FREQUENCY OF MATERNAL MORBIDITIES IN PATIENTS WITH PLACENTA PREVIA - A PROSPECTIVE SINGLE-CENTERED STUDY IN HAZARA DIVISION

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ABSTRACT

OBJECTIVES

The study aimed to determine the maternal morbidities in patients with placenta previa in a tertiary care hospital. Moreover, patients' risk factors and outcomes will also be accessed as secondary outcomes.

METHODOLOGY

This prospective cross-sectional study was undertaken at Ayub Teaching Hospital Abbottabad from January 2022 to July 2024. Any pregnant patients carrying the ultrasound diagnosis of placenta previa in an emergency or the ward were included in the study. A non-randomized convenience technique was applied for sample collection. Patients with other placental anomalies, such as placenta accreta, were excluded from the current study. The data was analyzed in SPSS version 21, and significance was kept below 0.005.

RESULTS

In the present study, 104 cases of placenta previa were recruited, among which 76(73%) patients fall in the age range between 24 and 34 years. The incidence of major placenta previa was observed in 76/104 cases. In 86% of cases, obstetric trauma was observed, and in 54 (52%) cases, purpureal sepsis was recorded. The purpureal sepsis was 10/36(28%) in patients with tamponade placement and 8/36(22%) in APH patients with a significance of 0.001. Presentation with antepartum hemorrhage was seen in 67% of cases (8/12) in the age group < 20 years. The maternal mortality was 2%.

CONCLUSION

The complication rate was relatively higher than reported in previous studies. The rate of morbidity can be minimized by following a multi-disciplinary approach. The cases should be managed in settings with ICU care and blood bank facilities.

KEYWORDS: *Antepartum Hemorrhage, Pregnancy Complication, Obstetric Trauma, Placenta Previa, Maternal Mortality*

INTRODUCTION

Immense hemorrhage in the last trimester of pregnancy is a significant cause of maternal morbidity and mortality. In developing countries like Pakistan, it is the second most common leading cause of death in pregnancy.[1] Overall, one-fifth of cases presenting with antepartum hemorrhage are diagnosed with placenta previa.[2] The frequency of placenta previa in developed countries is estimated at up to 5.2 per 1000 pregnancies, while in Pakistan, the incidence of placenta previa was reported at 6.03%.[3,4] Placenta previa is when the placenta implants in the lower segment of the uterus partially or fully encases the internal cervical Oss. There is no recognized etiology for placenta previa. It is believed to be connected to aberrant endometrial vascularization brought on by scarring or atrophy following prior trauma, surgery, or infection. These elements could lessen the lower segment's differential development, preventing the placenta from shifting upward as pregnancy progresses.[5] Risk factors for placenta previa include prior caesarian section, multiparity, advanced maternal age, habitual abortion, curettage, and maternal smoking.[3,4] The patient usually presented with painless recurrent vaginal bleeding in the last trimester. Placenta previa is linked with maternal complications like placental adhesions, antepartum and post-partum hemorrhage, septicemia, hypovolemic shock, thrombophlebitis, preterm labor, DIC, shocked liver, and adult respiratory distress syndrome. Neonatal complication includes birth asphyxia, early sepsis, intrauterine growth retardation, and even sometimes death. Maternal hemorrhage carries a higher risk of morbidity and mortality and may be complicated with extra surgical procedures like hysterectomy, internal iliac artery ligation, uterine

artery ligation, B-Lynch suture, and Intrauterine balloon tamponade placement. These invasive procedures carry a high fatality rate, require extra medication, increase the need for frequent need for blood transfusions, and prolong hospital stays. In the earlier presentation, the clinical approach includes categorizing hemorrhage severity and pre-planned elective c-section, which should be performed in a hospital equipped with an intensive care unit, neonatal nursery, and the availability of a blood bank. Maternal morbidity can be reduced in tertiary care hospitals with a multi-disciplinary approach.[5] In emergencies, previa complicates catastrophic vaginal hemorrhage, complicated surgical procedures, and even death of the patient. The study aimed to estimate various maternal complications and outcomes in patients diagnosed with placenta previa. The study will create local evidence for gynecologists and obstetricians in an emergency department. It will quantify the need for an integrated intra-departmental approach. Furthermore, the study will update the existing data in various regards.

