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Original Research Article

An empirical study on maternal and perinatal outcome of placenta previa-risk factors, morbidity and mortality in JNIMS, Imphal, India

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ABSTRACT

Background: The observational study to analyse the maternal and perinatal outcome in pregnancies complicated with placental previa evaluating the potential risk factor, associated with morbidity and mortality.
Methods: The study was a prospective longitudinal comprising of all the pregnant women after 28 week of gestation irrespective of gravid and parity that attended or admitted in the department of obstetrics and gynaecology, JNIMS, diagnosed as having placental previa by transabdominal ultrasonography and conducted for the period of 20 months i.e. from October 2017 to June 2019 analyzing 54 cases of placenta previa.
Results: During this period there were total of 9967 deliveries with incidence of placenta previa being 0.54% in JNIMS, Porompat. The estimated risk factors out of total 54 cases were 20-30 (52%) years by age group, 25 (46%) gravida, 18 (32%) parity, 36 low lying placenta and 11 cases (20%) preterm.
Conclusions: Highest levels of placenta previa are associated with poor maternal and perinatal outcome.

Keywords: Morbidity, Obstetrics haemorrhage, Perinatal outcome, Placenta previa, Mortality, Risk

INTRODUCTION

Haemorrhage and vaginal bleeding still present as major clinical complications in obstetrics. The case is panic and huge concern for both patients and doctors. Placenta previa often shows bright red vaginal; bleeding and painless. It occurs when the placenta is partially or wholly implanted in the lower uterine segment. It was reported that the average incidence of placenta previa occurs at an average of 0.3 to 1 % case in 300 to 400 deliveries.[1] Risk factors like multiple pregnancy, caesarean delivery, abortions, uterine surgical, advanced maternal age, multiparity, smoking, cocaine, endometritis, manual removal of placenta, sub mucous fibroid, previous termination of pregnancies contribute to the development or complicated placenta previa.[2] It should be suspected if there is bleeding after 28 weeks of pregnancy. Abdominal examination shows uterus non tender and moderate. The main cause of placenta previa is still unknown but believes to be due to abnormal vascularisation of endometrium caused by scarring or atrophy from the previous trauma surgery or infection, persistence of chorionic activity in deciduas capsularies, defective decidua or big surface area of placenta.[3] The incidence of placenta previa ranges from 0.3-0.8% among pregnant women depending upon the population investigated. A study from 1975- 1984 shows the overall incidence of placenta previa around the world is 0.36%.[4] However, the studies conducted between 1985-1995 shows that the incidence increases to 0.48%. This increased could be explained with the increasing rate of predisposing factors like the increasing rate of cesaerean section, increased maternal age, abortion etc.[5] The incidence of placenta previa appears to be increasing. A number of predisposing factors have been identified which includes advancing, multiparity, African or Asian

background, smoking, cocaine use, prior placenta previa, one or more cesarean birth, prior suction curettage for spontaneous or induced abortion and male gender.[6] Placenta previa should be suspected if there is bleeding after 28 weeks of gestation. Different route of ultra-sonogram such as transabdominal (TAS), transvaginal (TVS) or trans-perineal (TPS) are available for the diagnosis of placenta previa. Gentle transvaginal give the most accurate placental localization with few complications. Manual per vaginal examination is not only uninformative but may leads to more bleeding and is contraindicated.[7] Placenta previa remain the leading cause of perinatal morbidity. Women with placenta previa stay longer in hospital and had a higher rate of cesarean section but still the perinatal mortality remain high and the principle cause being prematurity. Careful monitoring of the patient with placenta previa is of utmost importance, especially regarding careful ultrasonography examination with the exact placental localization during the second trimester of pregnancy. Early recognition and careful monitoring of placenta previa and timely cesarean delivery once the infant is sufficiently mature could minimize the poor outcome in sudden massive vaginal bleeding.[8]

METHODS

The study was conducted in the department of obstetrics and gynaecology, Jawaharlal Nehru Institute of Medial Sciences (JNIMS), Porompat, Manipur during the period from October 2017 to June, 2019 after getting approval from the ethical committee of the Institute.

