

Observational Study to Evaluate the Indications of Cesarean Section in Primigravida at Tertiary Care Health Center in Northern Maharashtra

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Abstract

Background: Over last decade progressive increase in the rate of deliveries by cesarean section, is a cause of major public health concern due to potential maternal and perinatal morbidity. The driving factor leading to steady increase in cesarean delivery is not completely understood and there is lack of consensus on the appropriate cesarean section rate. This study will present the cesarean section rate in primigravida at our institute, indications of cesarean section and associated maternal and fetal morbidity. **Methods:** This was a retrospective study done on primigravida who delivered by cesarean section in the department of Obstetrics and Gynecology, SMBT institute of medical sciences & research center during one-year period. **Result:** The incidence of cesarean section in primigravida in our study was 29.09%. Most common indication of cesarean section in primigravida was fetal distress 39.81%. Amongst 41 cases of cesarean sections done for fetal distress, 33 cases had spontaneous onset of labor, 5 cases were induced with pgE1. Other common indication of cesarean section was cephalopelvic disproportion in 12.62% of cases, oligohydramnios in 11.65% of cases and breech presentation in 9.71% of cases. Most common antenatal high-risk factor was hypertensive disorder of pregnancy in 18.44% of cases. Blood transfusion and postpartum hemorrhage were the maternal morbidities noted in our study. Common cause for NICU admission was respiratory distress syndrome. **Conclusion:** Standardization of indications of primary cesarean section at tertiary center level is required. So that sequential annual audit of cesarean sections can help to strategize improvement of antenatal care for the reduction of primary cesarean section rate.

Keywords: Cesarean section, Incidence, Indication, Primigravida.

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INTRODUCTION

Cesarean delivery (C-section) is a surgical procedure used to deliver a baby through incisions in the abdomen and uterus. The origin of the term cesarean is believed to be from the birth of Julius Caesar in 100 BC. Other possible Latin origins include the verb "caedere," meaning to cut, and the term "caesones" that was applied to infants born by postmortem operations. The first modern cesarean section was performed by German gynecologist Ferdinand Adolf Kehler in 1881.

Cesarean section is one of the life-saving procedures. Since last few decades it has been observed

the indications for cesarean sections have undergone gradual changes till now. Current advanced surgical and anesthesia techniques have drastically reduced the maternal morbidity related to cesarean sections. Acceptance of cesarean section has increased in population over the decades.

Therefore, besides the obstetric causes, several other medical, social, ethical, economic and medicolegal factors play an important role in this rising trend of primary cesarean section. Though cesarean section is associated with complications like postpartum hemorrhage, blood transfusion, obstetric hysterectomy and the risk of uterine rupture, placenta previa, or

placenta accreta in subsequent pregnancies, over the decades the rate of complications has been reduced. According to WHO worldwide cesarean section rates have risen from around 7% in 1990 to 21% today [1]. Overall rate of cesarean section documented in India has risen from 8.5% in 2005-06 to 17.2% in 2015-16 [2, 3]. According to National family Health Survey data 2019-20(NFHS-5), cesarean section births in Maharashtra rose from 20% in 2015-16 to 25.4% in 2019-20. At private healthcare facilities cesarean section was documented to be 39% in Maharashtra [4].

The purpose of this study is to evaluate indications of cesarean section in primigravida at SMBT hospital. Analyzing common indications of cesarean section will help in formulating standard protocol with evidence-based medicine to facilitate more vaginal deliveries in primigravida. Thus, reducing the primary cesarean section rate and maternal operative morbidity.

AIM

To evaluate the various indications for cesarean section in primigravida delivering at tertiary care institute.

OBJECTIVE

1. To study various indications of cesarean section in primigravida.
2. To estimate incidence of cesarean section in primigravida.
3. To study feto-maternal morbidity.

Table-1: Deliveries in Primigravida

Mode of delivery	No of Deliveries (Total= 354)	Percentage (%)
Vaginal delivery	251	70.90
Cesarean delivery	103	29.09

Table 1 shows a total number of 354 primigravida were admitted for delivery during the study Period. Amongst them cesarean section was performed in 103 cases. Incidence of cesarean Section in primigravida was observed to be 29.09%.

