



A study on analysis of cesarean section rate using Robson ten group criteria in a rural tertiary centre Karnataka

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Abstract

Introduction: Cesarean delivery is one of the most widely performed surgical procedures in obstetrics worldwide. There is a progressive increase in cesarean deliveries across the world, both in developed as well as in developing countries¹. There was an upward trend in the cesarean delivery rate as there were no reliable and internationally standardized data enabling a global comparison for the indications of cesarean deliveries. Hence, in 2014, the WHO proposes the Robson Ten Group Classification system as a global standard for assessing, monitoring, and comparing cesarean delivery rates within healthcare facilities over time and between facilities.⁴

Methodology: This was a retrospective study on 196 patients undergoing cesarean delivery over a period of 6 months and were classified according to Robson's 10 group classification in a rural tertiary care hospital in Dakshina Kannada., to see which clinically relevant groups contributed most to the cesarean deliveries.

Results: In the present study, the age distribution was between 19 years and 41 years with a maximum of 120 patients in the age group was 21-30 years accounting for 61.2%. Most of them belonged to the lower class and were unemployed. 85.71 % of the CS was done between 37 and 40 weeks of gestation, many of them were done electively (60.2%). 59.7% of the study population were multiparous women with the most common indication of repeat CS (40.3%). 40.3% of the study population were nulliparous with the most common indication for CS among them being fetal distress (17.3%) followed by non-progression of labor (16.3%). The maximum contribution of cesarean was through Robson's group 5.

Conclusion: Caesarean section rate can be reduced by combined efforts at all levels and by encouraging hospital vaginal deliveries of all the primigravida, grand multiparous pregnant women, and those who had previous cesarean section by providing adequate maternal and fetal monitoring during labor and round the clock operative facilities and blood bank facilities in all public and private health institutions.

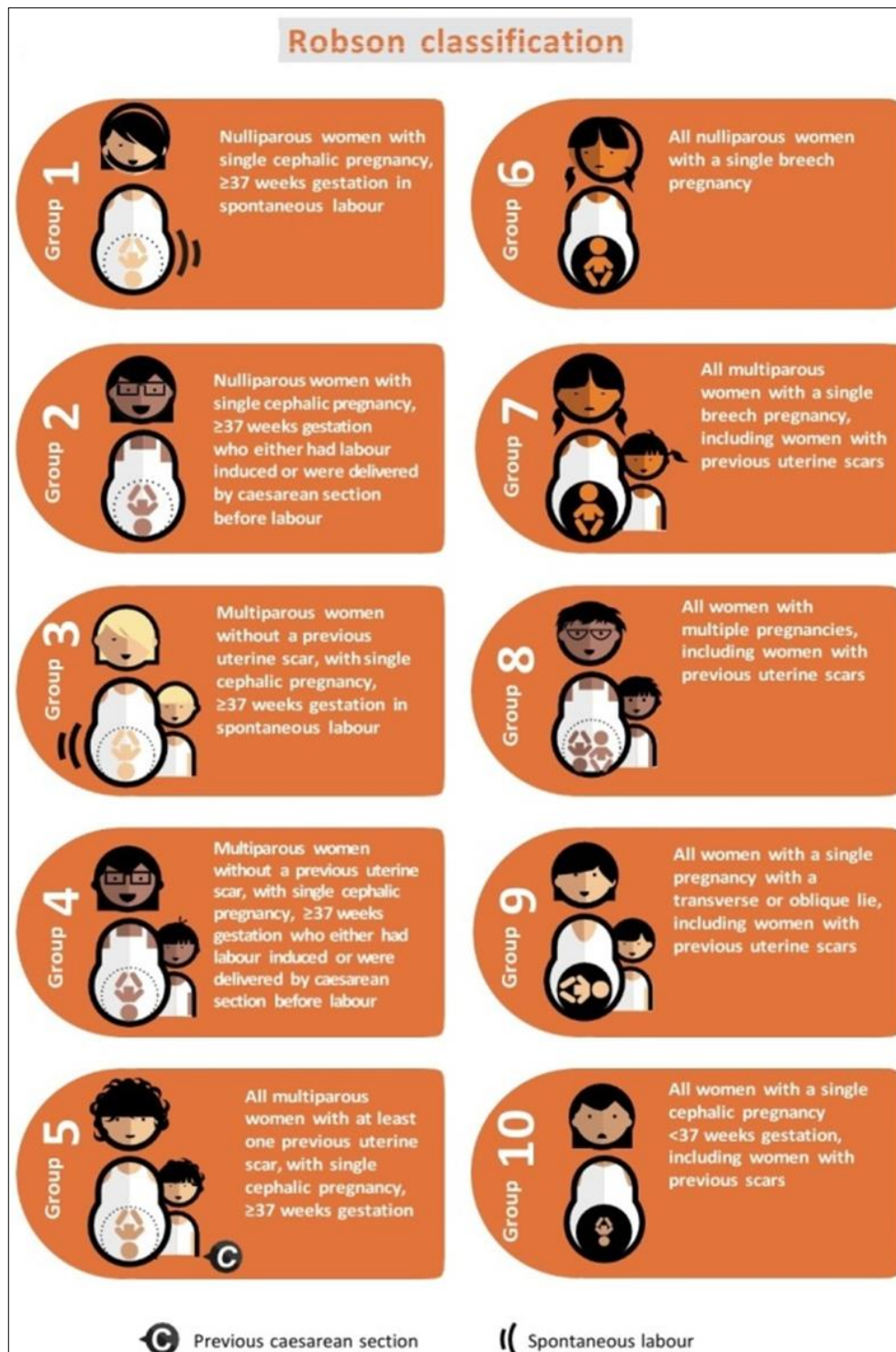
Keywords: cesarean section, fetal distress, non-progression of labor, robson classification

