Short Communication

Occurrence of Placenta Preavia and Its Complications in Women with Previous Three Caesarean Section or More

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Abstract

Background: Placenta previa or low-lying placenta occurs when the placenta is implanted in the lower uterine segment; its incidence is increasing due to the increasing number of cesarean sections. Placenta previa can cause severe antepartum and intrapartum bleeding, preterm delivery, the need for blood transfusion, and prolonged hospital stays. **Objectives:** To determine how the increasing number of cesarean sections can lead to an increasing incidence of placenta previa and its complications. **Materials and Methods:** This is a cross-sectional observational study carried out in the Karbala Maternity Hospital between January 2021 and January 2023. A total of 100 females with three or more cesarean sections were included in the study. Statistical analysis was used to determine the relationship between previous cesarean sections and the development of placenta previa. **Results:** Placenta previa occurred in 12.7% of women with three previous operations, 30.8% of women with four previous operations, and 18.2% of women with five previous operations, while placenta accreta occurs in 9.5% of women with three previous operations, 15.4% of women with four previous operations, and 9% of women with five previous cesarean sections with a *P* value of 0.708. **Conclusion:** Increasing number of cesarean sections is associated with an increased number of developing placenta previa and placenta accreta.

Keywords: Cesarean section, hysterectomy, placenta accreta, placenta previa

Introduction

Placenta previa occurs in about 0.5% of all pregnancies, and its incidence is increasing with the increasing number of cesarean sections.[1] Placenta previa can cause antenatal and intrapartum bleeding which can cause maternal death.[2] Prematurity and preterm deliveries due to placenta previa increase the risk of early neonatal death by threefold.[3] The pathophysiology of placenta accreta is not totally understood. Decidua maldevelopment associated with trophoblastic invasion may be a cause.[4] Placenta accreta increased in the last 50 years due to the increasing number of cesarean sections.[5] Placenta accreta nowadays is the main cause of emergency hysterectomy due to severe hemorrhage.[6] Placental invasion to other nearby organs, such as the bladder and bowel, may require reconstructive surgery, and massive blood transfusion needs to be given in some cases.[7] Maternal mortality rate in the case of placenta accreta may reach 7% and morbidity up to 60%.[8] Risk factors for developing placenta previa and placenta accreta include previous cesarean sections, uterine scaring, uterine curettage, and multiparity.[9] The diagnosis of placenta previa by Doppler ultrasound is confirmed by magnetic resonance image; some cases are not diagnosed until the time of delivery, when severe vaginal bleeding occurs while trying to deliver the placenta.[10]

Cesarean section is a surgical procedure, it is usually indicated to save the life of the fetus and/or mother, and its rate to deliver the baby is increasing globally. That is, in the United Kingdom, 25% of deliveries occur by cesarean section, and in China, 50% of all deliveries occur by cesarean section.[11,12] In Turkey, the rate of cesarean

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section rose from 8% in 1993 to 37% in 2008.[13] This increase in the rate of operations may be due to increased maternal age, previous cesarean section, and medico-legal reasons.[14] Some women choose a cesarean section as a mode of delivery without any indications.[15]

The aim of this study was to study the relationship between the number of previous cesarean sections and the development of placenta previa and placenta accreta with their complications.

Materials and Methods

This is a cross-sectional observational study carried out in the Obstetric and Gynecology Department of Karbala Maternity Hospital from January 2021 to January 2023. One hundred term pregnant females with three previous and more cesarean sections were included in the study. The inclusion criteria include pregnant women with three, four, and five previous cesarean sections, no previous vaginal delivery, no history of previous placenta previa, no medical disease like hypertension or diabetes, and no twin pregnancy or polyhydramnios. Women with three previous operations were 63 cases, women with four previous operations were 26 cases, and women with five previous operations were 11 cases. After taking informed consent to participate in the study, history and examination were taken, ultrasound results were recorded, and follow-up of these women was done till the day of operation; findings at operation regarding the development of complications, the site of the placenta, the need for blood transfusion, the need for hysterectomy, early neonatal complications, and admission to the high dependency care unit were recorded.

Table 1: Distribution of complications in women with three previous cesarean sections or more

	Frequency	Percentage
Placenta previa	18	18%
Placenta accreta	11	11%
Need blood transfusion	18	18%
Hysterectomy	8	8%
ICU admission	11	11%

Statistical analysis

Statistical analysis was carried out using Statistical Package for the Social Sciences (SPSS) version 23.0 (SPSS, IBM Company, Chicago, IL 60606, USA) with the chi-square test.

Ethical approval

The study was carried out in compliance with the moral guidelines found in the Helsinki Declaration. Before taking a sample, the patient's verbal and analytical consent was obtained. According to Document No. 24-40 dated August 24, 2020, an Ethical Committee at the University of Karbala, College of Medicine, Karbala, Iraq, evaluated and approved the study protocol as well as the subject information and permission form.

Results

Table 1 shows that 18% of females with three previous cesarean sections and more had placenta previa, and 11% of them had placenta accreta. Blood transfusion was indicated in 18% of them, hysterectomy was performed in 8%, and intensive care unit (ICU) admission was performed in 11%.

