

# Associated Risk Factors of Placenta Previa A Matched Case Control Study

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## ABSTRACT

**Aim:** To find out the factors associated with placenta previa and their contribution in causing placenta previa.

**Methods:** A matched case control study was conducted in obstetrics & gynecology department of Jinnah Hospital, Lahore and completed in Gulab Devi Hospital, Lahore. The patients who presented in the hospital with vaginal bleeding and diagnosed as having placenta previa through ultrasound were included in this study. With respect to these cases (patients of placenta previa) 60 females that were not having placenta previa were selected as a control. In addition to collecting the basic demographic details questions were asked about the medical history, gynecological history and obstetrics history in order to confirm the presence or absence of related risk factor. All information was recorded on a predefined questionnaire. For the analysis of data, SPSS version 16.00 was used. Mean of both case and control groups were compared on the basis of different variables. Chi square test was used for qualitative data. P-value  $\leq 0.05$  was taken as significant.

**Results:** Factors that were found significantly associated with placenta previa included maternal age > 35 years (0.020), history of cesarean section (0.03), history of miscarriage (0.001), previous history of placenta previa (0.000), history of dilatation and curettage (0.000) and history of evacuation of RPOCs (0.001) as their p-values were < 0.05 (significant). Risk factor contributing the most for having placenta previa was any previous history of placenta previa (OR=19) followed by history of evacuation of RPOCs (OR=6.3), miscarriages (OR=5), old maternal age (OR=4), history of D & C (OR=3.4) and previous cesarean section (OR=2.8).

**Conclusion:** This study showed that old maternal age, history of placenta previa, previous cesarean section, history of dilatation and curettage and evacuation of RPOCs and miscarriages were the factors significantly associated with placenta previa. These risk factors should be screened antecedently so as to minimize the prevalence and to avoid disastrous effects of placenta previa.

**Keywords:** Pregnancy, risk factors, placental abnormalities, maternal health.

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## INTRODUCTION

Being a serious complication of pregnancy placenta previa is the abnormal location of placenta in the lower segment of uterus in which placenta partially or completely covers the internal cervical<sup>1</sup>. Incidence of placenta previa is very high at 26 weeks, this is so because when the gestational age increases the lower segment is formed & the upper segment enlarges & moves with placenta<sup>2,3</sup>. Its prevalence is 0.64% in Asian women and 3-4/1000 in the world.<sup>4</sup> The etiology remains controversial but several risk factors have been reported in literature in association with this condition. Major risk factors found to be associated with placenta previa are maternal age, parity, previous cesarean section, previous history of placenta previa, abortions and certain obstetric

complications<sup>3,5,6,7</sup>. The risk factors in western population and Asian population are comparable because there are some risk factors which are present in Asian population and they are unique in their nature, if compared with the risk factors of western population. So this study is an attempt to find out association of those known risk factors with placenta previa in our local context in order to evaluate these conditions carefully during pregnancy for the detection of placenta previa.

## MATERIALS AND METHODS

It was a matched case control study conducted in obstetrics & gynecology department of Jinnah Hospital, Lahore. The study was completed in six months. Using non probability (purposive sampling) a sample of 30 cases was taken (considering its prevalence as 0.64%<sup>4</sup> at 5% margin of error). The patients who presented in the hospital with vaginal bleeding and diagnosed as having placenta previa through ultrasound were included in this study. All

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patients with placental abnormalities other than placenta previa for example placenta accreta, vasa previa or abruption of placenta were excluded. Patients with incomplete data were weeded out due to failure to satisfy the inclusion criteria. With respect to these 30 cases (patients of placenta previa) 60 females that were not having placenta previa were selected as a control. All controls were matched with cases with respect to age.

In addition to collecting the basic demographic details questions were asked about the medical history, gynecological history and obstetrics history in order to confirm the presence or absence of related risk factor. All information was recorded on a predefined questionnaire.

For the analysis of data, SPSS version 17.0 was used. Mean of both case and control groups were compared on the basis of different variables. Chi square test was used for qualitative data. P-value  $\leq 0.05$  was considered as significant. Odds ratio were calculated to assess the risk burden.