Introduction

Cesarean delivery is defined as the delivery of a fetus through surgical incisions made through the abdominal wall (laparotomy) and the uterine wall (hysterotomy). Cesarean delivery is one of the most widely performed surgical procedures in obstetrics worldwide. It was mainly evolved to save the life of the mother and fetus during the difficult delivery. In 1985 the International Health Care Community of WHO has considered the ideal rate for cesarean sections to be between 10% and 15%. There is a progressive increase in cesarean delivery rates across the world, both in developed as well as in developing countries^[1]. The rapid increase in cesarean birth rates from 1996 to 2014 without clear evidence of a concomitant decrease in maternal or neonatal morbidity or mortality raises significant concern that cesarean delivery is overused. Worries over such increases have led the World Health Organization to advise that Cesarean Section (CS) rates should not be more than 15%,^[2] with some evidence that CS rates above 15% are not associated with additional reduction in maternal and neonatal mortality and morbidity^[3].

There was an upward trend in the cesarean delivery rate as there were no reliable and internationally standardized data enabling a global comparison for the indications of cesarean deliveries. Hence, in 2014, the WHO proposes the Robson Ten Group Classification system as a global standard for assessing, monitoring, and comparing cesarean delivery rates within healthcare facilities over time and between facilities^[4].

The system classifies all women into one of 10 categories that are mutually exclusive and, as a set, totally comprehensive. The categories are based on 5 basic obstetric characteristics that are routinely collected in all maternities (parity, number of fetuses, previous cesarean section, onset of labor, gestational age, and fetal presentation).

Table 1: Robson's 10 group classification system

WHO expects that this classification will help healthcare facilities to

- Identify and analyze the groups of women which contribute most and least to overall cesarean delivery rates
- Compare practice in these groups of women with other units who have more desirable results and consider changes in practice
- Assess the effectiveness of strategies or interventions targeted at optimizing the use of cesarean section
- Assess the quality of care and clinical management practices by analyzing outcomes by groups of women
- Assess the quality of the data collected and raise staff awareness about the importance of this data, its interpretation, and use.

Several reasons can explain variations in institutional rates of CS. These include the inherent differences in patient characteristics, type of institution, and available resources. In addition, institutional differences in obstetric practice and pregnancy and labor management protocols can account for this variation ^[5]. Therefore, population-based CS rates should not be considered as recommended targets at the facility level. Indeed, systems

designed to monitor cesarean section rates at facilities should take into account these differences. CS rates should no longer be thought of as being too high or too low but rather whether or not they are appropriate. Thus, CS should only be conducted based on medical indications, and efforts should be directed towards improving access to all women in need rather than striving to achieve an arbitrary rate [6, 7].

