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Original Research Article

Analysis of caesarean section rate using WHO's Robson's 10-group classification system: a hospital based retrospective study

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ABSTRACT

Background: Maternal morbidity and mortality has been an utmost priority worldwide as it is an indicator of healthcare system. In order to bring it down, it has become the need of the hour to decrease the number of caesarean sections as it is one of the most common cause of morbidity among women. Every institution should have an audit to determine the rate of caesarean section and corresponding indications in order to implement new protocols or modify existing ones to improve caesarean section rates.
Methods: All women who underwent caesarean section between time period Jan 2015- Dec 2019 were included. All vaginal deliveries were excluded. Delivery and operative registers, logbooks and online entries were used for data collection in the obstetric and gynecologic department. A retrospective data collection was done, tabulated and entered in excel sheet.
Results: Robson's group 1, group 2, group 5 were the main contributors to overall caesarean section rate. The major indications for caesarean section were found to be as previous caesarean section (33%), non-progress of labor (22%) followed by meconium stained liquor, cephalopelvic disproportion both around 10%.
Conclusions: Robson's group 1, group 2, group 5 were the main contributors to the overall caesarean section rate. The major indications for caesarean section were found as previous caesarean section and non-progress of labor. Further studies are needed for comparison and to make amendments to protocols.

Keywords: Caesarean section, Robson's classification, Retrospective study

INTRODUCTION

Every fifth woman in this world is undergoing caesarean section.[1] Cut off percentage for caesarean section has not been well defined. Clinical audits will help to determine and make timely interventions to effectively bring down caesarean section rates and morbidity. Robson classification system proposed by WHO in the year 2015 classifies into ten groups of patients who underwent caesarean section which are mutually exclusive .[2] It has acquired great acceptance in various setting due to ease and appropriate categorization of patients.[3,4] It has been a worldwide recommendation by World Health Organization (WHO) and the International Federation of Gynecology and Obstetrics (FIGO) society for standardizing, assessment and uniform comparison.[5,6]

In 1985, World Health Organization (WHO) meeting held in Fortaleza, Brazil, stated that caesarean section (CS) rates higher than 15% could hardly be justified from a medical standpoint.[7] At all India level, the CS rate has increased from 2.9 percent of the childbirth in 1992-93 to 7.1% in 1998-99 and further rise to 8.5% in 2005-06 and a steady rise to 17.2% in 2015-16 with an annual average rate of increase of 8%. According to the recent NFHS 4, the average rate of C-section in India is 17.2% ranging

Table 1: Robson classification.

Group	Description
1	Nullipara, singleton cephalic, ≥37 weeks, spontaneous labour
2	Nullipara, singleton ,cephalic, ≥37 weeks A: induced B:caesarean section before labour
3	Multipara, singleton, cephalic, ≥ 37 weeks, spontaneous labour
4	Multipara, singleton cephalic, ≥ 37 weeks A: induced B: caesarean section before labour
5	Previous caesarean section, singleton cephalic, ≥37 weeks A: spontaneous labour B: induced labour C: caesarean section before labour
6	All nulliparous breeches A: spontaneous labour B: induced labour C: caesarean section before labour
7	All multiparous breeches (including previous caesarean section) A: spontaneous labour B: induced labour C: caesarean section before labour
8	All multiple pregnancies A: spontaneous labour B: induced labour C: caesarean section before labour
9	All abnormal lies (including previous caesarean section but excluding breech A: spontaneous labour B: induced labour C: caesarean section before labour
10	All singleton cephalic, ≤ 36 weeks (including previous caesarean section) A: spontaneous labour B: induced labour C: caesarean section before labour

Source: Robson classification: implementation manual-WHO

from 5.8% in Nagaland to 58.0% in Telangana. 45% underwent caesarean section post onset of labor while 55% preterm. The difference in C-section delivery from NFHS-1 (National Family Health Survey) to NFHS-4 shows that 7 states has CS rate that is more than 30%, eight states has CS rate in between 10% and 20% and nine states less than 10%. There is an alarming increase in CS rates in India and interstate and regional variations in CS rates. 8The data of NFHS-5 is yet to be released.

Objective of the study was to determine rate of caesarean section and classifying each indication of caesarean section according to Robson's classification.

METHODS

A retrospective type of study was done in the department of obstetrics and gynecology, Bhabha Atomic Research Centre and Hospital, Mumbai. Study was conducted after appropriate scientific and ethical committee approval. All women who underwent caesarean section between time period January 2015 - December 2019 were included in the study. Data collection was done by referring delivery and operative registers, logbooks and online entries maintained in the department. The obtained data was tabulated into categories for analysis.

Statistical analysis

Data tabulated in excel sheet and statistical analysis done, results stated in terms of total number, mean and percentages over 5 years (January 2015-Deccember 2019). The results are presented in table form.

RESULTS

As it is clearly seen, the incidence of emergency sections have been persistently high since past 5 years with an average rate of 60% emergency sections and 39% elective sections. Average rate of 49% caesarean sections over past 5 years.

It is clearly observed that previous caesarean sections (CS), non-progress of labor (NPOL) and meconium stained liqor were the most common indications accounting for 33%, 22% and 10% respectively.

Rest of indications being cephalopelvic disproportion, meconium stained liqor and malpresentation.

Table 2: Incidence of emergency and elective sections.

