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Original Research Article

The ten group Robson classification: a retrospective study to identify strategies to optimise caesarean section rates

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ABSTRACT

Background: Caesarean section rates have been increasing worldwide. For proper assessment, the ten group Robson classification is recommended by WHO for assessing CS rates. We are analyzing the caesarean section rates by classifying the caesarean sections using modified Robson's ten group classification. Objective of the current study was to estimate caesarean section rates in our hospital and to classify caesarean section using modified Robson's ten group classification system.

Methods: Current retrospective study was conducted in the department of obstetrics and gynaecology in a tertiary care hospital. The medical records were reviewed for a period of 12 months.

Results: Total number of deliveries during the study period was 315. The total numbers of caesarean section were 159 and total vaginal deliveries were 156. The caesarean section rate was 50.47%. The main contributors to overall caesarean section rate were group 5 (18.10%), group 2 (13.96%) and group 1 (5.71%). Women with one previous LSCS contributed majorly to the caesarean section rate. Higher CS rate was also seen in both group 2A (69.40%) and group 4A (47.30%) which had underwent induction of labour. More inclination towards trial of labour following CS for women with previous one LSCS can lower CS rates.

Conclusions: Modified Robson's classification is easily implementable and an effective tool for ongoing surveillance. The results can be compared between Institutions, states and countries. Having implemented the Robson classification and identified groups which contributed the most to the overall CS rate, interventions to reduce the same has to be our prime objective.

Keywords: Caesarean section, Robson classification, Induction of labour, Vaginal deliveries

INTRODUCTION

Caesarean section (CS) rates have been increasing worldwide and have caused concerns.¹ Over the past 4.5 decades there has been dramatic increase in the caesarean section rates in both, developed as well as developing countries. This increase has been a subject of considerable debate. In 1985 WHO has proposed the ideal rate for caesarean section to be between 10-15%.² The purpose of classification of woman into different groups is to identify woman where effective strategies like changing labour management protocols may help to optimize caesarean section rate. Dr. Michael Robson in

2011 proposed a need to adopt a standard classification system for easy comparison and improvement of obstetric care and introduced Robson classification to achieve this. For meaningful comparisons to be made world health organization recommends the use of the ten-group Robson classification as the global standard for assessing CS rates.² We are analyzing the caesarean section rates by classifying the caesarean sections using modified Robson's ten group classification. It is important to evaluate whether the modified Robson's classification is feasible one to use in our setting and if so, it could be used for a common classification system for caesarean

section. This constitutes the matter of the research being proposed.

METHODS

The aims and objectives of current study were to estimate caesarean section rates in our hospital and to classify caesarean sections by using modified Robson’s ten group classification system.

Current study is a descriptive retrospective study which was conducted in the department of obstetrics and gynaecology in DM Wayanad institute of medical sciences, Wayanad, Kerala. The medical records were reviewed for a period of 12 months from January 2019 to December 2019.

Inclusion criteria

All pregnant women who had crossed the period of viability delivered during January 2019 to December 2019 were enrolled and classified according to Robson’s classification system as given in (Figure 1).

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

Figure 1: Robson’s ten group classification system.

The following variables as per Robson’s classification system were collected; details regarding parity, gestational age, mode of previous deliveries, onset of labour, lie, presentation, mode of delivery, indication for caesarean section.

Overall CS rate, relative size of each group and relative contribution of each group to the overall CS rate were calculated. After obtaining ethical clearance from the ethical committee of the institution, data was collected and entered in Microsoft excel sheet and was later analyzed using statistical SPSS 20 software, appropriate statistical tests were applied to analyze the data.

RESULTS

Total number of deliveries during the study period was 315. The total number of caesarean sections was 159 and total vaginal deliveries were 156. The caesarean section rate was 50.47%. Vaginal delivery rate was 49.52%. Caesarean section rate in this study is 50.47% which is higher than the WHO standards. Distribution of deliveries across ten groups is shown in (Figure 2).

