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**Original Research Article**

# Rising trends of caesarean section in modern obstetrics: analysis by Robson classification

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## ABSTRACT

**Background:** Rising caesarean section (CS) rates are a major public health concern worldwide. The main objective of our study was to analyse the CS rates according to Robson ten group classification system (TGCS).
**Methods:** This was a retrospective study conducted in the department of obstetrics and gynaecology at Chettinad hospital and research institute, during a period of 5 years from May 2015 to April 2020. All the women who delivered by CS were included in the study. The data regarding parity, gestational age, onset of labour, number of foetuses and presentation was collected and classified according to Robson TGCS and analysed.
**Results:** A total of 4199 women delivered during the study period. Out of 4199 women 2149 (51.18%) underwent CS. All the women who underwent caesarean section were classified according to Robson TGCS. Group 5 contributed the most (40.81%). Group 2 had the second highest contribution of 33.36%. Group 1 had 6.24%, group 3 and 4 contributed for 1.16% and 4.65% respectively. Group 6 and 7 had 2.84% and 1.68% respectively. Group 8 had 2.28%, group 9 had 0.23% and group 10 constituted 6.75%.
**Conclusion:** As contribution of repeat CS is high among the overall CS rate it is important to reduce the primary CS rates. More analytical studies need to be done based on Robson TGCS to evaluate the indication of CS within each group.

**Keywords:** CS, Robson classification, Labour, Vaginal birth after CS

## INTRODUCTION

Caesarean section (CS) is one of the most common surgery performed in modern obstetrics. In 1985, WHO recommended the ideal CS rate should be between 10-15%.[1] CS rates have continued to increase worldwide both in developed and developing countries.[2] The rising trends of CS in modern obstetrics is a major public health concern all over the world.[3,4] Hence, there is a need for internationally accepted classification system to reduce the CS rates. Among the classification systems available, Robson TGCS has been widely used in various countries.[2,4] Robson TGCS was proposed by Dr. Michael Robson in 2001 which consists of 10 patient categories based on 5 obstetric characteristics (Parity, gestational age, onset of labour, fetal presentation and number of foetuses).[2,4]

The ten groups of Robson classification include: Group 1: Nulliparous, singleton, cephalic, >37 weeks in spontaneous labour, Group 2: Nulliparous, singleton, cephalic, >37 weeks induced labour or CS before labour, Group 3: Multiparous (excluding previous CS), singleton, cephalic, >37 weeks in spontaneous labour, Group 4: Multiparous (excluding previous CS), singleton, cephalic, >37 weeks induced labour or CS before labour, Group 5: Previous CS, singleton, cephalic, >37 weeks, Group 6: All nulliparous with a single breech, Group 7: All multiparous with a single breech (including previous CS), Group 8: All multiple pregnancies (including previous

CS), Group 9: All women with a single pregnancy transverse or oblique lie (including previous CS) and Group 10: All singleton, cephalic, <37 weeks (including previous caesarean).

Robson TGCS provides an easy way to collect the information regarding CS rates. Applying this classification helps in identifying broad categories whom to be targeted in reducing CS rates.

## METHODS

This was a retrospective study conducted in the department of obstetrics and gynaecology at Chettinad hospital and research institute, which is a tertiary care teaching hospital. All the women delivered by CS during a period of 5 years from May 2015 to April 2020 were included in the study. The data regarding parity, gestational age, onset of labour, number of foetuses and presentation was collected from the hospital records, classified according to Robson TGCS and entered in Microsoft excel spread sheet and analysed by using SPSS software.

## RESULTS

A total of 4199 women delivered during the study period. Out of 4199 women 2149 (51.18%) underwent CS (Table 1). All the women who underwent CS were classified according to Robson TGCS. Group 5 contributed the most (40.81%). Group 2 had the second highest contribution of 33.36%. Group 1 had 6.24%. Group 3 and 4 contributed for 1.16% and 4.65% respectively. Group 6 and 7 had 2.84% and 1.68% respectively. Group 8 had 2.28%, group 9 had 0.23% and group 10 constituted 6.75% (Figure 1).