Year	Total confinements	Emergency CS	%	Elective CS	%	Total	%
2015	420	120	60.9	77	39.1	197	46.9
2016	451	155	67.6	74	32.4	229	50.7
2017	411	120	61.2	76	38.8	196	47.6
2018	441	124	58.7	87	41.3	211	47.8
2019	475	129	56.8	98	43.2	227	47.7
Total	2198	648	61.13	412	38.86	1060	48.2

Table 3: Indications of caesarean section.

Year	Previous CS (33%)	CPD (10%)	NPOL (22%)	Fetal distress (8%)	Meconium Stained Liqor (10%)	Oligohydra-mnious (4%)	Malpresen-tation (3%)	Others (10%)
2015	65	19	43	15	20	8	6	21
2016	75	23	50	18	23	9	7	24
2017	66	18	40	17	18	7	8	22
2018	72	22	48	24	17	5	4	19
2019	73	25	47	20	21	6	8	27
Total	351	107	228	84	99	35	33	113

Table 4: Incidence of various groups according to Robson classification.

Group	Incidence (%)
One	17
Two	22.1
Three	3
Four	4.4
Five	22.5
Six	6
Seven	3.4
Eight	3.2
Nine	3.4
Ten	15

Post data analysis, it was found that robson's group 1, 2 and 5 were the most common groups among all when classified according to robson's criteria while rest of groups constituted a small number.

Table 5: Important parameters and respective rates.

Parameter	Group	Percentage
Age	<20 yrs	5.2
	20-35	84.3
	>35	10.5
Type of CS	Emergency	62.1
	Elective	37.9
Parity	Primigravida	56
	Multigravida	54
Gestational age	Preterm (≤ 36 weeks)	22
	Term	78
Onset of labor	Spontaneous	48
	Induction of labor	52
Presentation	Cephalic	90
	Breech, transverse, oblique	10

It can be seen that majority were among age group 20-35 years, women who underwent emergency sections, term gestation and induced labor underwent more caesarean sections when compared to below 20yrs, above 35 years, elective sections, preterm and spontaneous labor.

DISCUSSION

In order to decrease morbidity associated with rising caesarean section rate, it is indeed important to scrutinize all caesarean sections pertaining to intrapartum course, indications and postoperative recovery.

The maximum contributors of caesarean deliveries in this study were by groups 1, 2 and 5. Similarly, a study in Brazil which is comparable to India in terms of socioeconomic development, women with a history of previous caesarean at term with cephalic presentation (group 5) and primigravidas, cephalic presentation and >37 weeks gestation (group 1,2) were the most common groups.[9]

In India as well, a study conducted in a community center has examined caesarean deliveries of over a decade. In it, around 10,093 caesareans were analyzed and all deliveries were classified as per the Robson's system. Accordingly, they found that the largest contributors to total caesarean sections were groups 1, 5 and 3 (37.62 %, 17.06 % and 15 % respectively). This greater number of group 5 and less number of group 2 probably may be explained by the fact that the community centers usually cater to low risk women and have fewer inductions and trial of labor for previous caesarean sections as in India referrals are mostly for high risk pregnancies.[10]

According to a similar study done by Tripathi et al, in New Delhi over a 5 year period data analysis, all women with one or more previous caesareans with cephalic presentation (group 5) contributed to the maximum number of caesareans (32.5%), closely followed by group 1 (22.86%) and group 2 (10.25%). 31.65% of the total caesareans were elective cases, 17.23% were in women with inductions and 51.1% of the caesareans were in spontaneously laboring women.[11]

In the present study, around 33 % of all caesareans were done for previous caesarean section 22% for non-progress of labor and 10% for meconium stained liquor.

Some important points needs no less emphasis like labour ward protocols to decrease caesarean section rates at an institutional level keeping in mind the available resources is important. All meconium stained liquors or all non-reassuring fetal heart patterns do not necessarily require a caesarean.

Risk versus benefit needs to be weighed without compromising on maternal and perinatal outcome. More need for adequate training for emergency procedures, operative vaginal deliveries and interpretation of cardiotopograph cannot be less emphasized. Although, fetal blood sampling helps to decrease unnecessary cesareans depicting good condition of fetus in case of abnormal cardiotopograph, fetal scalp stimulation is also useful.[12]

Classification under the Robson's system is the first step on the path to reduce caesarean rates. It is only through regular analysis that relevant group specific measures can be introduced, changes implemented and repeat audit needs to be done to measure the impact. The major drawback of Robson's system is that it does not include the neonatal morbidity or any maternal high risk factors. Thus, ignoring a significant number of caesarean deliveries taking place for maternal or neonatal high risk factors. In this era of patient autonomy, the concept of caesarean on demand also comes as a huge setback for improvement in areas of precious pregnancy and trial of labor for previous caesarean delivery.[13]

Limitation of study was a large study population would give better understanding and help in comparison of studies. Further studies are required to involve perinatal outcome and maternal outcome.

CONCLUSION

All deliveries and caesareans should be universally categorized by the Robson's system for standardization and comparison. Interventions should be targeted at reducing primary caesareans and encouraging patients for trial of labor for previous caesareans where possible.

Institutional protocols have to be defined, inductions and caesarean deliveries to be done for justified indications. A regular audit should be done in all institutions to rationalize caesarean rates. Impact of interventions to reduce caesarean rates should be studied and documented for future reference.

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