The study was a prospective longitudinal study comprising of all pregnant woman after 28 weeks of gestation irrespective of gravid and parity who attended or admitted in the Department of obstetrics and gynaecology who are diagnosed as having placenta previa by transabdominal ultrasonography.[9] A repeat ultrasonography was done at 36 weeks to exclude the case of placenta previa that migrate spontaneously during the course of pregnancy.[10-14]

Study population

All pregnant women who come to JNIMS for antenatal check-up or admitted for delivery during the study period, which are diagnosed as placenta previa by ultrasonography and included in the inclusion criteria.

Operational

In this study placenta previa includes placenta that is implanted somewhere in the lower uterine segment. It has been classified according to Williams classification as a) Placenta previa: the internal OS is covered partially or completely by the placenta b) Low lying placenta: implantation in the lower segment is such that the placental edge does not cover the internal but lie within a 2 cm wide perimeter around the internal.[15,16]

Inclusion criteria

- Pregnant women with 28 weeks gestation complicated with placenta previa.
- Post caesarean pregnant women complicated with placenta previa
- Both primigravidae and multigravidae pregnant women, singleton pregnancy with placenta previa
- Pregnant women with placenta previa who are willing to participate in the study.

Exclusion criteria

- Pregnant women with placenta previa who refuse to participate in the study
- Pregnant women with placenta previa whose data are incomplete during analysis
- Pregnant women with placenta previa with previous history of hypertension, diabetes or any other complications
- Pregnant women with placenta previa with multiple pregnancies, polyhydramnios, with major congenital anomalies.[17]

Sample size

Study group included those pregnant women with placenta previa attending JNIMS for ante-natal check-up and either delivered vaginally or by caesarean section who are included in the inclusion criteria.[18-22]

Study tool

Records of pregnant women with placenta previa and ultrasonography reports of women with placenta previa.

Study variable

Age, parity, obstetric history, sex of the fetus, general maternal condition, other complication like anaemia, Post-Partum haemorrhage, emergency cesarean hysterectomy, blood transfusion, hospital days and neonatal outcome like birth weight, period of gestation, fetal presentation, mode of delivery, admission to neonatal intensive care unit, still birth, early neonatal death, low Apgar score etc., was used.[23,24]

Procedure

- A written consent was taken from the subject willing to participate in the study and was screened for inclusion and exclusion criteria for study of perinatal outcome
- Details of patient history were taken, and examination were done and recorded. All cases fulfilling the inclusion criteria during the study period were included in the sample

- Investigations: All investigations listed in the performa were advised. Results of the investigation were noted and recorded
- Details of patient's history, condition at the time of admission, during labour and mode of delivery were noted. After delivery, the mother and the babies 30 were examined and finding will be noted. Mother and babies were followed up
- Expectant management by using bed rest, tocolytic therapy, sedatives, iron therapy or blood transfusion in patient with placenta previa were advocated till the fetus attained maturity, wherever feasible and then the baby were either be delivered vaginally or by cesarean section[25]
- The outcome of the case were assessed by maternal factors like level of haemoglobin percentage, blood transfusion, operative interference, postpartum haemorrhage, hysterectomy, days of hospital stay, maternal death and fetal factors like weight of the babies, period of gestation at birth admission to neonatal intensive care unit (NICU), stillbirth, low Apgar score, IUGR, and early neonatal death.[26-28]

Data collection

Data of the patient were recorded in the predesigned performa which is enclosed in the annexure. The particulars like treatment investigations, examination, history and follow-up details were recorded in the relevant time.

The results are compared with other study results and findings were recorded. Informed consent was taken from all the patients. Approval of ethical committee of JNIMS was taken before the study.

Statistical analysis

Data were analyzed using the SPSS version 21 (statistical package for social science) and presented in tabulated manner. χ^2 test and p-value were used for the 31-significance test.[29]

RESULTS

The study was conducted for a period of 20 months i.e. from October 2017 - June 2019 in departments of obstetrics and gynaecology, JNIMS, Porompat. During this period there were 54 cases of placenta previa. During this period there were a total of 9967 deliveries with the incidence of placenta previa being 0.54% in JNIMS, Porompat.