Because of its advantages and simplicity, the WHO and the International Federation of Gynecology and Obstetrics (FIGO) recommend the Robson classification system as a global standard for assessing, monitoring, and comparing CS rates among nations and within institutions over time, and between institutions, regardless of their level of complexity [5, 7, 8]. According to the American College of Obstetrics and Gynecologists, the highest variation occurs among nulliparous women with term singleton fetus with cephalic presentation and without other complications. High-risk patients have much lower variation in cesarean delivery rates between practitioners and hospitals. The maternal and fetal morbidity and mortality varies according to the type of cesarean section done. Naturally, it is more in the emergency cesarean section [9]. The present study was undertaken to analyze the different indications of cesarean section operations according to Robson Ten Group Classification in a rural tertiary care hospital in Dakshina Kannada.

Aim of the study

To analyze the indications of the cesarean section using Robson Ten Group Classification.

Methods and Methodology

Source of data: This was a retrospective study on 196 patients undergoing cesarean delivery over a period of 6 months from July 2021 to December 2021 in the Department of Obstetrics and Gynaecology in K V G Medical College, Sullia, Dakshina Kannada and were classified according to Robson's 10 group classification, to see which clinically relevant groups contributed most to the cesarean deliveries. All the data was retrieved and entered in a preformed structured proforma.

Inclusion criteria: All the pregnant women who underwent cesarean section during the study period.

Patients delivered by cesarean section during the given period were recorded and classified according to Robson's 10 group classification system as given in Table 1. The parameters considered were according to the classification system-Parity (with/ without previous CS),

Gestational age (>37 weeks /<36 weeks), Fetal presentation (cephalic/ breech / abnormal lie),

Number of fetuses (singleton/ multiple), Onset of labour (spontaneous/ induced / prelabour CS). (Table I).

Exclusion criteria: Deliveries by other than the cesarean section.

Data collected were analyzed using simple statistical measures like percentage and proportion. Descriptive statistical analysis was done. The study was conducted after taking approval from the institutional ethical committee.

Results

In the present study, the age distribution was between 19 years and 41 years with a maximum 120 number of patients in the age group was 21-30 years accounting to 61.2% followed by 72 patients in the age group of 31-40 years and only 3 patients each below 20 years and only 1 patient above 39 years which shows that more than half of the cases underwent cesarean section were in the age group of 21-30 years. (Table 2) Most of them belonged to the lower class and were unemployed. 85.71 % were done between 37 and 40 weeks of gestation, many of them were done electively (60.2%). 59.7% of the patients were multiparous women with the most common indication of repeat LSCS (40.3%).40.3% of the study population were nulliparous with the most common indication for LSCS among them being fetal distress (17.3%) followed by non-progression of labor (16.3%).

Table 2: Socio-demographic characteristic of the study population

Parameters	Variable	Number of patients	%
Age	<20	3	1.5
	21-30	120	61.2
	31-40	72	36.7
	>41	1	.5
	Total	196	100.0
SES	Lower Class	102	52.0
	Middle Class	91	46.4
	Upper Class	3	1.5
	Total	196	100.0
Occupation	Unemployed	139	70.9
	Skilled Worker	13	6.6
	Professional	44	22.44
	Total	196	100.0