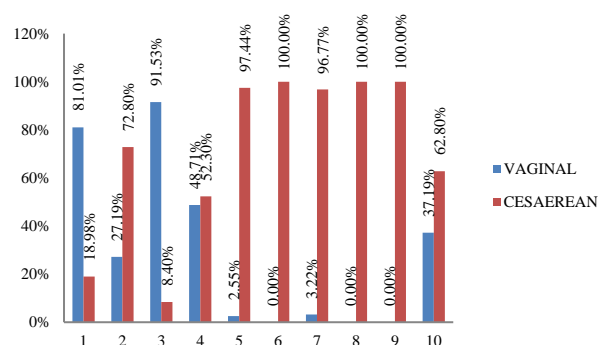


Figure 2: Distribution of deliveries across the ten groups.

The contribution of group 1 to overall caesarean section rate is 5.714 %. The contribution of group 5 to overall caesarean section rate is 18.10%. This group is the major contributor to the caesarean section rate. CS rate in this group was 97.44%. 99.32% of women had caesarean section before onset of labour. The contribution of group 3, 4 and 6 to overall caesarean section rate is 0.63 %, 3.49% and 2.85% respectively. Contribution of each group of Robson’s classification to overall caesarean section rates is shown in (Figure 3).

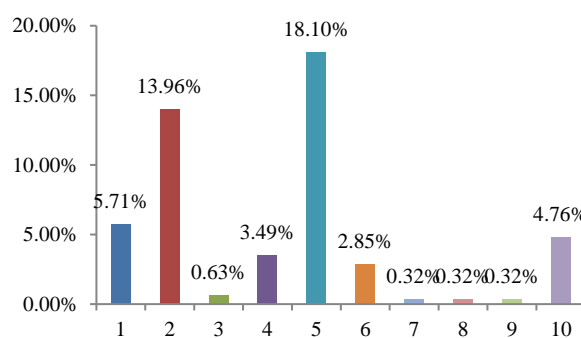


Figure 3: Contribution of each group of Robson’s classification to overall caesarean section rates.

Table 1: Caesarean section rate by ten group Robson classification.

	Relative size of groups (% of total number of births).	CS rate in each groups. (%)	Contribution made by each group to overall CS rate. (%)
Group 1, nulliparous, single, cephalic, ≥37 weeks, spontaneous labour	16.4	18.98	5.71
Group 2, nulliparous, single cephalic, ≥37 weeks	22.5	72.80	13.96
Induced	14.7	69.4	
CS before labour.	7.8	97.60	
Group 3, multiparous, single, cephalic, ≥37 weeks, spontaneous labour	21.1	8.40	0.63
Group 4, multiparous, single, cephalic, ≥37 weeks	11.2	52.30	3.49
Induced	6.9	47.3	
CS before labour	4.3	80.7	
Group 5, previous CS, singleton, cephalic, ≥37 weeks	14.9	97.44	18.10
Spontaneous labour	5.3	91.40	
Induced	2.1	100	
CS before labour	7.5	99.32	
Group 6, All nulliparous breeches		100	2.85
Spontaneous labour	1.2	100	
Induced		0.00	
CS before labour		100	
Group 7, all multiparous breeches*		96.77	0.32
Spontaneous labour	1.9	91.66	
Induced		0.00	
CS before labour		100	
Group 8, all multiple pregnancies*		100	0.32
Spontaneous labour	2.1	0.00	
Induced		0.00	
CS before labour		100	
Group 9, all abnormal lies*		100	0.32
Spontaneous labour		0.00	
Induced	0.9	0.00	
CS before labour		100	
Group 10, all singleton cephalic, ≤36 weeks*		62.80	4.76
Spontaneous labour	7.8	38.70	
Induced		64.78	
CS before labour		95.50	
Total	100		50.47

*Groups 7-10 include women with previous CS.

The next major contributor to overall caesarean rate is by group 2 which is 13.96%. This group includes

nulliparous, singleton, cephalic induced or section done before labour. CS rate was 14.7% in induced group which

was more than expected. Group 7, 8 and 9 contributed equally in CS rate, which was 0.317%. The contribution of group 10 to overall caesarean section rate is 4.76%. This group is important as it is often quoted by many tertiary referral units as to reason that their caesarean section rate is high. The size of the group is usually 4 to 5% of total and may indeed be higher up to 10% in some tertiary referral units. The rate of caesarean section in each group is shown in (Table 1).

