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Original Research Article

An Epidemiological Assessment of Maternal and Foetal Outcome in Previous Caesarean Section

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Abstract

Background: The rising number of primary Caesarean sections has led to increased consideration of delivery mode in subsequent pregnancies. The increasing prevalence of Caesarean sections contributes to a rise in multiple repeat procedures, which are linked to increased risks for both maternal and foetal complications.

Methods: A retrospective study was conducted over 12 months at Department of Obstetrics and Gynaecology, Katihar Medical College and Hospital, Katihar, Bihar, India. Data on previous Caesarean sections were collected, and clinical findings during the current pregnancies were recorded.

Results: During the study period, 942 women with a history of previous Caesarean section were admitted. Among them, 530 cases underwent elective repeat Caesarean section, while a trial of labour after Caesarean section was planned for 412 cases. Successful vaginal delivery was achieved in 311 cases, while 96 cases required repeat emergency Caesarean section due to failed labour trials. Maternal morbidity, such as adhesions, was observed in 11.25% of cases, and obliteration of the utero-vesical fold in 7.92%. Maternal mortality occurred in 0.15% of cases. Perinatal morbidity and mortality rates were 3.32% and 3.96%, respectively.

Conclusions: Given the increasing prevalence of women with previous Caesarean sections, it is crucial to provide informed counselling during attempts at vaginal delivery in well-equipped hospitals. Efforts to reduce primary Caesarean sections are warranted to mitigate complications in subsequent pregnancies.

Introduction

A Caesarean delivery refers to the birth of a viable foetus through an incision made in the abdominal wall (laparotomy) and the uterine wall (hysterotomy) [1]. It is considered a critical procedure in obstetrics, often saving lives. Today, it ranks among the most frequently performed surgeries; however, it unfortunately carries significant risks of maternal morbidity. In the past, before the advent of broad-spectrum antibiotics, blood transfusion capabilities, and advanced anaesthetic techniques, Caesarean sections were exclusively used to save the mother's life, often resulting in mortality rates of 50-70%.

Due to significant advancements in anaesthetic services and improved surgical techniques, the morbidity and mortality associated with Caesarean delivery have markedly decreased. According to a previous study, maternal mortality related to Caesarean delivery was reported at 2.2 per 1,000,000 in the United States [2].

The term "elective Caesarean" refers to a procedure scheduled at a predetermined time during pregnancy to ensure optimal obstetric, anaesthesia, neonatal resuscitation, and nursing care [3]. In contrast, an "emergency Caesarean section" is performed in response to unforeseen or acute obstetric emergencies [3]. Research indicates that procedures performed under emergency circumstances are more likely to be associated with morbidity and mortality compared to elective procedures [4].

The World Health Organization emphasizes that Caesarean sections should be performed based on medical necessity for the patient, rather than meeting a numerical target. It warns that institutions lacking adequate resources for safe surgery or managing complications may face higher rates of complications associated with Caesarean deliveries [5]. The rising rate and frequency of Caesarean deliveries have been linked to various maternal risks, including peripheral organ damage, excessive

bleeding, the necessity for intensive care, prolonged surgical procedures, hysterectomy, and maternal mortality [6-8]. Similarly, increasing rates and numbers of Caesarean deliveries are associated with fetal risks such as prematurity, low APGAR scores (a measure of newborn health), stillbirth, and early neonatal death [6, 9, 10].

The current study aimed to investigate the maternal and foetal outcomes in patients with a history of previous Caesarean section who subsequently required a repeat Caesarean section.

Methods

This retrospective study was done for 12 months at Department of Obstetrics and Gynaecology, Katihar Medical College and Hospital, Katihar, Bihar, India The study has been done on women admitted for safe confinement with previous caesarean section.

Inclusion criteria: All women with previous one lower segment caesarean section, gestational age 37-40 wks.

Exclusion criteria: All women with previous h/o classical CS, more than one CS, hysterotomy, myomectomy.

Following details were noted down in a proforma. Detailed history was taken at the time of admission about previous CS, particulars regarding indications, post operative morbidity, wt of the baby. Detailed history during the present pregnancy, investigation reports and associated medical disorders were noted down. Women with previous one C S done for non-recurrent indication and a singleton cephalic presentation were counselled about the risks and benefits of Trial of labour after caesarean (TOLAC) versus elective repeat CS. Women who gave consent for TOL were admitted and monitored during labour for pulse, BP, foetal heart rate, uterine contractions, scar tenderness and progress of labour. Emergency CS was done for patients with non-progress of labour and foetal distress. Intra and post operative findings were recorded. Perinatal details were noted.

Elective CS was decided for those women admitted with complications, completed 38 wks. and not willing for TOL. Intra and post operative findings were recorded. Maternal and perinatal findings were noted.

Results

During the study period, there were total 16537 admissions for safe confinement. Caesarean section was done for 2102 women, include primary and repeat caesarean section (rate of CS 14.84%). There were 942 women with history of previous one CS. Elective CS was done for 530 cases and trial of labour was planned for 412 cases. Successful vaginal delivery was conducted for 311 cases and failure of trial among 101 cases and 96 women had emergency repeat CS. Incidence of repeat CS was 66.45%. And 5 cases had scar dehiscence and closure of the rent (2 cases) and subtotal hysterectomy (3 cases) was done. Maternal mortality observed in one case who was admitted lately with history of leaking per vagina. Repeat CS was done, resulted in wound infection due to prolonged PROM and burst abdomen (0.42%).

