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# Analysis of caesarean section trend according to Robson's criteria in SBMCH

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## ABSTRACT

***Background:*** *There has been an increase in rate of caesarean section over last five decades. This is a matter of international public health concern as it increases the caesarean section related maternal morbidity. World Health Organization proposed use of Robson Classification as a global standard for assessing, maintaining and comparing Caesarean section (CS) rates*

*According to WHO, Robson classification will aid in optimization of the caesarean section use, assessment of the strategies aimed to decrease the caesarean section rate and thus improve the clinical practices and quality of care in various health care facilities.*

*The aim of the present study was to evaluate which clinical situation contributed and led to caesarean deliveries as per Robson's classification system.*

***Methodology****: This is a retrospective study conducted at Sree Balaji Medical College and Hospital from January 2024to June 2024.All cases delivered via caesarean section were included in the study and classified according to Robson's classification*

***Results:*** *There were a total of 481 deliveries(399 vaginal and 82 Caesarean deliveries)over the study period. The overall LSCS rate was observed to be 17%. The largest contribution was by group 5(62.2%) followed by group 2(8.5%) and group 1(7.3%).*

***Conclusion****: Robson criteria can be used as an auditing tool for the increasing number of caesarean sections being performed. As per Robson's criteria, group 5(previous LSCS) remains the main indication for caesarean section followed by group 2(nulliparous not in spontaneouslabor),and group1(nulliparous in spontaneous labor)respectively.Groups1and 2include caesarean sections in nulliparous women. Therefore, it is clear that increasing rates of primary caesarean sections, mainly in nullipara are responsible for the increase in caesarean section rates. Unless we reduce the rate of primary caesarean section, it may not be possible to reduce the caesarean section rate*

## INTRODUCTION

Caesarean section is referred to the delivery of the foetus surgically through an incision in the abdominal wall and an intact uterus.[1] It was introduced as a life-saving procedure for both the mother and the foetus. As per WHO, the optimal Caesarean section rates is within 10-15%. However, over the last couple of years, the rates of Caesarean section have been observed to be on the rising trend. As per the latest NFHS-4data [2], the rate of caesarean section in India was observed to be 17.2% which is more than the optimal rates as per WHO. The rate of LSCS was found to be increasing from 8.5%to17.2%overaperiodof10yearsfrom2005to 2015[2].As with any surgery, LSCS poses risks to both the mother and the foetus. Short term complications to the mother

include bleeding, injury of urogenital or gastrointestinal organs, postoperative infection and an increased risk for deep venous thrombosis [4] while the long- term complications include adhesions, incisional hernia, divarication of recti [3]. Neonatal complications include Respiratory distress–Transient tachypnoea of new born[4].Due to the increasing morbidity and mortality associated with an increase in the LSCS rates, a universally accepted system which can identify the cause of the increasing rates of LSCS was introduced by WHO in 2015 named the ROBSON'SCRITERIA[5].It includes 10 categories that classify the indications of caesarean sections based on five parameters: Obstetric history, onset of labour, fetal presentation or lie, gestational age and number of foetuses. All the ten categories are mutually exclusive and can be applied prospectively. This categorisation helps in auditing and monitoring the LSCS rates and offers a standardised comparison method between various institutions and countries to implement better strategies at reducing LSCS rates [6].

**Table1:** Robson Ten Group Classification System

| | |
|---|---|
| Group 1 | Nullipara, single, cephalic, termpregnancy, spontaneous labour |
| Group 2 | Nullipara, single, cephalic, term, induced labouror planned LSCS |
| Group 3 | Multipara without uterine scar, single, cephalic, term, spontaneous labour |
| Group 4 | Multipara without uterine scar, single, cephalic, term, induced labour or planned LSCS |
| Group 5 | Multipara with uterinescar, 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, abnormallie, including previous scar |
| Group 10 | Single, Cephalic, Preterm including previous scar |

The aim of the present study was to evaluate which clinical situation contributed and led to caesarean deliveries as per Robson's classification system and to formulate strategies for reducing the same.

