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The Relation Of Placenta Previa With History Of Previous Cesarean Section And Miscarriages

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Abstract

Background and objectives: The factors that increase the risk of placenta previa in subsequent pregnancies include past miscarriages and the scar from a previous cesarean operation. This study aimed to determine whether a history of cesarean section or miscarriage was related to placenta previa at Sulaimani Maternity Teaching Hospital.

Methods: At the Sulaimani Maternity Teaching Hospital, this case-control study was conducted between the 11th of September 2021 to the 31st of June.2022. A total of 100 women provided information, which was divided into two groups: Group A, which included 50 pregnant women with gestational ages between 30 and 40 weeks and confirmed placenta previa, and Group B, which included 50 pregnant women randomly selected with pregnancy lengths of 30 to 40 weeks and the placenta was in its usual location. Detailed history was taken from each woman, through this the relationship of placenta previa with previous cesarean section and miscarriages was studied.

Results: The results of this study revealed that prior cesarean sections were previously performed in 74% of cases of placenta previa, compared to 46% of controls (p value = 0.004). In addition; there was no correlation between placenta previa and prior miscarriages (p value= 1.000), and a highly significant correlation was seen between the rise in previous cesarean deliveries and the presence of accreta (p value = 0.003).

Conclusion: The likelihood of placenta previa in subsequent pregnancies is dramatically increased in this study by past cesarean deliveries; previous miscarriages have no significant impact on placenta previa development.

Keywords: Delivery, History, Miscarriage, Placenta previa, Previous cesarean

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Introduction

The term "placenta praevia" describes a placenta that develops within the lowest part of the uterus and is classified according to how close or far it is from the cervix's interior os. This definition was first made utilizing a trans-abdominal scan[1]. There are four grades; grade 1 (Low lying): Only the lower margin of the placenta invades the bottom part of the uterus, not reaching the os, while most of the placenta is located in the upper portion. Grade 2 (Marginal): Placenta reaches the internal os but does not cover it; grade 3 (Incomplete or partial central): Placenta covers the internal os when closed but not when fully dilated; grade 4 (major or total): Even when fully dilated, the placenta completely covers the internal os. It happens in singleton and twin pregnancies at a rate of 2.8/1000 and 3.9/1000, respectively[2].

In some cases, the placenta implants in the lower uterine section as opposed to the fundus, but the cause is unknown. The likelihood of lower segment placenta implantation does seem to be affected by uterine scarring[3]. This might be brought on by uterine scar persistent inflammation and endometrial defects. The production of the inflammatory mediators triggers the placental implantation at the lower uterine segment. Due to the scar's inadequate blood supply for the placenta's requirements, the placenta will be encouraged to grow towards the lower portion of the uterus or maybe develop into central placenta previa. As a result of scar contracture, the uterine cavity's morphology also alters, forcing fertilized eggs to move nearer the cervix. The lower uterine segment scar has an impact on the length of the uterine link between the frequency of prior cesarean deliveries and subsequent placenta previa. Like cesarean deliveries, the risk of previa endometrium loss, uterine scarring, and the ensuing Previa all seem to be related[11]. The -cent accuracy rate. Despite being detected by high-resolution ultrasonography, isthmus during the pregnancy's third trimester, preventing the placenta's upward migration and causing it to stay in the lower uterine segment, causing improper placental adhesion, which in turn raises the risk of central placenta previa[4].

Vaginal bleeding is caused mainly by placenta previa in the late second and third trimesters. Clinically, it presents as painless recurrent bleeding of varying amounts with no identified aetiology[2]. Although the bleeding is usually tiny and repeated, it can occasionally be severe and harmful to the mother's and fetus' life[5]. Placenta previa is a leading factor in maternal morbidity and mortality[6]. In addition, it increases the risk of massive bleeding following placental removal, which is the most common cause of an emergency hysterectomy[7]. Additionally, the spread of placental villi past the decidua basalis may aggravate placenta previa, leading to the spectrum of placenta accreta (placenta accreta, increta, or percreta) and increasing the risk of fatal bleeding, severe surgical complications, and other adverse outcomes[8]. Older maternal age, numerous births, multiple pregnancies, assisted reproductive technologies, prior uterine scarring from cesarean sections, myomectomy, dilation and curettage, congenital uterine abnormality, intrauterine adhesion, placenta abnormalities like battledore placenta or succenturiate lobe, and placenta previa in the past are risk factors for placenta previa[9].

Placenta previa has become more common during the past ten years, mainly due to growing cesarean section rates[10]. There is a will rise as more pregnancies end in miscarriage. Therefore, even though the aetiology of placenta previa is still unknown, most accurate method for detecting placenta previa is ultrasonography, which has a 96 per-morbidity and death have not decreased[12]. This study aimed to find the correlation

between the placenta previa and the previous history of cesarean section and miscarriage

Patients and methods

Between the 11th of September.2021 to the 31st of June.2022, this case-control study was carried out at Sulaimani Maternity Teaching Hospital. After being admitted to the hospital, each lady filled out a standardized questionnaire with all-inclusive criteria for study verbally during a direct interview. It contains information such as age, place of residence, occupation, body mass index, gravidity, parity, miscarriage, gestational age, placenta previa grade, placenta accreta spectrum signs, past medical history, past surgical history, and the number of prior cesarean sections.

