

Original Article

Indications and Outcome Assessment of Caesarean Section Operation in Preterm Pregnancy: An Observational Study

T Tayaba¹, M Rahman², LR Biswas³, D Zeba⁴, Z begum⁵, S Alam⁶, S Parvin⁷

Abstract:

Preterm birth is a leading cause of infant morbidity and death. And the ideal mode of delivery for preterm gestations is still debated. Studies suggest that Caesarean section is associated with improved neonatal outcomes for groups of mothers or infants with major comorbidities. With the aim to study the indication and outcome of Caesarean section in preterm pregnancy in Bangladesh, this cross-sectional descriptive study was conducted at Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur from July 2022 to December 2022 on a total of 82 cases. Among them, 15(18.29%) had preterm labour with previous LUCS & scar tenderness, followed by 13(15.85%) placenta previa, 11(13.41%) PROM, 10(12.20%) abruptio placenta, 10(12.20%) preterm labour pain with fetal distress, 10(12.20%) eclampsia, 7(8.54%) severe preeclampsia and 2(3.13%) malpresentation with cord prolapse. 42(51.22%) gave birth to an alive healthy baby. Most of the babies weighted 2.1-2.4kg for 28 (34.15%), followed by 1.6-2 kg for 17 (20.73%). 42(51.22%) babies did not need to admit in SCANU. 35 (42.68%) neonates had no complications, whereas others had PNA, RDS, TTN, hyperbilirubinemia, IUGR etc. A clear understanding of the outcomes of caesarean section in preterm pregnancy and the indications for the procedures might assist in making the best decisions.

Key words: Cesarean section, Gestational age, Preterm, Neonatal outcome.

Introduction:

Preterm birth is defined as birth before 37 completed weeks of gestation or fewer than 259 days since the first day of a woman's last menstrual period¹. As reported by the World Health Organization's Global Survey and Multi-country Survey, the prevalence of women who gave birth preterm via cesarean section was 31.0 % and

36.7 %, respectively¹. Though the lower limit of gestation is not uniformly defined, in developed countries it is 24 weeks, and in developing countries (e.g. India, Bangladesh) 28 weeks². According to a global survey published in 2015, preterm birth problems accounted for 17.8% (uncertainty range 15.4 to 19.0%)

1. Dr. Tabassum Tayaba, MBBS, DGO, FCPS (Gynae & Obs), Medical officer, Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur.
2. Dr. Dilruba Zeba, MBBS, DGO, MCPS, FCPS (Gynae & Obs), Professor & Head, Department of Gynae & Obs, Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur.
3. Dr. Zakia Begum, MBBS, DGO, FCPS (Gynae & Obs) Assistant Professor, Department of Gynae & Obs, Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur.
4. Dr. Samiya Alam, MBBS, DGO, FCPS (Gynae & Obs), Assistant

Professor, Department of Gynae & Obs, Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur.

5. Dr. Shahana Parvin, MBBS, DGO, Assistant Professor, Department of Gynae & Obs, Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur.
6. Dr. Mehbuba Rahman, MBBS, FCPS (Gynae & Obs), Medical officer, Faridpur General Hospital, Faridpur.
7. Dr. Lipika Rani Biswas, MBBS, FCPS (Gynae & Obs), Medical officer, Narail District Hospital, Narail.

Address of correspondence:

