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Original Research Article

Analysis of Cesarean Sections using Robson's Ten Group Classification System: A Cross-Sectional Study

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Abstract:

Background: To prospectively identify distinct, clinically significant groups of women admitted for delivery and to look into variations in CS rates among these relatively homogeneous groups of women, Robson's classification or Ten Group Classification System (TGCS) was developed. It aids in the development and application of successful tactics that are especially aimed at raising CS rates.

Methods: From May 2022 to April 2023, this cross-sectional study was carried out in the Department of Obstetrics and Gynaecology, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar. A total of 167 women who underwent CS in the hospital throughout the designated study period made up the study population. We gathered information on each case's mother features as well as details on the pregnancy. Robson categorization group served as the dependent variable.

Results: The average age was 26.53 +/- 5.1 years. The majority of the women, 116 (69.5%), lived in metropolitan areas, 74 (44.3%) were pregnant women between the ages of 37 and 42, and 108 (64.7%) had previously undergone caesarean sections. 85 individuals, or 50.9% of the total, were found to be from TGCS Group 10. The second and third most frequent groups, Group-5 and Group-1, respectively accounted for 24 (14.4%) and 19 (11.4%) instances. The two most frequent reasons for a caesarean section were found to be a previous caesarean section (20.4%) and foetal discomfort (19.8%).

Conclusion: Robson's Ten-Group Classification revealed that Group-10 and Group-5 were the two groups that contributed the most to the deliveries that were made. The most frequent reasons for a caesarean section were a previous one and foetal discomfort.

Keywords: Robson's Ten-Group Classification, Cesarean section, Fetal distress.

Introduction

A key metric for assessing access to obstetric services is the crude rate of caesarean sections. There have been more caesarean sections performed recently than ever before, although the reasons for this increase are debatable. Compared to a spontaneous vaginal birth, a caesarean delivery carries higher mother risks for the current and next pregnancies.[1] When compared to vaginal deliveries, caesarean

sections have higher rates of several maternal complications, such as anaesthesia difficulties, haemorrhage, infection, damage to nearby organs, and thrombosis.[2,3]

These maternal hazards are substantially higher for women who have subsequent caesarean sections. Previa of the placenta is becoming more common. Hysterectomy and placenta accrete are at higher risk.[4] It offers decreased rates of birth trauma and stillbirth for the newborn but higher rates of first respiratory problems.

Different writers have offered a variety of categorization schemes for caesarean sections. For categorising caesarean sections, Michael Robson created "Robson's ten group classification system" in 2001. According to a WHO declaration from 2014 (Geneva), "Robson's ten group classification system" should be used as the benchmark for evaluating, tracking, and comparing caesarean section rates among healthcare facilities.[5]

The Robson classification applies to "all women" who give birth in a particular location, not only those who have a c-section. This perinatal classification is comprehensive. It offers a structure for tracking and verifying CS rates. It is founded on four obstetric concepts: gestational age, preceding obstetric history, pregnancy course, and type of pregnancy. These factors are used to divide women into ten groups. Every woman fits into one group and one group only since the classification process is mutually exclusive and inclusive.[6] The Robson classification's main advantages include its straightforward initial interpretation, valid goal, straightforward design, and ease of execution.[7]

The current study objectives were to compute the overall caesarean section rate, identify the groups of women (distributed at our institute according to Robson's ten group classification scheme) that contributed most to the overall caesarean section rate, and analyse caesarean section rates within those groups.

Material and Methods

From May 2022 to April 2023, this cross-sectional study was carried out in the Department of Obstetrics and Gynaecology, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar. A total of 167 women who underwent CS in the hospital throughout the designated study period made up the study population. All study participants provided their written consent. Women who had laparotomies due to uterine rupture or those whose data were lacking were not included.

Maternal history, biodata, symptomatology, clinical examination, management results, pregnancy-related data (gestational age, foetal presentation, number of foetuses, and onset of labour), and maternal and foetal outcomes at discharge (complications, APGAR score at five minutes, and birth weight) were all recorded for all the women enrolled. Robson categorization group served as the dependent variable. A proforma that had been previously created contained all the study data.

For analysis, all completed data was entered into SPSS version 26.0. The variables and study participants were subjected to descriptive statistics calculations. Based on four obstetric concepts (and its parameters)—category of pregnancy, prior obstetric history, course of labour, and gestational age—the Robson group was given. Obstructed labour, significant antepartum haemorrhage (APH), malpresentation (transverse, oblique, and forehead), and uterine rupture were the absolute maternal indicators in that order. Foetal compromise, prior CS, failure to progress, breech position, severe pre-eclampsia, and eclampsia (without hierarchy) were examples of non-absolute indicators.

Results were represented as frequencies, percentages, means and SD.

Table 1: Robsons Ten Group Classification System

Group	Description
Group 1	Nullipara, single, cephalic, term pregnancy, spontaneous labour
Group 2	Nullipara, single, cephalic, term, induced labour or planned CS
Group 3	Multipara without uterine scar, single, cephalic, term, spontaneous labour
Group 4	Multipara without uterine scar, single, cephalic, term, induced labour or planned CS
Group 5	Multipara with uterine scar, single, cephalic, term
Group 6	Nullipara, single, Breech presentation
Group 7	Multipara, single, breech, including previous C-Section
Group 8	Multiple Pregnancy
Group 9	Single, abnormal lie, including previous scar
Group 10	Single, Cephalic, Preterm including previous scar

Results

There were 167 deliveries in total over the research period. The majority of the women, 152 (91.0%), were between the ages of 20 and 35, with a mean age of 26.53± 5.1 years overall. The majority of the women, 116 (69.5%), lived in urban areas, 117 (70.7%) had multiple pregnancies, 74 (44.3%) had gestational ages between 37 and 42 years, 108 (64.7%) had undergone caesarean sections before, and 156 (93.4%) had foetal presentations with cephalic heads (Table 2).