The acquired data were entered into the Microsoft excel program, in which clearing of data and coding were performed. Then, the data was transferred to Statistical Package for the Social Sciences software 25.0 to conduct data analysis. Two approaches were used in the data analysis: descriptive approach and analytical approach. In the descriptive method, the data were analyzed and presented as frequency, percentage, mean, and standard deviation. While in the analytical process, associations between variables were assessed using specialized statistical tests, such as the Chisquare test and t-test. Patients with placenta previa were compared with those without placenta previa, i.e., controls. In this study, a p value of < 0.05 was considered significant, while a p value of ≤ 0.001 was considered highly significant. Data collection started after approval of the research protocol by the research protocol ethics committee / Kurdistan Higher Council of Medical Specialties / Ministry of Higher Education and scientific Research / Kurdistan Region Government - Iraq, with approval number (1182) on 11th of September.2021 until 31st of June.2022 in the emergency department and post-operative ward of Maternity Teaching Hospital in Sulaimani city.

Results

Table (1) shows demographic characters; among the cases, 18% of women below 30yrs old,82% were above 30yrs, while in the control group, 62% were aged below 30yrs,38% were above 30yrs (Mean±SD=34.6±4.83,29.28±7.40) respectively, p value <0.001, and this is statistically highly significant. Other demographic characteristics, including residency, BMI and occupation, were not significant statistically, with p values (0.836,0.542,0.237) respectively.

Table (1). Demographic characteristics of studied women

Variables	Group(A) No. (%)	Group(B) No. (%)	p value
Age <30 >30 Age (Mean±SD)	 9(18) 41(82) 34.6±4.83	 31(62) 19(38) 29.28±7.40	<0.001
Residency Inside City Outside city	 18(36) 32(64)	 19(38) 31(62)	0.836
BMI <18.5	 0(0)	 0(0)	

18.5-24.9 25-30 >30 BMI (Mean±SD)	0(0) 22(44) 28(56) 30.18±1.71	0(0) 19(38) 31(62) 30.30±1.80	0.542
Occupation Housewife Gov-employee Non-gov-employee	 42(84) 7(14) 1(2)	 47(94) 3(6) 0(0)	0.237

Table (2) shows the difference between the two groups gravidity, parity, and gestational age at delivery. Both gravidity and parity significantly affect the placental location. Among the cases, 4% were primigravida, and 96% were multigravida, while in controls, 26% were primigravida, and 74% were multigravida, p value <0.002. Regarding the parity in cases, 4% were nulliparous(para 0),90% para(1-4), and 6% were para 5 and more, while in controls, 38% were nulliparous(para 0),62% were para(1-4), and no cases of para 5 and more, p value <0.001. Regarding gestational age at delivery in cases,62% delivered at G.A of<37 weeks and 38% delivered at G.A of 37 weeks and more, while in the control group,22% delivered at <37 weeks of gestation and 78% delivered at 37 weeks of gestation and more p value <0.001, and this is highly significant.

Table (2). Relationship of gravidity and parity with the location of the placenta

Variables	Group(A) No. (%)	Group(B) No. (%)	p value
Gravidity Primi Multi	 2(4) 48(96)	 13(26) 37(74)	0.002
Parity 0 1-4 5+	 2(4) 45(90) 3(6)	 19(38) 31(62) 0(0)	<0.001
Gestational age (week) <37 ≥37 Gestational age (week) (Mean±SD)	 31(62) 19(38) 35.78±1.85	 11(22) 39(78) 38.36±2.12	<0.001

Table (3) shows the association of previous cesarean section and miscarriage with the placental location. As shown, the history of prior miscarriage among the two groups is the same (32%) with a p value of 1, which is not significant statistically; however, there is a highly significant difference between the two groups in association with the history of previous cesarean section p value <0.004.

Table (3). Relationship of placenta previa with the history of previous cesarean section and miscarriage

Variables	Group(A) No. (%)	Group(B) No. (%)	p value
Previous Miscarriage			
No	34(68)	34(68)	1.000
Yes	16(32)	16(32)	
Previous cesarean section			
No	13(26)	27(54)	0.004
Yes	37(74)	23(46)	

Table (4) shows the relationship of placenta previa with an increasing number of previous cesarean sections and miscarriages. The growing number of previous miscarriages does not affect the placental location p value of 0.577. Contrarily, when the number of cesarean procedures rises, the risk of placenta previa increases p value <0.009.