METHODOLOGY

The prospective cross-sectional study was undertaken at Ayub Teaching Hospital, a tertiary care in Abbottabad. The study was conducted from January 2022 to July 2024. The institutional ethical committee approved the study with approval code/Ref.No.RC-2022/EA-01/011. The data was collected in a pre-designed questionnaire. All patients presented to the gynecology and obstetric emergency department in labor were screened with ultrasound to confirm the position of the placenta. Patients with placenta previa who were on ultrasound were included in the present study. Written consent was also signed before data collection from patients, and the patient was informed about the value of the research, the confidentiality of their statement, and their right to withdraw from the study. A 3.5MHZ ultrasound probe was used for confirmation of placenta previa. Patients already diagnosed with placenta previa were included directly in the current study. Moreover, the position of the placenta was also confirmed intraoperatively. Placental abruption, isolated placenta accreta, vasa previa, and uterine rupture were excluded from the study. A non-randomized convenience sampling technique was used for sample collection. The sample size required was calculated using the formula. $n = (Z\alpha)^2 \times P\ (1 - P) \div p^2$ (Where n=required initial sample size, Z =critical value for normal distribution at 95% confidence interval, which equals 1.96, P= prevalence, which in Pakistan was recorded as 6.03%[4] for placenta previa and p is precision, which is 0.05). After putting values, the sample size was recorded as n=84. Percentages and frequencies were calculated for nominal/categorical data. Mean and standard deviation were calculated for continuous data. The data was analyzed in SPSS version 21. The significance was kept at less than 0.05.

RESULTS

In the present study, 104 placenta previa (PP) cases were included over 30 months. Most patients fall in the age group 20-34 years (73%). The majority, 84 (81%), had a history of cesarian section, while 58 (56%) had a history of curettage. The details of demography and risk factors are shown in Table no 01.

Table 1: Enlisting Characteristics of Patients with Placenta Previa

Variables		No (%)	Variables		No (%)
	<20	12(11)	Clinical Presentation	APH	34(33)
	20-34	76(73)		Pre-Diagnosed	14(13)
	35-40	08(08)		PV Spotting	42(40)
	>40	08(08)		Abdominal pain	12(1(1)
Anesthesia	Spinal	66(63.5)	Smoking	Yes	06(5.7)
	General	30(29)		No	98(94)
Previous history of Gravidity	Primary	08(8)	Previous History of Parity	Nulliparous	06(5.7)
	Multi	42(40)		Multi parous	42(40)
	Grand Multi	54(52)		Grand Multi	56(54)
Hypertension	Primary	08(7.7)	Diabetes	Type II	0(0)
	Gestational	16(15)		Gestational	04(3.8)
Prior curettage	Yes	58(56)	Prior-C-Section	Yes	84(81)
	No	46(44)		No	20(19)
Abortion	Yes	54(52)	Pre-Delivery Admission	Yes	28(27)
	No	50(48)		No	76(73)
Grade of Placenta	Major	70(67)	Position of Placenta	Complete	58(56)
	Minor	34(33)		Incomplete	46(44)
Attachment of Placenta	Anterior	44(42)	Mode of Delivery	Labor + C-section	56(54)
	Posterior	24(23)		C-section	36(35)

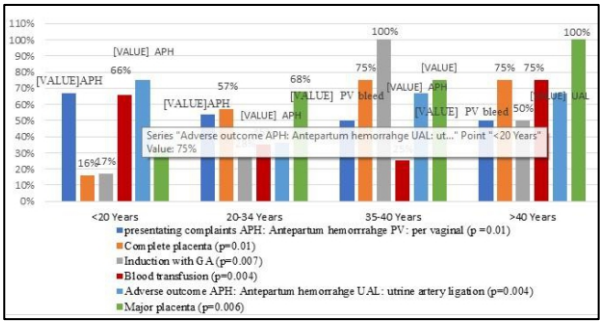

Figure 1: Presentation of patients, placental grade, position, type of anesthesia and adverse outcome with respect to different age groups.