Table-2: Type of cesarean section

	No of cases (N=103)	Percentage (%)
Emergency CS	97	94.17
Elective CS	6	5.8

MATERIAL & METHOD

This was a retrospective study done in department of Obstetrics & Gynecology, SMBT IMS & RC, Dhamangaon, and Nashik from July 2020 to June 2021. This study was conducted after obtaining permission from our institutional ethical committee. A total of 103 primigravida who delivered by cesarean section were selected for this study. Their demographic data, antenatal history, obstetric examination, antenatal high-risk factor, indication and type of cesarean section, intraoperative and postoperative complication were obtained. Fetal outcome assessed by NICU admission from patient’s data records. All data was compiled in structured format of all parameters in the Microsoft excel sheet. Statistical analysis was done in percentage, proportion and appropriate graphs using SPSS software version 22.0.

Inclusion Criteria

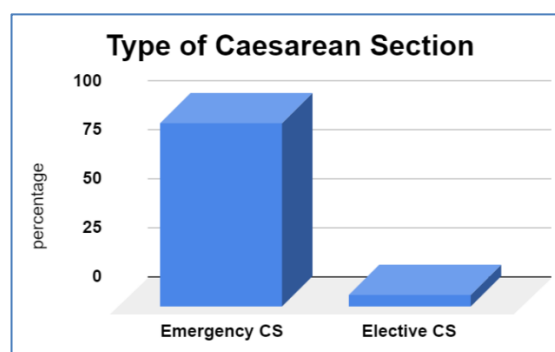
- All Primigravida > 28 week of gestation above 18 years who delivered by Cesarean section.

Exclusion Criteria

- All Primigravida who delivered vaginally.
- All Primigravida who underwent hysterotomy.
- All Multigravida women who delivered by cesarean section.

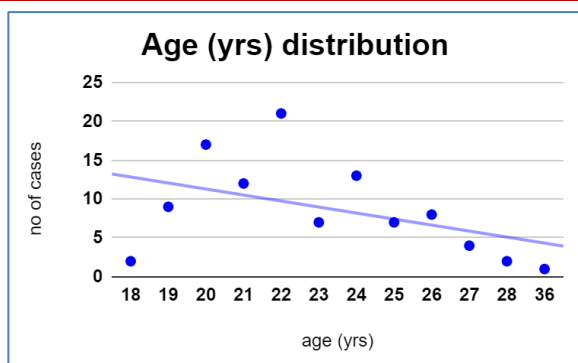
RESULTS

Results of the study were tabulated and analysed using percentage and appropriate graphs with the help of SPSS software version 22.0.



Graph 1

Table 2 & Graph 1 shows out of 103 cases, emergency cesarean section was done in 97 (94.17 %) whereas elective cesarean section was performed in 6 (5.8%) cases.



Graph-2

This study reveals, the age of cases ranges from 18-36 years with mean age 22.49 year.

Table-3: Height distribution

Height (cm)	No of cases(N=103)	Percentage (%)
=<145	8	7.77
>145	95	92.23

Height of the cases in the study ranges from 142 cm to 162 cm. Table 3 shows 8 participants were below 145 cm, 95 participants were above 145 cm.

Table-4: Gestation age distribution

	No of cases(N=103)	Percentage (%)
Term (=>37 weeks)	90	87.38
Preterm (<37 weeks)	13	12.62

Table 4 shows total preterm cesarean section was observed in 12.62% cases of primigravida while

87.38% cases of cesarean section were performed in term gestation.

Table-5: Distribution of presentation

	No of cases(N=103)	Percentage (%)
Cephalic	93	90.29
Abnormal presentation	10	9.71

Table5 shows in 90.29% cases of cesarean section in primigravida, the presenting part was cephalic, while abnormal presentation was observed in

9.71% cases. All of the abnormal presentations were observed to be breech.

