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Association of Caesarean Section and Multiparty With Placenta Previa in Sudan

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***Abstract**: This is a descriptive cross-sectional study conducted in Alshikh Mohamed Ali Fadul hospital in Omdurman City-Sudan during September 2013 - September 2014. The main aim was to identify the association of placenta previa with multiparity and previous caesarean section in pregnant women. In antenatal clinic as per protocol 200 pregnant women were scanned in their second and third trimester for foetal wellbeing and placental localization after taking a detailed obstetrical history and clinical examination. All women with or without symptoms of placenta previa showing placental implantation in lower uterine segment on ultrasound scan were documented. After completion of the two years data regarding the detailed obstetrical and surgical history were recorded in a questionnaire and analyzed using SPSS Software. Sixty five women were diagnosed as cases of placenta previa. The overall incidence of placenta previa was found to be 32.5% (65 women). Out of these 7 were primigrvidas, 12 were multiparous, 34 were grand multiparous. It was clearly evident from the study that placenta previa is associated with multiparity and previous caesarean section. Placenta previa was highly significantly associated with previous caesarean section (P =0. 000 <0.05). As well as, with multiparity and the association was found to be as high as previous caesarean section (P =0. 000 <0.05).*

***Keywords:** caesarean section, Development, Placenta previa, Parity, Ultrasound.*

I. Introduction

Placenta previa (PP) is defined as a condition where the placenta is partially or wholly is situated in lower uterine segment. Its prevalence in pregnant women has been recently estimated to be approximately 0.5% of all pregnancies. This frequency clearly correlates to the elevated caesarean section rate. [(1)] The incidence is different among pregnant women; but on the average it is 1 in 300 deliveries.[(2, 3)] The proportion of pregnant women developing placenta previa is increasing as a consequence of delivery by caesarean section. The risk increases almost linearly after each caesarean section. [(4, 5)] A single caesarean section increases the risk by 0.65%, two by 1.5%, three by 2.2% and four or more by 10%. A previous caesarean section in association with placenta previa increases the risk of uterine hysterectomy almost fourfold. [(6)]

Placenta previa is a major cause of maternal morbidity and mortality because of the massive antepartum and intrapartum haemorrhage. [(7, 8)] Moreover, it is associated with preterm delivery with increased neonatal mortality three folds as a result of prematurity. [(9)] Although placenta previa is associated with antepartum massive haemorrhage necessitating preterm caesarean section, this is not observed in all women with placenta previa. Hence, the ability to predict severe antepartum haemorrhage and emergency caesarean section is critical in the management of placenta previa. A previous caesarean section resulting in placenta previa increases the risk of Caesarean hysterectomy almost four-folds. [(3)]Also, this risk as a complication increases with increasing parity. Hence, future operative delivery will have an impact on the reproductive life of women. [(10)]

A study done by (Barrett JM, Boehm FH, Killam AP 1981 found that the incidence of placenta previa in a control group was 0.33% compared to the study group 1.86% after one caesarean section ($p<0.001$). Over two Caesarean sections were 5.49% and as high as 14.28% after third in obstetric history. Also, placental abruption was recorded as a placental complication in 0.33% pregnancies in the control group while it was 1.02% after one caesarean section and 2.02% in the group with two previous caesarean sections ($p<0.001$). Additionally, the difference in the incidence of intrapartum hysterectomy between the group with prior Caesarean section was 0.86%) and the study group was (0.006%). This showed high statistical significance ($p<0.001$); and concluded that a previous Caesarean section is an important risk factor for the development of placental complications. [(11)] Caesarean section delivery is the most common of operative procedure in practice obstetrics and gynaecology known to cause myometrial and endometrial lasting damage. [(12)] Surgical disruption of the uterine cavity is a potential risk factor for the occurrence of placenta previa. [(13,14)] The first observation that reported an association between prior Caesarean delivery and increased