Dr. Tabassum Tayaba, MBBS, DGO, FCPS (Gynae & Obs), Medical officer, Bangabandhu Sheikh Mujib Medical College Hospital, Faridpur. Phone: +8801717592242, E-mail: afseen111015@gmail.com

of all fatalities in children under the age of five³. Due to immature organ systems, newborns who survive are prone to develop both short and long-term complications, i.e. neurodevelopmental disability,

respiratory illnesses, and chronic disease in adulthood compared to preterm birth. There is uncertainty about the optimal mode of delivery at preterm gestations. Studies suggest that caesarean section is associated with improved neonatal outcomes for subgroups of mothers or infants with major comorbidities⁴⁻⁶. While other studies suggested that vaginal delivery was protective against neonatal death⁷. Yet others demonstrated that there was no significant difference in neonatal mortality between both groups⁸⁻¹⁰. Consistent with the lack of clear evidence about the optimal mode of delivery, there is considerable variation in caesarean rates among preterm births in the same region, or even within the same nation⁴. Variations in preterm caesarean rates ultimately reflect differences in the indications, demographic characteristics, and health status of the source population as well as differences in clinical practice and hospital characteristics. A clear understanding of the outcomes of caesarean section in preterm pregnancy, as well as the indications for the procedure, might assist doctors and mothers in making the best decisions possible. The aim of this study would be to assess the indications and outcome of caesarean section in preterm pregnancy at Bangabandhu Sheikh Mujib Medical College Hospital (BSMMCH), Faridpur.

Materials and Methods:

This was a cross-sectional descriptive study was conducted from July 2022 to December 2022 at the Obstetric ward, Department of Obstetrics and Gynecology in Bangabandhu Sheikh Mujib Medical College Hospital (BSMMCH), Faridpur. Apart from independent (demographic and physiological) variables, the dependent variables studied were main outcome variables e.g. maternal complications during operation like difficulties in finding the lower segment, delivering the baby, excessive uterine hemorrhage, injury to viscera, anesthetic complication, and postoperative period (PPH - Post partum hemorrhaged, UTI - urinary tract infection, wound infection, thromboembolism, puerperal sepsis), and neonatal complications e.g. asphyxia, IUGR (Intrauterine growth retardation), RDS (respiratory distress syndrome), TTN (transient tachypnea of the Newborn) SCANU (Special Care Newborn Unit) admission. Pregnant women admitted into Obstetrics and Gynaecology department of study place who had undergone caesarean section before 37 weeks were studied calculating a sample size of 82 by convenient sampling technique. Inclusion criteria of the study population were pregnant women who are certain about their last menstrual period or who have early ultrasonography dating of pregnancy, and pregnant

women who had undergone lower uterine caesarian section at a gestational age between > 28 weeks and <37 weeks. We excluded the patients with gestational age <28 completed weeks and > 37 weeks. After taking informed written consent from the patient, data were collected and statistically processed. The Research protocol was approved by the IRB (Institutional Review Board) BSMMCH, Faridpur. Basic principles of Research Ethics according to the 52nd WMA declaration of Helsinki' 2000 and CIOMS (Council for International Organizations of Medical Sciences) guidelines was maintained during the Research process.

Data analysis was done by SPSS 29.0 for windows software. The data were tabulated and quantitative parameters such as age of patient will be summarized in terms of mean and median. The significance of the results as determined in 95.0% confidence interval.

Results:

A total of 82 study patients were conveniently selected as sample for this study.

Most of the patients 72 (87.80%) were in between 18-35 years of age. Among the rest, 6 (7.32%) were below 18 years and 4 (4.88%) were more than 35 years old. The mean age was 26.5±9.35 years. Of them, 59 (71.95%) were multi para and 23(28.05%) were primi para. Most of the patients 43(52.44%) were 2nd/3rd time pregnant while 23(28.05%) were expecting their first baby and 16(19.51%) were ≥4th time gravida.

Gestational ages of the study patients were 37(45.12%) in between 30-34 weeks, 38(46.34%) in between 34-37 weeks and 7(8.54%) were less than 30 weeks.

About half of the patients 42(51.22%) had no previous record of LUCS and 40(48.78%) had the history. Majority of the subjects 75(91.46%) had an emergency behind the current LUCS and only 7(8.54%) were doing this routine based.

Majority of patients (70.73%) had no significant medical history, 13.41% was hypertensive (Table I).