## METHODOLOGY

This is a retrospective study conducted at Sree Balaji Medical College and Hospital from January 2024 to June 2024. All cases delivered via caesarean section were included in the study and classified according to Robson's classification. The indications for LSCS were grouped according to standard indications and as per Robson's criteria.

The study included all the patients who had Emergency and Elective LSCS during the study period.

Variables used for this study included:

- Gestational age was calculated in weeks according to LMP or First trimester USG
- Multiple pregnancy as confirmed by USG
- Term:37 completed weeks and above
- On set of labour: Spontaneous or Induced by pharmacological methods or mechanical methods

## RESULTS

A total of 481 deliveries were observed during the study period out of which 399 were Vaginal deliveries (83%) and 82 were delivered by caesarean section (17%) (Fig 1)

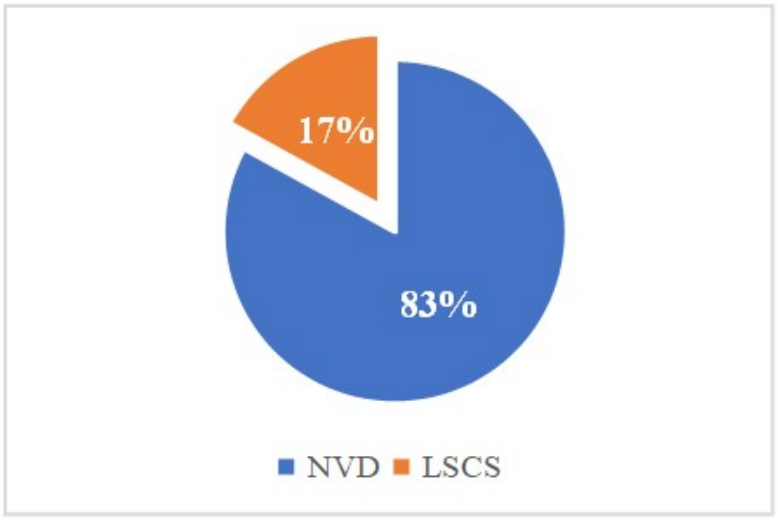


**Fig 1:** Distribution of mode of delivery among study population

On dividing the patients who underwent LSCS based on Robson's criteria, Group 5 accounted for 62.2% followed by group 28.5% and group 1of 7.3%. (Fig 2)

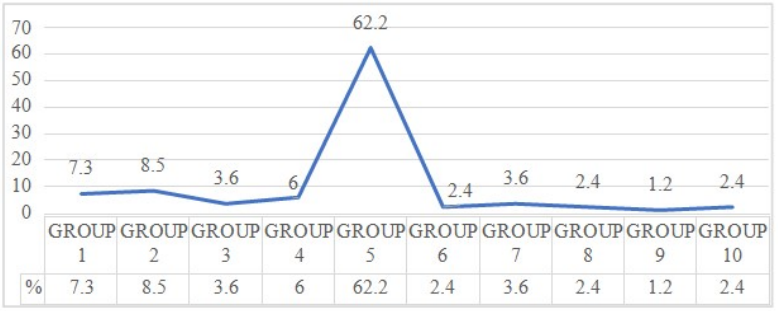


**Fig.2:** Distribution of Robson Groups Among the Lscs Patients

When LSCS was analysed according to their indications, Previous LSCS was the most common indication observed among the participants(62.2%)followed by fetal distress(8.5%), Cephalopelvic disproportion (4.8%) and malpresentation (4.9%) (Table 2)

**Table 2:** Indications for LSCS

| INDICATION | TOTAL | % |
|---|---|---|
| Previous LSCS | 51 | 62.2% |
| PPROM | 2 | 2.4% |
| CPD | 4 | 4.8% |
| MALPRESENTATION | 4 | 4.9% |
| MULTIPLE PREGNANCY | 2 | 2.4% |
| PLACENTA PREVIA/PAS | 1 | 1.2% |
| FETAL DISTRESS | 7 | 8.5% |
| PROLONGED LABOUR | 3 | 3.6% |
| SECOND STAGE ARREST | 2 | 2.4% |
| FGR/OLIGO | 2 | 2.4% |
| MATERNAL COMORBIDS | 3 | 3.6% |
| UTERINE ANOMALY | 1 | 1.2% |

**DISCUSSION**

The overall rate of Caesarean section in our study was observed to be 17%, which is more than the WHO optimal rate. The main contributor was observed to be Group 5which included term singleton pregnancies with a scarred uterus followed by group 2and Group 1 of Robson'scriteria. Previous LSCS was the most common indication for LSCS followed by fetal distress, cephalopelvic disproportion and malpresentation.