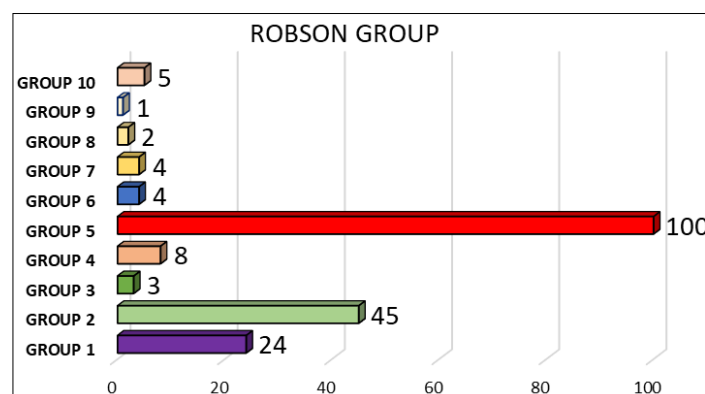
Gestational age	< 37 Weeks	11	5.61
	37-40 Weeks	168	85.71
	>40 Weeks	17	8.67
	Total	198	100.0
Parity	MULTIPAROUS	117	59.7
	NULLIPAROUS	79	40.3
	Total	196	100.0
Onset of labor	ELECTIVE	118	60.2
	EMERGENCY	78	39.8
	Total	196	100.0

Table 3: Indication of LSCS

Indication of LSCS	Number of patients	%
APH	1	0.5
Breech	7	3.6
Breech, Prev LSCS	1	0.5
CPD	3	1.5
Fetal distress	34	17.3
IUGR	1	0.5
IUGR with OLIGO	1	0.5
Maternal request	10	5.1
NPOL	32	16.3
PIH	1	0.5
Placenta previa	1	0.5
Prev LSCS	79	40.30
PREV LSCS with breech	1	0.5
Severe OLIGO	1	0.5
Transverse LIE	1	0.5
Twin with breech	1	0.5
Total	196	100.0

There were 10 cesarean sections on maternal request which was about 5.1 percent. The maximum contribution of cesarean was through Robson's group 5 that is multiparous with prior cesarean section, singleton, cephalic, ≥ 37 weeks followed by group 2 that is nulliparous, singleton, cephalic, ≥ 37 weeks, induced labor or cesarean section before labor. Induction of labor increased the chances of cesarean section. The cesarean section rate in group 1 (nulliparous, singleton, cephalic, ≥ 37 weeks, spontaneous labor) (12.2 %) and group 3 (multiparous without previous cesarean section, singleton, cephalic, ≥ 37 weeks, spontaneous labor) (1.5 %) was less as they came in spontaneous labor as compared with group 2 (nulliparous, singleton, cephalic, ≥ 37 weeks, induced labor or cesarean section before labor) (23.0%) and group 4 (multiparous without previous cesarean section, singleton, cephalic, ≥ 37 weeks, induced labor or cesarean section before labor) (4.1%) respectively where the labor was induced. There was an increased contribution of cesarean section by group 5 (multiparous with prior cesarean section, singleton, cephalic, ≥ 37 weeks) and group 2 (nulliparous, singleton, cephalic, ≥ 37 weeks, induced labor or cesarean section before labor) which was 51 and 23 percent respectively as seen in the present study. The rate of cesarean section increases in patients with previous cesarean sections (group 5). Although these patients were offered a trial of labor, the rate of refusal by these patients for a trial of labor was high.

Group 6: Robson group

**Fig 1**

Discussion

The cesarean birth rate in India has crossed the WHO threshold of 15% says the data collected by the Government of India. In India since the last two decades, cesarean deliveries have been doubled at both public and private facilities. According to the data collected by the Union Ministry of Health and Family Welfare under the Health Management and Information System, the estimate of cesarean section rates in India was just 11.7% in the year 2008-2009 increased to 23.85% in the year 2018-2019. India has registered a jump of over 311 percent in cesarean deliveries at public hospitals and 413 percent in private hospitals over the last decade.

Standardization and classification of cesarean deliveries were done according to Robson's criteria as an attempt to see which clinically relevant groups contributed the most to the cesarean deliveries.

Vogel et al analyzed the contributions of specific groups through Robson's 10 group classification system in 2 WHO multi-country surveys and concluded the proportion of women with previous cesarean section has increased along with the cesarean section rate in these women as we see in the present study [10]. Similarly, the use of induction and pre-labor cesarean section and cesarean section after induction in multiparous has also increased according to them.