Tablen2: Characteristics of Study Participants

Characteristics	No. of cases	Percentage
Age (years)		
• <20	10	6.0%
• 20 – 35	152	91.0%
• >30	5	3.0%
Area of Residence		
• Urban	116	69.5%
• Rural	51	30.5%
Gravidity		
• Primigravida	50	29.9%
• Multigravida	117	70.1%
Parity		
• Nulliparous	50	29.9%
• Multiparoun	117	70.1%
Gestational Age (weeks)		
• <37	93	55.7%
• 37 – 42	74	44.3%
• >42	0	0
History of previous cesarean section		
• None	108	64.7%
• 1	28	16.8%
• >1	31	18.6%
Onset of Labour		
• Spontaneous	83	49.7%
• Induction of labour	4	2.4%

• Pre-labour cesarean section	80	47.9%
Fetal Presentation		
• Cephalic	156	93.4%
• Breech	11	6.6%
Apgar Score (at 5 minutes)		
• ≤7	22	13.2%
• >7	145	84.8%
Birth Weight (grams)		
• <2500	31	18.6%
• 2500-4000	128	76.6%
• >4000	8	4.8%

Table 3 displays the distribution of all deliveries made throughout the study period using Robson's TGCS. 85 individuals, or 50.9% of the total, were found to be from Group 10. The second and third most frequent groups, Group-5 and Group-1, respectively accounted for 24 (14.4%) and 19 (11.4%) instances.

Table 3: Distribution of Cesarean Section in terms of Robson's TGCS

Sl. No.	Description of Robson's 10-groups Classification	No. of cases	Percentage contribution made by each group to overall CS
1	Nulliparous, single cephalic, ≥37 weeks, in spontaneous labour	19	11.4%
2	Nulliparous, single cephalic, ≥37 weeks, induced or caesarean section (CS) before labour	11	6.6%
3	Multiparous (excluding previous CS), single cephalic, ≥37 weeks, in spontaneous labour	11	6.6%
4	Multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labour	4	2.4%
5	Previous CS, single cephalic, ≥ 37 weeks	24	14.4%
6	All nulliparous breeches	4	2.4%
7	All multiparous breeches (including previous CS)	5	3.0%
8	All multiple pregnancies (including previous CS)	2	1.2%
9	All abnormal lies (including previous CS)	2	1.2%
10	All single cephalic, <37 weeks (including previous CS)	85	50.9

Table 4 provides a list of caesarean section indications. Foetal discomfort (19.8%) and prior caesarean section (20.4%) were discovered to be the most prevalent indicators.

Table 4: Robson's Ten Group Classification System

Indications	No. of cases	Percentage
Previous cesarean section	34	20.4%
Fetal distress	33	19.8%
Hypertensive Disorders of Pregnancy	10	6.0%
Failed Induction of Labour	8	4.8%
Cephalopelvic Disproportion	8	4.8%
Maternal Requests	7	4.2%
Contracted Pelvis	9	5.4%
Breech	9	5.4%
Abruption	10	6.0%
Placenta Previa	9	5.4%
Others	30	18.0%

Discussion

To balance the risks and advantages of CS, the World Health Organisation has recommended a CS rate of 15%. Rising trends in CS rates are considered to be a result of malpractice, labour induction without warning, a lower threshold for labour pains, a lower level of skill in using instrumental delivery methods, and maternal requests.[8-12] In order to identify potential areas for development and lower overall CS rates, it is crucial to continuously evaluate CS rates over time and compare them to historical data.[13,14]

Groups 10, 5, and 1 were found to be the most common in the current study, accounting for 50.9%, 14.4%, and 11.4% of cases, respectively. In contrast to our findings, Khan MA et al.8 found that Group-5 and Group-2 were the most prevalent in a local study. The most prevalent groups, according to Gilani S et al.[15], were category, Group-5, and Group-1, with 30.7%, 17.1%, and 21.4% of cases in each category, respectively. Group-1, Group-5, and Group-2 were found to be the most common groups, accounting for 33.3%, 19.7%, and 14.6% of cases, respectively, according to Dhodapkar SB et al.[16] from India.

According to their respective institutional procedures for addressing delivery cases, all of these research show the tendencies. It is important to draw attention to unique clues leading to particular delivery routes that may be somewhat similar, particularly across local research. According to Khan MA et al.[8], Groups 5, 2, and 10 contributed the most to overall CS rates. The three groups that most frequently contribute to CS rates are Group-5, Group-2, and Group-10, according to other Singaporean experts.[17]

One recurring finding has been that women with a history of caesarean section fear having their uteruses rupture if they give birth vaginally.

Thought to choose CS when giving birth after a prior scar, this has not yet been confirmed in local investigations. Most of the overall CS instances were contributed by Group 10, followed by Group 5. More than half of the CS cases from Group 10 can be explained by the fact that 55.7% of the women fall into the gestational age category of less than 37 weeks, indicating that these women are experiencing complications like hypertensive disorders of pregnancy, decreased foetal movement, foetal distress, or intrauterine growth restriction.

Among these cases, premature labour and membrane rupture are two additional frequent consequences. These findings may be indicative of the fact that, as the top tertiary care facility in the area, the majority of cases may be referred to our facility as high risk cases.

Conclusion

Robson's Ten-Group Classification revealed that Group-10 and Group-5 were the two groups that contributed the most to the deliveries that were made. The most frequent reasons for a caesarean section were a previous one and foetal discomfort.

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