



## Original Article

## Ultrasound Diagnosis of Placenta Previa and its Associated Risk Factors with Parity and Previous Cesarean Section

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## ABSTRACT

Placenta previa is a pregnancy condition in which the placenta is positioned abnormally either partially or completely covering the cervix. Females with prior cesarean section are at increased risk of developing placenta previa. Objective: To evaluate Placenta Previa and its Associated Risk Factors with Parity and Previous Cesarean Section using ultrasound. Methods: It was a cross-sectional study carried out at the private sector hospital of Gujranwala over 4 months period from December 2021 to March 2022. A total of 42 patients were selected using a convenient sampling approach. Patients identified with placenta previa following ultrasound examination were included after receiving informed consent. The patient's demographic statistics were collected on a specially designed data collecting sheet. The data were analyzed using the SPSS V20.0. Results: The result of this study revealed that women in their 20-30 years are most affected. Most of the women 27(64.3%) with placenta previa present asymptomatic. Risk increases with an increased number of parity and prior cesarean section. Anterior location is the most prevalent location for placenta previa 20(47.6%). Conclusion: The ultrasound is fully capable of detecting placenta previa, its type, and location. There is a direct relationship between previous cesarean section and multiparity with the risk of developing placenta previa.

## INTRODUCTION

Placenta previa is a complication of pregnancy in which the cervix is partially or completely covered by the placenta due to its abnormal positioning [1]. The uterus is a muscular pear-shaped organ that houses the developing fetus during pregnancy. The placenta transports trace minerals and oxygen from the mother's bloodstream to the fetus via an umbilical cord. Normally the placenta develops high up in the uterus on the front or back wall of the uterus. In placenta previa, the placenta develops in an incorrect location partially or completely covering the ostium [2]. Placenta previa is a rare obstetric emergency that is associated with an increased frequency of maternal death [3]. It occurs most probably during the second half and third trimesters of pregnancy [4]. Part of the placenta is

made up of maternal tissue, while the other half is made up of embryonic tissue [5]. placenta previa is a severe pregnancy issue that is the major reason for postpartum hemorrhage, which often endangered the lives of pregnant women [6]. After a single Cesarean delivery, the chance of placenta previa increases, and the prevalence rises even more as the number of Cesarean deliveries increases [7,8]. A previous C-section delivery doubles the likelihood of placenta previa in subsequent pregnancies, and those females are especially vulnerable to placenta accrete [9]. In the early detection of placenta accreta, ultrasound is extremely sensitive and specific [10]. High gravidity, high parity, and previous cesarean procedures all raise the incidence of placenta previa [11]. Placenta previa,

especially in women who have had a previous uterine scar, is a substantial risk factor for postpartum hemorrhage [12]. Pregnant women with placenta previa are more likely to experience placental inadequacies [13]. Placenta previa is linked to maternal and fetal complications, such as placental adhesion, antepartum hemorrhage, postpartum hemorrhage, malpresentation, and intrauterine growth restriction (IUGR), thrombophlebitis, preterm labor, and septicemia [14,15]. One fifth of all cases of antepartum hemorrhage are caused by placenta previa [16]. The leading causes for the establishment of placenta previa include the record of placenta previa, prior cesarean birth, numerous gestations, usage of ovulation pills, and rising maternal age [17]. Surgery of the uterus, usage of cigarettes, and drugs are other factors that contribute to the development of placenta previa [18]. Safe vaginal delivery is not possible due to placenta previa so the newborn must be delivered through cesarean section. Using ultrasound many instances can be detected in the early stages of gestation but others may report to the emergency department with pain-free vaginal discharge [19]. Due to 'placental migration,' the chances of placenta previa decrease with rising stages of pregnancy. This is because the uterine wall without the placenta grows quicker than the uterine wall with the placenta. Although the placenta does not travel itself, the parenchyma in which it is implanted swells, causing the placenta to appear to progress up and back from the cervix [20]. Because the significant antepartum and intrapartum hemorrhage associated with placenta previa it is one of the primary reasons for the mother's death. Furthermore, placenta previa is linked to preterm delivery, with prematurity raising neonatal mortality threefold [21]. Ultrasonography can be used to detect placenta previa before delivery [22]. Ultrasonography is the most accurate procedure for diagnosing placenta previa, with a 96 percent accuracy rate. Despite the use of ultrasonography with high resolution, morbidity and death have not decreased [23]. In placenta previa anterior placentation is reported to induce more severe hemorrhage during cesarean section in comparison to the posterior position [24]. The incidence of Previa placenta is increasing worldwide from 0.28-to 1.5 percent according to numerous articles due to rising rates of pregnancy in women of older ages, reproductive therapies, and previous cesarean births [25]. The purpose of this study was intended to illustrate the location of placenta previa in pregnant women and make them aware of the fact of developing placenta previa due to the rising percentage of previous cesarean sections and percentage of parity. The location and degree of placenta previa can be best determined using ultrasound.

