

Feto-maternal Outcome in Placenta Previa in Scarred versus Non-scarred Uterus

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Abstract

Introduction: Placenta previa complicates 0.3–0.5% of all pregnancies and is a major cause of third-trimester hemorrhage. It affects both mother and fetus; therefore, it is important to study this condition and its complications.

Aims and Objectives: The aims and objectives of this study were to compare the incidence of placenta previa, associated factors, complications, placental position, mode of delivery, and fetal and maternal outcome in non-scarred uterus and scarred uterus.

Materials and Methods: A total of 100 patients identified with the diagnosis of placenta previa beyond 28 weeks of gestation were taken. The cases were divided into two groups: Scarred and unscarred. Both the groups were compared for parameters such as maternal age, parity, frequency of placenta previa, fetal outcome, operative procedures, and maternal morbidity and mortality.

Results: Of 100 patients, 23% were in the age group between 18 and 25, 49% between 26 and 30, and 28% between 31 and 40 years. 6% of patients in scarred uterus had 2 or more previous dilatation and curettage. In all patients of scarred uterus, 80% of the patients had previous 1 cesarean section, while 15% had two previous sections and 4.5% had previous three cesarean sections. Chances of placenta previa increase both with dilatation and curettage and previous cesarean sections. However, it was found in this study that fetal outcome did not differ much with the presence of scarred uterus.

Conclusion: It can be concluded that, in our study, the cesarean section had a significant relationship with placenta previa and this risk becomes very high with escalation in number of cesarean sections.

Key words: Cesarean section, Curettage, Dilatation, Maternal mortality, Placenta previa, Scarred uterus, Unscarred uterus

INTRODUCTION

The placenta is the life support system of the fetus. Placenta previa is an obstetric condition characterized by abnormal implantation of the placenta into the lower uterine segment, covering whole or part of the cervix.^[1] Placenta previa complicates 0.3–0.5% of all pregnancies and is a major cause of third-trimester hemorrhage.^[2] The reported incidence is 1 case per 300–400 deliveries. Almost 30% maternal deaths in the Asian population are due to major obstetrical hemorrhage in placenta previa, especially due to the rise in the incidence of cesarean sections.^[3]

Placental migration is used to describe the apparent movement of the placenta away from the internal os. Many of those placentas that migrate most likely never were circumferentially implanted with true villous invasion that reached the internal os. Several factors can increase the risk of placenta previa such as:

- Advanced maternal age
- Multiparity
- Multifetal gestation
- Cigarette smoking
- Previous cesarean sections.

There is an evident literature support which suggests that the chances of placenta previa are not only more in patients who had a previous history of a cesarean section but the chances also increase with the number of the caesarean section in the past.

Abnormal placentation is currently the most common indication for peripartum hysterectomy. Placenta previa

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accounts for one-third of all cases of antepartum hemorrhage.^[4] Placenta previa is a major risk factor for obstetric hemorrhage, especially in women with a previous uterine scar.^[5]

Thus, given the increased incidence of placenta previa *per se*, following prior cesarean delivery must be acknowledged as a real concern by obstetricians, given the rising cesarean section delivery rates that we have been experiencing over the past few decades, especially, as the incidence of hysterectomy in such cases is very high and that there is a notable increase in maternal morbidity and mortality. Thus, we conducted this study to know about the association of placenta previa with previous cesarean section pregnancy so that early recognition of placental location abnormalities and timely intervention can have a significant impact on the maternal and perinatal outcome.

Aims and Objectives

The aims and objectives of this study were as follows:

1. To compare the incidence of placenta previa, associated factors, complications, placental position, mode of delivery, and fetal and maternal outcome in non-scarred uterus and scarred uterus.
2. To reduce maternal and fetal morbidity and mortality by early diagnosis and prompt management in cases of placenta previa.

