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Original Research Article

Evaluation of indication and feto-maternal outcome of caesarean section among the preterm pregnant patients in a tertiary care hospital

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ABSTRACT

Background: Caesarean sections performed appropriately and following appropriate medical indications are potentially life-saving procedures. At the same time, in many settings, women are increasingly subjected to caesarean sections without any appropriate indication which may contribute to the worldwide secular trend towards higher rates of caesarean sections. The objective of this study was to find out the indications and outcome of caesarean section in preterm pregnant patient.

Methods: It was a prospective cross sectional observational study carried out department of obstetrics and gynecology, Dhaka Medical College and Shaheed Suhrawardy Medical College Hospital, Dhaka, during the period of July 2013 to December 2013.

Results: Maximum (38%) of patients were between the age group 15-20 years. Of the 100 patients, eclampsia was highest (22%) among the list. Other common indications were APH 8%, PROM 20%, fetal distress 14%, malpresentation with cord prolapse 1%. Emergency operations were performed in majority (95%) of the mothers and elective operations in rest (5%) of the mothers. It was observed that pulmonary oedema 6%, post-partum hemorrhage 8%, wound infection 12% and urinary tract infection was present in 5% cases. Of the 92% had live birth, 8% had still birth and 18% died in the early neonatal period. LBW were 89% and 18% had birth asphyxia.

Conclusions: This study showed most common indications were eclampsia, pre-eclampsia. Other common indications were APH, PROM, fetal distress, malpresentation with cord prolapse etc. Electronic foetal monitoring and biochemical testing have improved the foetal assessment to a great extent.

Keywords: Fetal distress, Hypertension in pregnancy, Stillbirths

INTRODUCTION

Preterm labour is, defined as labour, which occurs from age of viability of fetus (currently defined in UK as 24 completed weeks of gestational age from the date of the last menstrual cycle or 22 completed weeks from the date of conception if that is accurately known) until the

completion of 37 weeks of gestation.¹ Preterm birth is the most significant problem in current obstetric practice and according to the World Health Organization, is the direct cause accounting for 24% of neonatal deaths. Rates of preterm birth range between 7-16% and are similar worldwide.² The optimal mode of delivery for preterm babies is controversial. Data from prospective randomized studies are very limited due to recruitment difficulties. In

practice, however, the rate of elective caesarean deliveries in preterm babies has markedly increased over the last decades. This further strengthens the need to try and determine whether this practice of elective caesarean deliveries is justified for a possibly better outcome of the infants, in face of potential serious morbidities among the mothers.^{3,4}

Caesarean section, an operation mainly evolved to save the maternal life during difficult childbirth has now increasingly become the procedure of choice in high risk situations to prevent perinatal morbidity and mortality. In recent years, the rate has risen to a record level of 46% in China and to a level of 25% and above in many Asian and European countries, Latin America and the United States.⁵ Preterm delivery (delivery before 37 completed weeks of gestation), constitutes a large number of deliveries world-wide and are a significant cause of perinatal morbidity and mortality.⁶⁻⁸

The following indications of caesarean section are currently the most common in woman with preterm pregnancy eclampsia, preeclampsia, antepartum haemorrhage, fetal distress with labour pain, premature rupture of membrane with chorioamnionitis, Preterm labour with previous caesarean section, malpresentation with cord prolapsed, multiple pregnancy, diabetes mellitus with polyhydramnios.⁹

A woman who has experienced a preterm birth is at risk of a subsequent preterm birth. Also at high risk are woman who are pregnant with twins or triplets. Infection has been shown too associated with preterm labour and also smoking and cocaine use. Preterm birth rates are rising amongst babies delivered by caesarean section. Preterm infant tolerate hypoxia more poorly than infant at term and significant damage could be prevented by timely intervention at the early sign of fetal distress.¹⁰

Thus it is important to set up a regular protocol and profile for accurate indication of caesarean section in preterm pregnant patient, which can also reduce the unnecessary caesarean section and maternal and fetal morbidity and mortality.

