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Original Research Article

Association between placenta previa and previous caesarian section and/or abortion

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Abstract

The present study was conducted to find the association between placenta previa and previous cesarean section. It was a prospective longitudinal study conducted in NRS Medical College and Hospital from May 2009 to April 2010. The study population had 100 women who had a previous cesarean section or abortion, and the control group consisted of 100 patients with no previous caesarean section/abortion. They were followed up and the incidence of placenta previa was noted in both the groups. The incidence of placenta previa was significantly increased in patients with the previous caesarean section but not in patients with previous abortion. The present study concluded that the incidence of placenta previa increases in patients with previous caesarean section.

Keywords: Caesarean section, abortion, placenta previa.

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1. Introduction

There have been profound alterations in the practice of obstetrics in the past decade. One of them is a progressive increase in the frequency of Caesarian deliveries. However, the secondary rise in repeat caesarean delivery has been associated with an increase in complications of childbirth. Moreover, the rate of induced abortion has also increased dramatically. Dilatation and curettage have been long proposed as a risk factor for placenta praevia.

Placenta previa is a condition characterized by the insertion of the placenta partially or totally in the lower uterine segment. Painless, recurrent bleeding per vagina has been the hallmark of placenta previa, and the symptoms and signs are usually proportionate to the amount of blood loss. As a rule, the first bout of bleeding is neither lethal to the mother nor the foetus. Thus, the expectant management, as advocated by Macafee, has been the mainstay of treatment.

However, bleeding placenta previa is an obstetric emergency. Though it can be diagnosed well before, but adequate and swift intervention remains the crux of management. It remains a significant challenge to the obstetricians. Since the etiology is obscure, significant risk factors should be searched upon to prevent the condition.

1.1 Aims & Objectives

1) To determine the association between placenta previa and previous caesarean section.
2) To determine the association between placenta previa and previous abortion (both spontaneous and induced)

2. Material & Methods

This prospective longitudinal study was conducted in the Obstetrics and Gynaecology Department of NRS Medical College, Kolkata, from May 2009 to April 2010. The study population comprised of 100 women who had a previous caesarean section or abortion. Abortion may be spontaneous or induced. The patients may have a previous vaginal delivery or more than one caesarian or abortion.

The control population of 100 women was formed by patients who did not have a previous caesarean section and/or abortion. But patients with previous vaginal delivery were included in this group.

The exclusion criteria included the following norms:-

1) Twin pregnancy
2) History of any substance abuse tobacco, cocaine, etc
3) History of bleeding P/V or placenta previa in a previous pregnancy
4) History of previous medical termination of pregnancy with drugs.
5) Patients with a history of both cesarean section and abortion
6) Any medical surgical or other obstetric complications.

These patients were followed up serially over one year to find out the incidence of placenta previa through serial ultrasound scans. The mode of ultrasound was transabdominal as it was a safe, accurate, and straightforward method for placental localization. Statistical analyses were done by using the Chi-square test.

3. Results

Table 1: Distribution of study population according to age

Age (in years)	Case	Control
< 19 YRS	19	21
20 – 25	31	35
26 – 30	33	30
> 30	17	14
Total	100	100

The mean age for the case was 23.6 and for control was 21.7

Table 2: Distribution of study population according to gravida

Gravida	Case	Control
1	0	1
2	38	40
3	46	44
>= 4	16	13

The age & gravida were comparable in both groups.

Table 3: Incidence of placenta previa in post-cesarean pregnancy

History of previous caesarian section	Presence of placenta previa in present pregnancy		Total
	Present	Absent	
Present	10	52	62
Absent	5	95	100

P value: - 0.0001; RR: - 3.2

This reports showed the incidence of placenta previa is significantly increased in post-cesarean pregnancy ($p < 0.0001$ using the degree of freedom 1)

Table 4: Incidence of placenta praevia in post abortal pregnancy

History of previous abortion followed by D/E	Presence of placenta previa in present pregnancy		Total
	Present	Absent	
Present	1	37	38
Absent	5	95	100

P: - 0.371

This table could not elicit any association between the previous history of abortion, followed by evacuation and placenta previa in the present pregnancy.

Table 5: Relation of placenta previa with a number of previous caesarian sections in a single patient

Number of previous caesarian section	Cases	Incidence of placenta praevia
Single caesarian section	50	7
Two or more caesarian section	12	3

This table shows that 14% developed placenta previa after one cesarean section and 25% after two cesarean sections. When compared with the control population, the relative risk of developing placenta previa after one cesarean section was 2.8 (p. value – 3.66), and after two or more cesarean sections, it was 5 (p. value:- 0.04).

Table 6: Assessment of placental migration in the two groups

Timing of ultrasound	Placenta completely covering internal os		Placenta partially covering internal os	
	case	control	case	control
32 weeks	7	6	5	3
36 weeks	5	2	3	1

In the case group, the rate of placental migration was found to be only 28.6 % when the placenta was completely covering internal os, whereas, in the control group, it was found to be of 66.66 %. In the case of placenta partially covering internal os, the rate of migration was found to be 40%. Though the result failed to rise to a level of statistical significance, the rate of migration was lower in the previous cesarean group.

4. Discussion

It is now well established that the rate of cesarean section and surgical abortion has increased many folds in modern-day obstetrics; consequently, the complications of such are also on the rise.

The initial table shows age and gravida between the two groups were comparable. However, there was a significant number of teenage pregnancies in both groups. Probably as the institution in which the study was conducted mainly catered people from the lower socioeconomic class where the age of marriage was quite low as well as low-level contraceptive practice, hence the number of teenage pregnancy rates was quite high in the present study group.

The abovementioned study had shown the incidence of placenta previa was significantly increased in post-cesarean pregnancy.

