ASSESSMENT OF CAESAREAN BIRTHS BASED ON ROBSON'S CRITERIA IN A RURAL INDIAN TERTIARY CARE SETTING

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Abstract

Background: Inherent to female physiology, the majority of women experience vaginal childbirth. In 1985, the World Health Organization (WHO) recommended an ideal caesarean section (LSCS) rate between 10-15%. Robson's Ten Group classification system facilitates a comprehensive analysis of caesarean births. Methods: All deliveries that occurred from May 2019 to September 2021 were categorized into one of the ten groups defined by Robson's Ten Group classification system. Subsequently, the caesarean section rate was calculated. Results: The study revealed a notable caesarean section rate of 66.3%. Particularly, Group 5 (Previous LSCS) was found to be the predominant contributor to the overall caesarean rate. Conclusion: Robson's Ten Group Classification emerges as an invaluable tool for conducting audits and, over time, curbing the incidence of caesarean deliveries.

Keywords: Childbirth, Caesarean Section, Robson's Criteria, Caesarean Section Rates.

INTRODUCTION

Inherent to their biology, most women are naturally inclined to give birth vaginally. Back in 1985, the World Health Organization (WHO) put forth the recommendation that the ideal caesarean birth rate should fall within the range of 10-15%[1]. However, in recent times, there has been a global surge in the incidence of caesarean deliveries. This escalating trend in caesarean births has raised significant concerns among both the medical community and the general public. Caesarean births not only entail pain but also carry inherent complications and can impact future pregnancy outcomes. Nevertheless, advancements in anaesthesia, pain management, and surgical techniques have improved the safety of caesarean births over time.

In 2001, Dr. Michael S. Robson[2] introduced a classification system known as Robson's Ten-Group classification system, which facilitates a thorough analysis of caesarean births. This classification system is primarily based on fundamental factors such as parity, onset of labour, gestational age, fetal presentation, number of fetuses, and previous caesarean sections.

Therefore, this current research was undertaken to examine the prevalence of caesarean sections within our healthcare facility using Robson's criteria (Robson's Ten-Group Classification System). This analysis aims to shed light on the factors contributing to the increasing rate of caesarean sections in central India.

AIM OF THE STUDY

The study aims to achieve the following objectives:

    i. Categorize caesarean births based on the Robson's Ten Group classification system.

    ii. Determine the group that makes the most significant contribution to the overall caesarean birth rate.

    iii. Assess the caesarean section rate within each group and its impact on primary caesarean sections.

MATERIALS AND METHODS

The research was carried out over a span of 28 months, spanning from May 2019 to September 2021, at Government Erode Medical College Hospital, located in Perundurai, Erode, Tamil Nadu, a tertiary care centre. All women who gave birth during this timeframe were enrolled in the study and categorized into specific groups based on Robson's Ten-Group Classification System. Prior approval was obtained from the Institutional Ethical and Research Committee for conducting the study.

For every woman included in the study, various data points were meticulously collected, encompassing maternal history, personal information, symptomatology, clinical assessments, treatment outcomes, and pertinent pregnancy details such as gestational age, fetal presentation, number of fetuses, and the initiation of labor. Additionally, maternal and fetal outcomes at the time of discharge, including any complications, APGAR scores at five minutes, and birth weight, were meticulously documented. The primary variable of interest was the Robson classification group to which each participant belonged. To maintain consistency and accuracy, a pre-designed data collection form was utilized to record all pertinent study information.

Inclusion Criteria:

All women who gave birth during this timeframe in Government Erode Medical College Hospital .

Exclusion criteria:

Women having laparotomy for uterine rupture or those with missing records were excluded. Women not given consent to participate the research study.

Table 1: Robson's Ten group classification of caesarean section

GROUPS	CLINICAL CHARACTERISTICS
1	Nulliparous, single, cephalic >37 weeks in spontaneous labor
2	Nulliparous, single, cephalic >37 weeks in induced or CS before labor
3	Multiparous (excluding previous CS) single, cephalic >37 weeks in spontaneous labor
4	Multiparous (excluding previous CS) single, cephalic >37 weeks in induced or CS before labor
5	Previous CS, single, cephalic, more than 37 weeks
6	All nulliparous breech
7	All multiparous breeches (including previous CS)
8	All multiple pregnancies (including previous CS)
9	All abnormal lies (including previous CS)
10	All single cephalic, <36weeks (incusing previous CS)

All the collected data was inputted into SPSS version 26.0 for subsequent analysis. Descriptive statistics were computed for both study participants and the various variables under consideration. The assignment of individuals to their respective Robson groups was predicated on four obstetric criteria, each having its specific parameters: pregnancy category, past obstetric history, labor progression, and gestational age.

