJ study.[14] Maternal mortality in the present study is 2.27%. Decrease in maternal mortality is due to early and accurate diagnosis of placenta previa by Ultrasound and Doppler and increased availability of medical care, blood transfusion and ICU facilities (Table 6).

CONCLUCSION

Placenta previa presenting as APH in third trimester is one of the gravest obstetric emergencies. Even with the best obstetric care due to dramatic suddenness, a pregnant

woman can become exsanguinated due to severe bleeding. Neonates born to them are at a higher risk of premature birth, low APGAR score and increased admission to NICU.

In the present study advancing maternal age, multiparity, prior caesarean section and prior abortions were found to have significant association with placenta previa. An increasing trend has been noticed in number of cases of previa with increasing incidence of probable risk factors mentioned above. The present study concludes that efforts should be made to reduce the rates of operative deliveries, because there is greater likelihood of placenta previa in scarred uterus in subsequent pregnancies.

Cesarean section is choice of mode of delivery in type 2b,3 and 4 placenta previa, where as normal vaginal delivery can be done in type 1 and 2 placenta previa. Regular antenatal check-ups with antenatal diagnosis of placenta previa, educating patients regarding present risk factors and probability of complications, correction of anemia and prophylactic hematinics supplementation, timely referral and management at tertiary level center equipped with blood and blood products, availability of senior obstetrician, NICU facility will definitely help in reducing the maternal and perinatal complications. Obstetric ICU/HDU facility will further help in better management of such cases.

The family planning services should be further improved to attain a decline in the number of women with high parity. Educating our patients and making them aware of the importance of antenatal care and its availability is very important.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Williams textbook of obstetrics. 24th edition, obstetrical hemorrhage. 2014:800.
2. Elsayes KM, Trout AT, Friedkin AM, Liu PS, Bude RO, Platt JF, et al. Imaging of the placenta: a multimodality pictorial review. Radiograph. 2009;29(5):1371-91.
3. Crane JM, Van den Hof MC, Dodds L, Armson BA, Liston R. Maternal complications with placenta previa. Am J Perinatol. 2000;17(2):101-5.
4. Cunningham FG, Leveno KJ, Bloom SL, Haulh JC, Gilstrap LC, Wenstrom KD. editors. Obstetric haemorrhage. In: Williams Textbook of Obstetrics, 22nd ed. New York: McGraw-Hill; 2013;809-823.
5. Ananth CV, Demissie K, Smulian JC, Vintzileos AM. Relationship among placenta previa, fetal growth restriction and preterm delivery: a population-based study. Obstet Gynecol. 2001;98(2):299-306.
6. Sheiner E, Shoham-Vardi I, Hallak M, Hershkowitz R, Katz M, Mazor M. Placenta previa: obstetric risk factors and pregnancy outcome. The J Mat-Fetal Neonat Med. 2001;10(6):414-9.
7. Raja Rajeshwari R, Rubini M. Maternal and perinatal outcome in placenta previa-one-year study in tertiary care center in Tamil Nadu, India. Int J Reprod Contracept Obstet Gynecol. 2016;5(8):2820.
8. Shinde V, Lakshmi R. A study on maternal and neonatal outcomes in placenta previa in a tertiary level hospital in India. Int J Med Sci Clin Invent. 2015;2(12):1480-4.
9. Ojha N. Obstetric factor and pregnancy outcome in placenta previa; department of obstetric and gynecology, Kathmandu. J Inst Med. 2012;34(2):38-41.
10. Kaur B, Dhar T, Sohli I. Incidence, risk factors and neonatal outcomes of placenta praevia presenting as antepartum haemorrhage in tertiary care centre of north India. Int J Bas Appl Med Sci. 2015;5(3):58-61.
11. Rangaswamy Rangaswamy M, Govindaraju K. Fetomaternal outcome in placenta previa-a retrospective study in teaching hospital. Int J Reprod Contracept Obstet Gynecol. 2016;5(9):3081-4.
12. El-Hamamy E, B-Lynch C. A worldwide review of the uses of the uterine compression suture techniques as alternative to hysterectomy in the management of severe post-partum haemorrhage. J Obstet Gynaecol. 2005;25(2):143-9.
13. Maiti S, Kanrar P, Karmakar C, Bagdi S. Maternal and perinatal outcome in rural Indian women with placenta previa. Br Biomed Bullet. 2014;2(4):714-8.
14. Thakkar JK, Thakkar SJ. Study of foetomaternal outcome in cases of placenta previa. J Evolution Med Dent Sci. 2018;7(19):2329-32.

Cite this article as: Yadava PA, Patel RR, Mehta AS. Placenta previa: risk factors, feto-maternal outcome and complications. Int J Reprod Contracept Obstet Gynecol 2019;8:4842-6.