Risk factor estimate

Placenta previa in relation to maternal age, previous cesarean section, abortion, parity, male child was studied.

X^2 = 15.831; d.f. = 2; p =<0.001 (Table 1, Figure 1). A highly significant p-value (<0.001) indicates that there is a certain association between age of the women and her status of placenta previa as the condition placenta previa happens to occur commonly above 20 years of her age.

χ^2 = 1.912; d.f = 2; p = 0.384 (Table 1, Figure 2).

Table 1: Distribution of placenta previa by age, gravida, obstetrical history, parity and sex of foetuses.

Risk	Particulars	Number of cases	Percentage	Significant P-value
Age (years)	≤ 19, 20-29, ≥ 30	2, 8, 24	4, 52, 44	< 0.001
Gravida	1, 2-3, > 3	15, 25, 14	28, 26, 46	0.384
Obstetrical history	Abortion, CS	18, 12	32, 22	0.436
Parity	0, 1-2, > 2	16, 32, 6	30, 59, 11	0.007
Foetus sex	Male, female	31, 23	57, 44	0.596

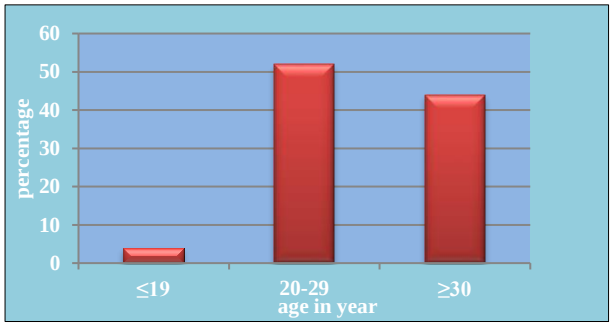

Figure 1: Statistical distribution of placenta previa by age.

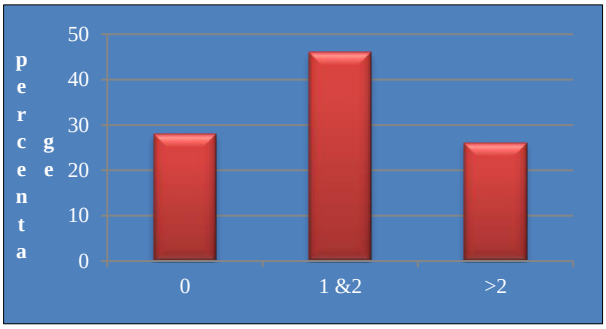

Figure 2: Statistical distribution of placenta previa by gravida.

No significant relationship is found between gravida and having placenta previa in the present study as evident by the insignificant p = 0.384 at 5% probability level.

χ^2 = 0.606; d.f = 1; p = 0.436 (Table 1, Figure 3).

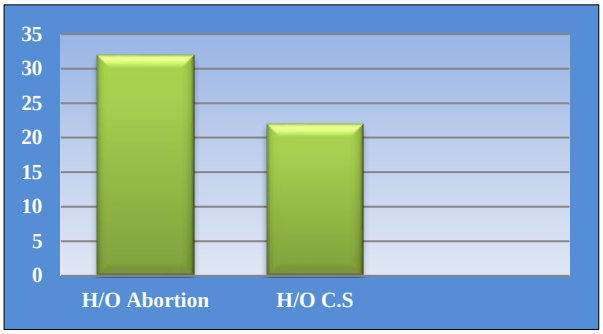

Figure 3: Statistical distribution of placenta previa by obstetrical history.

Having history of abortion and history of previous C.S. doesn't have significant difference amongst the patient who is having placenta previa.

χ^2 = 10.038; d.f = 2; p = 0.007 (Table 1, Figure 4).

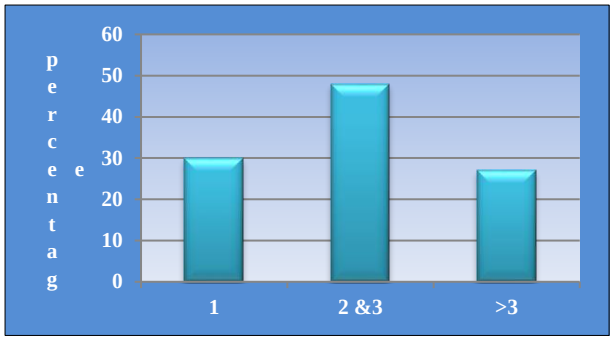

Figure 4: Statistical distribution of placenta previa by parity.