Overall, 70(67.3%) patients develop adverse outcomes during management at the hospital. Among them, 30/70 patients (43%) were complicated by APH, 14/70(20%) got hysterectomy,14(20%) got PPH with tamponade placement, 10/70(14%) patients got uterine artery ligation, and 2/70(3%) patients B lynch stitched performed. Half of patients (7/14) undergoing hysterectomy sustained bladder injury. In 86% of cases, obstetric trauma was observed, and in 54 (52%) cases, purpureal sepsis was recorded. The purpureal sepsis was 10/36(28%) in patients with tamponade placement and 8/36(22%) in APH patients with a significance of 0.001. Of the patients with significant placenta previa, 36/64 had c-sections, 12/64 had artery ligation, 10/64 had a hysterectomy, and 6/64 had hysterotomy. While minor placenta patients 20/26 had c-sections, and 6 had artery ligation with a p-value of 0.006. The mortality was 2(2%), and both cases were complicated by hysterectomy. In 42% (30/70) patients, APH was observed as an adverse outcome, among which 14 cases presented with PV spotting progressed to APH with a significance of 0.001.

DISCUSSION

We conducted our study in a single tertiary care hospital that receive referrals from five districts. After triaging the patients, each case is meticulously dealt with under the supervision of the senior registrar. The team comprises residents, house surgeons, and skilled staff nurses. The hospital has a medical ICU and blood bank around the clock. We observed that most of the patients (73%) belong to the age group 20-34, almost near to the recent study done at CMH Quetta, among which 63 % belong to the age group 25-35.[6] Advanced maternal age increases the chance of placenta previa up to 6 folds.[7] An international retrospective study done in China by Long S et al. reported a mean age of 31 with an IQ range of 28-34.9 years.[8] A study conducted in India by Khan S et al. also states that the age range 25-30 years is the most familiar age group for placenta previa.[9] We observed that induction with general anesthesia in PP patients was 29%, while the recent study done by Bawar S et al. in Peshawar recorded 56.5%. This was attributed to the difference in the grade of placenta previa.[10] In a study by Bawar S et al., 87% of patients were categorized in major placenta (grade III and IV). It's proven that the chance of induction with general anesthesia is high in major placenta previa.[11] Overall, most of the patients in our study are presented with APH. It has been noticed that the presentation was significantly high with APH in the age range from 20-34 years, while patients with an age range greater than 35 years presented significantly with PV spotting. The finding of APH in the present study is contradictory to those of Beenish et al., who suggested that PPH accounts for major hemorrhage, accounting for 39% of cases in patients with PP.[6] Khan S et al. also state that PPH is the most common hemorrhage in patients with PP.[9] A recent study done in Bangladesh by Islam et al. states that APH accounts for 28.3 cases in patients with PP.[12] The figure is still lower than our finding, which is 33% of cases (APH). Another study done in India by Mandal et al. reported that APH was observed in 37% of PP, which is almost consistent with our finding.[13] When other factors were compared, it was found that the majority (>90%) of PP patients were multigravida in our study and the study done by Mandal et al. (66%), while the study reported PPH as a major hemorrhage only 53% of cases were multigravida. Moreover, most of our patients (56%) had a history of curettage, while the study reported APH as a significant type of hemorrhage and also reported a history of curettage in most patients (43%). The multigravidity and prior history of curettage could be the reason for accounting APH in the majority of cases. A recent study done in Bangladesh claimed that 85% of the patients with PP have experienced some type of hemorrhage.[14] Our mortality was 2% (2/104), and both patients presented with severe pain in the abdomen and a sign of severe anemia. A hysterectomy was done in both patients, and the patient died in ICU. While Kulkarni AR et al. reported 3% mortality in patients with placenta previa, the difference could be the setting and geographic area of study (India).[15] No mortality was reported by Islam et al. (Bangladesh).[12] Khan B et al. reported a 1.36% mortality rate (Pakistan).[6] Perinatal deaths are also uncommon in patients with Vasa Previa.[16] Many studies suggested that mortality and morbidity in PP decrease in centers with multidisciplinary teams.[17,18]

LIMITATIONS

This was a single, single-centered study, but the study duration was optimum, and it was done in the largest tertiary care hospital in the Hazara division. The study did not record fetal outcomes in patients presenting with placenta previa. The details of the blood transfusion were not recorded.

CONCLUSIONS

The rate of complication was relatively higher than reported in previous studies. Incidence of major placenta, incomplete placenta, and general anesthesia induction increases significantly with age. The adverse outcomes vary in different age groups. Patients with

major placenta had significant obstetric trauma as compared to minor-grade placenta previa. The purpureal sepsis rate was high in patients with tamponade placement and patients with APH. The complications can be minimized when set up with a blood bank facility, ICU care facility, and elective vs emergency procedures.

CONFLICT OF INTEREST: None

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