Maternal indications were categorized into two groups: absolute and non-absolute. In the hierarchy of importance, absolute indications comprised obstructed labor, major antepartum hemorrhage (APH), malpresentation (transverse, oblique, and brow), and uterine rupture. On the other hand, non-absolute indications encompassed fetal distress, previous caesarean section (CS), failure to progress, breech presentation, severe pre-eclampsia, and eclampsia, without a specified hierarchy.

The findings were subsequently presented in the form of frequencies, percentages, means, and standard deviations (SD) to provide a comprehensive overview of the results.

RESULTS

A total of 1420 women delivered during this study period. Out of 1420 women, 942 women underwent lower segment caesarean section (LSCS). This constitutes 66.3% caesarean birth rate. Table 2 shows the relative size of each group and caesarean rate in each group

Table 2: Caesarean rate in each group

| Robson's Ten Group Classification	Total Number of Women delivered in the group (n)	Relative size of the group out of 100%	Number of LSCS in the group (n)
Group - 1	368	25.91%	225
Group - 2	296	20.84%	210
Group - 3	127	8.94%	29
Group - 4	82	5.77%	26
Group - 5	229	16.12%	228
Group - 6	21	1.47%	20
Group - 7	7	0.49%	7
Group - 8	8	0.56%	7
Group - 9	8	0.56%	8
Group - 10	274	19.29%	182
Total	1420	100%	942

The majority of women fell into Group 1 of Robson's classification, followed by Group 2, and then Group 10. Group 5 had the highest representation among the various groups, making the most significant contribution to the overall cesarean rate, followed by Group 1 and Group 2. Table 3 provides detailed insights into the contributions to both the overall cesarean rate and the rate of primary cesarean births.

Table 3: The overall cesarean rate and the rate of primary cesarean births

Robson's Ten Group	Number of Caesarean in the group	Contribution to Overall caesarean rate of 100%	Contribution to primary LSCS
Group - 1	225	23.88%	31.50%
Group - 2	210	22.29%	29.40%
Group - 3	29	3.07%	4.06%
Group - 4	26	2.76%	3.60%
Group - 5	228	24.20%	0
Group - 6	20	2.12%	2.80%
Group - 7	7	0.74%	0.28%
Group - 8	7	0.74%	0.72%
Group - 9	8	0.84%	0.70%
Group - 10	82	19.32%	18.48%

Group 1 played the most significant role in primary LSCS, followed by Group 2 and Group 10. Notably, the caesarean birth rate reached 100% in both Group 7 and Group 9. In Group 5, the LSCS rate was 99.56%.

Fig 1: Robson's Ten Groups
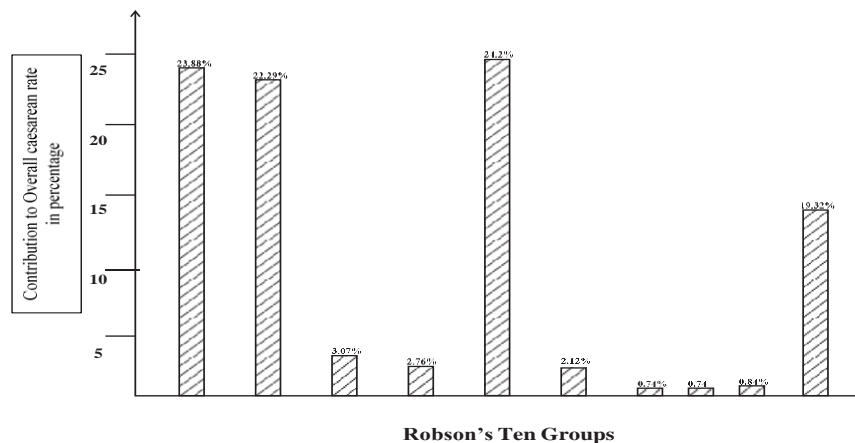
Fig 2: Contribution to Primary LSCS rate
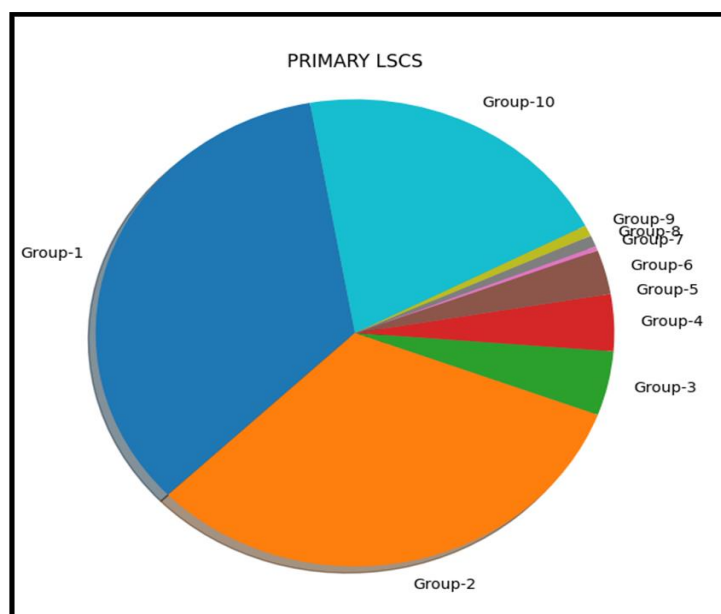
DISCUSSION