risk of placenta previa dates back to the early 1950s. [15] Ever since, several studies have reported the association between placenta previa and caesarean section. [16,17] These findings were subsequently confirmed through a large meta-analysis among more than 3.7 million pregnant women.[18] However, it remains unclear as to whether these risks increase with the number of Caesarean deliveries in a dose dependent fashion. Women of higher parity have a higher incidence. [19] Patients with placenta previa have 12 times the risk of having a recurrent previa in subsequent pregnancies. In a study about the relation of placenta previa and maternal age, it was found it increases dramatically with advancing maternal age. For example, women older than 40 years have nearly ninefold greater risk than women under the age of 20. This is done after adjustment of potential confounders including parity. [20]

In another study by (Barrett JM, Boehm FH, Killam AP, 1981) among 5267 obstetrical admissions 26 were diagnosed as cases of placenta previa. The overall incidence was 4.2%. Out of these 226 patients, 89 were multiparous, 99 were grand multiparous and rest were primigrvidas. One hundred sixty patients had a previous history of one or more caesarean section. From the available data it is concluded that there is an association between the incidence of placenta previa with the increase in parity. [21]

II. Materials And Methods

This is a descriptive cross-sectional study conducted at the department of obstetrics and gynaecology in Alshikh Mohamed Ali Fadul hospital in Omdurman City-Khartoum State in Sudan. It was conducted during the period September 2013-2014. In the antenatal clinic as per protocol 200 pregnant women were selected for the study. The inclusion criterion was a pregnant lady in her second and/ or third trimester of pregnancy. The doctor and staff nurse on duty were trained to enter the data in a Questionnaire. Then ultrasound scan was done for all selected women for foetal wellbeing and placental localization. All women with or without symptoms of placenta previa showing placental implantation in lower uterine segment on ultrasound were documented. Then women with placenta previa were further examined for their detailed obstetrical history-especially the parity and history of previous caesarean section- maternal age and socioeconomic status. After completion of the one year, data regarding the detailed obstetrical and surgical history were recorded in a questionnaire and analysed using SPSS Software. Out of all examined women (65) were found to have placenta previa. This percentage 32.5% (n = 200) was analyzed statistically by Chi square test to examine our hypothesis.

III. Statistical Methods

The data were analyzed using (SPSS Software) statistical social package for social sciences (Version 20 SPSS, Chicago, Illinois USA). Descriptive statistics were calculated for every measured variable, in order to evaluate the studied sample. All analyses were performed using descriptive frequency and crosstabs probabilities and a P value of $p < 0.05$ was considered statistically significant.

IV. Study Sample Characteristics

Data collected from September 2013 - 2014 from the department of obstetrics and gynaecology in Alshikh Mohamed Ali Fadul Hospital was analyzed. The percent of frequencies were calculated to examine the relationship between parity, pervious caesarean section and placenta previa. Sixty five women were found to have placenta previa out of the 200 studied pregnant women, 32.5 % (n = 200) were identified through descriptive frequency (Table-1).

Table (1) showing the distribution of placenta previa type

Placenta previa	Frequency	Total frequency %
Normal	135	67.5%
Previa	65	32.5%
Total	200	100.%

V. Results

Table (2) showing 66 out of the 200 women was identified having pervious caesarean section. This is going to be cross tabulated with placenta previa presence and tested for the likelihood of association.

Table (2) showing the distribution previous caesarean section

Previous Caesarean Section	Frequency	Total frequency %
Absent	134	67.0
Present	66	33.0
Total	200	100.0

Table (3) represents the cross tabulation between placenta previa and previous caesarean section in the study population. It shows that 35 women (18 %) of the total have placenta previa with previous caesarean section. This is in comparison to 105 women (52.5 %) who have normal placenta and no history of previous caesarean section. Using Pearson Chi-Square it showed a significantly high association between placenta previa and previous caesarean section (p <0.000).