Indications	Elective repeat CS	VBAC	CS in failed TOL
Fetal distress	16.41%	18.64%	52.08%
Breech	7.16%	10.28%	-
Transverselie	3.39%	9.64%	-
CPD	40.75%	9.96%	-
PROM	3.96%	9.64%	-
PIH	1.5%	5.78%	-
Placenta previa	0.94%	3.21%	-
Non progress of labor	3.015	9.64%	33.33%
Unknown	3.96%	23.14%	-
High risk pregnancy	16.97%	-	-
Threatened rupture	1.88%	-	14.58%
Total (942)	530	311	101

As shown in Table 1, foetal distress was the major indications for emergency repeat CS (52.08%), followed by non-progress of labour (33.33%). In elective repeat CS, major indication was CPD (40.75%), followed by foetal distress (16.41%).

Important per operative complication was adhesions and obliteration of UV fold. Classical CS was done in 2 cases (0.31%), Caesarean hysterectomy was done in 1 case (0.15%).

Table2: Incidence of preoperative complications in repeat cesarean section.

Complications	Percentage
Adhesions	12.25
Obliterated UV fold	7.92
Thinned out lower segment	3.32
Scar dehiscence	1.06
Cesarean hysterectomy	0.15
Broad ligament hematoma	0.15
Others	2.825

Perinatal morbidity requiring admission to NICU for 21 babies (3.32%) and mortality in 25 babies (3.96%). Reasons for the mortality were, prematurity (11 babies) and congenital anomalies (3 babies), neonatal sepsis (9 babies) unknown reasons (2 babies).

Discussion

There is a wide spread concern about the increasing proportion of births by caesarean section. Increasing rates of primary CS have led to an increased proportion of women with a history of prior caesarean delivery. Previous CS is the most common indication for repeat CS. Repeat CS predispose to an increased risk of intra operative complications like, scar dehiscence, adhesions, uterine rupture, significant haemorrhage, placenta previa, placenta accreta, bladder injury and hysterectomy [11]. In the present study number of women who underwent elective repeat CS were 530 (56.26%) and emergency repeat CS were 96 (10.19%).

The most common intra operative complication observed was adhesions. Present study adhesions and obliteration of UV folds was seen in 19.17%. Nazaneen S et al reported adhesions in 34.76%, dense adhesions in 12%, Anagha et al reported in 39.99%, Singh S et al 26.92% (21 in 78 cases) [11-13]

Incidence of placenta previa was 0.94% and placenta accreta was not seen in our study. Nazaneen S et al reported placenta previa 4.3% and placenta accreta 2.46%, Singh S et al reported 3% and 0.5% respectively [11, 13]. Incidence of caesarean hysterectomy in our study was 0.15%, Singh S et al reported 1.5% [13]. Nazaneen et al reported 1.53% as the study was done for previous 2, 3 CS, they had 5 cases of placenta accrete required hysterectomy and incidence of thinned out scar was seen in 3.32% and scar dehiscence in 1.06% [11].

In the present study there were 2 (0.21%) cases with rupture uterus and subtotal hysterectomy was done. A Sharma et al [14] reported 1.8% and Vikas D et al [15] reported 2% of rupture uterus in their study. Singh A et al reported incidence of rupture uterus 1.69%in previous CS, and 0.15% in patients without previous CS [16].

In the present study preterm CS was done for 11 cases. According to Nazaneen S et al preterm C S was done in 18.15%, due to patients admitted with emergency complaints like, pre term labour pains, PROM, and scar tenderness [11]. Singh S et al reported 8% preterm CS [13].

In the present study perinatal morbidity was 3.32%, mortality was 3.96%. A Sharma et al reported 9.67% babies of elective CS and 2.32% in emergency CS babies were admitted to NICU [14]. Vikas D et al reported outcome of babies in 30 emergency CS, done for failure of trial labour cases, stillbirths 2 babies, 2 neonatal death, sepsis in 4 babies, APGAR score less than 6 in 8 babies [15]. Akanksha N et al reported perinatal morbidity requiring NICU admissions for 6.4% [17].These studies suggest poor neonatal outcome for emergency CS babies.

Conclusion

The overall maternal risks are increased in repeat CS, but successful vaginal delivery is possible if women are managed well in tertiary care hospital. They should be counselled about maternal and perinatal risks and benefits of planned vaginal birth after caesarean section and elective repeat CS. Elective repeat CS should preferably be done at 39 completed weeks of gestation to avoid the risk of preterm birth. Sonographic evaluation of lower uterine segment scar and myometrial thickness (both by TAS and TVS) is a safe reliable and non-invasive method for predicting the risk of scar dehiscence/rupture in women with previous caesarean section. Lower uterine scar thickness >3.65 mm by trans abdominal scan is safe limit, above that VBAC can be offered.

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