However, parity has a significant bearing towards the regulation of the pattern of placenta previa. This is supported by p = 0.007, which is very highly significant statistically.

χ^2 = 0.596; d.f = 1; p = 0.596 (Table 1).

Sex of the baby doesn't have any role towards the pattern of placenta previa.

Maternal outcome

Types of placenta - 36 cases out of 54 cases were of low-lying placenta and 18 cases were placenta previa. Most of the patient had similar days of hospital stay with normal pregnancy. But 2% had to stay for more than 10 days and 9% had a stay of 6-10 days. Out of 54 cases 32(59%) reported to have mild anaemia. Four (7%) and two (4%) cases have severe and moderate anaemia respectively. In the present study the rate of placenta accreta were 2% (1 case) and it leads to cesarean hysterectomy. There were no other cases of severe post-partum haemorrhage leading to cesarean hysterectomy, 15% (8) of cases required blood transfusion either because of ante partum anaemia or severe PPH. Two cases was treated with iron transfusion for anaemia, 9% had severe post-partum haemorrhage.

Perinatal outcome

Period of gestation: 11 cases (20%) of the babies were preterm out of which 1 case (2%) was early preterm.

Presentation: The presentation of the fetus at the time of delivery among patient with placenta previa was breech in 11 cases accounting for 20% and transverse in 2 cases (4%).

Birth weight

Only 2 babies were low birth weight.

Apgar score

Most of the babies (85%) had Apgar score of more than 8 in 1st min. 7 babies (13%) had Apgar 5-8 and 1 baby (2%) had Apgar of less than 5 in the 1st min.

Complications in the newborn

Out of 54 newborn 6 (11%) required NICU admission and 1 (2%) developed respiratory distress syndrome. None of the newborn develops anaemia.

DISCUSSION

Placenta previa is the major cause of ante partum haemorrhage especially in the third trimester leading to adverse maternal and perinatal outcome. Regular antenatal checkup in every pregnant woman. The presence of placenta previa should be suspected before any hemorrhagic event when there is (i) an abnormal or unstable fetal lie in the late pregnancy - a persistent transverse lie is of greatest significance; (ii) a presenting part which has an abnormal relationship to the pelvis- for example held high above the brim by central placenta previa, deviated from the midline by lateral placenta previa, push forward over the symphysis by a posterior placenta previa or rendered difficult to define through the anterior abdominal wall (by an anterior placenta previa.[30-34] These physical signs become more significant the longer they persist and if they elicited independently at two or more separate antenatal examinations in the last 6-8 weeks of pregnancy then it is appropriate to take steps to exclude placenta previa by some form of placentography.[35,36] Various approaches have been used to diagnose placenta previa. Painless, bright red and which is recurrent should be taken as placenta previa