Table-6: Maternal antenatal high-risk factor

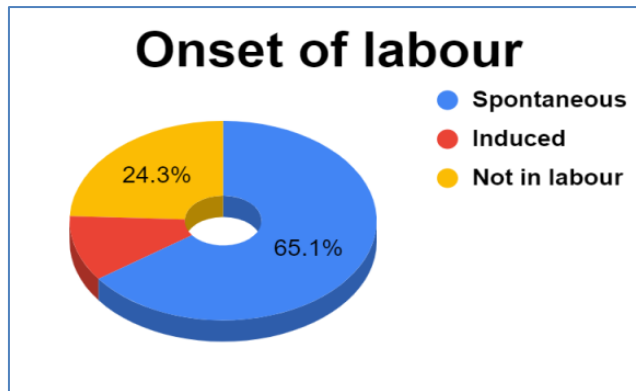
	No of Cases(N=103)	Percentage (%)
Hypertensive disorder of pregnancy (preeclampsia, eclampsia)	19	18.44
Anemia	7	6.80
Anemia & Eclampsia	1	0.97
Heart disease	3	2.91
Hypothyroidism	5	4.85
Gestational diabetes mellitus	1	0.97
Total high-risk pregnancy	36	34.95%

Amongst 103 cases of cesarean section in primigravida, high risk factors were observed in 34.95% of cases. Most common antenatal high-risk factor observed was hypertensive disorder constituting 18.44% of cases. Other high-risk factors observed were

anaemia in 6.80% of cases, both anaemia & eclampsia in 0.97% of cases, hypothyroidism in 4.85% of cases, heart disease in 2.91% of cases and gestational diabetes mellitus in 0.97% of cases.

Table-7: Onset of labour

	No of cases(N=103)	Percentage (%)
Spontaneous	67	65.05
Induced	11	10.67
Not in labour	25	24.27



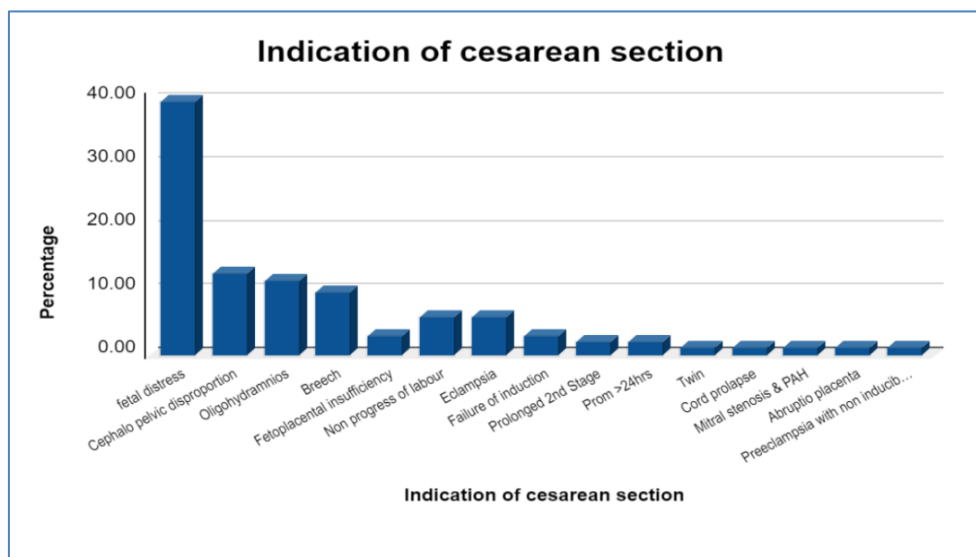
Graph-3

Table 7 & Graph 3 shows that out of 103 cases of cesarean section, 65.05 % had spontaneous onset of

labour, 10.67% had induced labour and 24.27% were not in labour.

Table-8: Indication of cesarean section

	No of Cases(N=103)	Percentage (%)
fetal distress	41	39.81
Cephalo pelvic disproportion	13	12.62
Oligohydramnios	12	11.65
Breech	10	9.71
Fetoplacental insufficiency	3	2.91
Non progress of labour	6	5.83
Eclampsia	6	5.83
Failure of induction	3	2.91
Prolonged 2nd Stage	2	1.94
Prom >24hrs	2	1.94
Twin	1	0.97
Cord prolapse	1	0.97
Mitral stenosis & PAH	1	0.97
Abruptio placenta	1	0.97
Preeclampsia with non-inducible cervix	1	0.97



Graph-4

Table 8 & Graph 4 Shows that the most common indication of cesarean section was fetal distress in 39.81% of cases. Numerous other indications