DISCUSSION

WHO stated in 1985 that no region should exceed rates higher than 10-15% of caesarean sections.² But the caesarean section rate in our study is 50.47% which is about thrice the expected. This classification helps us to identify groups which contributed the most to the overall CS rate. There by quality improvement activity could be implemented to modify the caesarean section rate in a particular group.

It is evident that, the caesarean section rate in group 2 and 4 is more than group 1 and 3. There is a rising trend in the incidence of induction of labour.³ This implies that induction of labour was associated with increased caesarean section rates. Strategies to reduce this have to be implemented. Proper management of labour, indication for induction, methods used for induction and the criteria used for failed induction has to be defined stringently. Any reduction in caesarean section in this group would reduce CS rate not only in the present condition, but would also reduce number of women in group 5 in the future years.⁴

Group 3 and 1 had lower CS rate of 0.63% and 5.71% indicating multiparous women who were induced or who came in spontaneous labour had higher vaginal delivery rate. This also shows that nulliparous women in spontaneous labor also had lower caesarean section rates, indicating that we are dealing with a comparatively low risk population.

A major contributor to overall caesarean section rate is group 5. This is mainly because most women with previous one LSCS undergone an elective repeat caesarean section prior to labour. Even though vaginal delivery can be tried after one LSCS, women opting for the same has been declined over years due to fear of uterine rupture.^{5,6} To reduce the caesarean section rate in group 5, a trial of labour (TOL) after caesarean section should be considered in every woman presenting for care, discussing the risk and benefits of VBAC while planning the birth and the primary sections has to be reduced.⁷

The contribution of group 6 and 7 to overall caesarean section rate is 2.85% and 0.317% respectively. Almost 100% of cases in group 6 and 96.77% in group 7 underwent caesarean section. This increase was seen post publication of term breech trial.⁸ ECV reduces a significant reduction of non cephalic births and caesarean

section. It is recommended that all women with breech presentation should be offered an ECV, after explaining the risks and benefits. Trial of labour should be considered for breech after explaining the risks and benefits. The contribution of group 9 to overall caesarean section rate is 0.317%. To decrease caesarean section in this group external version in to a breech or preferably a cephalic presentation should be attempted if the patient is at term or near term.

Robson group 1, 2 and 5 contributes to more than two third of overall caesarean section rate. In this study group 1, 2 and 5 normally contributed to two thirds of overall caesarean section rate. Induction of labour was associated with higher CS rate in both groups 2A and group 4A. In a study conducted by Samba et al at Ghana, caesarean section rate was 46.9% which is almost similar to our study.⁹ Groups 2, 4 and 5 contributed nearly half of the overall caesarean section rate which is similar in our study. According to Fatusic et al, caesarean section rate was 25.47% which was less than our study. Major contribution to caesarean section was by group 5, 2 and group 1 and it is almost similar to our study in which group 2 and group 5 are the major contributions.¹⁰ This clearly demonstrates the significance of the Robson's criteria, where different institutions and countries would have to develop different strategies to address the caesarean section rates.

Limitations

In current study, sample size was small and study was conducted at a single center and hence the course of labour was possibly influenced by our hospital protocols and limited by the facilities available. Plan of delivery for a patient with uterine scar was not clear. It does not allow analysis of CS by demand and those for specific indication like placenta previa, more over it does not account for preexisting medical and surgical conditions or fetal distress.

CONCLUSION

Modified Robson's classification is easily implementable and an effective tool for ongoing surveillance. The results can be compared between Institutions, states and countries. All hospitals and hospital authorities can use the modified Robson's classification system as a part of a quality improvement initiative to monitor caesarean section rates. Having implemented the Robson classification and identified groups which contributed the most to the overall CS rate, interventions to reduce the same has to be our prime objective.

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