

REVIEW ARTICLE

Optimizing Obstetric Care: A Review of Indications and Outcomes for First-Time Caesarean in Multipara

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ABSTRACT

Introduction: Caesarean section is a life-saving obstetric intervention when appropriately indicated; however, its increasing use among multiparous women with previous successful vaginal deliveries has become a matter of clinical concern. Evaluating the factors contributing to primary caesarean section (CS) in this group is essential for optimizing maternal and neonatal outcomes and promoting evidence-based obstetric care.

Objectives: To determine the incidence, indications, associated antenatal risk factors, maternal and neonatal outcomes, and Robson ten group distribution of primary caesarean sections in multiparous women.

Methods: A prospective observational study was conducted in the Department of Obstetrics and Gynaecology, Government Medical College and Rajindra Hospital, Patiala, over a period of one year (2022–2023). Multiparous women with at least one previous vaginal delivery beyond 24 weeks of gestation who underwent their first caesarean section were included. Relevant demographic, clinical, obstetric, and neonatal data were collected and analysed. Caesarean sections were further categorized using Robson's Ten-Group Classification System.

Results: Among 3,759 deliveries, 241 women underwent primary caesarean section, yielding an incidence of 12.98%. Most participants were unbooked referrals and belonged to lower socioeconomic strata. Anaemia (46.47%) was the commonest

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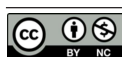
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antenatal risk factor. Emergency procedures accounted for 89.21% of surgeries. Foetal distress emerged as the leading indication for caesarean section (40.25%), followed by breech presentation (19.92%) and major placenta previa (19.09%). Maternal complications were infrequent, with postpartum haemorrhage and wound disruption being the most common. No maternal mortality was recorded. Robson Group 10 contributed the largest proportion of primary caesarean sections (45.23%).

Conclusion: Foetal distress remains the predominant indication for primary caesarean section in multiparous women. Strengthening antenatal care, encouraging timely referrals, and applying Robson's classification can facilitate targeted interventions, improve obstetric decision-making, and contribute to reducing avoidable caesarean deliveries.

KEYWORD:

• Primary Caesarean Section • Multipara • Robson Classification

INTRODUCTION

Caesarean section is one of the most frequently performed surgery in obstetrics. Although the Caesarean section is not a perfect solution for every obstetric issue; it can be a great option when used carefully. It has an enormous potential to save the life of both mother and baby. Primary caesarean section in multipara means caesarean section done in the subjects for the first time who had given birth vaginally once or more after the period of viability.¹ Globally, the rates of caesarean sections have increased, reflecting a change in the management of maternal health and obstetric practices. This rise is not without implications. Caesarean section poses a greater risk of maternal and perinatal morbidity, mortality and high cost of health care compared with vaginal deliveries. Therefore, it's important to evaluate the indications as well as the maternal and foetal outcomes, linked to caesarean birth.

These days, caesarean section is a safer option as compared to prolonged and difficult operative vaginal delivery in order to lower the morbidity and mortality rates for both mothers and newborns. Numerous other medical, social, economic, and medico-legal factors have contributed to the alarmingly high rate of caesarean sections nationwide. These include the introduction of recent technological advancements in labour wards, such as cardiotocography, colour doppler, and biophysical profile.²

WHO suggests using the Robson ten-group classification system (RTGCS) as a useful monitoring and analysis tool to evaluate the usage of caesarean sections (CS). The Robson system divides all deliveries into one of ten groups based on five parameters: gestational age, number of neonates, foetal lie, onset of labour, and obstetric history. The primary benefit of the Robson criteria is its ability to identify the subpopulations responsible for variations in the rates of caesarean sections and to enable standardised comparisons of data across timepoints and nations.³

Hence present study was done to study the indications of primary caesarean section in multiparous subjects with prior vaginal delivery. We will also look at distribution of primary CS in multipara as per ROBSON ten group classification.

AIMS & OBJECTIVES

1. To study the indications, incidence and obstetric outcome and associated high risk factors of primary caesarean section in multiparous women.
2. To evaluate primary caesarean section in multipara as per ROBSON classification.

MATERIAL AND METHODS

The present study was done in Department of Obstetrics and Gynaecology, Government Medical College and Rajindra Hospital Patiala

for a period of 1 year (2022-23). It was a prospective observational study and included all primary caesarean in multipara which occurred in the hospital during the study period. Subjects were enrolled into study after informed consent and data was collected as per predesigned proforma and approval for study was taken from institutional ethics committee.