## METHODS

It was a cross-sectional method of a study conducted in the department of radiology of private sectors hospital in Gujranwala, Pakistan. Subjects for this study were only females from 20 to 40 years who have undergone ultrasound. This study was conducted over 4 months from December 2021 to March 2022. A total of 42 patients were selected using a convenient method of sampling [2]. An informed written consent form was also signed by patients. The study was simultaneously conducted in the Department of Diagnostic Radiology in the Ultrasound department. The ultrasound was done using a 3.5 MHZ probe.

## RESULTS

The current study was conducted among 42 females for the study of placenta previa on ultrasound. The current study was conducted among patients with different age groups ranging from 20 to 40 years. With the highest frequency at 19(45.2%) at 26-30 years and the lowest at 3(7.1%) at 36-40 years as shown in Table 1.

Age of patient	Frequency	Percent
20-25 years	6	14.3
26-30 years	19	45.2
31-35 years	14	33.3
36-40 years	3	7.1
Total	42	100.0

**Table 1:** Age of patients

Most patients were asymptomatic with a frequency of 27(63.4%) and patients with a frequency of 15(35.7%) presented with painless vaginal bleeding, as shown in Table 2.

Sign and symptoms	Frequency	Percent
None	38	41.8
Painless vaginal bleeding	53	58.2
Total	91	100.0

**Table 2:** Signs and symptoms of placenta previa

Table 3 Show the number of parity with highest frequency 12(28.6%) and lowest frequency of 3(7.1%).

Parity	Frequency	Percent
0	7	16.7
1	6	14.3
2	7	16.7
3	7	16.7
4	12	28.6
5	3	7.1
Total	42	100.0

**Table 3:** Number of parity

Patients diagnosed with minor degree placenta previa observed the highest frequency of 29(69%) and the major degree of placenta previa observed was 13(31%) as shown in Table 4.

Type of placenta previa	Frequency	Percent
Minor	29	69.0
Major	13	31.0
Total	42	100.0

**Table 4:** Type of placenta previa

Most of the patients were found with the highest anterior placental location 20(47.6%) posterior placental location 13(31%) and lateral placental position with the lowest frequency of 9(21.4%) as shown in Table 5.

Placenta previa location	Frequency	Percent
Anterior	20	47.6
Posterior	13	31.0
Lateral	9	21.4
Total	42	100.0

**Table 5:** Location of placenta previa

The risk of placenta previa was found to be increased in patients with a previous number of cesarean sections. The current study found the highest frequency of 9(21.4%) and the lowest frequency of 2(4.8%) as shown in table 6

Previous cesarean section	Frequency	Percent
0	17	40.5
1	2	4.8
2	3	7.1
3	4	9.5
4	7	16.7
5	9	21.4
Total	42	100.0

**Table 6:** Previous cesarean section

## DISCUSSION

Placenta previa is an abnormal positioning of the placenta covering the os either partially or completely. The risk of placenta previa increases in females with a history of prior cesarean section. It endangers the lives of both mother and fetus. A total of 42 patients were selected using a convenient sampling approach. The current study included females from 20-40 years to evaluate placenta previa using ultrasound. Patients in the age group 26- 30 years 19(45.2%) were more prevalent to have placenta previa whereas the previous study published in 2017 by Elhaj also found similar results having more chance of placenta previa at around 30 years [2]. Another study by Frah published in 2016 also supported the result by having 50(33.5%) patients between the age group 23-45 years of placenta previa [11]. Both previous studies have similar findings to the current study. Moreover, the current study found that 27(64.3%) asymptomatic patients and 15(35.7%) with complain of painless vaginal bleeding. This point resembled the previous study by Elhaj published in 2017 which also found that 26(61.9%) presented with no complaints and 16(38.1%) were with painless vaginal bleeding[2]. The current study concluded that multiparous patients were at high risk of placenta previa 12(28.6%), a study by Elhaj published in 2017 shows that multiparous women were more prone to develop placenta previa

(85.8%) [2]. Both studies had similar findings relative to parity. The current study shows that the frequency distribution of placenta previa with the highest frequency of minor placenta previa 29(69%) and lowest frequency of major placenta previa 13(31%), similar results are also concluded by Elhaj with the highest frequency of minor placenta previa 22 (52.4%) and lowest frequency 20(47.6%) [2]. The current study shows that the placenta previa occurs more commonly in the anterior location 20(47.6%) and less frequently in the lateral location 9(21.4%). The same results are concluded by Elhaj shows that the anterior location is the most commonly affected side 19(45.2%) and the least affected on the lateral side 10 times (23.8%) [2]. The current study shows that the risk of developing placenta increases with prior cesarean section 9(21.4%). The study by Frah also concluded that a previous cesarean section increases the prevalence of placenta previa 26(52.0%) [11].

## CONCLUSION

The study concluded that the frequency of asymptomatic women was more in females presenting with pain-free vaginal bleeding. A large number of females with placenta previa were multiparous. The incidence rises with the frequency of prior cesarean deliveries and the mother's age. Placenta previa develops more commonly at the anterior site as compared to the posterior location.

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