Objective

The objective of this study was to evaluate the indications of caesarean section in patients with preterm pregnancy and its outcome.

Specific objective

The objective of this study were to (a) determine the indications of caesarean section in preterm pregnant patients; (b) evaluate the indications of caesarean section in preterm pregnant patients; (c) evaluate the neonatal mortality and morbidity following caesarean section; and (d) evaluate the maternal complications following caesarean section.

METHODS

This was a cross sectional, hospital based observational study. The patients selected by purposive consecutive sampling technique. A total of 100 cases were included in this study. Department of Obstetrics and Gynaecology in Dhaka Medical College Hospital, Dhaka and Shaheed Suhrawardy Medical College Hospital, Dhaka. At July 2013 to December 2013.

Inclusion criteria

All the preterm pregnant women who were underwent caesarean section in Dhaka Medical College and Hospital and Shaheed Suhrawardy Medical College Hospital during the study period.

Exclusion criteria

The women with term pregnancy who underwent caesarean section in Dhaka Medical College Hospital and Shaheed Suhrawardy Medical College Hospital. Pregnant women who were unwilling to cooperate.

Procedures of collecting data

Data were collected using a structured questionnaire (research instrument) containing all the variables of interest. At first, pt selection were done by seeing the files of the patients in the post-operative ward. Then the causes of caesarean section in preterm patients were evaluated by taking history and also by reviewing the records. Then both the mother and the baby were followed up during their hospital stay. Finally, all the information were summarized and put into a structured data sheet.

Procedure of data analysis of interpretation

Data were analyzed using computer based programme statistical package for social science (SPSS) for windows version 16.0.

Ethical clearance

Ethical clearance of the study was taken from the Ethical Review Committee of the concerned hospitals.

RESULTS

Table 2 showed 77% from poor socioeconomic status and only 22% from middleclass.

Table 3 showed eclampsia was highest (22%) followed by preeclampsia (21%) among the list. Other common indication was APH, PROM, PROM with chorioamnionitis, preterm labour with caesarean section, foetal distress with labour pain etc.

Table 4 showed in present series, spinal anesthesia was given in 76% cases because of surgeons favored it due to

simplicity, reliability of spinal anesthesia and minimal fetal drug exposure. Here general anesthesia was 24% cases due to central placenta praevia, abruptio placenta, eclampsia, scar tenderness with history of heart disease.

Table 5 showed with no complication 64%, wound infection 12%, PPH 8%, pulmonary oedema 6%, UTI 5%, and death 5%.

Table 6 showed fetal outcome, 92% had live birth, among these, neonatal death is 18% cases and stillbirth in 8% cases.

Table 7 showed fetal complication of the study subject, maximum 89% were LBW followed by 20% were Prematurity with associated other diseases and 18% had perinatal asphyxia.

Table 8 showed the birth weight of preterm babies are 2-2.5 kg in 69% of the cases. Birth weight below 2 kg are in 20% of cases. Only 11% are above 2.5 kg.

Table 1: Age distribution of the patients (N=100).

Age in years	N	%
15-20	38	38
21-25	22	22
26-30	17	17
31-35	13	13
>36	10	10

Table 2: Socio-economic status of the patients (N=100).

Socio-economic status	N	%
Poor	77	77
lower middle class	22	22
Upper class	1	1

Table 3: Indications of preterm caesarean section (N=100).

Indication	N	%
Eclampsia	22	22
Preeclampsia	21	21
APH	8	8
PROM	15	15
PROM with chorioamnionitis	5	5
Preterm labour with previous caesarean section	8	8
Fetal distress with labour pain	14	14
Malpresentation with cord prolapse	1	1
DM with polyhydramnios	3	3
Multiple pregnancy	3	3

Table 4: Type of anesthesia given (N=100).

Type of anesthesia	N	%
Spinal anesthesia	76	76
General anesthesia	24	24

Table 5: Maternal complications in preterm caesarean section (N=100).