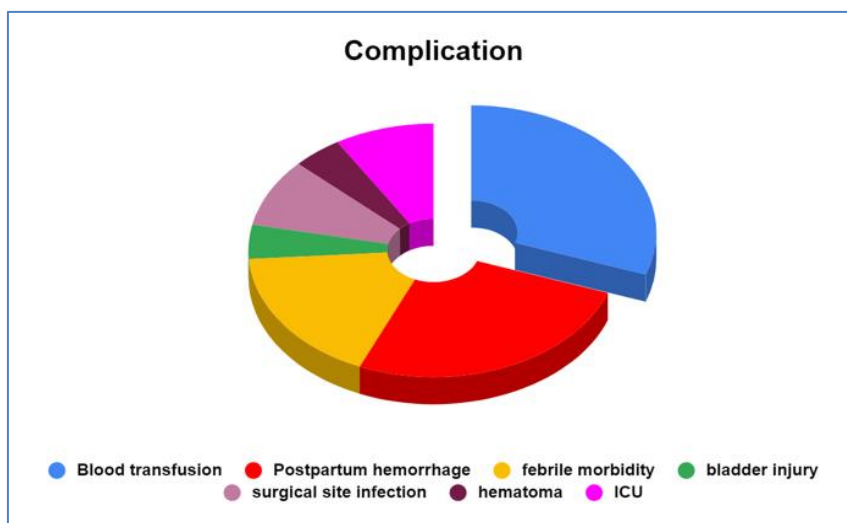
of cesarean section in decreasing order were cephalopelvic disproportion in 12.62% of cases, moderate to severe oligohydramnios in 11.65% of

cases, breech presentation in 9.71% of cases, non-progress of labour & eclampsia in 5.83% of cases each, failure of induction and fetoplacental insufficiency in 2.91% of cases each, Prolonged 2nd stage of labor and

Prom> 24 hours in 1.94% of cases each, twin gestation, cord prolapse, abruptio placenta, severe mitral stenosis with pulmonary artery hypertension and preeclampsia with non-inducible cervix in 0.97% of cases each.

Table-9: Complication

	No of Cases (N=103)	Percentage (%)
Postpartum hemorrhage	6	5.83
Blood transfusion	7	6.80
Febrile morbidity	4	3.88
Bladder injury	1	0.97
Surgical site infection	2	1.94
Hematoma	1	0.97
ICU	2	1.94



Graph 5

Graph 5 & Table 9 shows amongst 103 cases of cesarean section 6 cases developed atonic postpartum hemorrhage, 7 cases required blood transfusion, postoperative fever occurred in 4 cases, surgical site

infection in 2 cases, hematoma occurred in 1 case, bladder injury observed in 1 case & 2 cases required ICU admission.

Table-10: NICU admission

	No of Cases (N=103)	Percentage (%)
Low birth weight	4	3.88
Respiratory distress syndrome	13	12.62
Perinatal asphyxia	2	1.94
Hypoglycemia	1	0.97
Sepsis	1	0.97
Pneumonia	2	1.94
Total	23	22.33%

Table 10 shows 22.33% of babies required NICU admission. 12.62% cases of baby were admitted due to respiratory distress syndrome, 3.88% cases of baby due to low birth weight (< 2 kg), 1.94% cases of baby due to perinatal asphyxia, 1.94% of cases of baby due to pneumonia, 0.97% cases of baby due to sepsis & 0.97% cases of baby due to hypoglycemia.

DISCUSSION

Cesarean Section when clinically indicated, it saves life of mother and fetus. According to the WHO, the population-based Cesarean Section rate above 10-15% does not improve the maternal and fetal mortality [5]. The sharp increase in Cesarean Section rates over last few decades are questionable and requires attention.

Cesarean section in primigravida increases their chance of repeat cesarean section in future pregnancy, thus increasing short and long-term morbidity. Hence there is an urgent need to review the indications of cesarean sections in primigravida.