Table (3) showing the association between placenta previa previous caesarean section

Placenta previa	Previous Caesarean Section		
	Absent	Present	Total %
Normal placenta	105 (52.5 %)	30 (15 %)	135(67 %)
Placenta previa	30 (15 %)	35 (18 %)	65(33 %)
Total	135 (67.5 %)	65 (33 %)	200 (100 %)

The association between placenta previa and previous caesarean section is (p <0.000) Sig. (2-sided).

Table (4) shows the distribution of parity to be cross tabulated with placenta previa to test the association between the two conditions. The multiparous women constitute about 76 (38%).

Table (4) showing the distribution of parity among the study population

Parity	Simple Frequency	Relative frequency %
Prime gravida	48	24 %
One Birth	22	11 %
Two Births	29	14.5%
Three Births	25	12.5 %
More Than 3 Births	76	38 %
Total	200	100.%

Table (4) represents the cross tabulation between placenta previa parity in the study population. It shows that 75(37.5%) multiparous had the highest frequency among the study population. At the same time 34 of them have the highest frequency of presence of placenta previa (52 %). This is in comparison to the rest of women 31 (48 %) who have placenta previa. Using Pearson Chi-Square showed a significantly high association between placenta previa and parity (p <0.000).

Table (5) showing the association between placenta previa and parity

Parity	Placenta previa		
	Absent	Present	Total %
Prime gravida	41(30.3%)	7 (9%)	47(23.5%)
One Birth	18(13%)	5(7.7%)	23(11.5%)
Two Births	23(17%)	8(12.3%)	31(15.5%)
Three Births	12(8.9%)	12(18.5%)	24(12%)
More Than 3 Births	41(30.3%)	34(52%)	75(37.5%)
Total	135(100%)	65(100%)	200(100%)

The association between placenta previa and previous caesarean section is (p <0.000) Sig. (2-sided).

VI. Discussion

A study by (David M, Luesley, and Philip N. Bakerk 2010) showed that the proportion of pregnant women with a placenta previa is increasing as a consequence of previous caesarean section. The study also confirmed that the incidence increases almost linearly after each previous caesarean section. As well as, this risk of such a complication increases with increasing parity. [(10)] In our study it found that 65 women 32.5 % were found to have placenta previa out of the 200 studied pregnant women. When this was tested for association, the p value showed high statistical significance at two tails (p <0.000). Moreover, (Ananth CV, Smulian JC, Vintzileos AM 1999**)** confirmed the positive linear correlation between placenta previa and caesarean section. They found that a single cesarean section increases the risk by 0.65%, two by 1.5%, three by 2.2% and four or more by 10%. Additionally, the previous Caesarean section in association with placenta previa increases the risk of uterine hysterectomy almost four-folds.

Surraya Halimi 2011 reported that women of higher parity have a higher incidence of developing placenta previa. Sheiner E, et al concluded the placenta previa increases dramatically with advancing maternal age. [(19, 20)] In our study, we also found that the possibility of placenta previa increases with greater parity independent of the number of prior caesarean deliveries. We showed that 75grand multiparous women have the highest frequency (37.5%) among the study population. Using Pearson Chi-Square showed a significantly high association between placenta previa and parity at two tails (p <0.000). In other words, the association between pervious caesarean section and placenta previa becomes stronger as parity increases even if the

number of caesarean deliveries stays the same. Again, the possibility of placenta previa increased both across and within parity groups. Our study supported the conclusions of previous studies showing an increased possibility of placenta previa in women with previous caesarean section. Also, we found that multiparous woman is at high risk of developing placenta previa than a woman of low parity.

VII. Conclusion And Recommendations

From the available data is concluded that there is a high association between incidence of placenta previa in women with previous caesarean section as well as multiparity. Hence, we recommend that pregnant women should attend antenatal clinics regularly for follow up during their pregnancy. This is for planning, proper management and advice to use family planning methods. The aim is to anticipate any complication and to have safe deliveries.

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