Table (4). Relationship of placenta previa with the growing number of prior cesarean sections and miscarriages

Variables	Group(A) No. (%)	Group(B) No. (%)	p.value	Variables	Group(A) No. (%)	Group(B) No. (%)	p value
Previous miscarriage				Previous cesarean section			
0	34(68)	34(68)		0	13(26)	27(54)	
1	10(20)	9(18)		1	10(20)	13(26)	
2	5(10)	3(6)	0.577	2	13(26)	6(12)	0.009
3	0(0)	2(4)		3	10(20)	3(6)	
4+	1(2)	2(4)		4+	4(8)	1(2)	

Table (5) determines the association between the number of previous miscarriages and cesarean sections with the grade of placenta between the grade of placenta previa and the number of previous miscarriages and cesarean sections p value (0.897, 0.384), respectively.

previa in the case group. There is no significant difference

Table (5). Relationship between the grade of placenta previa in group A and the number of prior miscarriages and C-sections.

Variable	Grade 1 No. (%)	Grade 2 No. (%)	Grade 3 No. (%)	Grade 4 No. (%)	p value
Previous miscarriage					
0	4(100)	8(61.5)	6(60)	16(69.6)	
1	0(0)	3(23.1)	3(30)	4(17.4)	
2	0(0)	2(15.4)	1(10)	2(8.7)	0.897
3	0(0)	0(0)	0(0)	0(0)	
4+	0(0)	0(0)	0(0)	1(4.3)	
Previous cesarean section					
0	0(0)	5(38.8)	4(40)	4(17.4)	
1	2(50)	4(30.8)	1(10)	3(13)	
2	1(25)	2(15.4)	4(40)	6(26.1)	0.384
3	1(25)	1(7.7)	1(10)	7(30.4)	
4+	0(0)	1(7.7)	0(0)	3(13)	

Table (6) shows the association between the number of previous cesarean sections and signs of accreta spectrum in women with placenta previa. An essential connection exists between the number of prior cesarean sections and signs of accreta spectrum p value 0.003.

Table (6). correlation between the number of prior cesarean procedures and the presence of accreta spectrum in placenta previa patients.

	Signs of accreta spectrum		
Variable	Yes NO. (%)	No NO. (%)	p value
Previous cesarean section 0 1 2 3 4+	13(48.1) 5(18.5) 4(14.8) 4(14.8) 1(3.7)	0(0) 5(21.7) 9(39.1) 6(26.1) 3(13)	0.003

Discussion

In this study, the relationship between a history of past miscarriages and cesarean births and placenta previa was addressed. The outcomes of the current study allow for a reevaluation of the data in light of the current situation, even though these findings and risk factors were initially established more than 20 years ago. Despite the fact that placenta previa's specific cause is uncertain, a number of factors, including advanced maternal age, multiparity, prior uterine surgery, improper decidue vascularization (previous miscarriage and curettage), multiple pregnancies, smoking, and prior uterine surgery, may influence the location of the placenta's attachment to the uterine wall [12]. The recent study's findings revealed that the placenta previa group had considerably higher age, gravida, and parity than the control group, supported by numerous other studies, like Tuzovic[10], Suknikhom[12]. A past cesarean section seems to be more frequently linked to the placenta previa in subsequent pregnancies in the current study; this was also demonstrated in earlier studies, such as those by Mohammed[5], showing that the frequency of placenta previa was more than two times higher in the scarred uterus than in the unscarred uterus (0.31 per cent vs 0.68 per cent). Numerous studies conducted worldwide demonstrate a 2 to 5-fold increased risk of placenta previa in women who have previously had c-sections, such as the study conducted by Parvin[7]. In the present study, 74% of cases had a history of previous c-sections; Similar findings were seen in the study by CH Nirmal[13], in which uterine scarring in the past was listed as a substantial risk factor (56.5%), while in the study conducted by Sorakayalapeta[2] 29.8% cases had a history of prior cesarean section, which is much less than our study. Our research demonstrates a rising correlation between the prevalence of past cesarean scars and placenta praevia. A previous cesarean section increases the chance of placenta previa, and the risk increases in direct proportion to the number of uterine scars. It constitutes with other studies finding Silver[11] and Ghourab[14]. There is disagreement over the relationship between previous miscarriage and placenta previa in subsequent pregnancies; some studies claim no connection, while others demonstrate that multiple miscarriages, elective miscarriages, or even one spontaneous miscarriage are factors that raise the likelihood of placenta previa in upcoming pregnancies[15]. In contrast to the current study, Taylor[16] observed an increased incidence of

placenta previa in patients who had previously had a miscarriage, while both Rose[17] and Williams[18] reported no association of PP with prior miscarriage. Furthermore, the findings of the present study show a highly significant association between the number of prior cesarean sections and the signs of accreta spectrum p value 0.003, as demonstrated in Table 5. According to research by Clarke[19], when a placenta previa is present, the chance of placenta accreta increases from 24% in women who have had one prior cesarean delivery to 67% when there have been three or more. Regarding miscarriage, our study found no relation between the number of previous miscarriages and signs of accreta spectrum p value 0.455, in contrast to the study conducted by Yang[20] demonstrated the likelihood of placenta accreta spectrum development is increased by prior miscarriage.

Conclusions:

The current study's findings show that having a prior cesarean procedure significantly increases the likelihood of developing placenta previa in subsequent pregnancies. Contrarily, placenta previa does not significantly correlate with past miscarriages in subsequent pregnancies.

Conflict of interest

The authors assert no conflict of interest.

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