Research Article

Previous lower segment caesarean section -a potential risk factor for Placenta Previa

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Abstract

Introduction: Obstetrical hemorrhage continues to be an important cause of maternal mortality, accounting for 15-20% of maternal deaths. Placenta previa is an important cause of both antepartum and post partum haemorrhage. **Aim of the Study:** To determine the risk of subsequent occurrence of placenta previa in women with history of previous Lower Segment Caesarean Section (LSCS). **Materials And Methods:** The study was a hospital based prospective study conducted in our medical college and teaching hospital over a period of two years (2011-2013). A detailed history has been taken as per proforma for all pregnant women at or after 32 weeks who attended the hospital in the study period. As per inclusion and exclusion criteria of our study, study population has been selected. The study population was divided into control group [patients with unscarred uterus] and study group [patients with previous LSCS]. Placental location was done by Trans Abdominal Sonography- Ultrasound Sonogram (TAS-USS) and patients with placenta previa were followed up regularly till the time of delivery for pregnancy outcomes. **Results:** The incidence of placenta previa in patients without previous LSCS was 0.55% and in those patients with previous LSCS was 1.59%. It is statistically significant by Chi Square test X=4.39(P <0.05). Considering the relative risk (RR), in women with previous LSCS scar, the risk for developing placenta previa in subsequent pregnancy is three times more than women without LSCS scar. **Conclusion:** There is a strong association between previous LSCS and risk of subsequent development of placenta previa. The study also reinforces the importance of advocating vaginal delivery as far as possible and reduces the number of LSCS and future placenta previa.

Key words: Placenta Previa, Previous LSCS, Placenta Accreta, Caesarean Hysterectomy

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Introduction

Obstetrical haemorrhage continues to be an important cause of maternal mortality, accounting for 15-20% of maternal deaths. Placenta previa is an important cause of both antepartum haemorrhage and post partum haemorrhage. In placenta previa, placenta lies within the lower uterine segment of the uterus, presenting an obstruction to the cervix and thus to the delivery [1].

Risk factors for placenta previa include those that increase the likelihood of uterine scar tissue (including higher parity, prior caesarean delivery or prior abortion) or multiple gestations [2-4]. Even though there are many predisposing factors for placenta previa, the association of placenta previa with previous LSCS is of particular importance in present day Obstetrics [5]. The incidence of placenta previa at term varies from 0.2% to 1.9% [6-9].

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The risk of placenta previa in a pregnancy after a Caesarean section delivery has been reported to be between 1.5 and 6 times higher than after a vaginal delivery [3].

Recent epidemiological studies have also found that the strongest risk factor for placenta previa is a previous LSCS suggesting that a failure of decidualisation in the area of a previous uterine scar can have an impact on both implantation and placentation [10].

The incidence of LSCS has been rising [11] in the past 3 decades. With the increased number of caesarean sections, the number of pregnancies with previous LSCS rises as well. Placenta previa can result in life threatening maternal complications [12-14] such as haemorrhage and shock and in adverse infant outcomes such as prematurity, still birth and neonatal death. National hospital surveillance data from the USA demonstrate a case fatality rate of 17.3 deaths per 100, 000 white women

with placenta previa and 40.7 deaths per 100 000 among Black women [15].

The aim of this study was to establish the influence of the previous LSCS on development of the placenta previa. This study provides yet another reason for reducing the rate of primary caesarean delivery [5] and for advocating vaginal birth for women with prior caesarean delivery [2].

Materials and Methods

The study was conducted after getting permission from Institutional Ethical Committee and detailed informed consent was obtained from the patients. The study was a hospital based prospective study conducted in our teaching medical college and hospital over a period of two years (2011-2013). A detailed history has been taken as per Proforma for all pregnant women at or after 32 weeks who attended the hospital in the study period.

