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Original Research Article

## Pregnancy with previous caesarean section: an overview of adverse fetomaternal sequelae

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### ABSTRACT

**Background:** The Caesarean section epidemic is a reason for immediate concern and deserves serious international attention. The purpose of this study was to evaluate adverse maternal and fetal complications associated with pregnancies with history of previous caesarean section.

**Methods:** A cross-sectional, observational study carried out over a period of 1 year from 1<sup>st</sup> June 2016 to 31<sup>st</sup> July 2017 in Medical College Kolkata. 200 antenatal patients with previous history of 1 or more caesarean sections were included. In all cases thorough history, complete physical and obstetrical examination, routine and case specific investigations were carried out and patients were followed till delivery and for 7 days thereafter. All adverse maternal and fetal complications were noted.

**Results:** Out of 200 women, 30 candidates were tried for VBAC, of them 20 (66.66%) had successful outcome. Most common antenatal complication was APH (5.5%) due to placenta praevia followed by scar dehiscence. There were 12 cases (6.66%) of PPH and 6 cases (3.33%) of scar dehiscence in the study group. 3 cases required urgent hysterectomy due to placenta accreta. 42 out of 196 babies required management in SNCU immediately or later after birth.

**Conclusions:** Women with a prior cesarean are at increased risk for repeat cesarean section. Vigilance with respect to indication at primary cesarean delivery, proper counselling for trial of labor and proper antepartum and intrapartum monitoring of patients are key to reducing the cesarean section rates and maternal complications.

**Keywords:** Maternal morbidity, Repeat caesarean section, Scar rupture, Vaginal birth after caesarean section

### INTRODUCTION

With the sky rocketing caesarean section rates an increasing number of women face the issue of mode of delivery in their current pregnancy. The Caesarean section epidemic is a reason for immediate concern and deserves serious international attention.<sup>1</sup> The main concern in cases of pregnancy with scarred uterus is that it might end up in rupture, leading to severe maternal and perinatal morbidity and mortality. The presence of a CS

scar affects the site of implantation and the distance between implantation site and the scar is related to the risk of spontaneous abortion, scar dehiscence and morbid adherent placenta. Apart from scar related complications there are other morbidities related to post caesarean deliveries like scar pregnancy, traumatic postpartum hemorrhage, dense abdominal adhesions, rectus sheath hematoma, UTI, cervical tear, adherent bladder and thinned lower uterine segment. In the management of patient with previous caesarean section, regular and intensive antenatal surveillance is required. Proper

selection, appropriate timing and suitable methods of induction with close supervision by competent staff are necessary.<sup>2</sup>

This study was carried out to assess the fetomaternal outcome in previous history of caesarean pregnancy so that we can implement better safety measures to avoid any maternal complications arising due to caesarean sections.

**METHODS**

It was a cross-sectional, observational institution-based study carried out over a period of 1 year from 1<sup>st</sup> June 2016 to 31<sup>st</sup> July 2017 in Department of Obstetrics and Gynaecology, Eden hospital, Medical College Kolkata. 200 antenatal patients with previous history of 1 or more caesarean sections were included after institutional ethical clearance and proper consent from the patients. All pregnant mother with history of previous one or more caesarean sections who were admitted under our unit were included. Patients with history of previous uterine surgeries (myomectomy/hysterotomy), malpresentation, multiple pregnancy, diagnosed IUGR, fetus with congenital anomaly and associated medical illness were excluded from the study.

In all cases thorough history, complete physical and obstetrical examination, routine and case specific investigations (blood investigations and USG) were carried out and patients were followed up till delivery and for 7 days thereafter. All adverse maternal and fetal complications were noted. The outcome measured for mothers were uterine rupture; hysterectomy; postpartum haemorrhage (PPH); postpartum infection; admission to intensive care unit (ICU); manual removal of placenta and maternal mortality. Fetal outcome measured were stillbirth, asphyxia; SNCU admission at birth and other complications.