MATERIALS AND METHODS

It was an institutional-based prospective study conducted in the Department of Obstetrics and Gynecology at Government Medical College and Hospital, Nagpur, India, between January 2017 and July 2018.

A total of 100 patients identified with the diagnosis of placenta previa beyond 28 weeks of gestation were taken. Diagnosis was confirmed by transabdominal and transvaginal ultrasound as and when required. The cases were divided into two groups:

- Unscarred uterus - including cases with placenta previa who have no previous history of cesarean section or any uterine surgery like curettage.
- Scarred uterus - including cases with placenta previa who have a history of 1 or more previous cesarean section or uterine surgery like myomectomy or uterine rupture repair.

Both the groups were compared for parameters such as maternal age, parity, frequency of placenta previa, fetal outcome, operative procedures, and maternal morbidity and mortality.

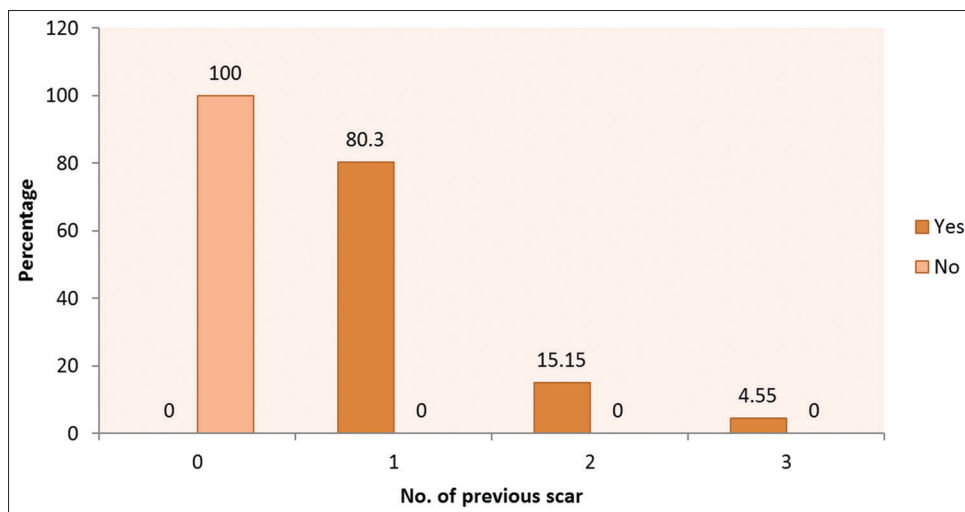
Inclusion Criteria

All pregnant women diagnosed with placenta previa beyond 28 weeks of gestation were included in the study. A detailed history was taken and a thorough clinical examination was done, followed by relevant investigation as required by the study.

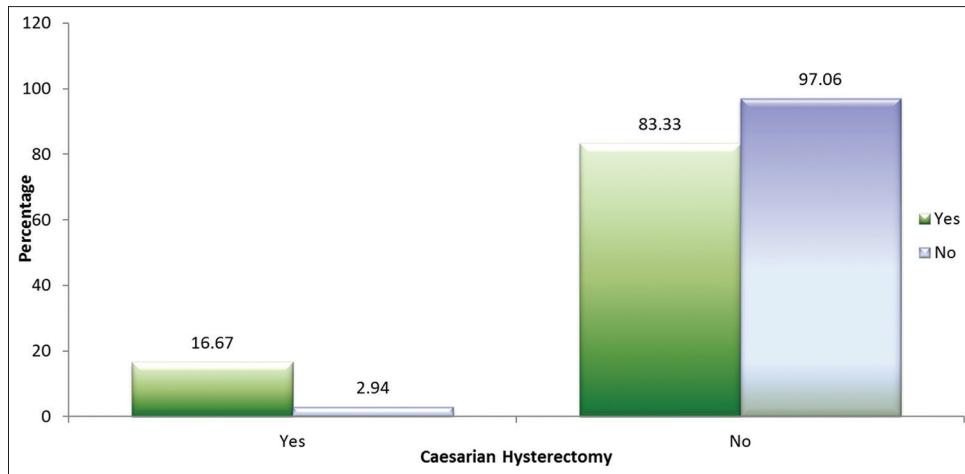
All the data were duly recorded in the standard prepared pro forma.

