

## RELATIONSHIP OF CAESAREAN DELIVERIES TO RISK OF PLACENTA PREVIA

Naila Tahir, Sidra Kiani\*

Army Medical College Rawalpindi, National University of Medical Sciences (NUMS) Rawalpindi, Pakistan,

\*Military Hospital Rawalpindi, Pakistan

### ABSTRACT

**Objective:** To study the effect of caesarean section on frequency of placenta previa.

**Study Design:** Cross sectional comparative study.

**Place and Duration of Study:** Military Hospital Rawalpindi, From September 2012 to September 2014.

**Material and Methods:** Two Hundred females, hundred with previous cesarean deliveries and hundred controls, with previous vaginal deliveries, were included in the study. Frequency of placenta previa in both the groups was recorded and analyzed on SPSS version 10. Analysis was performed for frequencies, means and standard deviations. It was compared for significance by Chi square test, and p value less than 0.05 was considered significant.

**Results:** Placenta previa was found in 4 (4%) case, and 2 (2%) controls. It was not found in para 4 or less in both groups, while 2 cases and 1 control with parity 4 or more had previa ( $p < 0.05$ ). Females with previous one scar had no previa, while with previous 2 scars, one had previa ( $p < 0.05$ ). One female with previa in case group and both females with previa in control group were more than 25 years old. Previa was not found in females below 25 years of age. Morbidity adherent placenta was found in 10 cases, all had previous 02 or 03 cesarean sections.

**Conclusion:** Previous one cesarean did not increase the frequency of placenta previa. However, increasing number of scars, increasing maternal age beyond 26 years and increasing parity beyond 4 were associated with placenta previa.

**Keywords:** Cesarean section, Placenta, Placenta previa, , Vaginal deliveries.

### INTRODUCTION

Placenta Previa is defined as placenta lying entirely or in part in the lower uterine segment<sup>1</sup>. Its incidence as quoted in international literature is about 0.28 to 2%<sup>2</sup>. Though in other studies incidence of about 0.2 and 0.83 has been calculated<sup>3,4</sup>. In hospital based local studies frequency of placenta previa has been calculated to be in the range of 0.51% to 3.5%<sup>5,6</sup>. Advancing maternal age, multiparity, previous cesarean sections<sup>7-10</sup>, abortions, evacuation of retained products of conception<sup>11,12</sup>, cocaine use<sup>11</sup> and smoking<sup>12,13</sup> during pregnancy have all been attributed as risk factors for placenta previa. Previous placenta previa has also been associated with its development<sup>14</sup>. In singleton pregnancies with normal sized placenta, the most common identifiable etiological factor is previous uterine damage due to repeated

pregnancies or obstetric and gynaecological procedures<sup>15</sup>. This endometrial damage predisposes to abnormal placentation.

There is an association between previous cesarean sections and subsequent development of placenta previa, which is reported between 3% and 10%<sup>10,16-18</sup>. Cesarean section for first live birth is associated with 47% increased risk of placenta previa<sup>18</sup>. There is wide variation in results of various international and local studies. Most of the studies show increase in the frequency of placenta previa with increasing number of cesarean sections, in direct response pattern<sup>17,18</sup>. This was evident in local studies as well<sup>16</sup>. Some studies however show that there is no increased risk of placenta previa in females with history of previous cesarean deliveries<sup>3,19</sup>.

### MATERIAL AND METHODS

This study was conducted in Gynaecology and Obstetrics department of Military Hospital Rawalpindi. It is Class A hospital, consisting of full-fledged medical and surgical units. Department of Gynaecology and Obstetrics has 170 beds. In our emergency and labour ward, we are provided with ultrasound machines, and

**Correspondence:** Dr Naila Tahir, Advisor in Gynaecology, CMH Abbottabad, Pakistan  
Email: dr-naila@hotmail.com

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we do the ultrasound scans of all the patients in emergency and labour ward. There is a well-equipped operation theatre, which remains functional 24 hours a day. The hospital has a well-equipped laboratory for all the routine and specific investigations. We also have a radiology department, which is provided with state of the art equipment for ultrasonography and Doppler studies as well as Magnetic Resolution Imaging.

This study was conducted for a period of

**Group B:** Hundred females with a history of previous normal vaginal deliveries were recruited as controls.

#### Inclusion Criteria

Singleton pregnancies at or beyond 28 weeks of gestation were selected, with the history of previous normal vaginal deliveries, or with the history of previous one or more cesarean deliveries. Females in both the groups were matched for age and parity, since both are confounding factors. Advanced maternal age

**Table-1: Placenta previa distribution in group A and group B.**

	Group A (n=100)		Group B (n=100)	
	Number of patients	Percentage	Number of patients	Percentage
Upper Segment	96	96 %	98	98%
Placenta Previa*	4	4 %	2	2%
Total	100		100	

\* Difference between group A and group B is statistically non-significant.