Table 2 reveals that women with four previous operations had a higher incidence of developing placenta previa (30.8%), women with five previous operations had (18%), while women with three previous operations had a lower incidence (12%). The *P* value of 0.131 was not significant. Regarding placenta accreta, women with four previous operations had higher incidence (15.4%), women with three previous operations had (9.5%), while women with five previous operations had a lower incidence (9%) with a *P* value of 0.708 which is not significant. Regarding the need for blood transfusion, women with five previous operations needed a transfusion in 28.09% of cases, women with three previous operations in 16.31%, and women with four previous operations in 15.38% with a *P* value of 0.343. Hysterectomy is indicated in 18.2% of women with five previous operations, 15.4% in four previous operations, and 3.2% in three previous operations with a *P* value of 0.065. ICU admission is higher in women with four previous operations (23%),

Table 2: Placenta previa and placenta accreta in women with three, four, and five previous cesarean sections

	Group 1 Three previous CS ($n = 63$)	Group 2 Four previous CS ($n = 26$)	Group 3 Five previous CS ($n = 11$)	*P* value
Placenta previa	8 (12.7%)	8 (30.8%)	2 (18.2%)	0.131
Placenta accreta	6 (9.5%)	4 (15.4%)	1 (9%)	0.708
Need of blood transfusion	10.28 (16.31%)	4.62 (15.38%)	3.09 (28.09%)	0.343
Hysterectomy	2 (3.2%)	4 (15.4%)	2 (18.2%)	0.065
ICU admission	4 (6.3%)	6 (23%)	1 (9%)	0.07

CS = caesarean section

Table 3: Neonatal outcome in women with three, four, and five previous cesarean sections

	Group 1 Three previous CS (n = 63)	Group 2 Four previous CS (n = 26)	Group 3 Five previous CS (n = 11)	P value
Preterm	33 (52.4%)	17 (65.4%)	10 (91%)	0.045
NICU admission	11 (17.5%)	7 (26.9%)	4 (36.4%)	0.294

CS = caesarean section

9% in women with five previous operations, and 6.3% in women with three previous operations with a P value of 0.07.

Table 3 shows the early neonatal complications. Preterm delivery occurs in 91% of women with five previous operations, 65.4% of women with four previous operations, and 52.4% of women with three previous operations with a P value of 0.045 which is not significant between the groups. Admission to the premature care unit occurs in 36.4% of women with five previous operations, 26.9% of women with four previous operations, and 17.5% of women with three previous operations with a P value of 0.294 which is not significant.

Discussion

Increasing the number of cesarean sections can cause a lot of complications. One of these complications is the development of placenta previa and placenta accreta with its complications, including the need for blood transfusion and hysterectomy. During this study, which was carried out at Karbala Maternity Hospital between January 2023 and January 2024, 100 pregnant women with three previous cesarean sections and more included in the study (women with three previous operations [63 cases], women with four previous operations [26 cases], and women with five previous operations [11 cases]).

Regarding the need for blood transfusion, in this study, we found that the higher the previous cesarean sections, the higher the need for blood transfusion (five previous operations had 28.09% of cases) with a P value of 0.345, which is comparable to the study done in America that found the need for blood transfusion is higher in a history of five operations (15.43%) with a P value of 0.61.[16] Another study done found that five previous operations had a 20% need for blood transfusion.[17] Another study conducted in Turkey showed that blood transfusion is more in women with four previous operations (6%) with a P value of 0.007[18] and in New York (8.9%) with a P value of 0.145.[19]

In this study, a higher incidence of placenta previa occurs in women with four previous operations (30.08%), compared to those with five previous operations (18.2%) and three previous operations (12.7%). Another study showed that women with five previous operations had a higher incidence of placenta previa (3.37%) with a P value of $<$0.001.[16] Also, a study done in Kingdom of Saudia Arabia found a higher incidence of placenta previa in five previous operations (8.75%).[17]

Placenta accreta, in this study, occurs more frequently in women with four previous operations (15.4%), women with five previous operations (9%), and women with three previous operations (9.5%) with a P value of 0.708. Another study showed that the incidence of placenta accreta is higher in women with five previous operations (2.4%) with a P value of 0.008.[19]

Regarding emergency hysterectomy, it was needed in 18.2% of women with five previous operations, 15.4% of women with four previous operations, and 3.25% of women with three previous operations with a P value of 0.065. These results were compatible with a study conducted by Silver and Robert in America, who found that hysterectomy is indicated in 8.99% of women with five previous operations with a P value of $<$0.001.[16] Another study revealed that four previous operations had a higher incidence of emergency hysterectomy (4.3%) with a P value of $<$0.001.[19] A study done in Saudia Arabia found that three previous operations had a higher incidence of emergency hysterectomy at the time of operation (1.3%) with a P value of 0.33.[20]

Conclusion

Delivery by cesarean section can carry a lot of complications; one of the remote complications is the development of placenta previa and placenta accreta. The incidence increases with the increasing number of operations, which can cause severe bleeding needing for hysterectomy. Restrict the cesarean section number to strict guidelines and limit the number of cesarean sections to fewer than four to decrease these complications.

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Conflicts of interest

There are no conflicts of interest.

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