Table-I: Distribution of patient according to medical history (N=82)

Medical History	Number of Patient (%)
Nothing contributory	58 (70.73%)
Hypertension	11 (13.41%)
UTI	6 (7.32%)

Diabetes mellitus	4 (4.88%)
Others	3 (3.66%)
Heart disease	0 (0.00%)
Total	82 (100.00%)

The status of labour during hospital admission was studied. More than half 46(56.10%) were not in labour condition and 36(43.90%) were in labour.

Indications of LUCS include eclampsia, severe pre-eclampsia, placenta previa, abruptio placenta, PROM, preterm labour with previous LUCS with scar tenderness, preterm labour pain with foetal distress, malpresentation, cord prolapse etc (Figure 1).

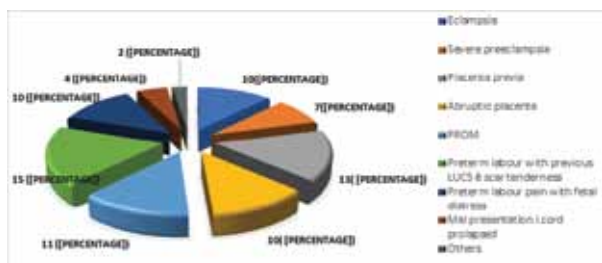


Figure 1: Distribution of patients according to indication of LUCS (N=82)

Majority of patients (64.63%) had no per-operative complications, 13.41% had excessive uterine hemorrhage & 12.2 % had difficulty in delivering the baby (Table II)

Table-II: Distribution of study patients (N=82) according to per-operative medical complication

Complications	Number of Patient (%)
No complication	53 (64.63)
Difficulty in finding the lower segment	4 (4.88)
Difficulty in delivering the baby	10 (12.20)
Excessive uterine hemorrhage	11 (13.41)
Injury to viscera	3 (3.66)
Anesthetic complication	1 (1.22)
Others	0 (0)
Total	82 (100)

Half of the study patients 42(51.22%) gave birth to an alive and healthy baby though 33(40.24%) study patients' baby was alive and asphyxiated and 7(8.54%) study patients' baby was in still birth. Birth weight varied from less than 1 kg to more than 2.5 kg (Figure 2).

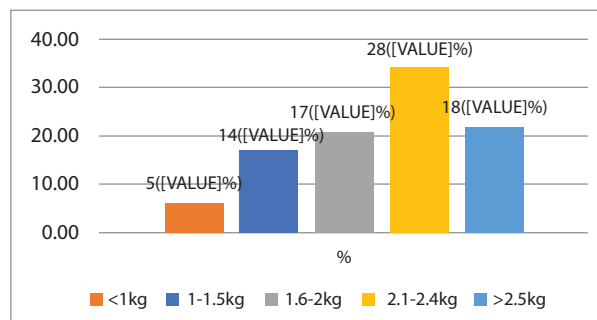


Figure 2: Distribution of study patients (N=82) according to birth weight of the baby

More than half 42(51.22%) of the babies did not need to admit in SCANU but 40 (48.78%) had to admit. Neonatal complications were one of the most important parameters to study (Figure 3).

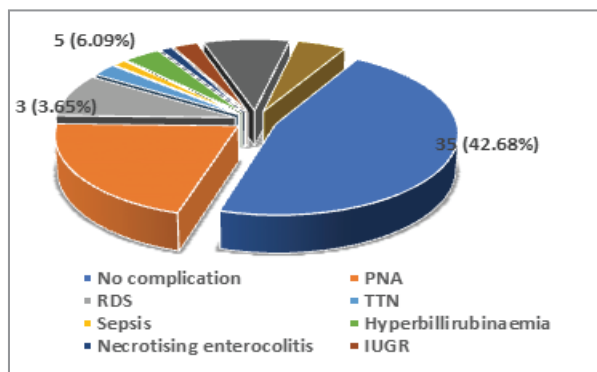


Figure 3: Distribution of study patients (N=82) according to neonatal complications

Discussion

Preterm infants endure hypoxia less well than term infants, and significant damage might be avoided by prompt intervention at the first indication of fetal distress¹¹. Caesarean section is a powerful intervention and often seems to parents as obviously offering the best chance to a vulnerable preterm baby¹².