In this study, among 100 cases with a history of risk factor 62 had a previous cesarean section and 38 had a history of a past abortion. Among 62 patients with a history of previous cesarean section, 10 developed placenta praevia, and among 95 patients without any history of risk factors, 5 developed placenta previa. Thus the result of relative risk being 3.2 and the p-value being 0.05 makes the result significant using the degree of freedom 1. To WW *et al*. (1995) showed the incidence of placenta previa was significantly increased in those with a previous history of cesarean section (1.31 %) compared with those with an unscarred uterus (0.75 %) (RR 1.64). This risk increased as the number of previous cesarean sections increased (RR 1.53 for one previous section, 2.63 for two or more). Darios Getahun *et al*. (2006) concluded that pregnancy after the caesarean section was associated with an increased risk of placenta previa (0.63 %) compared with vaginal delivery (0.38 %).[1] Ananth *et al*. (1997) concluded that women with at least one prior cesarean delivery were 2.6 times at higher risk for the development of placenta previa. [2] Clark Steven L *et al*. (1985) concluded that the incidence of placenta previa increased almost linearly with the number of prior cesarean sections to 10% with four or more.[3]

Among the 38 patients who had the previous history of abortion, one patient developed placenta previa; thus, the incidence is 2.7%. In the control group, among 100 patients without any risk factor, five patients suffered from placenta previa, the incidence being 5%. The p-value is > 0.05; there is no statistical significance between the two. Adel T. Abu-Heija (1999) *et al*. did not found any significant relation between placenta previa with previous abortion, neither did Harlap *et al*. (1978) and Zhou W *et al*. (2001) [4-6] Johnson *et al*. found that Vacuum aspiration abortion was not associated with an increased risk of placenta previa (OR 0.9, 95% CI 0.6–1.5)[7]. However, the risk of placenta previa increased with the number of sharp curettage abortions (OR 2.9, 95% CI 1.0–8.5 for G3).

However, Barrett JM *et al*. (1981) showed that the incidence of placenta previa almost doubles in post abortal pregnancy [8]. Endometrial curettage may play a role in the increased incidence of placenta previa subsequent to an induced first-trimester abortion. According to Memon (2010), an association of placenta praevia following miscarriages was also noted Hendricks (1999) had also shown that women with two or more previous abortions had a 2.1 (95% CI 1.2, 3.5) times increased risk of subsequently developing placenta previa.[9,10] Taylor (1993) concluded that women who report one or more induced or spontaneous abortions are 30% more likely to have a subsequent pregnancy complicated by placenta previa than women without such a history. [11] The results should not be generalized to areas where suction curettage is not the preferred method of induced abortion.

However, in our study, the patients could not specify the instrument used during termination, neither the patient could produce previous documents. Because of the fact most dilatation and evacuation is performed by curettage, it can be assumed that the curettage method was used. The inability to reproduce this history is a shortcoming of this study.

When the distribution of post-cesarean cases according to the number of cesarean section was done. Among 50 patients with previous one cesarean section, 7 developed placenta previa (14%) while among nine patients with two or more C/S 3 developed placenta previa (25%). The relative risk of developing placenta previa after 1 C/S is 2.8 (p-3.66) (not significant), and after two or more C/S is 5(0.04) (significant) (with Yates correction). To WW (1995) showed risk increased as the number of previous cesarean sections increased (R.R. 1.53 for one last section, 2.63 for two or more).

[12] Clark (1985) showed the incidence of placenta previa increased almost linearly with the number of prior cesarean sections to 10% in patients with four or more.

However, Reli Hershkowitz [3] (1995) *et al*. showed the difference between none and one previous cesarean section was highly significant (P< 0.0001), the difference between one and more cesarean sections was not significant.[13]

When the rate of placental migration in both groups was compared, some interesting facts came up. In the case group, at 32 weeks, seven women (100%) showed placenta completely covering internal os, among which five persisted at 36 weeks. (71%). Thus 71% of patients showed a lack of placental migration between 32 weeks to 36 weeks when the placenta is completely covering internal os. At 32 weeks, 5(100%) patients showed placenta partially covering internal os, among which 3(60%) persisted at term. Thus 60% showed a lack of placental migration between 32 to 36 weeks when the placenta is incompletely covering the internal os.

In the control group at 32 weeks, 6(100%) patients showed placenta completely covering internal os, among which 2 (33.33%) persisted. Thus 33.33% of patients showed a lack of placental migration between 32 weeks to 36 wks when the placenta is completely covering the internal os. At 32 weeks, 3(100%) patients showed placenta partially covering internal os, among which 1(33.33%) persisted at 36 weeks. Thus 33.33% of patients showed a lack of placental migration when the placenta is marginally covering the os. This observation indicates that the rate of placental migration is significantly more reduced in cases of post-cesarean low lying placenta. This is in corroboration with the work of Bhinde *et al*. (2004), Ghourab (2001), Chama *et al*. (2004), Dashe (2002), Laughon (2005).[14-18]

4. Conclusion

The incidence of cesarean section is rising and, accordingly, its complications. The previous cesarean scar may hamper to regular placental migration leading to increased incidence of placenta previa. The previous curettage may also alter the normal endometrium causing abnormal placental migration.

It is beyond doubt the post-cesarean placenta previa is challenging to manage, causing significant maternal and perinatal morbidity and mortality.

In this study, the relative risk of developing placenta previa after the cesarean section is 3.2. (p-) after 1 C/S is 2.26, and after 2 C/S is 5. This shows a significant association between the two. But no association between placenta previa and previous abortion was present in this study.

However, this is a small study done for a short period. There is ample scope for further elaborate research in this field.

Larger endeavors with a large sample size will probably reflect a higher association between placenta previa and previous cesarean section and/ or abortion.

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