**RESULTS**

In the present study, 200 obstetric patients with previous history of caesarean deliveries admitted under our unit were chosen. In all cases thorough history taking and clinical examination was done. They were followed up until they were discharged postpartum. Results thus obtained were analysed and expressed in tables.

**Table 1: Age distributions of the patients (n = 200).**

Age in years	No. of patients	Percentage (%)
<20	62	31
>20-25	94	47
>25-30	38	19
>30-35	2	1
>35	4	2

The most frequent age group with previous history of caesarean section being admitted was between 20-25

years (47%), followed by patients less than 20 years (31%) between 18-40 years (Table 1).

**Table 2: Distribution of patients according to socioeconomic status (n = 200).**

Status	No. of patients	Percentage (%)
Low	155	77.5
Middle	45	22.5
Modified BG Prasad's classification for 2013		
Socioeconomic standard class	Modified BG Prasad's classification for 2013	
1	Rs. 5156 and above	
2	Rs. 2578-51551	
3	Rs. 1547-2577	
4	Rs. 773-1546	
5	Below Rs 773	

Socioeconomic standard of study population was assessed by modified BG Prasad's classification of socioeconomic standard of 2013 using per capita income in their family

Of the studied populations 77.5% belonged to low socioeconomic status and 22.5% were of middle socioeconomic status (Table 2).

**Table 3: Antenatal check-ups.**

Cases	Percentage
Booked	30
Unbooked	70

Only 30% of patients had regular antenatal check-ups and were booked cases at the referring and the present hospital (Table 3).

**Table 4: Case distribution according to inter delivery interval (n = 200).**

Months	No. of cases	Percentage
6-12 months	15	7.5
>12 months	185	92.5

It was seen that 15 cases (7.5%) conceived within 1 year of previous caesarean section and in the remaining 185 patients (92.5%) the pregnancy interval was > 1 year with respect to previous delivery (Table 4).

**Table 5: Mode of delivery (n = 200).**

Mode of delivery	No. of cases	Percentage
Elective repeat caesarean delivery	30	15
Emergency caesarean section those were not fulfilling the criteria of trial of labour	150	75
Vaginal birth	20	10

In the present study 30 patients were tried for VBAC as they fulfilled the criteria and gave the required consent.

The success rate of VBAC was 66.66% i.e. 20 patients delivered vaginally, and 10 patients required emergency CS because of fetal distress, cord prolapse, non-progress of labour and suspicion of scar dehiscence. Out of the remaining patients 130 underwent repeat elective LSCS and 150 required emergency CS for various causes (Table 5).

**Table 6: Antenatal maternal complications on/after admission (n = 200).**

Maternal complications	No. of patients	Percentage
Placenta praevia	11	5.5
Scar dehiscence	6	3
Shock	6	3
Scar rupture	4	2
Death	2	1

As evidenced by the Table 6, the most common antenatal complication was APH (5.5%) due to placenta praevia followed by scar dehiscence and shock either following scar rupture or APH (3% each). There were 2 maternal deaths (1%) due to shock as a result of placenta accrete.

**Table 7: Difficulties encountered during caesarean section.**

Difficulties during repeat caesarean section	No. of cases (n=180)	%
Difficulty in opening abdomen	74	41.11
Difficulty in separation of bladder	24	13.33
Difficulties due to placenta praevia/accrete	11	6.11
No difficulties	71	39.44

As apparent from Table 7, difficulty in opening the abdomen was encountered in 74 patients (41.11%) because of adhesions between uterus and undersurface of rectus sheath. Difficulty in separation of bladder was seen in 24 (13.33%) patients. There were 11 cases of placenta praevia out of which 3 were placenta accreta (Table 7).