Inclusion Criteria:

- All multigravida with previous vaginal delivery beyond the period of viability (24 weeks or above).

Exclusion Criteria:

- All primigravida
- Multigravida with previous caesarean section
- Nulliparous multigravida
- Multipara delivering before 24 weeks
- Women with previous uterine surgery

RESULTS

The data presented across various tables provide a comprehensive overview of the demographics, clinical indications, and outcomes associated with primary caesarean sections in multiparous women.

During our study period, 1857 caesarean sections and 1902 vaginal deliveries were conducted in our hospital making a total of 3759. During this period, 241 primary CS in multipara took place and the rate of primary CS in multipara came out to be 12.98%.

In our study, it was observed that majority of subjects undergoing caesarean sections were in the 26-30 years age group (37.76%) and mean age was 29.28 ± 5.05 years. 77.59% of study subjects were unbooked. This could lead to higher risks and complications during pregnancy and delivery. 17.01% of study subjects were illiterate and 58.92% had just primary education. Maternal educational disparities serve as a critical determinant, negatively impacting both health-seeking behaviour and timely access to antenatal care. They were more or less equally divided in urban (53.53%) and rural areas (46.47%). Majority belonged to lower socioeconomic status (65.56%). Majority of them were gravida 2 (48.96%) but we had study subjects with higher gravidity as well. (Table 1)

Table 1: Demographic Profile

Factor	No. of subjects	%age
Mean age	29.28 $\pm$ 5.05 years	
Booked	54	22.41
Unbooked	187	77.59
Illiterate	41	17.01
Primary	142	58.92
Matric and higher	58	24.07
Rural	112	46.47
Urban	129	53.53
Upper	4	1.66
Middle (upper & lower)	79	32.78
Lower	158	65.56
Gravida 2	118	48.96
Gravida 3	64	26.56
Gravida 4	43	17.84
Gravida $\geq$ 5	16	6.64

Table 2: Antenatal High-Risk Factors of Study Subjects

Antenatal High-Risk Factor	No. of Subjects	Percentage
Anaemia	112	46.47
Abnormal presentation	57	23.65
Hypertensive Disorder	45	18.67
Placenta previa	44	18.25
Multiple pregnancy	5	6.22
Diabetes in Pregnancy	12	4.98
IHCP	8	3.32
Thyroid Disorders	6	2.49
Heart Diseases	1	0.41
Epilepsy	1	0.41
Bronchial Asthma	1	0.41

A significant portion of subjects (46.47%) had anaemia as antenatal high-risk factor in our study group followed by abnormal presentations (23.65%), hypertensive disorders (18.67%), placenta previa (18.25%) and diabetes (4.98%) (Table 2).

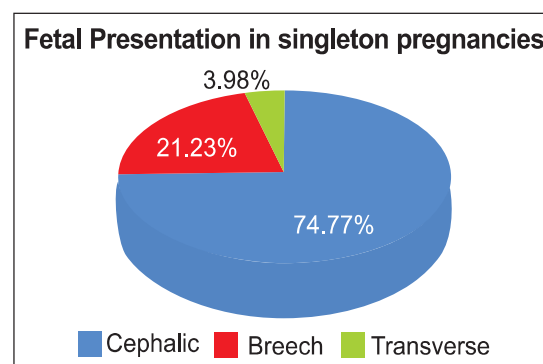


Figure 1: Fetal Presentation In Singleton Pregnancies

In our study, out of 226 singleton pregnancies, 74.77% had cephalic presentation followed by breech (21.23%) and transverse (3.98%). There were 15 twin pregnancies. (Figure 1)

During the study period 61% underwent CS at less than 37 weeks and 39% at ≥ 37 weeks with mean period of gestation as 35.95 ± 2.40 weeks.

139 (57.68%) of the subjects were already in labour at time of CS. Induction of labour was done in 29 (12.03%) and 73 (30.29%) were taken up for CS before labour.

The indication for induction were hypertensive disorders (62.06%), IHCP (20.68%), diabetes in pregnancy (10.34%), FGR (6.89%) followed by anhydramnios and impending eclampsia with poor Bishop score in one subject each (3.44%).

As shown in Figure 2, Emergency caesarean sections were predominant (89.21%) in our study group as compared to elective ones (10.79%).