There is no comprehensive and extensive study in our country on caesarean section. So, the incidence of preterm caesarean section in Bangladesh is yet to

determine. In the present study, 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 fetus, an interventional procedure caesarean section has to be employed immediately¹³.

The majority of the patients in this study (72.80%) were between the ages of 18 and 35. The remaining 6 (7.32%) were <18 and 4 (4.88%) were >35 years. The average age was 26.5±9.35 years. A similar observation was followed in the study of P begum et al¹⁴. They found that the majority 58 (52.7%) of the patients belonged to the age group 21-30 years where the mean age was found 27.5 ± 9.5 years¹⁴.

In our study, about 59(71.95%) were multi para (pregnant for a second time or more) and 23(28.05%) were primi para (first pregnancy). Based on the research participants' gravida histories, only 16 (19.51%) of the patients were more than four times pregnant, and 23 (28.05%) were expecting their first baby, while 43 (52.44%) of the patients were expecting their second or third child. It reflects that in the last few years, family size has been shifted from 5-6 children per couple to 2-3 children per couple. Grand multi-parity has been significantly reduced in the past few years. Sethi et al also reported similar results of 35% gravida², and 30% of gravida-3 parity status¹⁵.

We found a maximum of 38(46.34%) study patients were between 30-34 weeks of gestational age 37(45.12%) were in between 34-37 weeks and 7(8.54%) were less than 30 weeks of gestational age were found respectively. Rowailly et al reported primary cesarean section in multigravida that most of the patients (78.8%) belonged to the gestational age of 37-42 weeks followed by 18.2% of patients in gestational age of <37 weeks¹⁶. Another study found a total of 102 C-Sections was performed before the 28th gestational week, in 75% of extremely preterm deliveries (102/136). At 22-25 weeks, the CS rate was 70% (51/73) and at 26-27 weeks 81% (51/63)¹⁷.

Our study revealed that around half of the patients 40(48.78%) had no previous record of lower uterine caesarian section (LUCS) and 42(51.22%) had a previous LUCS. The caesarean rate among women who had caesarean in the past was very high compared to women who did not have any previous caesarean found in the study of Desai G et al¹⁸. A study done by Sethi et al in 100 patients showed almost similar results showing 91% were emergency surgery and only 9% were electively operated¹⁵. Emergency caesarean section was

done in 98 cases and elective operation in only 2 cases found by Wazed F et al².

The status of labour during hospital admission of the study patients was more than half 46(56.10%) were not in labour and 36(43.90%) were in labour. We identified the most important thing in our study was the indications of LUCS of our study patients. In our study, indication was one of the approaches to identify the maternal and neonatal outcomes properly. As there was no previous study regarding indication as an important finding, we considered it as the most important finding with an aim to assess the outcome of caesarean section in preterm pregnancy. Maximum patients 15(18.29%) had preterm labour with previous LUCS with scar and tenderness; then 13(15.85%) had placenta previa, 11(13.41%) had PROM, 10(12.20%) had abruptio placenta, 10(12.20%) had preterm labour pain with fetal distress, 10(12.20%) had eclampsia, 7(8.54%) had severe preeclampsia, 4(4.88%) had mal presentation with cord prolapsed respectively. The incidence and indications for caesarean section operation were eclampsia 24%, preeclampsia 20%, APH 15%, PROM 8%, PROM with chorioamnionitis 4%, preterm labour with previous caesarean section 9%, foetal distress with labour pain 7%, less foetal movement 6%, malpresentation with cord prolapse 3%, multiple pregnancy 2% and diabetes mellitus with polyhydramnios 2%. Himabindu et al reported fetal distress (24.7%) as the most common indication for caesarean section in their study¹⁹. Rao et al also reported abnormal presentations (32.5%), APH (19.5%), fetal distress (17%), and obstructed labour (18.5%) in her study²⁰.