unless proved otherwise.[37] There is no place for digital vaginal examination in diagnosis of placenta previa as it may provoke more bleeding. Digital vaginal is only indicated inan operating theater with full preparation of cesarean section.[38] Various radiological methods have been used in the past such as soft tissue placentography (using X-rays), radioisotopes radiography, pelvic angiography and thermography is no longer used. Magnetic resonance imaging may 54 be a diagnostic technique in the future but at present high cost limits its use.[39-41] Diagnostic ultrasound scanning is safe, accurate and non-invasive. It limits provide the simplest, most precise and safest method of placental localization. It can precisely determine the extent of placental margin in relation to internal os. In addition, it is helpful for assessing the fetal size and status and also provides information pertaining to maturity and wellbeing of the fetus for guiding the management. Various methods can be used like transabdominal (TAS), transvaginal (TVS) transperineal (TPS) and color Doppler flow study.[42] In my study the diagnosis was made based on TAS result done at >28 weeks of gestation. Transabdominal sonography was repeated at 34-36 weeks to see for placental migration for low lying placenta. Only those cases where placenta remained low-that is less than or equal to 2 cm from the internal OS were considered.[43] The incidence of placenta previa was found to be 0.54% in my study which almost corresponds to meta-analysis of Faiz AS who found incidence to be ranging from 2.8 to 19.7 per 1000 pregnancies.[44,45] In my study all cases of placenta previa including both low lying and placenta previa were included. Out of all the cases, majority were low lying placenta accounting for 67% were and placenta previa account for only 33%.[46] This is almost similar to finding of Sekiguchi A et al, who in their study found the incidence of incomplete placenta previa to be 56.2 % and that of complete placenta previa to be 43.8%.[47-51] Increasing maternal age was found to be an important risk factor the study conducted by Faiz AS et al.[50] The mechanism by which advanced maternal age impairs normal placental development is not well understood. One of the possible explanations could be that the percentage of sclerotic change on the intra-myometrial arteries increases with increasing age thereby reducing the blood supply to the placenta. In my present study maximum patient were in age group of 20-30 years which accounts for 52% followed by aged over 30 years accounting for 44%. There were only 2 patients (4%) of placenta previa who was below 19 years. The finding is similar to the finding of Rajeshwari R et al, who found that maximum cases (79%) were in the age group 20-29 years. The higher incidence of placenta previa in my study compared to other studies in western countries might be our lifestyle like early marriage, earlier completion of pregnancy and so most pregnancy occurring in the age group 20 30 years. The cases of placenta previa were seen more commonly in multigravidae compared to primi. In the study 2nd and 3rd gravid account for 46% followed by primigravida (28%) and 4th and above gravid another 26%. Lesser cases in higher gravid may be because of smaller size of family. This finding is almost similar to that of Raja Rajeshwari et al who found that 75.4% of placenta previa case was seen in multi and 24.6% were seen in primi. There were 12 cases (22%) of previous cesarean in cases of placenta previa which is comparable to the finding of Naik VR et al, who found history of previous cesarean in 20.75% of patient with placenta previa several studies conducted around the world confirmed a 2-5 fold increased risk for placenta previa development in women with history of previous cesarean section.[52] Other possible explanation includes the preferential demise of female foetuses that implant in the lower segment of the uterus. In my study most of the cases were that of low-lying placenta which accounts 67% of the total cases.[53] Authors like Robert favoured prolonged bed rest in hospital in patients with bleeding per vagina irrespective of whether bleeding is due to placenta previa or in unknown cause whereas other claimed that out- patient management of selected cases with placenta previa were both effective and safe.[54] In our institution cases of placenta previa is admitted when they present with per vaginal bleeding for complete bed rest. 8 patients (15%) required blood transfusion compared to 26% in study 14% olive.[55] Blood transfusion was either due to severe anaemia or intraoperative atonic pph. This finding is quite different from the finding of Ch. Nirmala et al, who found that 47.36% had birth weight less than 2 kg.[56]

CONCLUSION

Placenta previa still remains a major cause of maternal and perinatal morbidity and mortality.

Increased maternal age, previous history of cesarean, previous history of abortion and male child significantly increase risk of placenta previa. Increase incidence of placenta accrete leading to cesarean hysterectomy was also noted. Preterm delivery were common in pregnant mother complicated with placenta previa but maximum neonates (96%) had normal birth weight i.e. >2.5 kg. Rate of need for admission were high (11%) among baby born to mother with placenta previa. There was no maternal or neonatal death during the study period. The result of my study also indicates that knowing obatetric risk factors that predispose for placenta previa development is important for choosing adequate preventive measures for these women. As maternal and perinatal morbidity and mortality due to placenta previa is preventable, effort should be made to bring down these rates. This can be achieved by spacing pregnancies, limitation of family size, antenatal registrations of all pregnancies, and routine use of USG in pregnancy and early referral of high-risk pregnant women to the tertiary care centers. Awareness should be brought about in the rural public to avail facilities provided by the Government. Hence with careful monitoring of these high risk pregnancies especially regarding careful ultrasonography examination with exact placental localization, adequate antenatal check up to improve

health status, correction of anaemia, early diagnosis, adequate expectant management followed by prompt intervention or termination of pregnancy will to some extend minimize its risks.

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