Inclusion criteria

1. All pregnant women with para1, para2, para 3 at or after 32 weeks
2. Age between 20-34 years

Exclusion criteria

1. Multi fetal gestation
2. Age 19years or less and 35 years or more
3. Nulli para, para 4 and above
4. Previous uterine surgeries other than LSCS and previous placenta previa

All patients included in the study were divided into control (patients without previous LSCS) and study (patients with previous LSCS) groups. These patients were subjected to general examination and Obstetrical examination. Trans abdominal ultrasound imaging of placental location (criteria- placenta 0.1-2cm from internal os) was done. Basic investigations-Hemoglobin, urine routine, blood grouping and typing were also done.

Those patients who were found to have placenta previa were followed up regularly till the time of delivery. Mode of delivery, associated complications like placenta accreta, postpartum haemorrhage, need for hysterectomy were noted. Patients were followed up till the time of discharge.
The data were subjected to chi square test with SPSS software version 20.0

Results

Total number of patients delivered in our hospital from July 2011 to December 2013 was 1669. Of them 17 had placenta previa. Patients with known risk factors for placenta previa were excluded from the study [multiple pregnancy, advanced maternal age, grand multi, previous uterine curettage, uterine surgeries other than LSCS, previous placenta previa]

Of the remaining 982 patients, 252 had previous LSCS scar and 730 had no scar. The incidence of placenta previa in patients without previous LSCS scar was 0.55% and in those patients with previous LSCS scar it was 1.59% [Table-1]
It is statistically significant by Chi Square test $X=4.39 (P < 0.05)$. Considering the relative risk (RR), in women with previous LSCS scar, the risk for developing placenta previa in subsequent pregnancy is three times more than women without LSCS scar.

Table -1: Incidence of placenta previa in scarred and unscarred uterus

Previous LSCS scar	Placenta previa		Total	Incidence
	Yes	No		
+	6	246	252	1.59%
_	4	726	730	0.55%
Total	10	972	982	

Type II placenta previa was the commonest placenta previa in this study. In those with previous LSCS scar anterior placenta was more common. All patients with placenta previa with or without previous LSCS scar were delivered by LSCS. All of them were delivered after 37 completed weeks.

Two patients of placenta previa in scarred uterus and one patient with placenta previa in unscarred uterus developed antepartum haemorrhage and underwent emergency LSCS and blood transfusion. In this study, placenta accreta was found in 2 cases of placenta previa with previous caesarean scar. There was no placenta accreta in women without scar. Of the 2 cases of placenta accreta, who had previous caesarean section scar, one had caesarean hysterectomy in view of postpartum haemorrhage. Other patient also had postpartum haemorrhage but managed conservatively.

Of the 3 patients with post partum haemorrhage, 2 had previous caesarean scar with placenta accreta. One was managed conservatively [underwent hysterectomy after a month due to delayed haemorrhage], one underwent hysterectomy. Patient with post partum haemorrhage without scar was managed conservatively. All these 3 had antepartum haemorrhage also.

Discussion

Placenta previa is an important cause of obstetrical haemorrhage. There are many predisposing factors for placenta previa but the association between placenta previa with previous LSCS scar is of particular importance in present day obstetrics. The number of caesarean deliveries are increasing in modern obstetrics were compared to the past, which inturn influences the incidence of placenta previa. As per inclusion and exclusion criteria of our study all possible independent risk factors for placenta previa have been excluded. The incidence of placenta previa in patients with previous LSCS scar and without scar has been compared.

Total number of patients delivered in our hospital during the study period was 1669. Of these 17 had placenta previa. 25 patients with multi fetal gestation were excluded from the study. One patient had placenta previa. Strong et al reported that the incidence of placenta previa was 0.55% for twin gestation as compared with 0.31% for singleton gestation [16]. Then as per our exclusion criteria patients with age ≤ 19 years were excluded from the study. Patients with age ≥35 years [56 patients] were excluded from the study as Zhang et al and Cieminski et al reported that the risk of placenta previa is 2-3 times higher in women more than 35 years [17,18].