Maternal complications	N	%
No complication	64	64
Pulmonary oedema	6	6
PPH	8	8
Wound infection	12	12
UTI	5	5
Death	5	5

Table 6: Perinatal outcome in preterm caesarean section (N=100).

Perinatal outcome	N	%
Live birth	92	92
Still birth	8	8
Neonatal death	18	18

Table 7: Fetal complications in preterm caesarean section (N=100).

Fetal complications	N	%
No complication	32	32
LBW	89	89
Perinatal asphyxia	18	18
Prematurity with associated other diseases	20	20
Neonatal death	18	18
Still birth	8	8

Table 8: Birth weight of preterm baby (N=100).

Birth weight (kg)	N	%
1-1.5	5	5
1.6-2	15	15
2.1-2.5	69	69
2.6-3	9	9
3.1-3.5	2	2

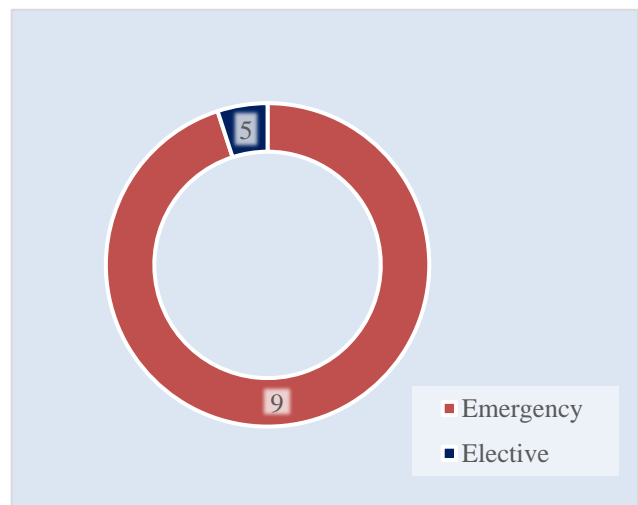


Figure 1: Nature of caesarean section in preterm pregnancy of the patients (N=100).

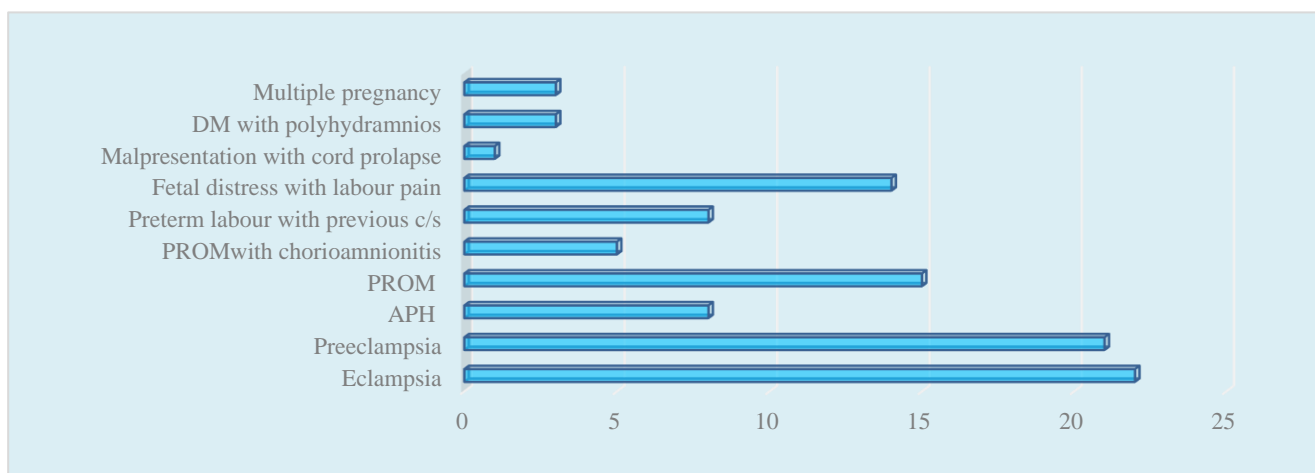


Figure 2: Indications of preterm caesarean section wise patients (N=100).