Table 4: Comparison between the studies

Robson group	Kant A et al [11]	Present study
Group 1	21.47 %	12.2 %
Group 2	28.44 %	2.30 %
Group 3	9.79 %	1.5 %
Group 4	5.83 %	4.1 %
Group 5	20.53 %	51.0 %
Group 6	1.12 %	2.0 %
Group 7	0.38 %	2.0 %
Group 8	1.7 %	1.0 %
Group 9	0.38 %	0.5 %
Group 10	1.04 %	2.6 %

In our study, 51% of the study population belonged to Robson's group 5 that is multiparous with prior cesarean section, singleton, cephalic, ≥ 37 weeks so, to reduce the rates of repeat cesarean deliveries, we should evaluate on daily basis the indication of primary cesarean section. This will not only decrease the cesarean section in nulliparous but will also eventually decrease cesarean section in multiparous with previous cesarean section. There is an increase in the trend of cesarean section on maternal requests. Healthcare providers must be aware of the importance and consequences of decisions about the mode of delivery, as neither method is devoid of risks. Accepting maternal choice as the sole determinant of the method of delivery is probably doing pregnant women a disservice and may constitute a lack of responsibility. Conflicts between maternal and fetal interests are potentially complex, ethically and emotionally, and difficult to resolve. Doctors, midwives, and childbirth educators must give full and honest advice based on the available information.

To suggest that one cesarean section rate (15%) is optimal for all populations in all countries cannot be sound. What matters most is that those women who need a cesarean section get one under optimum conditions and that those who do not need a section get appropriate care and support through labor.

Only then will we minimize damage and maximize satisfaction.

There is a consensus (National Institute for Health and Care Excellence [NICE], Royal College of Obstetricians and Gynaecologists [RCOG], American College of Obstetricians and Gynecologists [ACOG]/ National Institutes of Health [NIH] that planned VBAC is a clinically safe choice for the majority of women with a single previous lower segment cesarean delivery. Use of specialist antenatal clinics designed to guide and support women through the informed decision-making process on the mode of birth after a primary cesarean delivery has been found to improve VBAC attempt rates in Australia.

Cesarean audit to be done in an institution regularly to ensure the quality and monitor the outcomes. It should include the rates, indications, and complications of the procedure. TOLAC should be kept as an option for all women with previous lscs with a low transverse scar. External cephalic version for breech at around 36 weeks. In case of maternal request, the health care providers should counsel the mother based on the available information and if possible, encourage her to go for vaginal delivery. All elective lscs to be planned after 39 weeks of GA preferably when she goes into labor. There is a need to evaluate the proportion of women who were offered a trial of labor and the success rate of VBAC. This will enable the design and implementation of antenatal counseling strategies and labor-management protocols, reducing the number of repeat CS. Implementation of standard labor management strategies can reduce the primary cesarean section rate without compromising maternal and fetal safety. Women should be given more time to give birth was the 2018 WHO new advice to reduce cesarean section rates, Stop rushing women in Labour was a warning that too many are being pushed into cesarean sections without giving adequate time for vaginal birth [12].

Limitations

Small sample size hence the findings cannot be generalizable.

The findings from RTGCS are only a starting point and should be viewed as a means, not an end. We now have a clear insight about “who” is having CS but not “why” the CS is being performed. Crucial variables such as indications, maternal and perinatal outcomes, are not incorporated, limiting the extent to which conclusions can be drawn from our study.

Conclusion

Use of the Robson criteria allows standardized comparisons of data across countries and timepoints and identifies the subpopulations driving changes in cesarean section rates. Women who have previously had a cesarean section are an increasingly important determinant of overall cesarean section rates in countries with a moderate or low HDI.

Strategies to reduce the frequency of the procedure should include avoidance of medically unnecessary primary cesarean section. Improved case selection for induction and prelabour cesarean section could also reduce cesarean section rates.

Cesarean section rate can be reduced by combined efforts at all levels and by encouraging hospital vaginal deliveries of all the primigravida, grand multiparous pregnant women and those who had previous cesarean section by providing adequate maternal and fetal monitoring during labor and round the clock operative facilities and blood bank facilities in all public and private health institutions. Government should improve the existing health facilities so that antenatal and delivery services should be provided to all the pregnant women in society.

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