A study conducted in Asia by Lumbigan on Petal [7] observed that the LSCS rate was around 27.3%in his study, which is similar to the observation made in our study. The LSCS rates in his study was observed to be between 14.7% to 46.2%, contributed by China

Across-sectional study conducted by Chaudhary et[8] from October 2022to March 2023 concluded LSCS rate31.4% in his study. It was observed that majority of LSCS belonged to Robson's criteria Group 5(56%), Group 2(56%) and Group 10(54%), which is similar to the observation made in our study.

In a study conducted by Bolognani CV et al [9], he observed that the major contributors to LSCS belonged to group 5(38.1%), group 1(21.5%) and group 2(18.6%)as observed in our study.

Rahman H et al. [10] reported previous LSCS and fetal distress to be the most common indications for LSCS in his study, which is similar to the observation made in our study.

The increased contribution by group 5 to LSCS rates stems from the fear of complications of VBAC such as scar dehiscence, scar rupture and thereby women opting for a repeat LSCS. Counselling at the appropriate time, beginning for the antenatal period would help alleviate the anxiety about VBAC, there by reducing the rates of repeat LSCS. Also, reducing the rates of primi LSCS would significantly reduce the women being categorised into Group 5.

The second contributor is Group 2 which includes Nullipara, single, cephalic, term, induced labour or planned LSCS. Choosing the appropriate method of Induction is essential for a successful vaginal delivery, thereby reducing the LSCS rates due to failure of induction.

The main indications for LSCS in Group 1and Group 2were Fetal distress, Failure to progress and failed induction. Choosing the appropriate induction method, use of partogram for monitoring labour[11] and reassessing the indication of intrapartum LSCS[12] can help reduce LSCS rate in these groups.

Group 3contributed 3.6% of the LSCS rates the indication being fetal distress. Use of partogram to monitor the labour, early identification of the high-risk group scan be beneficial [13].

In group 4, which includes multiparous women without uterine scar, single, cephalic, term, induced labour or planned LSCS, FGR and fetal distress were the main indications for LSCS.

Group 6 and group 7include primigravida and multigravida with breech presentation and group 9includes malpresentation. The contribution of these groups to overall LSCS rates remain slow. To further reduce the rates of LSCS in these groups, External cephalic version for breech presentations can be tried. [14]

Group 8 includes multiple pregnancy and group10 includes preterm deliveries. The contribution of these groups remains low.

The study exhibits several strengths. It incorporates a substantial number of deliveries, providing a comprehensive understanding of LSCS practices in our institution. The utilization of the RTGCS ensures standardized and meaningful analysis of LSCS patterns. The findings shed lighton specific groups where interventions can be targeted to optimize LSCS usage and promote safe vaginal deliveries.

However, there are certain limitations. The study did not delve into the underlying factors influencing the decision-making process for CS, such as provider or patient preferences. Maternal request for LSCS has been increasing in the recent times which is not included in the Robsons classification system. Additionally, the study did not explore long-term maternal or neonatal outcomes associated with different CS groups.

## CONCLUSION

The absence of a standardized classification system for LSCS hinders meaningful comparisons across healthcare facilities, regions, and countries [15]. Use of the Robson criteria can inform efforts to manage caesarean section rates at both the individual facility and national level by identifying how the use of this intervention in specific obstetric subpopulation affects the overall caesarean section rates, and how obstetric populations and intervention rates change with time [13]. Effort can then be directed towards those groups, strategies can be devised and policies and practices modified to help reduce the LSCS rate until we achieve the ideal rate recommended by WHO.

## CONFLICT OF INTEREST

No conflict of interest observed

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