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THE RISK FACTORS ASSOCIATED WITH PLACENTA PREVIA IN PATIENTS PRESENTED TO CIVIL HOSPITAL KARACHI-A CASE CONTROL STUDY

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ABSTRACT:

BACKGROUND: *In placenta previa, the placenta occupies an inferior position in the uterine cavity partially or completely enclosing the cervical ostium. The condition assumes clinical significance due to significant maternal and perinatal morbidity and mortality. In this study we aim to explore the relative risks of several associated factors in a Pakistani population.*

METHODOLOGY: *This retrospective case-control study includes all the cases diagnosed as Placenta previa during the study period i.e 2008. The diagnosis was confirmed or excluded by Ultra-sonography. The control group included 91 controls comprising of women whose ante natal ultrasound demonstrated placental localization in upper uterine segment, had no antepartum haemorrhage and their pregnancies ended in a normal vaginal delivery. The case records of all the patients were carefully assessed to ascertain the demographic data, mean age, parity, gravidity, history of smoking, history of previous caesarean sections, uterine fibroids, multiple gestations, myomectomy, dilatation and curettage, dilation and evacuation. SPSS 15.0 was used to analyse the data and Odds ratio were determined to establish the relative risks of different variables.*

RESULTS: *The mean age of cases i.e. 28.7 (+ 4.9) was found to be greater than the control group (mean age 26.8 years). The mean parity and gravidity in the case group was 3.4 and 4.8 respectively while it was recorded as 2.9 and 3.6 in controls. Pre-maturity was associated with the greatest i.e. 31 fold risk of Placenta Previa while the Odds Ratio associated with age, parity, caesarean section, dilatation and evacuation, prematurity and uterine exploration were 2, 2.1, 5.3,1.8 and 4.2 respectively.*

KEY WORDS : Placenta previa, risk factors, parity, caesarean section, pre-maturity.

INTRODUCTION:

Placenta previa is an infrequent type of impaired placental implantation where the placenta occupies an inferior position in the uterine cavity covering completely or partially the internal cervical ostium. Placenta previa complicates 0.3% to 0.5% of the pregnancies[1], notably 1.2% of the total 37,702 pregancies analysed in an Asian population had placenta previa[2], while an incidence of 3.5% in Pakistani population and an incidence of 65% with pregnancies associated with a previous Cesarean section in Pakistan . Significant maternal and perinatal morbidity and mortality [4] can be attributed to this condition whose etiology remains an enigma and is reflected by multiple risk factors including cesarean section[5], high parity [6], history of previous spontaneous or induced abortions [6,7], number of previous cesarean sections [6,7], previous uterine operations previous placenta previa [8], smoking [9] or substance abuse during pregnancy , multiple gestation [10], male sex of the newborn [11]. All of these risk factors have been found in the Western population. Risk factors associated with placenta previa in studies done to date in Pakistan include increasing maternal age[12] increasing parity previous caesarean section[7] smoking, [21] low socio-economic status, no schooling[12], residence in urban areas and curettage while prior preterm birth, technology-assisted conception, working during pregnancy were the risk factors associated in an Asian population. Although the risk factors associated with placenta previa in both the Eastern and the Western population are comparable but there are certain risk factors[14] which are unique to Asian population, therefore in the present study we aim to elucidate the potential role of these risk factors

in the development of placenta previa in an Asian i.e. Pakistani population.Racial variations have been reported as a proposed risk factors for placenta previa.[13]

MATERIAL & METHOD:

This is a retrospective, case control study conducted at Gynaecology and Obstetrics Department, Civil Hospital Karachi over an interval of one year i.e. 2008. Civil hospital Karachi, is one of the renowned tertiary care hospitals of Karachi, Pakistan with an estimated 2500 admissions in the Obstetrics unit per annum. The study received ethical approval from the Ethical Review Board of Dow University of Health Sciences (DUHS).