## RESULTS

There was a significant difference between cases and controls with respect to age. Old maternal age (> 35 years) was significantly associated with cases of placenta previa as p-value was 0.02 (significant). Similarly history of cesarean section, history of miscarriage, previous history of placenta previa, history of dilatation and curettage (D & C) and history of evacuation of RPOCs were also found significantly associated with cases of placenta previa as their p-values were < 0.05 (significant). These cross tabulations are shown in Table1.

**Table-01: Associated Risk factors of Placenta Previa**

	Cases 30 (%)	Control 60 (%)	Odds ratio	p-value
Age > 35 years	15 (50%)	12 (20%)	4.0	0.020
Multiple Pregnancies	02 (6.6%)	02 (3.3%)	2.0	0.13
History of cesarean section	14 (46.6%)	14 (23.3%)	2.8	0.030
History of miscarriage	16 (53.3%)	11 (18.3%)	5.0	0.001
Previous history of placenta previa	15 (50%)	03 (5.0%)	19	0.000
History of dilatation & Curettage	13 (43.3%)	11 (18.3%)	3.4	0.000
History of Evacuation of RPOCs	11 (36.6%)	05 (8.3%)	6.3	0.001

Risk factor contributing the most for having placenta previa was any previous history of placenta previa (OR=19) followed by history of evacuation of RPOCs (OR=6.3), miscarriages (OR=5), old maternal age (OR=4), history of D & C (OR=3.4) and previous cesarean section (OR=2.8).

## DISCUSSION

Increasing maternal age is a known risk factor of placenta previa. It appears to increase the occurrence of placenta previa, it may be due to atherosclerotic and infarction changes in the uterus, or occur due to the under perfusion of placenta because of placental size increase in PP. In our old maternal age was significantly associated with placenta previa. Many studies also supported this theory. Zhang, J concluded that increasing maternal age also increases the chance of placenta previa.<sup>6</sup> Multiple pregnancies are also considered to be a risk factor for placenta previa. But in this study its association was not found to be significant as p-value was 0.05.

Previous history of cesarean section was found to be significantly associated with placenta previa as its p-value was 0.03 (significant). The reason can be damage of uterus endothelial lining and scarring of uterus. The attraction and adherence of the placenta to the caesarean section scar can also be a reason for the lower implantation of placenta in subsequent pregnancies. Our findings are in consistent with findings of Nielsen, T.F et al<sup>7</sup>, McMahan et al<sup>8</sup>, Enila et al<sup>2</sup> and Lydon-Rochelle et al<sup>9</sup> which also demonstrated a significant association of cesarean section with placenta previa. However Cieminski et al<sup>10</sup> and Hossian et al<sup>11</sup> concluded from their studies that a previous history of cesarean section has no contributing role in placenta previa in the succeeding pregnancy.

Miscarriage was found significantly associated with placenta previa in this study. The odds of having placenta previa were two times higher in women having history of miscarriage/abortion. The findings of this study are in accordance with many other studies and these studies mutually endorse and reinforce each other. Morgan K et al<sup>12</sup> stated a similar relationship. But Zhou W et al<sup>13</sup> observed no association of previous history of abortions with placenta previa. Hendricks M.S et al<sup>14</sup> also stated that increasing frequency of abortions was found to predispose a woman to placenta previa. Lowit A et al<sup>15</sup> suggested an increased risk of miscarriage for placenta previa & low birth weight.

Evacuation of RPOCs also had a significant value and found to be associated with a six times more chance of having placenta previa. Similarly

having a history of dilatation and curettage (D & C) was found as a risk factor for placenta previa as in this study its p-value was calculated to be 0.014 (significant) with odds of 3.4. That mean females having history of dilation and curettage of the uterus was associated with a three times increased risk of placenta previa. Our findings are in agreement with the findings of Suknikhom et al<sup>16</sup> who gave an odds ratio 1.7 for previous dilatation and curettage, and concluded that placenta previa have significant association with previous uterine operation.

History of previous placenta previa can also be a significant risk factor for placenta previa in next pregnancies. In this a significant number of females were having a recurrence of placenta previa. Our findings are similar with the findings of previously reported literature<sup>17,18</sup> with respect to recurrent placenta previa.

## CONCLUSION

This study showed that old maternal age, history of placenta previa, previous cesarean section, dilatation and curettage and evacuation of RPOCs and miscarriages were the factors significantly associated with placenta previa. It is suggested from this study that during pregnancy, antenatal checkup should be done regularly so as to screen the risk factors antecedently so to avoid disastrous effects of placenta previa.

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