Exclusion Criteria

1. All pregnant women having placenta previa before 28 weeks of gestation were excluded from the study.
2. Cases of placenta previa with any other maternal morbidity such as severe pregnancy-induced hypertension, severe IUGR, and gestational diabetes mellitus were excluded.



Graph 1: Incidence of placenta previa according to a number of previous scar



Graph 2: Comparison according to cesarean hysterectomy

RESULTS

A total of 100 cases were included in this study. In scarred uterus, the most common age group was 26–30 years. 51% of patients were in this age group, while in unscarred uterus, 44% of patients were in this group. As the age group increased to 31–40 years, scarred uterus had 33% of patients while unscarred had only 17% of patients [Table 1]. $P = 0.024$ was considered to be statistically significant, and hence, as the age increases, the chances of having placenta previa in scarred uterus also increase.

As the parity is increased to ≥ 2 , 25% of the patients were found in scarred uterus while 26% in unscarred uterus. $P = 0.001$ was considered to be statistically significant and showed that, as the parity increases, chances of having placenta previa in scarred uterus also increase.

About 33% of the patients in scarred uterus had a history of previous one dilatation and curettage, while only 11% of the patients in unscarred uterus had one dilatation and curettage. 6% of patients in scarred uterus had 2 or more previous d n c, while only 2% of patients in unscarred uterus had 2 or more d n c. $P = 0.04$ was considered to be statistically significant which showed that chances of placenta previa increase with increase in a number of previous d n c in scarred uterus [Table 2].

In all patients of scarred uterus, 80% of the patients had previous one cesarean section, while 15% had two previous sections and 4.5% had previous three cesarean sections. $P = 0.001$ and Fischer’s exact was 0.00 which was statistically significant [Graph 1]. Therefore, as the number of previous cesarean sections increases, chances of having placenta previa also increase. Maximum patients were in 34–37 weeks’ group in scarred uterus, that is, 51%. $P = 0.023$ was considered to be statistically significant

Table 1: Relation of previous scar with age

Age (years)	Previous scar n (%)	
	Scarred	Unscarred
18–25	10 (15.15)	13 (38.24)
26–30	34 (51.52)	15 (44.12)
31–40	22 (33.33)	6 (17.65)
Total	66 (100)	34 (100)

$\chi^2 (2) = 7.4215, P: 0.024$

Table 2: Relation of previous scar and history of dilatation and curettage

Number of dilatation and curettage	Previous scar n (%)	
	Scarred	Unscarred
0	40 (60.61)	29 (85.29)
1	22 (33.33)	4 (11.76)
2	4 (6.06)	1 (2.94)
Total	66 (100)	34 (100)

$\chi^2 (2) = 6.4340, P: 0.040$

which shows that, as the gestational age increases, chances of having placenta previa in scarred uterus also increase.

About 72% of the patients in scarred uterus and 52% of the patients in unscarred uterus had anterior placenta. Grade 3 placenta was found in 71% of the scarred uterus and 44% of unscarred uterus. Only 6 cases of 100 had invasive placenta. 3% of cases in scarred uterus had placenta accreta while 2.9% in unscarred uterus had placenta accreta. 4.5% of the cases in scarred uterus had placenta percreta, while no cases were there in unscarred uterus.

About 500–1000 ml of blood loss was found in 45% of scarred uterus and 73% of unscarred uterus. >1000 ml blood loss was found in 53% of scarred uterus and 23% of unscarred uterus. $P = 0.018$ was considered to be statistically significant. Bilateral uterine artery dilatation was done in 33% of cases of scarred uterus and 11% of

cases of unscarred uterus. $P = 0.02$ was considered to be statistically significant. Uterine compression sutures were used in 18% of the cases of scarred uterus and 2.9% of the cases of unscarred uterus. $P = 0.032$ was considered to be statistically significant, and hence, it was found that uterine compression sutures were more commonly used in patients with scarred uterus.