STUDY SAMPLE

The study group included the 81 cases diagnosed as Placenta Previa during the study interval. ''Placenta previa was defined as a placenta that completely or partially covered the internal cervical ostium, or as the placenta whose margin reached the edge of internal cervical ostium at the time of delivery.[2]'' The diagnosis was established by ultrasonography conducted at the Radiology unit of Civil Hospital Karachi. Gestational age was obtained by the last menstrual period, confirmed through ultrasound. Cases with incomplete records were excluded from the study.

The control group comprised of 91 samples, comprising women whose ante natal ultrasound demonstrated placental localization in upper uterine segment, had no antepartum haemorrhage and their pregnancies ended in Normal Vaginal Delivery (NVD). Those with incomplete data or other Placental abnormalities were excluded from the study.

OUT-COME MEASURES:

The medical records of all the patients were carefully assessed to evaluate the risk factors for Placenta Previa. The pertinent information included patient's demographic characteristics such as age. The modalities for the purpose of comparison also included parity of the patients, history of previous Caesarean sections, uterine abnormalities such as fibroids, multiple pregnancies, prematurity at present pregnancy, history of surgical interventions such as dilatation and curettage and dilatation and evacuation, manual removal of placenta, exploration of uterine cavity, myomectomy, history of smoking.

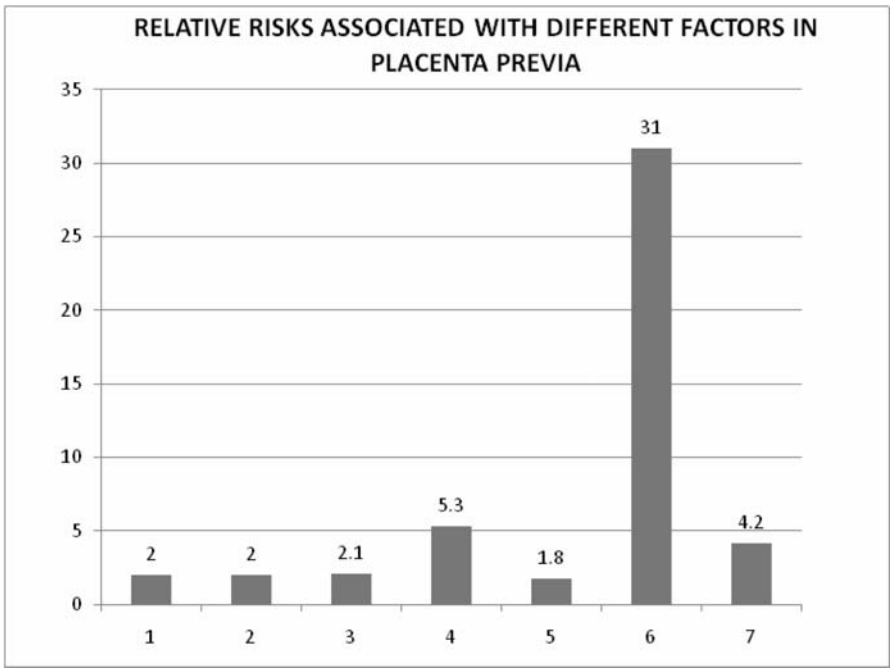
STASTICAL ANALYSIS:

SPSS-15.0 was used for data entry and analysis. The results of the two groups were compared on account of different variables. Standard error of mean is used to

TABLE 1:
FACTORS ASSOCIATED WITH PLACENTA PREVIA

FACTOR	CASES	CONTROLS
Mean Age	28.6 (SD ± 4.99)	26.8 (SD ± 4.96)
Number of women with age 30 or above	47 (58 %)	30 (32 %)
Number of women with age 35 or above	13 (16 %)	10 (11 %)
Mean parity	3.4	2.9
Mean Gravidity	4.8	3.6
History of CS	16 (19.8)	4 (4.4 %)
History of D & C	1 (1.2)	0 (0 %)
History of D & E	20 (24.7)	14 (15.4 %)
History of MROP*	6 (7.4 %)	0 (0 %)
History of uterine exploration	7 (8.6 %)	2 (2.2 %)
History of fibroids	1 (1.2 %)	0 (0 %)
Premature birth	42 (52 %)	3 (3.3 %)
History of smoking	1 (1.2 %)	0 (0 %)