**Figure 1: Scar rupture seen during laparotomy.**

**Table 8: Uterine scar status during caesarean section (n=180).**

Condition of scar	No. of cases	Percentage
Healthy scar	170	94.44
Dehiscence of scar	6	3.33
Rupture of scar	4	2.22

Scar dehiscence was seen intra-operatively in 6 patients (3.33%) and 4 cases had scar rupture (2.22%) which were clear cut and repair was done followed by bilateral tubal ligation (Table 8) (Figure 1 and 2).



**Figure 2: Scar dehiscence seen during caesarean section.**

The most common problem faced during caesarean section was PPH (6.66%) followed by wound extension (3.33%). 3 cases required urgent hysterectomy due to placenta accreta. Bowel and bladder injuries occurred in 2 cases each (1.1%) (Table 9).

**Table 9: Intraoperative complications.**

Complications	No. (n=180)	Percentage
Pph	12	6.66
Wound extension	6	3.33
Hysterectomy	3	1.66
Bladder injury	2	1.1
Gut injury	2	1.1

Out of 180 patients in whom LSCS was performed 48 cases (26.66%) had postoperative complications. Puerperal pyrexia in 17 cases due to UTI and wound infection and 15 patients had gaping of the LSCS wound. Blood transfusion was required in 12 cases. Hospital stay ranged from 10-21 days and 2 patients required CCU admission due to hypovolemic shock.

Of a total of 200 births, 4 stillbirths were seen which was due to uterine rupture. 96 out of 196 deliveries (48.97%) were at term whereas 100 out of 196 deliveries (51.01%) were preterm.

**Table 10: Distribution of neonates according to APGAR score at birth.**

Apgar score	No. of babies N = 196	Percentage
<3	0	0
3-4	2	1.02
5-6	5	2.55
7-8	18	9.5
>8	171	87.5

42 out of 196 babies required management in SNCU immediately or later after birth. Out of 196 babies 7 (3.57%) had very low APGAR score at birth because of scar dehiscence and APH and were admitted in SNCU (Table 10).

## DISCUSSION

There is a widespread public and professional concern about the increasing proportion of births by caesarean section worldwide.<sup>3</sup> The Caesarean section epidemic is a reason for immediate concern and deserves serious international attention. The introduction of lower segment caesarean section gave a good and strong scar to the uterus, to hold and safely deliver a subsequent pregnancy. It is now safe to say that "once a caesarean section, always a hospital delivery".<sup>4</sup> Incidence of rupture uterus varies from 0.3/1000 to 7/1000 deliveries in India accounting for 5% to 10% of all maternal deaths.<sup>5</sup>

In the present study, total 200 cases were included with one or more previous caesarean section, 30 cases were taken directly for elective caesarean section, 30 cases were given trial of labour and remaining 150 cases underwent emergency caesarean section without undergoing trial of labour. Out of 30 cases of TOL, 20 (66.66%) were delivered vaginally and remaining 10 (33.33%) cases had failed trial of labour and required emergency caesarean section. Our results were comparable to other studies of Bhat BPR et al, Pramod Kumar et al.<sup>6,7</sup>

In the present study it was seen that 15 cases (7.5%) conceived within 1 year of previous caesarean section and 185 cases (92.5%) conceived after 1 year of previous caesarean section. Huang et al had earlier concluded in their study that inter-delivery interval of less than 19 months were associated with a decreased rate of VBAC success in those who had induction but not in those who went into spontaneous labour.<sup>8</sup> Shipp et al reported an increased rate of uterine rupture during a trial of labour in VBAC patients with interdelivery interval of less than 18 months.<sup>9</sup>

About 85.5% antepartum patients were uneventful in our study. The most common antenatal complications were APH due to placenta praevia (5.5%) followed by scar dehiscence and shock either following scar rupture or APH (3% each). Maternal death was found to be 1% because of shock due to placenta accreta. Similarly, a

study done by Nahar K, et al in around half (48%) of the cases antepartum period was uneventful. Another 16% cases had some complications related with previous surgeries like placenta praevia, scar tenderness and chronic abdominal pain.<sup>10</sup>

