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ORIGINAL ARTICLE

Analysis of Caesarean Sections according to Robson's Ten Group Classification System at a Tertiary Care Hospital in Lumbini Province

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Article Info:

Received Date: 5 Jan, 2024

Acceptance Date: 6 Mar, 2024

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Funding sources: None

Conflict of interest: None

Access the article online

DOI: doi.org/10.70027/jrahs10

Abstract

Introduction: A Caesarean section (CS) is a common surgical operation in obstetrics. There is an alarming concern regarding rising rate of CS worldwide. This study was conducted to align with the Robson classification, an international standard for tracking and comparing CS rates within an institution. The study also identifies the CS rates within each group according to Robson's ten-group classification system (RTGCS).

Methods: This cross-sectional study, conducted over six months from October 2022 to March 2023, took place in the Department of Obstetrics and Gynecology at Rapti Academy of Health Sciences, a tertiary care center in Province 5. Descriptive analysis was performed on various variables according to the Robson's Ten Group Classification System, and the Caesarean sections (CS) were subsequently categorized.

Results: Out of 1780 total deliveries, 1060 (59.55%) were vaginal deliveries while 720 (40.45%) were CS. According to the Robson classification, group 1 was the predominant contributor at 34.2%, followed by group 5 at 21.1% and group 3 at 16.1% respectively. In regards to the indication of CS, cephalo-pelvic disproportion was the top most indication for CS.

Conclusion: As per the study as group 1 and group 5 are the leading group of CS in the institute, measures such as following evidence based labour care guide and promoting instrumental deliveries and vaginal birth after caesarean (VBAC) could help address the increasing CS rates.

Keywords: Caesarean section, robson's classification, tertiary hospital

Introduction

Cesarean section is a most common surgical procedure performed during pregnancy.[1] Globally, 21.1% of births are delivered via CS.[2] In Nepal, currently the CS rate standing at 22%.[3] Common reasons for performing a CS include fetal distress, cephalo-pelvic disproportion, and previous CS.[4,5–7]

Evaluating and auditing CS rates are crucial for enhancing maternal and neonatal care.[5] Several frameworks are utilized for auditing CS rates, the Robson classification is one of those.[8] Robson's classification was proposed by Michael Robson in 2001, and in 2015, it was recommended by WHO as a global standard for tracking and comparing CS rates.[9,10] Studies across various settings have shown that Robson group 5 predominantly contribute to overall CS rates [5,6,11–13] with significant contribution from groups 1, 2, and 3 [7,13–16] The objective of this study is to analyze the Cesarean Section as per the RTGCS.

Methods

Citation:

Lamichhane B, Darlami R, Bhattarai S. Analysis of Caesarean Sections according to Robson's Ten Group Classification System at a Tertiary Care Hospital in Lumbini Province. J. Rapti A. Health Sci. 2024;1(1):28-32.

The study was conducted in quantitative method using a descriptive cross-sectional study of past 6 months' record at Department of Obstetrics and Gynecology at Rapti Academy of Health Sciences. The study populations were women delivered by Caesarean section at RAHS from October 2022 to March 2023. Women delivered after 28 weeks with a baby of birth weight of more than 1 kg were included in the study while cases with uterine rupture and cases with incomplete data on the register were excluded from the study. Ethical approval was obtained from Nepal Health Research Council (NHRC) and an approval letter was acquired from the Rapti Academy of Health Sciences to conduct research at the hospital. The data were collected from case records from the maternity register using a table prepared according to Robson's ten-group classification system. Sample was calculated reviewing past hospital records, in which around 3000 deliveries occurring per annum among them almost 1500 cases are Cesarean Section. While taking every record of women who underwent CS during the study period of 6 months, it was around 700. After eliminating 36 cases of incomplete data and with exclusion criteria, the study sample size was 664. Collected data were entered into EpiData and subsequently transferred to SPSS for analysis. Descriptive analysis including frequency and central tendency were calculated for study variables and, CS cases were categorized based on Robson's Ten Group Classification System.

Results

During the study period, a total of 1780 deliveries were occurred. Among the total deliveries 1060 (59.55%) were vaginal deliveries, while 720 (40.45%) were Caesarean sections. Out of 720 CS, sample of 664 was taken and rests of the participants were excluded from the study because of lack of complete information.