In our study the incidence of cesarean section in primigravida was 29.09% which was comparable to study conducted by *Joshi et al.*, at a teaching hospital, where the cesarean section rate in primigravida was observed to be 29.5% [6]. In our study emergency cesarean-section done in 94.17% compared to study conducted *Nair et al.*, where emergency cesarean section rate was 82.4% [7]. Numerous antenatal high-risk factors were observed during our study. Most common high-risk factor observed was hypertensive disorders of pregnancy in 18.44% of cases. Hypertensive disorders of pregnancy included preeclampsia and eclampsia. The other high-risk factors noted were anemia, heart disease, hypothyroidism and gestational diabetes mellitus. This was similar to a prospective study of 496 primipara at tertiary care center by *Jain M et al.*, where hypertensive disorder of pregnancy constituted 14% as a common antenatal risk factor in primipara patient [8]. Total 34.95% cases of primigravida had antenatal high-risk factor in our study. Being a tertiary referral Centre, the number of high-risk patients is significantly higher. Most common indication of cesarean section was fetal distress in 39.81% cases. In our study fetal distress was identified by electronic fetal monitoring and meconium stained liquor. This was comparable to a study conducted by *Mandi et al.* at tertiary care center where the most common indication of cesarean section was fetal distress in 45% of cases [9]. In our study amongst 41 cases of cesarean sections done for fetal distress, 33 cases had spontaneous onset of labor, 5 cases were induced with pgE1 and 3 cases was taken before onset of labor having severe oligohydramnios and uteroplacental insufficiency. Antenatal high-risk factor identified amongst 41 cases of fetal distress were, postdated in 10 cases, preterm in 2 cases, hypertensive disorder of pregnancy in 5 cases, moderate to severe oligohydramnios in 5 cases, oligo with intrauterine growth retardation in 2 case, heart disease in 2 cases, moderate anemia in 1 case and intrauterine growth retardation alone in 1 case. *Malapure P et al.*, in his study found most common indication of cesarean section to be fetal distress in 41% of cases which also included meconium stained liquor and non-reassuring NST [10]. The introduction of continuous electronic fetal monitoring (EFM) has been suggested as a cause of the rising Cesarean section rate for fetal distress. Access to fetal blood sampling (pH or lactate level) may reduce the rate of unnecessary Cesarean sections for abnormal fetal heart rate patterns. Newer methods, such as fetal ECG waveform analysis and computerized CTG, may also contribute to a further reduction in the future [11]. American College of Obstetricians and Gynecologist (ACOG) recommends replacement of

term fetal distress by non-reassuring fetal status followed by further description of findings – fetal tachycardia or bradycardia, repetitive variable decelerations, late decelerations and low biophysical profile [12].

A study conducted by *Kulkarni et al.*, at tertiary care center, the most common indication of cesarean section in primiparous women was cephalopelvic disproportion in 44.97% cases. [13]. In comparison to this our study showed Cephalopelvic disproportion (12.62%) as second most common indication of cesarean section. This shows the indication of cesarean section varies among different institutes. In our study common maternal intraoperative and postoperative complications seen were, blood transfusion required in 6.80%, PPH occurred in 5.83% cases, febrile illness developed in 3.88%, surgical site infection occurred in 1.97%, ICU admission required in 1.94%, hematoma occurred in 0.97% and bladder injury observed in 0.97%. There was no maternal mortality. This was comparable to study conducted by *Sankhala et al.* where the most common complication was PPH in 7.15% of cases amongst 475 primigravida who delivered by cesarean section [14]. In our study 22.33% baby required NICU admission which was comparable to the study conducted by *Mandi et al* where 26.55% of baby required NICU admission [9]. In our study respiratory distress was the commonest reason for NICU admission contributing to 12.62% cases.

CONCLUSION

On comparing our results with studies done till now, it is observed that there is no standard nomenclature of indications of primary cesarean section. Thus, the result cannot be compared to other studies. Hence standardization of indications is required at least at tertiary care centers. As per the standard international guidelines, upgrading the tertiary care center with more advanced technology of fetal surveillance in terms of fetal blood sampling (pH or lactate level), fetal ECG waveform analysis and computerized CTG can help to reduce the primary cesarean section rate for fetal distress. In addition, serial annual audits of primary cesarean section indications can help to improve antenatal care in terms of identifying high risk pregnancies and setting up standard protocols for antenatal care. Extending antenatal care by specialist at primary health care level or mobile clinics may be required to reduce primary cesarean section rate at the referral center.

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