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ORIGINAL ARTICLE

FREQUENCY OF PLACENTA PREVIA IN WOMEN WITH PRIOR CAESAREAN SECTION AND ITS RELATION WITH INCREASING NUMBER OF CAESAREAN SECTIONS AND MATERNAL FACTORS

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ABSTRACT

Background: Placenta praevia is major contributor to obstetrical haemorrhage, a leading cause of maternal mortality. Scarred uterus is a risk factor for development of placenta previa. Objective of this study was to determine frequency of placenta previa in women with prior C-section and its relation with previous number of c-sections.

Materials & Methods: It was a cross sectional study conducted in PIMS hospital Islamabad from 1st March 2021 to 1st March 2022. Sample size was 307 and sampling technique was consecutive non probability**.** Our sociodemographic variables were age, gestational age and parity. Our research variables were presence of placenta previa measured on dichotomous scale as yes or no and number of prior caesarean sections. Data was stratified for age, gestational age and parity and compared for presence and absence of placenta praevia. Results were presented as frequency and percentages for each stratum. Chi- square test was used for any significant association of placenta praevia with stratified groups of prior number of caesarean sections, age, gestational age and parity. A P-value ≤ 0.05 at 95% CL was considered as statistically significant.

Results: Placenta previa was observed in 27.7% patients with prior caesarean section. Stratification of placenta previa with respect to age, gestational age, parity and prior number of caesarean sections was done and its association was found to be statistically significant with age, parity and number of previous caesarean section with p value of 0.000 at 95% confidence level**.**

Conclusion: Association of placenta previa was found to be statistically significant with age, parity and number of previous caesarean section and its prevalence was 27.7% in sample.

KEY WORDS: Placenta previa; Caesarean section; Gestational age; Association; Parity.

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INTRODUCTION

Placenta previa is a serious obstetrical issue with high maternal and perinatal morbidity and mortality.[1] Pakistan is 5th most populous country in the world with a very high maternal mortality rate of 178 /100000 births. Apart from other causes, obstetric hemorrhage is the leading cause of maternal death.[2] Placenta previa is a major contributor to this causing up to 35% of obstetrical hemorrhage.[3] In a developing country like Pakistan with scarce health resources, role of obstetrical hemorrhage in causing maternal mortality is even more enhanced.[4]

Placenta previa is defined as placenta lying completely or partially in lower uterine segment. [5] In major type of placenta previa, it covers internal cervical os entirely or part of internal cervical os.[6] It is an obstetrical complication that occurs in second or third trimester of pregnancy.[7] Its incidence is very high in 26 weeks of gestation but with increase of period of gestation, it decreases. Reason for this

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is increase in size of lower uterine segment and as upper uterine segment moves up, placenta moves up with it.[6]

Uterine damage resulting from frequent pregnancies and caesarean section are most important risk factor for development of placenta previa. Established risk factors are: older maternal age, smoking, prior placenta previa, prior abortion, prior uterine surgeries like myomectomy, dilatation and curettage or hysteroscopy and use of assisted reproductive technique.[3]

Incidence of placenta previa is 4-5/1000 deliveries. It causes antepartum hemorrhage which complicates 2-5% of deliveries.[1] This incidence is on the rise because of increase in rate of c- section in last few years.[8,9] In our local studies, incidence of 0.51 to 3.5% is documented.[5] In USA placenta previa is reported to be present in 0.3% to 0.5% of all pregnancies. There is 1.5 to 5-fold increase in risk of developing placenta previa in case of history of caesarean section. High parity may increase risk by 10 %.[7] Moreover incidence increases with increase in number of caesarean sections. Risk increases by 0.65% for single caesarean section to 10% for 4 or more sections.[10]

Apart from maternal and perinatal mortality, placenta previa also causes maternal morbidity that is: increased risk of c-section and other procedures like caesarean hysterectomy, vascular ligation procedures, increased need of blood transfusions and ICU care. Management of placenta previa with caesarean result in more chances of developing placenta previa in next pregnancy along with placenta accreta spectrum.[11]Perinatal morbidity in terms of preterm birth, low birth weight, low Apgar score at birth and may need NICU care. All these complications require dealing with such patients in hospitals with resources available to tackle these complications for better prognosis.[11]

As pregnancy with placenta previa is high risk, its correct and timely diagnosis is required for better prognosis.

Objectives of this study was to determine the frequency of placenta previa in patients with prior caesarean section and to determine any relation of placenta previa based on maternal sociodemographic factors and number of prior caesarean sections. Identification of this association can help us in anticipating and thus better managing the placenta previa.

MATERIALS AND METHODS

It was a cross sectional study conducted in department of Obstetrics & Gynaecology, PIMS hospital, Islamabad from 1st march 2021 to 1st march 2022.

Sample size of 307 was calculated with 95% confidence level, 5% margin of error and taking expected proportion of placenta previa i.e. 27.5% in pregnant females with prior caesarean sections. [10] Sampling technique was non-probability, consecutive sampling. Inclusion criteria was all women of age 15-45 years with singleton pregnancy and gestational age of 28 weeks and above having one or more prior caesarean sections and exclusion criteria was women having history of prior uterine surgery like myomectomy, hysteroscopy and dilatation and curettage, abortion, assisted reproductive technique, smokers and having twin pregnancy.

Our sociodemographic variables were age in years, gestational age in weeks and parity. Our research variables were presence of placenta previa measured on dichotomous scale as yes or no and number of prior caesarean sections.