Babinzki et al and Eniola et al showed that the incidence of previa was 2.2% in women of para 5 or > when compared to women of lower parity [19, 20]. According to Laverty placenta previa occurs in 0.2% of nulli parous women and upto 5 % of grand multi paras [21]; hence patients with para 4 and above (2patients) have been excluded as per our exclusion criteria. Those patients with previous endometrial damage and myomectomy scars (164 patients) have been excluded as Rose and Chapman reported significant association between placenta previa and previous curettage [22]. Monica et al reported that women who have a history of placenta previa have an increased risk of placenta previa in subsequent pregnancy [23]; hence we have excluded 2 patients from the study.

Of the remaining 982 patients, 252 had previous LSCS scar (study group) and 730 had no scar. Six patients with scar and 4 patients without scar had placenta previa. The incidence of placenta previa was 1.59% and 0.55% in patients with scar and without scar respectively. It is statistically significant ($p<0.05$). The risk was 3 times higher in women with scarred uterus than in women with unscarred uterus.

During the last 3 decades the caesarean birth rate has increased alarmingly. The association of placenta previa and previous LSCS is of great importance inview of this alarming rise in caesarean delivery rates. Failure of appropriate lower uterine segment development and inability of the placenta to migrate across the scar tissue to support this consistently reported association. Oppenheimer et al found that in women admitted at 29 weeks gestation, in those women who had a caesarean delivery, the average migration rate was 0.3 mm/wk and in those women who had a vaginal delivery, the average migration rate was 5.4 mm/week [24]. After 1 caesarean delivery, the risk of previa is reported to be approximately 1.9%; the risk increases to 5.5% after 2 caesarean deliveries and reaches 14.3% after 3 caesarean deliveries [25].

All the patients with placenta previa were delivered by LSCS after 37 completed weeks. Of the 6 patients in the study group 5 patients had previous one LSCS and one had previous 2 LSCS. Two patients of placenta previa in scarred uterus and one patient of placenta previa in unscarred uterus developed antepartum haemorrhage and underwent emergency LSCS and blood transfusion.

For women whose placenta was implanted anteriorly in the site of prior LSCS scar, there was an increased likelihood of associated placenta accreta [26] and need for hysterectomy. Clark et al reported that 5% of women with unscarred uterus and placenta previa had placenta accreta [27]. Placenta accreta was found in 2 cases of placenta previa with scar. There was no placenta accreta in women without scar. Of the 2 cases of placenta accreta one had caesarean hysterectomy in view of postpartum haemorrhage. Another patient was managed conservatively with methotrexate but she had hysterectomy inview of delayed haemorrhage.

There was post partum haemorrhage in 3 patients, 2 of them had previous LSCS scar, one of them underwent hysterectomy and others managed conservatively but underwent hysterectomy after a month due to delayed haemorrhage and the other one who had no previous LSCS scar managed conservatively. All the 3 patients who had PPH also had APH.

Conclusion

There is a strong association between previous LSCS and risk of subsequent development of placenta previa. The

study also reinforces the importance of advocating vaginal delivery as far as possible and reduces the number of LSCS and future placenta previas. Women with previous LSCS scar are at high risk for developing placenta previa in subsequent pregnancy. Placenta previa inturn increases the risk of complications like obstetrical haemorrhage, placenta accreta and the need for caesarean hysterectomy. To prevent the deadly complications of placenta previa, the other important factor to be noted is, all pregnant women with scarred uterus should undergo at least one ultrasound examination during second trimester.

Anticipation of intraoperative complications such as haemorrhage, placenta accreta and the need for caesarean hysterectomy is an important factor in reducing maternal morbidity and mortality [28, 29]. For better and efficient management of these complications, all the patients of placenta previa and previous LSCS scar should be delivered in a tertiary care center [30].

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