*Manual removal of placenta



1 = age of subjects (over/under 30)
2 = age of subjects (over/under 35)
3 = parity
4 = caesarean section
5 = D & E
6 = prematurity
7 = uterine exploration

test the significance of continuous variables (age). Categorical variables (parity, Caesarean sections, fibroids, multiple pregnancies, prematurity at present pregnancy, dilatation and curettage and dilatation and evacuation, removal of placenta, exploration of uterine cavity, myomectomy, history of previous smoking, and smoking during pregnancy) are analysed by the Odds ratio to determine the relative risks.

RESULTS:

Total 81 cases of Placenta previa were recorded in the Gynaecological and Obstetrics Department of Civil Hospital Karachi in the study period i.e. 2008. The number of total deliveries during the same interval were 2484, therefore the incidence of Placenta Previa was recorded to be as 3.27%

Table 1 shows that the mean age of the cases i.e. the Placenta Previa group was 28.67 years + SD = 4.99 years (Range= 18-40 years). Out of these, 47 i.e. 58% women had ages of 30 or above. The mean parity was found to be 3.37 and the mean gravidity was recorded as 4.75. The mean age of the control group was 26.80 years (Range = 16-40 years). 30 i.e. 32% women amongst the controls had ages of 30 and above.

16 women (19.8%) had a previous history of Caesarean section, 1 (1.2%) had undergone dilatation and curettage (D & C) and 20 (24.7%) underwent Dilatation and Evacuation (D & E) before the ensuing pregnancy. Just 4 (4.4%) of controls had a past history of one or greater Caesarean sections, 14 (15.4%) had a previous history of Dilatation and evacuation. None of the control had undergone Dilatation and currettage.

Amongst other interventions, 6 (7.4%) women gave the history of manual removal of Placenta and 7 (8.6%) women had uterine exploration during at least one of their previous pregnancies. This is in contrast to our control group in which just 2 (2.2%) women had a past history of uterine exploration and none had a history of manual removal of Placenta.

1 (1.2% of cases) had present history of Uterine Fibroids (confirmed during the caesarean section). In comparison, none of the control had fibroid(s) in their present pregnancies.

One of the most imperative points to emphasize in our study is that majority i.e. 42 (52%) of the total number of pregnancies in the case group resulted in a pre-mature birth (defined as a delivery of child prior to the completed 37 weeks of gestation). Out of these 4 (4.9%) deliveries took place in the in the 30th week, , 5 (6.2%) in the 32nd week and the majority of the total i.e. 10 (12.3%) in the 34th week. It is also concluded that approximately 70% of the babies born pre-mature were delivered before or during the 34th week of gestation. In 1 (1.2%) women, the pregnancy culminated in a multiple pregnancy. These results are in striking contrast to those of the controls in which just 3 (3.3%) of deliveries were born pre-mature. Like cases one woman in controls also had multiple pregnancies.

Just 1 (1.2%) women had history of smoking during the present pregnancy, whereas no one among controls had such history.

Chart 1 demonstrates relative risk that is especially significant for previous caesarean section, history of dilatation and curettage and prematurity in present pregnancy.

DISCUSSION:

Increasing maternal age is a well known risk factor for placenta previa. It has been found that women of 35 years of age or greater than 35 years are at an increased risk for placenta previa[14] . This is in resonance with our study which also found out the same relationship between increasing maternal age and placenta previa. Out of the 81 cases of placenta previa in our study, 13 were related to maternal age of 35 or greater .We found that maternal age above 35 confronts almost a twofold increased risk of placenta previa in the subsequent pregnancy. Thus, our results confirm previous reports of association between increasing maternal age and placenta previa. Multiparity has been associated with the risk for developing placenta previa [6]as was reported by Gilliam et al.[15] , demonstrating that the incidence of placent previa was increased as the parity increases, remarkably It has also been established that women with high parity and multiple caesarian section are at the highest risk of developing placenta previa . The risk of developing placenta previa is more than nine times in women whose parity is greater than four , thus demonstrating a well known association between placenta previa and multiparity. In our study, we conclude that the women having a parirty of less than 3 have half the chances of Placenta Previa than those with or higher than 3. Same implies to a parity of 5, inculcating twice the risk of Placenta Previa.