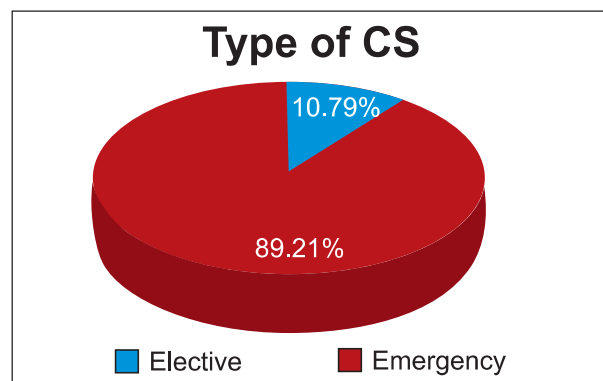


Figure 2: Type of CS in Study Subjects

The leading indications for caesarean sections in our study group were foetal distress (40.25%), followed by breech (19.92%), and Major degree placenta previa (19.09%). These findings highlight common complications necessitating surgical intervention (Table 3).

Table 3: Indications of CS in Study

Indication of CS	No. of Subjects	Percentage
Fetal Distress	97	40.25
Breech	48	19.92
Major Degree Placenta Previa	46	19.09
Twin Pregnancy with 1st Twin Non-Cephalic	15	6.22
Transverse Lie	9	3.73
Abruption with Poor Bishop	6	2.49
Deranged Color Doppler (AEDF/REDF)	5	2.07
Failed IOL	5	2.07
Obstructed Labor	3	1.24
Cord Prolapse	3	1.24
Genital Warts	2	0.83
Macrosomia	1	0.42
Impending eclampsia with poor bishop	1	0.42
Total	241	100

Intrapartum complications were seen in form of intrapartum bleeding (3.73%), difficulty in extraction of baby. Omit difficulty in extraction of baby (2.90%) and extension of incision (0.83%).

The postpartum complications observed consisted of PPH (2.48%), Wound disruption (2.48%), postpartum eclampsia (1.65%), subinvolution of uterus and P sepsis (1.24% each).

In our study it was observed that most babies had a birth weight between 2.5-3.0kg (44.62%), with a mean weight of 2.38 ± 0.38 kg. This indicates a generally healthy birth weight range, although 52.59% babies had low birth weight (i.e. birth weight less than 2.5 kg).

There were 5 IUD (1.95%) and there was no maternal mortality.

We further looked at distribution of these primary CS in multipara as per ROBSON ten group classification (Table 4A).

Table 4A: Distribution of Study Subjects According to Robsons Group

Robson's Group	Group description	No. of Subjects	Percent age
3	Multiparous, singleton, cephalic, ≥ 37 weeks gestation, in spontaneous labour (excluding prior CS)	29	12.03
4a	Multiparous, singleton, cephalic, ≥ 37 weeks, induced labor and no prior CS	9	3.73
4b	Multiparous, singleton, cephalic, ≥ 37 weeks, CS prior to labour and no prior CS	22	9.13
7	Multiparous breech (including prior CS)	48	19.92
8	Multiple pregnancy (including prior CS)	15	6.22

table cont....

9	Transverse or oblique lie (including prior CS)	9	3.73
10	Singleton, cephalic, pregnancy <37weeks POG (including prior CS)	109	45.23
Total		241	100

It was observed that. Group 10 made the largest (45.23%) contribution, followed by Group 7 (19.92%), Group 3 (12.03%), Group 4b (9.13%), Group 8 (6.22%), Group 4a and Group 9 contributed equally (3.73%). This classification helps in understanding the different clinical scenarios leading to caesarean sections.

Relative Group contribution to overall CS rate is defined as contribution of study subjects of each Robson group to total no of CS during study period. As per our study, Group 3 and Group 4 are complete groups (as they don't include subjects with previous CS) but Group 7, 8, 9 and 10 are not mutually inclusive because these groups also include subjects with previous CS but in our study, subjects with previous CS are excluded. So, maximum relative contribution is by Group 10 (5.86%) followed in list by Group 7 (2.58%) then by Group 3 (1.56%) (Table 4B).

Table 4B: Relative Group contribution to CS rate in our study by Robson Ten Group Classification

Robson's Group	No. of Subjects	Relative Group Contribution to CS Rate (%)
3	29	1.56
4a	9	0.48
4b	22	1.18
7	48	2.58
8	15	0.80
9	9	0.48
10	109	5.86
Total	241	12.94

We were further interested in looking at indication of CS in these groups which we studied as per ROBSON groups.