DISCUSSION

Preterm infants tolerate hypoxia more poorly than at term and significant damage could be prevented by timely intervention at the early sign of foetal distress.¹¹ Caesarean section is a powerful intervention and often seems to parents as obviously offering the best chance to a vulnerable preterm baby.¹² Preterm breech probably benefits to some extent from caesarean section.¹³ The incidence of caesarean section has been reported differently depending upon the type of hospital or teaching institute in the world.

The caesarean section rate in USA is 15% in 1978 and 17% in 1981.¹⁴ In Britain, the section rate is 8% in 1980.¹⁵ In Australia, the average rate is 12%.¹⁶ Hospitals of different medical colleges receive a good number of high-risk patients with inadequate or no antenatal care. This prospective cross sectional study was designed to evaluate the risk factors which are associated with preterm patients leading to delivery by caesarean section.

A total of 100 preterm patients selected purposively in the department of Gynaecology and Obstetrics of Shaheed Suhrawardi and Dhaka Medical College Hospital during the study period of July 2013 to December 2013, were included in this study. This study shows that regular antenatal care was done in only 13 (13%) cases and educational status was also poor (primary level education) in 74 (74%) patients. Socio-demographic details of this study revealed poor socio-economic status, lack of education and lack of antenatal care. These findings consisted with previous study.¹⁷

Regarding evaluation, in this study the principle indications of caesarean section of preterm patients were eclampsia (22%), preeclampsia 21% (among them uncontrolled BP 57.1%), PROM 20% (among them fetal distress 60%), Fetal distress with labour pain 14%, APH 8%, malpresentation with cord prolapse 1%. Various study has done previously to detect the common causes of

indication of preterm caesarean section, which showed, in case of APH common causes were foetal distress, excessive vaginal bleeding and placenta previa.¹⁸

In case of PROM most common cause was fetal distress.¹⁹ In case of multiple pregnancy most common causes were severe oligohydramnios done previously in different medical colleges and institutes in our country, the major indication of caesarean section from this study is eclampsia. The indication of caesarean section in preterm pregnancy varies with the study done for only eclampsia in different hospital 12%, 40.4%, 50.12%, 55.66%.²⁰⁻²⁴ Also similar study in Nigeria shows principal indications were preeclampsia 31%, APH 28%, PROM 10%, eclampsia 5%.²⁵ This may be due to difference in sample size and etiology. Emergency and elective caesarean section in present series were 95% and 5% respectively. This study is comparable to study performed by Scotland during 1994 and Wajed during 2003.^{26,27}

Gestational age at which caesarean section was done in our study eclampsia is 32-36 weeks, preeclampsia 33-36 weeks, PROM 33-36 weeks, APH 33-35 weeks, preterm labour with previous caesarean section 34-36 weeks, fetal distress with labour pain 32-36 weeks, multiple pregnancy 33-35 weeks, malpresentation with cord prolapsed 36 weeks and DM with polyhydramnios 35-36 weeks. Gestational age in eclampsia and preeclampsia in studies are similar.^{11,28-30} Gestational age in APH is slightly different from study by Datta et al 1980 where the period of gestation is 28-36 weeks.³¹ This study is also similar with the study done in Nigeria where most of the deliveries occurred at the gestational age range of 33 to 36 weeks.²⁵ Maternal morbidity in present study is due to pulmonary oedema (6%), post-partum haemorrhage (8%), wound infection (12%) and UTI (5%).