Table 1: Characteristics of Study Parameters N=664

Characteristics		Number	Percentage (%)
Age (years)	15-19	54	8.1
Median age: 25±4.9SD	20-25	292	44
	26-30	205	30.9
	31-35	92	13.9
	36-40	21	3.2
Gestational age	< 37 weeks	48	7.2
	37-42	605	91.7
	>42	11	1.1
Parity	Nulliparous	339	51.1
	Multiparous	325	48.9
Onset of labor	Spontaneous	488	73.5
	Induced	15	2.3
	CS before labor	161	24.2
Fetal presentation / lie	Cephalic	608	91.6
	Breech	44	6.6
	Transverse, Oblique	12	1.8
Type of CS	Elective	155	23.6
	Emergency	509	76.4
Fetal status at time of birth	Live birth	662	99.7
	Still birth	2	0.3

Table 2: Distribution of CS as per Robson classification N=664

Group	Description	Number	Percentage
1	Nullipara, single, cephalic, term pregnancy, spontaneous labor	227	34.2
2	Nullipara, single, cephalic, term, induced labor or planned CS	62	9.3
3	Multipara without uterine scar, single, cephalic, term, spontaneous labor	107	16.1
4	Multipara without uterine scar, single, cephalic, term, induced labour or planned CS	28	4.2
5	Multipara with uterine scar, single, cephalic, term	140	21.1
6	Nullipara, single, Breech presentation	28	4.2
7	Multipara, single, breech, including previous C-Section	16	2.4
8	Multiple Pregnancy	5	0.8
9	Single, abnormal lie, including previous scar	11	1.7
10	Single, Cephalic, Preterm including previous scar	40	6.0

Table 3: Indication of Caesarean section N=664

Indication	Number	Percentage
Cephalo-pelvic disproportion (CPD)	191	28.8
Fetal Distress	165	24.8
Previous CS	145	21.8
Mal-presentation	44	6.6
Failed induction of labor	51	7.7
Abnormal lie	16	2.4
Oligohydraminous	31	4.7
Others	21	3.2

As per the study the rate of CS was 40.45%. The common age groups of women were 26-30 years who had CS with Median age of 25±4.9SD (Table. 1). More than 91% of CS was term pregnancy. About 339 (51.1%) of CS were nulliparous. The majority (73.5%) of CS were spontaneous, while only 2% were induced. About 91.6% fetal presentation was Cephalic. Almost 76 % were emergency CS. Almost all (99.7%) were live birth (Table. 1).

A total of 227 (34.2%) of the CS were classified under Group 1 as per Robson classification, which contributed the highest number, followed by group 5 (21.1%) and group 3 (16.1%). While only 5 (0.8%) of the CS were under Group 8 being the lowest number.

The commonest indication of CS was cephalo-pelvic disproportion (CPD) with 28.8%, followed by fetal distress being the second commonest indication with 24.8% and Previous CS with 21.8% (Table 3).

Discussions

Robson's Ten Group Classification System was recommended by WHO in 2015, as a global standard tool for assessing, monitoring and comparing CS rates between and within health care facilities and countries.[10] It is very essential to track and evaluate the CS rate over a period of time to compare and make necessary improvement with aim to lower overall CS rate.[17,18] Looking at the leading group as per the study results (Group 1- 34.2%) shows resemblance to other studies conducted in Nepal.[19,20]

According to the WHO's 2017 Implementation Manual on assessing population types using the Robson classification, the combined size of groups 1 and 2 in the study (44%) was slightly above the range specified by the Robson guidelines (35-42%).[21] Likewise, the size of Group 5 of the study was 21.1% is a reflection of overall high rate of CS in the past years. Similarly looking at the ratio of Group 1 vs group 2 which is 3.6 of the study is higher than set by Robson guidelines (2: 1) is a reflection of more accuracy of data collected.[21] The ratio of Group 3 vs Group 4, which is 3.8, exceeds the ratio of Group 1 vs Group 2 which further supports the data's reliability and reflects the organization's culture.[21]

As the combination of group 1, 3 and 5 contributes to more than 71 % of total CS, these group remains to be the main focus in regards to reduction of CS with possible risk factors being identified and adhering to evidence based labor care guide. Also the high rate of group 5 emphasizes the importance of promoting VBAC in subsequent pregnancy.

As this study is conducted in a government academia and as all the CS performed are free of cost, as a strength of the study there is no monetary issue as a confounding factor in determining the indication or CS rate. In addition, as institute greatly serves more to rural and sub urban population, vaginal delivery still remains to be the choice among the clients and which address the majority being emergency CS and its absolute need. As a limitation of our study the study does not include subdivision of subgroup of 2, 4 and 5. The other limitation of the study identified was inadequate record keeping that contributed to almost 7.7 % of the clients being excluded from the study. This recognizes the need of proper documentation as well as

electronic medical record keeping (EMR) in the institute.

There is some limitation in this study, as it does not explain the indication of CS for each groups of RTGCS.

Conclusion

The study concludes as per RTGCS, group 1 remains to be the leading group. To address the rising rate of CS, it is mandatory to follow an evidence based labor care guide and promote instrumental deliveries. In addition, as group 5 remains to the second largest contributing group and as the CS rate is more than 40%, this will definitely lead to markedly rise in size of group 5 in near future. This trend of distribution of CS also emphasizes the importance of practice of vaginal birth after Caesarean (VBAC) in the institute.

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