Cesarean hysterectomy was done in 16% of the cases of scarred uterus and 2.9% of the cases of unscarred uterus. $P = 0.045$ was considered to be statistically significant [Graph 2]. Hence, it was found that, as the number of previous cesarean sections increases, the amount of blood loss and other complications and eventually the chances of cesarean hysterectomy increase. Bladder injury was found in only 4 cases of the total of 100 and all of them were in scarred uterus group. Maternal mortality occurred in three cases in scarred uterus and one case in unscarred uterus.

Cephalic presentation was found in 84% in scarred uterus and 76% in unscarred uterus. Premature babies were found in 63% of the cases in scarred uterus and 41% of the cases in unscarred uterus. $P = 0.032$ was considered to be statistically significant [Table 3]. Hence, it was found that prematurity was more common in scarred uterus as compared to unscarred uterus.

Live birth occurred in 90% of the cases of scarred uterus and in 91% in case of unscarred uterus. Thus, it was found in this study that fetal outcome such as live birth, stillbirth, and neonatal death did not differ much with the presence of scarred uterus.

DISCUSSION

Hemorrhage in pregnancy is the most important cause of maternal deaths worldwide. Its contribution to maternal mortality rate is even more striking in countries with low resources.^[6] Placenta previa is one of the most dreaded complications in obstetrics due to its associated adverse maternal and perinatal outcome. The frequency of cesarean section is increasing worldwide with a parallel rise in maternal mortality and morbidity. The higher incidence of cesarean delivery today is strongly associated with greater frequency of placenta previa. Similar results were found in this study.

Table 3: Comparison according to prematurity

Prematurity	Previous scar n (%)	
	Scarred	Unscarred
Yes	42 (63.64)	14 (41.18)
No	24 (36.36)	20 (58.82)
Total	66 (100)	34 (100)

$\chi^2 (2) = 4.5941, P: 0.032$

The most common age group in this study was 26–30 years both in the scarred and unscarred groups. This result was similar to the results obtained in the studies of Kaur *et al.*,^[7] Pravin *et al.*,^[8] Katke *et al.*,^[9] Parikh *et al.*,^[10] and Fauzia *et al.*^[11] A maximum number of patients in this study were multigravidas. Around 65% of patients had parity between 1 and 2. Various literatures have concluded that increasing parity increases the risk of placenta previa.^[12,13]

Most of the patients in this study were from urban areas around 76%. Residence did not have much effect on placenta previa ($P = 0.199$). Most of the patients were unbooked. Results were similar to the studies of Katke *et al.*,^[9] Parikh *et al.*,^[10] and Fauzia *et al.*^[11] As the number of previous dilatation and curettage increases, the chances of having placenta previa in scarred uterus also increase ($P = 0.04$). The results were similar to the results of Kaur *et al.*^[7] and Fauzia *et al.*^[11]

An increase in the number of previous cesarean section increases the chances of placenta previa in subsequent pregnancies. The results were significant in our study with $P = 0.001$. Many studies conducted around the world confirm a 2–5-fold increased risk of placenta praevia with a previous history of c-section.^[14] These findings were similar to the results of Kaur *et al.*,^[7] Pravin *et al.*,^[8] Katke *et al.*,^[9] Parikh *et al.*,^[10] and Fauzia *et al.*^[11]

The anterior placenta was more common in our study scarred uterus ($P = 0.048$) similar to the results of Kaur *et al.*,^[7] Pravin *et al.*,^[8] Katke *et al.*,^[9] Parikh *et al.*,^[10] and Fauzia *et al.*^[11]

There were only two cases of placenta accreta in the scarred uterus and one case in unscarred uterus and 3 cases of placenta percreta in scarred uterus. More chances of adherent placenta are there in scarred uterus.