The maternal morbidity is higher due to great variability of indication of caesarean section. Danforth (1982) observed that even in the most favourable cases, various factors influence morbidity like spill of amniotic fluid, blood into peritoneal cavity, easy or difficulty in delivery

in baby, amount of uterine bleeding and patient's response to anaesthesia. Donald (1962) mention that many of the cases who have been in labour for some while at the time of section are infected and in spite of the use of antibiotics about a quarter of these cases are peuperally morbid. In Feroza Wazed study, maternal morbidity was from pulmonary oedema 15%, wound infection 11%, PPH 5%, UTI 4%.²⁷ Similar study done in Nigeria where maternal morbidity was from wound infection 14%, PPH 5%, UTI 6%, anemia 13%.²⁵

The technical skill of the surgeons performing the operation is a major contributing factor for the morbidity. This study shows fetal outcome, live birth 94%, among these neonatal death 14%, still birth 6%. The incidence of perinatal death was chiefly made up of cases of prematurity, eclampsia, cord prolapse, multiple pregnancy. On the other hand, different studies in western countries have revealed a very low perinatal mortality rate.^{32,33} Perinatal mortality in different studies of eclampsia show 38.6%, 47%, 41%, 39% and only 2.78%.^{21,23,24,34} In our study the perinatal mortality is 20% which is due to eclampsia and other causes. Differences are may be due to sample size, etiology and management skill. In our studies the birth weight in preterm babies are 2.1-2.5 kg in 69% cases, birth weight below 2 kg 20% cases, above 2.5 kg are 11% cases.

Similar study done by Feroza Wajed shows that birth weight in preterm babies are 2-2.5 kg in 50% cases, below 2 kg are in 37% cases.²⁷ Also similar study done in Nigeria shows that majority birth weight in preterm babies were 1.5-2.5 kg.²⁵ From above discussion, it is evident that caesarean section in the modern obstetric practice is playing a very important role to provide better health care to mother and baby. However proper antenatal care, better observation and intrapartum monitoring can reduce caesarean section rate.

Limitations

The study was short duration and small sample size. During study period modern electronic monitoring device like cardiotocography and intrauterine pressure catheter were not available for accurate assessment of fetal condition and uterine activity. Partograph monitoring could not be used to each patients as needed because the hospital was overburdened. Study of fetal scalp blood pH was not possible in suspected fetal distress.

CONCLUSION

The indications for caesarean section operation were eclampsia 22%, preeclampsia 21%, premature rupture of membrane (PROM) 20%, antepartum haemorrhage (APH) 8%, preterm labour with previous caesarean section 8%, foetal distress with labour pain 14%, multiple pregnancy 3%, and diabetes mellitus with polyhydramnios 3% and malpresentation with cord prolapse 1%. Emergency caesarean section was done in 95 cases and elective

operation in 5 cases. Live birth was 92% and perinatal mortality was 26%. Neonatal morbidities were prematurity and birth asphyxia. Maternal mortality in preterm caesarean section was 5%. Maternal morbidities were pulmonary oedema, PPH, Wound infection and UTI. In the present study, only preterm pregnancy cases were observed. Actually, our aim should be to continue the pregnancy up to term but due to unavoidable circumstances and for saving the life of the mother or foetus, an interventional procedure i.e. caesarean section had to be employed immediately. By the preterm caesarean section, we are still unable to reduce the maternal and perinatal loss in general. Careful approach is needed for selecting cases for primary as well as repeated caesarean section. Illiteracy and ignorance are major causes of maternal mortality and morbidity in our country which should be reduced by increasing awareness and motivation. Further studies with larger samples and in different hospitals may reflect the actual incidence of caesarean section both in routine and emergency cases.

Recommendation

Preterm caesarean section could be better managed by adequate treatment of antecedent pathology. This involves timely hospital admission of cases such as preeclampsia, multiple pregnancy, and intrauterine growth retardation, where bed rest plays an important role in furthering the gestational age. However, in many cases this may be difficult because limited bed space and medical facilities are major constraint in our hospital practice. A better salvage rate of the delivered infants will be obtained by improving facilities and care currently being offered in our neonatology unit.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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