Regarding per operative maternal complications, 53(64.63%) found no complications, while 11(13.41%) had an excessive uterine haemorrhage, 10(12.20%) had faced difficulty in delivering the baby, 4(4.88%) had difficulty in finding the lower segment, and 1(1.22%) had anesthetic complications respectively. Wazed F et al conducted a study at Dhaka Medical College in 2009. They found no complication in 50 study patients, pulmonary oedema in 17 study patients, postpartum haemorrhage in 4 study patients, wound infection in 10 study patients and urinary tract infection in 3 study patients and 16 study patients died before C-Section².

We found about half of the study patients 42(51.22%) gave birth to an alive and healthy baby. 33(40.24%) study patients' babies were alive and asphyxiated and 7(8.54%) study patients' babies were still birth. In another study, they found alive 81, stillbirths 7 and neonatal death 25².

Most of the 28(34.15%) study patients babies weight was 2.1-2.4kg; 17(20.73%) study patients' babies were 1.6-2 kg; 18(21.95%) has more than 2.5 kg baby weight, 14(17.07%) study patients' baby was 1-1.5 kg and 5(6.10%) had given birth baby with below one kg weight respectively. A study by Rowaily et al done on 4307 patients reported that most of the babies (61.7%) born had a weight of 2500-3500 grams which is considered to be a normal body weight followed by 21.6% of babies who had a body weight of >3500 grams¹⁶. Lower birth weight in our study could be a reflection of poor maternal nutrition and antenatal care.

Regarding neonatal complications, 38 (46.34%) neonates had no complications, whereas 17 (20.73%) had PNA, 7(8.54%) had PND, 7 (8.54%) had RDS, 2 (2.44%) had TTN, 3 (3.66%) had hyperbilirubinemia, 2(2.44%) had IUGR, 1(1.22%) had necrotising enterocolitis, 1(1.22%) had sepsis and 4 (4.88%) had other complications. Another study conducted in Ethiopia found neonatal complications following CS delivery were observed in 45 (28.8%), whereas complications following vaginal delivery were seen in 77 (24.6%). The leading fetal complications for CS delivery were neonatal sepsis 19 (42.2%), birth asphyxia 13 (28.8%), MAS 6 (13.3%), neonatal jaundice, and death 3 (6%)².

Conclusion:

This descriptive cross-sectional study with a small sample size and the participants were selected conveniently that's why the study patients may not reflect the whole circumstances. The study results might not be reflected in the whole community as well. The study period was too small, so the sample size become small. The duration of labour and the time interval between the decision for EC/S and the start of operation were not determined. This study identifies preterm labour with previous LUCS with scar tenderness and placenta previa as the leading indication of Caesarian section in group-10 of Robson 10 group classification system at BSMMCH, Faridpur. As the leading cause of preterm cesarean section at BSMMCH is preterm labour with previous LUCS with scar tenderness and placenta previa, if we can reduce primary cesarean rate, we can reduce this preterm cesarean section rate.

References:

1. Thanh BYL, Lumbiganon P, Pattanittum P, Laopaiboon M, Vogel JP, Oladapo OT, et al. Mode of delivery and pregnancy outcomes in preterm birth: a secondary analysis of the WHO Global and Multi-country Surveys. *Scientific Reports*. 2019;9(1).
2. Wazed F, Jahan S, Tanira S. Indication of Caesarean Section Operation in Preterm Pregnancy and Its Outcome – A Study of 100 Cases. *Journal of Dhaka Medical College*. 2010;18(2):124-26.
3. Liu L, Oza S, Hogan D, Chu Y, Perin J, Zhu J, et al. Global, regional, and national causes of under-5 mortality in 2000–15: an updated systematic analysis with implications for the Sustainable Development Goals. *The Lancet*. 2016;388(10063):3027-35.
4. Bannister-Tyrrell M, Patterson JA, Ford JB, Morris JM, Nicholl MC, Roberts CL. Variation in hospital caesarean section rates for preterm births. *Aust N Z J Obstet Gynaecol*. 2015;55(4):350-6. PubMed PMID: 26223538.
5. Werner EF, Savitz DA, Janevic TM, Ehsanipoor RM, Thung SF, Funai EF, et al. Mode of delivery and neonatal outcomes in preterm, small-for-gestational-age newborns. *Obstet Gynecol*. 2012;120(3):560-4. PubMed PMID: 22914464.
6. Holzer I, Lehner R, Ristl R, Husslein PW, Berger A, Farr A. Effect of delivery mode on neonatal outcome among preterm infants: an observational study. *Wien Klin Wochenschr*. 2017;129(17-18):612-17. PubMed PMID: 28004267.
7. Malloy MH. Impact of cesarean section on intermediate and late preterm births: United States, 2000-2003. *Birth*. 2009;36(1):26-33. PubMed PMID: 19278380.
8. Sangkomkamhang U, Pattanittum P, Laopaiboon M, Lumbiganon P. Mode of delivery and outcomes in preterm births. *J Med Assoc Thai*. 2011;94(4):415-20. PubMed PMID: 21591525.
9. Sonkusare S, Rai L, Naik P. Preterm birth: mode of delivery and neonatal outcome. *Med J Malaysia*. 2009;64(4):303-6. PubMed PMID: 20954555.
10. Malloy MH, Onstad L, Wright E. The effect of cesarean delivery on birth outcome in very low birth weight infants. National Institute of Child Health and Human Development Neonatal Research Network. *Obstet Gynecol*. 1991;77(4):498-503. PubMed PMID: 2002969.
11. Arias F. ed. *Practical guide to high risk pregnancy and delivery*. 2nd ed. New York: Mosby; 1994. p.186-7.
12. Gupta V, Kanti R. Review of caesarean section. *J Obstet Gynecol India*. 1981; 31(1): 30-40.

13. World Health Organization. The hypertension disorders of pregnancy. WHO Technical Report Series No.758. Geneva, Switzerland. World Health Organization,1987.
14. P Begum, DR Saha, D Zeba. Indication and Outcome of Caesarean Section in Multigravid Women with a History of Vaginal Delivery in a Tertiary Care Hospital. *Faridpur Med. Coll. J.* 2019;14(2):86-89.
15. Sethi P, Vijaylaxmi S, Shailaja G, Bodhare T, Devi S. A study of primary caesarean section in multigravidae. *Perspect Med Res.* 2014; 2:3-7.
16. Rowaily MAA, Alsalem FA, AbolfotouhMA. Caesarean section in a highparity community in Saudi Arabia: clinical indications and obstetric outcomes. *BMC Pregnancy Childbirth.* 2014; 14(92):1-10.
17. Ho gberg U, Ha kansson S, Serenius F, Holmgren PA. Extremely Preterm Cesarean Delivery: A Clinical Study. *Acta Obstetrica Et Gynecologica.* 2006; 85: 1442-47.
18. Desai G, Anand A, Modi D, Shah S, Shah K, Shah A, et al. Rates, indications, and outcomes of caesarean section deliveries: a comparison of tribal and non-tribal women in Gujarat, India. *PLoS One.* 2017;12(12):e0189260. <https://doi.org/10.1371/journal.pone.0189260>.
19. Himabindu P, Sundari MT, Sireesha KV, Sairam MV. Primary caesarian section in multipara. *IOSR-JDMS.* 2015; 14(5):22-5.
20. Rao JH, Rampure N. Study of primary caesarean section in multiparous women. *J Evol Med Dental Sci.* 2013; 2(24):4-7.