

Analysis of Cesarean Section using Robsons classification at Teaching Hospital of Eastern Nepal

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ABSTRACT

Introduction: Cesarean section is an operative procedure for delivery of fetus and placenta by making an incision over abdomen and uterus after period of viability. **Aims:** The aim of study is to analyze rate of cesarean section and perform an analysis based on Robsons ten group classification. **Methods:** A cross sectional study was conducted at Department of Obstetrics and Gynecology of a teaching hospital of eastern Nepal, over a period of one year from October 2022 to September 2023. All details regarding demography, obstetric history, medical history, labor status, indication of cesarean section, etc. were collected. Then all pregnant ladies were assigned to one of Robsons ten group classification systems and recorded into labor confinement book. The statistical analysis was performed using Statistical Package for Social Sciences version 21. Descriptive statistical tools were used to express the results. All tests were done with a significance level of 5% (p-value <0.05) and 95% confidence Interval. **Results:** The overall rate of cesarean section was 1,829(46.93%). Majority 1323(72.30%) were in age group 20-30 years. Maximum 1,629(89.10%) delivered at >37 weeks of gestation. Majority 789(43.10%) of cases had lower segment cesarean section because of previous cesarean delivery. According to Robsons classification system, Group 5 has highest cesarean section rate 725 (39.60%) followed by Group 2(A+B), 334(18.21%). **Conclusion:** Implementing Robsons Ten Group Classification System at our setting has helped us to identify major contributor of overall cesarean section rate. Group 5 was at top followed by group 2. Thus with adequate trial of labor after cesarean, proper labor monitoring and judicious use of induction protocol can significantly reduce rate of cesarean section.

Keywords: Cesarean Section, Classification, Pregnancy, Nepal

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INTRODUCTION

Cesarean section is an operative procedure for delivery of the fetus and placenta after the period of viability and it is an important indicator of access to quality maternal and reproductive health care service offered by a nation at population level.^{1,2} One in every five women undergo cesarean delivery according to recent data, in different parts of the world.³ According to World Health Organization (WHO) rate of cesarean section should not be more than 15% in any region.⁴ There is an alarming increase in the cesarean rate, globally from 6% in

1990 to 19% in 2014 and 21% in 2021.^{5,6} Though being a life-saving procedure it has various complications like hemorrhage, need for blood transfusion, sepsis, wound infection, Intensive Care Unit (ICU) stay, hysterectomy and even death. There is a chance of repeat cesarean section, morbidly adherent placenta, uterine rupture etc. in future pregnancy.⁷ Cesarean section has significantly greater risks of vulnerability of perinatal morbidity and mortality as compared to that of vaginal delivery.⁸ In 2015, Robsons Ten Group Classification System was accredited by WHO as a global standard tool for assessing, monitoring

and comparing cesarean section rates within health care facilities.⁹ Robsons ten group classification is based on six core obstetrics variables.¹⁰ Every delivering women can be classified into one of the ten group in Robsons classification as it is mutually exclusive, reproducible, relatively simple to use and clinically relevant.^{11,12} The aim and objective of this study is to analyse the rate of cesarean section at our institute and perform an analysis based on Robsons ten group classification.

METHODS

This is an observational cross sectional study conducted at the Department of Obstetrics and Gynecology at teaching hospital of eastern Nepal, over a period of one year from October 2022 to September 2023. Ethical clearance was taken from Institutional review committee (Reference Number: IRC-PA-226/2022) of Birat Medical College Teaching Hospital(BMCTH). The study population included all the pregnant ladies who delivered at study site during the study period. All the deliveries before 28 weeks of gestation were excluded from the study. The pregnant ladies who fulfilled the criteria were enrolled in the study. All the details regarding demography, obstetric history, medical history, labor status, indication of cesarean section, singleton or multiple pregnancy, fetal lie and presentation were collected. Then all the pregnant ladies were assigned to one of the Robsons ten group classification system and recorded into the labor confinement book. The group was reviewed again after the delivery to check for any change as sometime there may be change in group before and after delivery and were again re classified.