More than 1000 ml blood loss was found in 53% of the patients in scarred uterus. $P = 0.018$ was considered to be statistically significant, and hence, it was found that the amount of blood loss increases as the number of previous cesarean section increases. This was also found in the studies of Kaur *et al.*,^[7] Parikh *et al.*,^[10] and Fauzia *et al.*^[11]

Bilateral uterine artery ligation was used as a method to reduce intraoperative blood loss and postpartum hemorrhage. It was used in 33% of the cases in scarred uterus. This result was significant ($P = 0.02$) and comparable to the results of Kaur *et al.*^[7] and Parikh *et al.*^[10]

Uterine compression sutures were used in 18% of the cases in scarred uterus with placenta previa. $P = 0.032$ was considered to be statistically significant and similar to the results of Kaur *et al.*^[7] and Parikh *et al.*^[10]

Cesarean hysterectomy was required in 11 cases in scarred uterus and 1 case in unscarred uterus group. Results were statistically significant ($P = 0.045$), and similar results were found in the studies of Kaur *et al.*,^[7] Katke *et al.*,^[9] and Parikh *et al.*,^[10] Bladder injury was found in only four cases in scarred uterus. Bladder injury occurred accidentally or in cases of placenta percreta. Maternal mortality occurred in 3 cases in scarred uterus and 1 in unscarred uterus.

Malpresentations are common in placenta previa; however, cephalic is still the most common. However, in all these patients, the head was high floating or deflexed even at term.

Prematurity was found in 63% of the cases of scarred uterus. $P = 0.032$ was considered to be statistically significant. Therefore, it was found in this study that scarred uterus with placenta previa had more chances of having a premature baby as compared to unscarred uterus.

Live birth occurred in 90% of the cases of scarred uterus and 91% in case of unscarred uterus. Stillbirth occurred only in two cases of scarred uterus. Neonatal death was found in four cases of scarred uterus and three cases of unscarred uterus. Thus, fetal outcome did not differ much with the presence of scarred uterus. This was similar to the results of Kaur *et al.*,^[7] Pravin *et al.*,^[8] Katke *et al.*,^[9] Parikh *et al.*,^[10] and Fauzia *et al.*^[11]

CONCLUSION

Placenta previa, whether found fortuitously by ultrasound or with the clinical emergency of maternal hemorrhage, carries significant maternal and fetal risk. Accurate diagnosis, judicious expectant management with blood transfusion as required, and timely delivery can lead to the most favorable outcome.

It can be concluded that in our study the cesarean section had a significant relationship with placenta previa and this risk becomes very high with escalation in a number of cesarean sections.

An increasing use of primary cesarean section results in increasing incidence of placenta previa as well as accreta. As the maternal and perinatal morbidity and mortality due to placenta previa is preventable, efforts should be made to bring down these rates which can be achieved by spacing pregnancies, limitation of family size, antenatal registration of all pregnant patients, use of routine USG in pregnancy, and early referral of high risk pregnant women to tertiary care centers.

In conclusion, primary prevention in the form of reduction in the rate of primi cesarean section must be done to prevent likelihood of placenta previa in scarred uteri. The emphasis should be on institutional delivery in a tertiary care center with multidisciplinary care, i.e., involvement of senior obstetrician, anesthetist, neonatologist, sonologist, and hematologist. Sonographic detection of the anterior placenta is very important to predict maternal outcome in placenta previa, and in such cases, obstetricians should be aware of maternal massive hemorrhage. The family planning services should be further improved to attain a decline in the number of women of high parity. The morbidity associated with placenta previa can be reduced by detecting the condition in the antenatal period by ultrasound before it becomes symptomatic. Early diagnosis by ultrasound and planned delivery should be the goal.

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