The World Health Organization (WHO) has endorsed a caesarean section (CS) rate of less than 15% to strike a balance between the risks and benefits of CS. The increasing trends in CS rates are raising concerns about lower thresholds for managing labor pains, reduced expertise in instrumental deliveries, instances of malpractice, unnecessary labor induction, and maternal requests for CS. It's crucial to continually assess CS rates over time and compare them with historical data to pinpoint areas for potential improvement with the goal of reducing overall CS rates.

The high rate of caesarean birth in our study may be due to the following factors. Ours is a tertiary care referral Centre where patients are referred at the last minute and also the place where complicated high-risk cases are being handled. Certain part of study period coincides with the first and second wave of covid 19 pandemic wherein the respiratory distress in mothers, the increased incidence of oligohydramnios and intrauterine fetal death in second wave may be the reasons for early decision making and increased caesarean birth in that study period.

The findings of the study coincides closely with Aparna et al study[3] where the caesarean rate was 63.89%. Rashida Parveen et al study[4] showed caesarean birth rate of 64.7%.

In our study, the greatest contribution to the overall caesarean rate is by Group 5 (24.2%) followed by Group 1 (23.8%) and Group 2 (22.29%). Most of the studies S. Sal et al[5], P.Pravina et al[6], Virta et al[7], Tahira et al[8], Kanmani et al[9] Spandana et al[10] reported Group 5 as the greatest contributor to the overall caesarean rate. Whereas Magatte et al[11] and Saroj et al[12] reported Group 1 as the major contributor.

S. Sal et al[5] and Tahira et al[8] reported Group 1 and 2 as the second and third greatest contributor to the overall rate of caesarean births as in our study. In recent years, increasing sedentary life style leading to decreased tolerance of pregnant women to labor pains, over concerned questioning relatives and medicolegal issues may be the key factors for the early decision making for caesarean births.

Regular antenatal classes, motivation and antenatal exercises may help in increasing the physical and emotional strength of laboring women. Proper counseling of the pregnant women, their relatives about the labor events, expected and unexpected complications, vigilant labor and fetal heart rate monitoring, motivation for vaginal delivery and adequate training in instrumental delivery will go a long way in reducing the caesarean rates.

Standard induction protocols, case selection, individualised case-based approach, use of partogram, cardiotocogram with documentation are all important factors in reducing the primary caesarean births Group 1 to Group 4. In case of high-risk pregnancies adequate induction - delivery interval should be given while at the same time carefully monitoring the high-risk cases. External cephalic version and increased practice of vaginal breech delivery will take care of reducing the size of Robson's Group 6 and Group 7.

The complications associated with a previous caesarean pregnancy   stress the importance of decreasing the primary caesarean birth. Reducing primary caesarean rate is the need of the hour to reduce the Robson's Group 5 caesarean birth and also the ever rising overall caesarean rates.At the same time, caesarean rates should not be thought as being too high or too low but whether appropriate or not.

CONCLUSION

Decreasing the caesarean birth rates especially primary caesarean births without compromising the safety of mother and newborn is the real challenge to be faced in this decade of uncooperative patients, impatient patient attenders and medico legal issues. Robson's Ten Group classification helps to identity the group which contributes more to the overall caesarean birth rate, evaluate the rate of caesarean in each group of women and also compare the caesarean rates over time and between health facilities. Robson's Ten group classification is a very important, simple, relevant and useful method to audit and thereby reduce the caesarean birth rates over time.

Limitations

One of the key limitations of this study was that we were unable to record perinatal and maternal outcomes among study participants. As this was a single center study with a comparatively short sample size, results of this study cannot be generalized. Generalization requires the support of results from similar large studies

Conflicts of interest: There are no conflicts of interest.

Ethical statement

Institutional ethical committee accepted this study. The study was approved by the institutional human ethics committee. Informed written consent was obtained from all the study participants and only those participants willing to sign the informed consent were included in the study. The risks and benefits involved in the study and the voluntary nature of participation were explained to the participants before obtaining consent. The confidentiality of the study participants was maintained.

Authors' contributions

Revathi.A: Conceived, Data Collection.

Gayathri A: Supervision, Proof Reading.

Renju R: Literature Review, Discussion.

Sathya R : Responsible for Data's Integrity and Authenticity

Panneerselvam Periasamy : Manuscript draft editing and statistical analysis.

All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work. All authors have read and agreed to the published version of the manuscript.

Data Availability:

All datasets generated or analyzed during this study are included in the manuscript.

Informed Consent:

Written informed consent was obtained from the participants before enrolling in the study

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