Group	Descriptions
1	Nulliparous, single cephalic, ≥37 weeks, in spontaneous labor
2A	Nulliparous, single cephalic, ≥37 weeks, induced labor
2B	Nulliparous, single cephalic, ≥37 weeks, planned cesarean delivery
3	Multiparous (excluding previous CS), single cephalic, ≥37 weeks, in spontaneous labor.
4A	Multiparous (excluding previous CS), single cephalic, >37 weeks, induced labor
4B	Multiparous (excluding previous CS), single cephalic, >37 weeks, planned cesarean delivery
5	Previous CS, single cephalic, ≥ 37 weeks.
6	All nulliparous breeches
7	All multiparous breeches(including previous CS)
8	All multiple pregnancies (including previous CS)
9	All abnormal lies (including previous CS)
10	All single cephalic, <37 weeks(including previous CS)

Table I: Robsons ten group classification⁹

The following definitions were used for core obstetrics variable:

Nulliparous: The women who has not delivered a neonate weighing more than 1kg or period of gestation more than 28 weeks.

Multipara: The women who has delivered at least once weighing more than 1 kg or period of gestation more than 28 weeks.

Spontaneous labor: The Onset of labor was spontaneous before delivery.

Induced Labor: The women was not in labor at admission and later induction of labor was done.

Term pregnancy: Pregnancy of more than or equals to 37 weeks of gestation.

Preterm pregnancy: Pregnancy less than 37 weeks of gestation.

Pre labor CS: Women was not in labor before CS.

Sample size was taken by total enumeration technique so the total number of case during the study period were 3,897. The convenience sampling technique was used. The collected data was entered in Microsoft Excel and statistical analysis was performed using Statistical Package for Social Sciences (SPSS) version 21. Descriptive statistical tools like frequency, percentage, median, and interquartile range were used to express the results. To test the variables distribution, a test of the normality of the data was performed. The data was considered as not normally distributed if the significance of the Shapiro-Wilk test was < 0.05. Pearson chi-square test was used for bivariate analysis to determine the presence of an association between the dependent and independent variables. All tests were done with a significance level of 5% (p-value <0.05).

RESULTS

During study period of one year, total deliveries conducted at BMCTH were 3,897, out of which 1,829 delivered by LSCS. The overall rate of cesarean section was 1,829(46.93%). Majority 1323(72.30%) were in age group 20-30 years followed by 288(15.70%) less than 20 years and 218(11.90%) were more than 30 years. Almost all 1,793(98%) had singleton pregnancy however, 36(2%) had multiple pregnancy. (Table II)

SN	Obstetrics Variables	Number(n)	Percentage (%)
1.	Gestational Age		
	<37 weeks	200	10.90
	>37 weeks	1629	89.10
2.	Parity		
	Primi	755	41.30
	Multi	1074	58.70
3.	Presentation/Lie		
	Cephalic	1,668	91.20
	Breech	133	7.30
	Transverse	28	1.50

Table II: Obstetrics Variables

According to Robsons classification system, Group 5 has the highest cesarean section rate 725(39.60%) followed by Group 2(A+B), which is 234(18.21%) and followed by Group 1 298(16.30%) least contributed by group 9 that is 28(1.50%). (Figure 1)

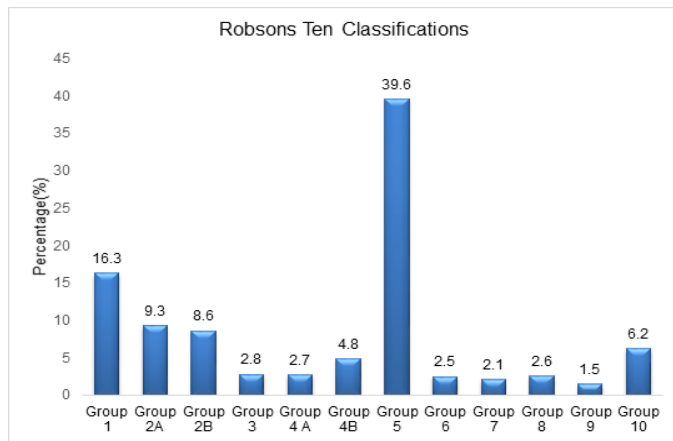
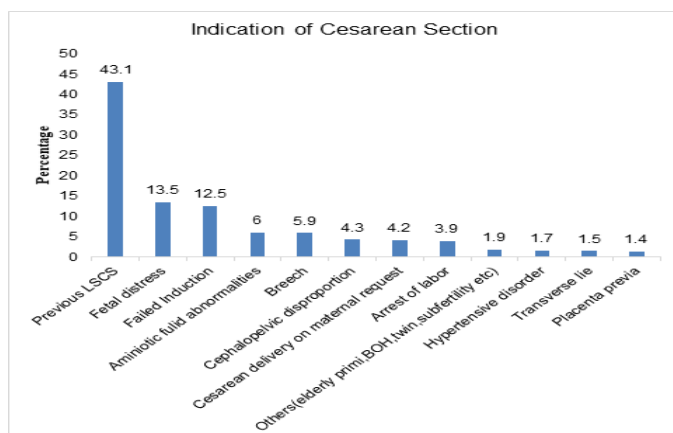