Maternal smoking history has a positive influence on placenta previa as reported by Jens Tolboll Mortensen et al.[5] . It is reported that the risk for placenta previa is directly related to the dose of cigarette smoking i.e. the risk increases with the increasing number of cigarettes smoked and years of smoking[9,17] . An interesting discovery is that the female fetuses are more prone to the detrimental effect of smoking on placenta previa[5].Women who stopped smoking during preganacy were able to reduce the risk of placenta previa and thus fetal mortality in contrast to those who did not stop smoking[9,10]. Since, just one women in our cases and no one among controls had the history of smoking during pregnancy, we do not draw any conclusion on the association of smoking with Placenta Previa.

The past history of Caesarean sections in our study was found to be significantly greater in the women with Placenta Previa, compared to the controls.These results are consistent with the previous studies [3,4,5,6,7]. The study of Ananth et al showed a positive association between number of prior caesarean sections and the risk for placenta previa [4]. In that research, the relative risk increased from 4.5 for history of one previous Caesarean section (95% CI 3.6–5.5) to 7.4 for two (95% CI 7.1–7.7), 6.5 for three (95% CI 3.6–11.6), and 44.9 for four or more previous Caesarean sections (95% CI 13.5–149.5). The direct relationship of caesarean sections with amplified risk for Placenta Previa has also been reported by Gilliam et al[15]. The Odds Ratio of 4.5 in our study shows a strong association of Previous history of Caesaren section with Placenta Previa and co-relates well with the past literature mentioned above.

Uterine fibroids are not found to be linked with the chances of Placenta Previa in our study. Hung et al [14] did not find any stastically significant relationship (p value = 0.78) between fibroids and incidence of placenta previa in an Asian (Taiwanese) population .However, Tuzovic et al [2] found an 8.5 fold increased threat of this condition in women having Uterine abnormalities (p value = 0.005. CI= 8.47).

Premature deliveries were witnessed in much higher proportions in pregnancies complicated with placenta previa compared to the ones in whom this condition was not present. Tuzovic et al has also stated a similar direct relationship [2] reporting over 41% incidence of premature deliveries in Placenta previa cases compared to 4.8% that of controls. The p value in this study was less than 0.001 and confidence interval was 13.9 (9.1-21.2). Our findings also show an astonishing 31 fold increased risk of premature delivery in a women having Placenta Previa compared with the controls.

It has been reported that females who had undergone surgical myomectomy are more likely to develop placenta previa than those without that. Adesiyun AG has noticed an occurrence of 10.3% of development of

Placenta previa after myomectomy. [18], which is approximately 20 times higher than that of general population. Vergani P et al did not found any stastically significant association between uterine leiomyoma and placenta previa. [19]. Since just one case during our study underwent surgical myomectomy, we do not conclude with any association. Multiple gestations might also confer an added risk for the development of Placenta Previa. Several authors [20] have found a slightly greater risk (P value less than 0.05) of this condition in women giving birth to twins. Strong TH reported 0.55% incidence in comparison to 0.31% of general population. We did not find any association between multiple pregnancy and Placenta Previa.

Previous history of dilation and curettage and dilatation and evacuation results in almost 4 fold elevated risk of Placenta Previa as per findings of Kiondo P et al [21]. The 95% confidence interval (CI) in their study was 3.9 (1.4-11.1) and the P value was 0.01. We conclude that the risk for development of Placenta Previa almost doubles with a past history of Dilatation and Evacuation.

We also conclude that a strong association (4 fold increased risk) exists between previous history of Uterine exploration and manual removal of placenta and the development of Placenta Previa in the ensuing pregnancy.

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