Females fulfilling selection criteria were enrolled in the study from OPD, labour room and emergency Department of Obstetrics & Gynaecology, PIMS hospital, Islamabad. Informed consent was taken before enrolment. Demographic details like name, age, gestational age, parity was noted. Then females were thoroughly assessed and ultrasound was done by expert radiologist with assistance of researcher for localization of placenta and diagnosis of placenta previa. All this information was recorded on a proforma.

Data was entered and analysed by SPSS version 21.0. Continuous variables like age, parity and gestational age were measured on numerical scale and were expressed as mean and Standard Deviation (SD). Data was stratified for age, gestational age and parity. Post-stratification, stratified groups were compared for presence and absence of placenta previa. Results were presented as frequency and percentages for each stratum. Chi- square test of association was used to determine any significant association of placenta previa with stratified groups of prior number of caesarean sections, age, gestational age and parity. A P-value $\leq$ 0.05 at 95% CL was considered as statistically significant.

RESULTS

A total of 307 women with prior c- sections participated in study. Age range in this study was from 15 to 45 years with mean age of 29.9 and SD of 3.22 years, mean parity 2.48 with SD of 1.27 years. Mean gestational age in weeks was 32.46 with SD of 3.08 weeks Placenta previa was observed in 27.7% patients with prior caesarean section as shown in Table-1. Stratification of placenta previa with respect to age, gestational age, parity and prior number of caesarean sections are shown in Tables 2, 3, 4 and 5 respectively. Association of placenta previa was found to be statistically significant with increasing age, increasing parity and increasing number of previous caesarean section with p value of 0.000 and at 95% confidence level.

Table 1: Frequency and %age of patients with Placenta Previa (n=307)

Placenta Previa		Frequency	%age
1	Yes	85	27.7%
2	No	222	72.3%
	Total	307	100%

Table 2: Stratification of Placenta Previa with respect to age.

Age (years)		Placenta Previa		Chi Square	p-value
		Yes	No		
1	15-30	34(16.6%)	171(83.4%)	37.983	0.000
2	>30	51(50%)	51(50%)		
Total		85(27.7%)	222(72.3%)		

Table 3: Stratification of Placenta Previa with respect to gestational age.

Gestational Age (weeks)		Placenta Previa		Chi-Square value	p-value
		Yes	No		
1	28-35	76(29.3%)	183(70.7%)	2.2698	0.132
2	>35	9(18.8%)	39(81.2%)		
Total		85(27.7%)	222(72.3%)		

Table 4: Stratification of Placenta Previa with respect to parity.

Parity		Placenta Previa		Chi-Square value	p-value
		Yes	No		
1	1-3	49(20.1%)	195(79.9%)	34.350	0.000
2	>3	36(57.1%)	27(42.9%)		
Total		85(27.7%)	222(72.3%)		

Table 5: Stratification of Placenta Previa with respect to prior numberof caesarean sections.

Prior number of caesarean section		Placenta Previa		Chi-Square value	p-value
		Yes	No		
1	1-2	57(20.8%)	217(79.2%)	60.3405	0.000
2	>2	28(84.8%)	5(15.2%)		
Total		85(27.7%)	222(72.3%)		

DISCUSSION

Placenta previa was seen in 85 (27.7%) out of 307 cases with previous history of C- section. Placenta previa was observed in 20.8% patients with prior number of caesarean sections of 1-2 as compare to 84.8% in patients with prior number of caesarean sections of > 2 (p 0.000). The data has also revealed in various studies that the placenta previa is more common in cases with prior Caesarean section.[11,12] This can be attributed to the scar site serving as a nidus for implantation. It is also found in the past that there was linear and significant association between the number of previous Caesarean sections and the risk of developing placenta previa. The data from the past has shown that the proportion of the risk for development of placenta previa, after 1st, 2nd and 3rd Caesarean section increases the risk by 2.2, 4.1, and 24 times as compared to the cases with no prior history of C section. According to another analysis the risk after 1st Caesarean section was 1.9%, after the 2nd was 15.6%, after 3rd as 23.5%, after 4th as 29.4%, after 5th as 33.3% and 50% with more than this.[11,12]

In a study by Deepthi PS et al, placenta previa was more common 29.4 % as compared to those without c section in past.[13] Mattalitakis M reported in women with prior history of c section, more the number of sections, greater is risk of developing placenta previa. Percentage of women with placenta previa was 46% with previous one caesarean section and 54% with more than one caesarean section.[14] Several researches conducted globally found 2-to-5-fold increase in incidence of placenta previa with history of increasing number of c sections.[15]

Kaul S et al reported many fold increase in risk of developing placenta previa with 2.1, 2.8, and 4-fold risk when number of caesarean sections increases from previous 1 & 2 to 3 sections respectively. Possible mechanism may be interference of scarred tissue with normal migration of placenta or attraction and adherence of placenta to scar.[16] In our study, increasing age and parity, both were statistically significantly associated with presence of placenta previa. Same is reported by Qamer S et al. in her study 55.51 % women were in age group 31-40 years, 37.79% in were in age group 21-30 years and 2.36% were less than 20 years.[15]

Kaul S et al found in his study, 72% of cases were in higher age group and 54% were multiparous. Mechanism can be sclerotic changes in intramyometrial blood vessels with age compromising blood supply. In some studies, it is suggested that increased parity leads to atherosclerotic changes in uterus leading to under perfusion of placenta resulting in increased size of placenta reaching lower uterine segment.[16]

CONCLUSION

It is concluded that there is significant association of placenta previa with increasing age, increasing parity and increasing number of previous caesarean delivery.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
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AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	HN, HF
Acquisition, Analysis or Interpretation of Data:	HN, HF, SB, AN, KW, MS
Manuscript Writing & Approval:	HN, HF, SB, AN, KW, MS

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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