$p = 0.683$

**Table-2: Frequency of placenta previa in relationship with c-section (n=100).**

Frequency of placenta previa		
Number of previous C-Sections	Number of patients	Frequency
Previous 1	70	0
Previous 2	22	2
Previous 3	8	0
Total	100	2

**Table 3: Frequency of placenta previa in relationship with age group (n=50).**

Age group	Group A (n=5)		Group B (n=50)	
	Name of Patients	Frequency	Name of Patients	Frequency
21-25 Years	11	0	11	0
26-30 Years	27	1	27	0
31-35 Years	11	1	11	0
36-40 Years	1	0	1	1
Total	50	2	50	1

two year, from September 2012 to September 2014. A total of Two Hundred women were included in the study and divided into two group.

**Group A:** Hundred females with a history of previous one or more cesarean deliveries. Frequency of placenta previa was studied in both the groups, who were matched for age and parity.

and advanced parity are said to be implicated as etiological factors for placenta previa. The females included in the study were nonsmokers, further removing another confounding factor from the study group.

#### Exclusion Criteria

All the females with the history of previous miscarriages, myomectomy and dilatation and curettage were excluded from the study. All of these result in the endometrial

damage and can result in abnormal placentation.

### Data Analysis

The data was entered into SPSS (version 10). Descriptive statistics were applied. Mean and standard deviation were calculated for numerical data, frequency and percentages were calculated for categorical data. Numerical data included age of the subject in both the groups. While categorical data included frequency of placenta previa in both the study groups. Risk of placenta previa also was calculated in relationship with parity of subjects in both the groups. Frequency of placenta previa was also calculated in relation with different age groups. Chi-square test was applied and *p* value was calculated. *p* value of less than 0.05 was taken as significant.

### RESULTS

Total of hundred females with history of previous one or more cesarean deliveries in group B (case group) were compared with group A (control group, included hundred females with history of previous normal virginal deliveries). Both groups were matched for age and parity. Distribution of patients according to the age and parity in group A and B shown in table-2. Distribution of placenta previa among the number of previous c-section is shown in table-1 difference was statistically significant and *p* value was less than 0.05. Previous one c-section the number of patients were 70. Previous two c-section the number of patients were 22 with frequency 2. Previous tow cesarean sections the number of patients were 22 with frequency 2. Previous three c-sections the number of patients were 8 among the total figure of 100 patients.

### DISCUSSION

According to the result of current study, previous one cesarean section did not increase the likelihood of development of placenta previa in subsequent pregnancy, as compared with the females with the history of previous normal vaginal deliveries.

Females in both the groups were matched for age of parity, thus removing two most important confounding factors. Females in both

the groups were also nonsmokers; thereby another confounding factor was removed.

Similar results have been found in retrospective cohort study conducted by Odibo Centres at St Louise Missouri in a period from 1996 to 2000<sup>19</sup>. This study found that development of placenta previa has association with increasing parity, advanced maternal age, history of spontaneous abortions and three or more prior cesarean deliveries.

A 10 year retrospective hospital based study conducted by Cieminski A, and Dluqolecki F from 1992 to 2000<sup>3</sup>, revealed similar results.

Previous cesarean section has been identified as an important risk factor for development of placenta previa in subsequent pregnancy in many studies and meta-analysis. A large meta-analysis and review of literature of studies published between 1966 and 2000 was performed by Faiz AS and Ananth CV, to study the etiology and risk factors for placenta previa<sup>11</sup>. They found that advancing maternal age, multiparty, previous cesarean delivery and abortion, smoking and cocaine use during pregnancy and male fetuses all conferred increased risk of placenta previa. Thus our observation of increased risk with increasing age and parity is supported by this meta-analysis.

A study conducted locally by Zaman BS etal, BV Hospital Bahawalpur during year 2000 to 2003, also confirmed our observation of increased incidence of placenta previa with increasing parity and advancing maternal age<sup>12</sup>. This study however found increasing risk of placenta previa with previous cesarean sections, and observation not supported by our results.

Current study was carried out on limited number of patient and in limited duration of time period. Therefore we cannot generalize our results for whole of the population. However, as can be seen in above discussion, our results are generally supported by most of international and locally conducted studies.

### CONCLUSION

The results of present study indicate that frequency of placenta previa is not increased in

females with the history of previous one cesarean delivery as compared to previous one normal vaginal delivery. However, increasing number of cesarean sections can lead to the increased risk of placenta previa. The results also indicate that increasing parity beyond 4 and advancing maternal age beyond 26 years are strongly associated with the development of low lying placenta.

Another finding is of morbidly adherent placenta previa in the form of placenta accreta / increta in 10 patients, all of these patients had previous 02 or 03 cesarean sections.

Hence Cesarean section is associated with increased morbidity both immediate and long term.

### CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

### AUTHORS CONTRIBUTION

Naila Tahir, advisor, Sidra Kiani, study design and data analysis.

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