Looking at Group 3, most cases were dealt because of foetal distress 22 (75.86%), cord prolapse 3 (10.35%), obstructed labour 3 (10.35%). 1 case of symptomatic major degree placenta previa was also taken up in emergency (3.44%).

In Group 4a, out of 9 cases, 6 patients underwent CS because of foetal distress (66.67%) and rest 3 were because of failure of induction (33.33%).

The most common indication for CS in Robson Group 4b was Major degree placenta

previa (68.18%) with or without APH, followed by Abruptio with poor bishop score (9.10%), and genital warts (9.10%). (Table 5).

In Group 7, most of the cases were done in emergency (ie.44 out of 48 cases) i.e. 91.67%. The high CS rate in this group is explained by the fact that most of the patients didn't give consent for vaginal breech delivery after the risk associated assisted breech delivery was explained.

Out of 15 cases, in Group 8, 14 cases (93.33%) were dealt in emergency because 11 of the cases presented to us in labour with 1st twin non cephalic, 2 cases of twin pregnancy with both breech came with Abruptio, and 1 case (6.67%) of twin pregnancy with 1st twin non cephalic came with Symptomatic placenta previa. Only one elective CS was done because of twin with preeclampsia.

Table 5: Indications of CS in Robsons Group 4b

Indication of CS	No of subjects	Percentage
Major degree Placenta previa (with APH/without APH)	15 (3+12)	68.18
Abruptio with poor Bishop score	2	9.10
Genital warts	2	9.10
Deranged color doppler	1	4.54
Impending eclampsia with poor bishop	1	4.54
Macrosomia	1	4.54
Total	22	100

Ideally, transverse lie should be an elective CS. But because of our tertiary care centre and increased number of referrals from periphery, most of the cases of Group 9 with transverse lie presented to us in labour and were dealt in an emergency (8 out of 9 cases i.e.88.89%)

Table 6: Indications of CS in Robsons Group 10

Indications of CS	No of subjects	Percentage
Fetal distress	69	63.30
Major degree placenta previa with APH	30	27.52
Deranged colour doppler (AEDF/ REDF)	4	3.67
Abruptio with poor Bishop score	4	3.67
Failure of Induction	2	1.84
Total	109	100

We had Group 10 as the largest group with Foetal distress as the most common indication for CS (69 out of 109 cases i.e.63.30%) followed

by Major degree placenta previa with APH (30 cases 27.52%) and deranged colour doppler (4 out of 109 cases i.e.3.67%) (Table 6).

Table 7: Indication of CS in Study Subjects and their Distribution according to Robsons Classification

Indication of CS	3	4a	4b	7	8	9	10
Fetal Distress	22 (22.69%)	6 (6.18%)					69 (71.13%)
Breech				48 (100%)			
Major degree Placenta Previa	1 (2.18%)		15 (32.61%)				30 (65.21%)
Multiple Pregnancy					15 (100%)		
Transverse Lie						9 (100%)	
Abruption			2 (33.33%)				4 (66.67%)
Deranged Color Doppler (AEDF/REDF)		1 (20%)					4 (80%)
Failed IOL		3 (60%)					2 (40%)
Obstructed Labor	3 (100%)						
Cord Prolapse	3 (100%)						
Genital Warts			2 (100%)				
Macrosomia			1 (100%)				
Impending Eclampsia with Poor bishop			1 (100%)				

So, it's very clear from our study that most common indication of CS was Foetal distress which was maximally distributed along Robsons Group 10 (71.13%), Group 3 (22.69%), and Group 4a (6.18%). 2nd most common indication in our study Group was Breech which came under group 7 (100%), Next came Major degree placenta previa which was maximally distributed along Group 10(65.21%), Group 4b (32.61%) and Group 3 (2.18%). Multiple pregnancies came under Group 8(100%). Transverse lie came under Group 9(100%) (Table 7).

DISCUSSION

Total number of deliveries during the present study period for 1 year were 3759 and caesarean section was done in 1857 cases accounting for 49.4% CS rate. Total no of primary CS in multipara in our study period was 241 accounting for 12.97% out of total CS. The results of our study are comparable to study done by Boyle et al(2013)⁴ and Somarwal et al(2020)⁵ (i.e.11.5% and 10.89% respectively). Some other authors like Aftab et al(2012)⁶, Aggarwal et al (2019)⁷ and Meena et al(2022)⁸ had reported higher primary CS in multipara in their studies (37.17%, 23.4% and 25.80% respectively).