Figure 1: Distribution of Cesarean Section according to Robsons Ten Group Classification System

Indication for LSCS

The majority 789(43.10%) of the cases had LSCS because of previous LSCS followed by fetal distress 247(13.50%) and failed induction 228(12.50%). (Figure 2)



*CDMR (Cesarean delivery on maternal request) **CPD (Cephalo pelvic disproportion)

Figure 2: Distribution of Indications of Cesarean Section

DISCUSSION

This study included 1,829 pregnant women who delivered by LSCS at BMCTH during the period of one year from year from October 2022 to September 2023. The rate of Cesarean section at our institute was 46.9%. World Health Organization (WHO) recommends that the rate of CS should not exceeds more than 15% in any region. As compared to WHO the rate is very high.¹³ The CS rate in our study is comparable to the study conducted by Subedi AC at Manipal Teaching Hospital in 2022 in which the CS rate was 51%. However the rate is even higher in private

hospitals reaching up to 81%.¹⁴ The CS rate in our study is lower than the study conducted by Gurung P. at Patan Academy of Health Science which showed CS rate of 57.5%.¹⁵ In the present study 72.3% were from the age group of 20-30 years and majority(58%) were multi gravida which is comparable to the study done by Abubeker FA et al.¹⁶ Using Robsons Ten Group Classification System all the CS cases were assigned to individual group and CS rate was calculated. Group 5 has the highest CS rate of 39.6% in this study which is comparable to the study done by Jain R. and Fatima SS et al. in which group 5 has contribution of 38.69% and 34.7% respectively.^{17,18} Different studies have shown group 5 with less CS rate than present studies.^{19,20}

Group 2 and 1 are the second and third highest contributors with CS rate of 18.2% and 16.3% respectively which is comparable to the study by Mittal P.²¹ The contribution from combination of group 1, 2 and 5 is more than 74%. Group 9 has the lowest contribution in overall CS rate. Regarding various indications for CS, previous LSCS is leading with 43.1% followed by fetal distress 13.5% and failed induction 12.5%. In a study by Gurung P. the leading cause of Cs was fetal distress 34.9% followed by previous CS 26.89% and failed induction 17.89%.¹⁵

In our study Major contribution by group 5 is due to the lack of Trial of Labor after Caesarean (TOLAC), which results in increased number of elective CS. Despite the recommendations made by ACOG and RCOG regarding Vaginal Birth After Caesarean (VBAC), the rate of repeat CS is still on higher side because of the fear of associated complications like uterine rupture, failed TOLAC etc.⁽²²⁾ Thus with proper case selection, vigilant monitoring and adequate trial the rate of CS in group 5 can be lowered. Similarly proper labor monitoring and avoiding unnecessary induction of labor may reduce the incidence of failed induction and fetal distress which ultimately will reduces the rate in group 1 and 2.

CONCLUSION

Implementing Robsons Ten Group Classification System at our setting has helped us to identify the major contributor of overall cesarean section rate. Group 5 was at the top followed by group 2 and group 1. Thus with the adequate trial of labor after cesarean, proper labor monitoring and judicious use of induction protocol can significantly reduce the rate of cesarean section at our institute.

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