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

Yadav SK1, Yadav I1, Pradhan T1, Deo A1, Dhamala J1, Regmi UK2, Yadav M3, Jyoti S4

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 1,323 (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

Authors:

1. Dr. Siddhartha Kumar Yadav
2. Dr. Indra Yadav
3. Dr. Tarun Pradhan
4. Dr. Amit Deo
5. Dr. Jibnath Dhamala
6. Dr. Upendra Krishna Regmi
7. Dr. Mukesh Yadav
8. Dr. Sabita Jyoti

1Department of Obstetrics and Gynaecology, Birat Medical College and Teaching Hospital, Biratnagar, Nepal
2Department of General Surgery, Province Hospital, Birendranagar, Surkhet, Nepal
3Department of Radiation Oncology, Sushil Koirala Prakhar Cancer Hospital, Khajura, Banke, Nepal
4Department of Community Medicine, Nepalgunj Medical College, Nepalgunj, Banke

Address for Correspondence:
Dr. Siddhartha Kumar Yadav
Department of Obstetrics and Gynecology
Birat Medical College and Teaching Hospital
Biratnagar, Morang, Nepal
Email: yadavsiddhartha087@gmail.com

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. Robson's ten group classification is based on six core obstetrics variables. Every delivering woman can be classified into one of the ten groups in Robson's classification as it is mutually exclusive, reproducible, relatively simple to use and clinically relevant. The aim and objective of this study is to analyze the rate of cesarean section at our institute and perform an analysis based on Robson's 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 Robson's 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 sometimes there may be change in group before and after delivery and were again reclassified.

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

Table I: Robson's ten group classification

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 1,323(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)

<table>
<thead>
<tr>
<th>SN</th>
<th>Obstetrics Variables</th>
<th>Number(n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gestational Age</td>
<td>&lt;37 weeks</td>
<td>200</td>
<td>10.90</td>
</tr>
<tr>
<td>2. Parity</td>
<td>Primi</td>
<td>1,668</td>
<td>91.20</td>
</tr>
<tr>
<td>3. Presentation/Lie</td>
<td>Cephalic</td>
<td>1,668</td>
<td>91.20</td>
</tr>
<tr>
<td></td>
<td>Breech</td>
<td>133</td>
<td>7.30</td>
</tr>
<tr>
<td></td>
<td>Transverse</td>
<td>28</td>
<td>1.50</td>
</tr>
</tbody>
</table>

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)

![Robsons Ten Classifications](image)

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)

![Indication of Cesarean Section](image)

Figure 2: Distribution of Indications of Cesarean Section

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

**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.

**REFERENCES**


3. Betran AP, Ye J, Moller AB, Zhang J, Gülmezoglu AM, Torloni MR. The increasing trend in caesarean section rates:


10. Cammu H, Martens E, Van Maele G. Using the Robson Classification to Explain the Fluctuations in Cesarean Section. J Pregnancy. 2020 Nov 12; 2020(Table 1). doi.org/10.1155/2020/2793296