A significant proportion of the participants had primary education (58.92%), and 17.01% were illiterate. Multiparity is often associated with illiteracy. The education level of the mother is a critical factor in healthcare decision-making and outcomes, as highlighted by Haberman et al (2014).⁹ Educational status significantly impacts health literacy and the ability to navigate healthcare systems effectively. Lower educational levels are associated with poorer health outcomes due to a lack of understanding and adherence to medical advice, which can lead to complications requiring caesarean sections.

Most of the subjects in our study (77.59%) were unbooked and referred from peripheral areas as our hospital is a tertiary care centre but other authors^{10,11} reported majority of cases as booked in their study (97.1% & 97%).

Socioeconomic status was predominantly lower, with 56.43% of participants falling into the lower socioeconomic class. Multiparity is often associated with poverty. Lower socioeconomic status often correlates with limited access to quality antenatal care, leading to unmanaged pregnancy complications that require emergency interventions.

In our study, Anaemia was the most common high-risk factor seen which contributes about

(46.47%). This is similar to study done by Gotam et al (2019)¹² where anemia contributes 57%.

In our study most of the cases (215 out of 241 cases i.e. 89.21% cases were dealt in an emergency This is similar to study conducted by Aftab *et al* (2012)⁶ (85%), Kumar S *et al* (2019)¹³ (91.6%), and Shagufta *et al* (2023)¹⁴ (88.83%).

The high rate of emergency caesarean sections could be due to several factors, including late referrals and lack of timely prenatal care, These high rates of emergency interventions suggest a need for improved prenatal screening and planning to mitigate the need for emergency surgeries.

In our study, most common indication for primary CS in multipara came out to be foetal distress (40.66%), followed by malpresentations which include Breech and Transverse lie which makes 24.48% followed in list by APH which includes both Placenta previa and Abruptio which makes 20.75%. Our results are comparable to study done by Erika Desai et al (2013)¹⁵ in which also foetal distress was the most common indication i.e. 25.5%, followed by abnormal presentation (17.4%), and APH (22.09%). In study conducted by Shagufta et al (2023)¹⁴ also foetal distress was the most common indication for primary CS in multipara (37.67%).

The application of Robson's classification in this study provides a useful framework for categorizing and analysing caesarean sections. Healthcare providers can adopt this classification system to better understand the distribution of caesarean deliveries within their institutions and to identify areas for improvement. When we analysed our study subjects according to Robsons classification, we observed that Primary CS in multipara were spread over various Robsons categories.

Most common indication for primary CS in multipara among our study subjects was foetal distress which was maximally distributed along Group 10(71.13%), Group 3 (22.69%) and Group 4a (6.18%). In Group 3, it was generally because of late referrals, less frequent antenatal care, so they are generally unaware of the preexisting medical disorders which itself predisposes to foetal distress. So, Group 3 needs careful attention towards labour management.

In Group 4a, indications for induction of labour should be made very clear and labour monitoring should be done by partographs or LCG though we had good success rate for induction of labour in our study. In Group 7, CS rate can be reduced by adequate counselling regarding risk-benefit ratio of vaginal breech delivery and by proper selection of cases. Group 10 made the largest absolute and relative group contribution to overall CS rate. This group needs careful attention. As we observed from our study that Hypertension (46.47%), Diabetes (4.98%), were the most common Antenatal high factors in our study group. These medical disorders might necessitate induction of labour before 37 weeks of gestation and can lead to preterm delivery of baby. Adequate counselling and importance of good antenatal care and its benefits should be explained to the subjects Group 4b, Group 8 and Group 9 usually are associated with high CS rate and so was in our study.

CONCLUSION

Multiparity is often associated with poverty. Lower socio-economic status often correlates with limited access to quality antenatal care, leading to pregnancy complications that require emergency interventions like caesarean sections. So, IEC (Information, education and counselling) activities should be carried out to make them more aware about good antenatal care and its associated benefits to both mother and baby Targeted counselling should emphasize the early detection and management of pre-existing conditions, such as hypertension and diabetes, to prevent unnecessary preterm inductions and allow pregnancies to reach full term. Furthermore, clinical protocols for vaginal breech delivery must include thorough patient counselling and rigorous case selection. Integrating these strategies into clinical practice facilitates more informed decision-making and optimal resource allocation. Robsons 10 Group classification provides a structured framework for understanding the distribution of caesarean deliveries across different risk groups, to analyse trends and to improve obstetric practices facilitating more effective clinical decision making.

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