Difficulty in opening the abdomen due to adhesions was encountered in 54 (30%) of the patients. Adhesions between the omentum, peritoneum and bladder were seen in 20 cases (11.11%). Difficulty in separation of the bladder in was seen in 24 (13.33%) of the patients. There were 11 cases of placenta praevia, out of which 3 were placenta accreta. Same findings were seen in another study done by Jinturkar A et al where difficulty in opening the abdomen due to adhesions was encountered in 52 patients (22.12%) and adhesions between the omentum, peritoneum and bladder was seen in 19 patients (8.08%). Difficulty in separation of the bladder in was seen in 23 patients (9.79%)<sup>11</sup> Parikh et al found excessive adhesions in 36% of the patients for LSCS in his study.<sup>12</sup>

During the present study, scar dehiscence and scar rupture were seen in 6 (3.33%) and 4 cases (2.22%) respectively. Similar study by Anagha A, et al showed scar dehiscence in 2.74% cases.<sup>11</sup> The incidence of scar rupture is quite high in our study as compared to the normal incidence rate i.e. 0.2-0.9% in single low transverse incision and 0.9-1.8% in multiple low transverse incision.<sup>13</sup>

From the current study, the most common problem faced during caesarean section was PPH (6.66%) followed by wound extension (3.33%). In contrast to our findings, study done by Goel SS et al, showed PPH in 48.55% cases which was quite high.<sup>2</sup>

Out of 200 cases 11 had placenta praevia out of which 3 patients (1.5%) were placenta accreta and underwent total hysterectomy. The incidence of placenta accreta in the present study is quite low as compared to the known incidence rate of accreta i.e. 3% for unscarred uterus, 11% for previous one LSCS and 40% for previous 2 LSCS. In a Network study, by Silver and associates, they reported an incidence of placenta praevia of 1.3 percent for those with only one prior cesarean delivery.<sup>14</sup>

Out of 180 patients in whom LSCS was performed 48 cases (26.66%) had postoperative complications. Puerperal pyrexia in 17 cases (8.55%) either due to UTI or wound infection and 15 patients (7.5%) had LSCS wound gaping. Hospital stay ranged from 10-21 days and 2 patients required CCU admission due to hypovolemic shock. The rate of complication is significantly less in this study in comparison to other two studies done by Chowdhury et al and Asaduzzaman.<sup>15,16</sup> Similar results were found in other study by Anagha A, et al where complications occurred in 25.1% cases.<sup>11</sup> Of a total of 200 births in our study, 3 stillbirths were seen (1.5%) which was due to rupture uterus. 7 babies (3.57%) had

APGAR score less than 7 at birth because of scar dehiscence and APH and were admitted in SNCU. Ismail S, et al found 23 cases (4.9%) had fresh still birth and 7 perinatal deaths (1.5%). APGAR score was less than five at five minutes in 31 (6.6%) and 138 (29.4%) of the neonates admitted to nursery.<sup>17</sup>

In the present study, 96 out of 196 deliveries i.e. 48.97% were at term whereas 100 out of 196 deliveries (51.01%) were preterm. Another study done by Nahar K, et al found majority (91%) of the cases were admitted with term, only 9% were with preterm.<sup>10</sup>

## CONCLUSION

Due to rise in Caesarean section rate as a primary mode of delivery in past few years, the number of pregnancies with previous Caesarean section has also increased. Rising trend of caesarean section has been associated with fetomaternal complications. Vigilance with respect to indication at primary cesarean delivery, proper counseling for trial of labor and proper antepartum and intrapartum monitoring of patients are key to reducing the cesarean section rates. If the incidence of primary caesarean section rates is reduced, the complications associated with repeat caesarean section can be decreased. Substantial reduction in the caesarean rate can be achieved safely and efficiently by encouraging the trial of labour in women with a single previous caesarean delivery.

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