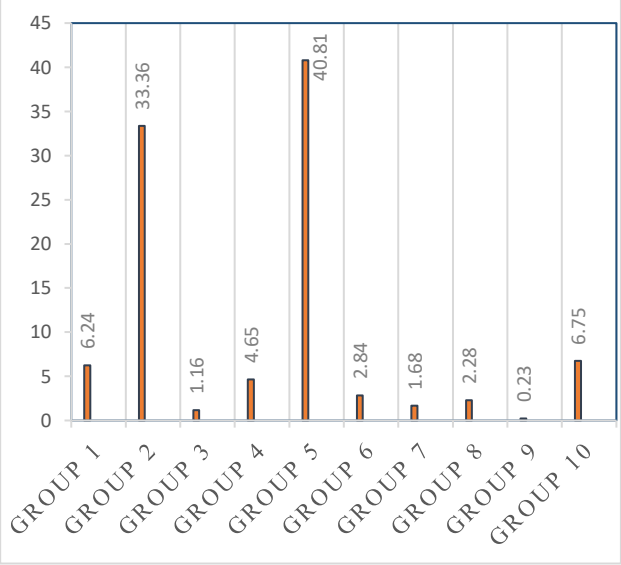


**Figure 1: Distribution of CS rates according to Robson TGCS.**

**Table 1: Distribution of deliveries according to mode of delivery.**

| Mode of delivery | No. of cases n=4199 (%) |
|---|---|
| **Normal vaginal delivery** | 1874 (44.63) |
| **Outlet delivery** | 106 (2.52) |
| **Vacuum delivery** | 70 (1.67) |
| **CS** | 2149 (51.18) |

## DISCUSSION

Rising CS rates is a global concern in the last few years both in developed and developing countries.[5]

In this present study, overall CS rate was 51.8% which was high when compared with other studies and WHO criteria for optimal care.[1,6,7] Group 5 (40.81%) contributes maximum to overall CS rates which is in similarity with other studies.[8-10] This highlights on encouraging trial of labour after caesarean (TOLAC) to reduce repeat CS rates. However, few studies reported a success rate of vaginal deliveries between 60-90% after CS.[11,12]

Next contributor was group 2 which constitute 33.36%. Failed induction and fetal compromise are the commonest indications for primary CS in this group which is similar to various studies.[13,14] Labour induction protocols vary worldwide and increasing labour inductions is an upcoming contributor to caesarean section especially primary CS rates. Judicious selection of women for induction, strict implementation of induction protocols would lead to reduction in primary CS rates. CS rate in group 1 was 6.24% which is low when compared with other studies.[10,15,16] Multiparous women in group 3 and 4 contributes to 1.6% and 4.65% respectively.

Group 10 which includes women with <37 weeks gestation with cephalic presentation with or without previous CS contributes to 6.75% towards over all CS rates which is similar to Dhodapkar et al study.[16] In contrast, 14.29 % CS rate was observed in Sah et al study.[6] Even though preterm birth is the main contributor of neonatal mortality and morbidity, prematurity with no other risk factors is not an absolute indication for CS. Hence, preterm CS indications must be addressed more carefully.

Group 8 (multiple pregnancies) constitutes 2.28% of overall CS rates. Malpresentations especially breech in group 6 (2.84%) and group 7 (1.68%) contributes to 100% CS rates regardless of parity which is comparable to Dhodapkar et al study.[16] This can be reduced by increased use of external cephalic version (ECV) in breech presentation and conducting vaginal breech deliveries. There were 5 CS (0.23% of overall CS rates) done for transverse or oblique lie in group 9 which contributes 100% CS rates similar to other studies.[7,10]

Robson TGCS is simple and reproducible classification having certain limitations. It doesn't include indications for induction of labour or CS. It also doesn't include medical or surgical conditions which influence the decision to undertake CS. No information regarding women who have undergone TOLAC is obtained. Many modifications to TGCS have been proposed so far to overcome such deficiencies but none has gained universal acceptance.[17,18]

## CONCLUSION

As contribution of repeat CS is high among the overall CS rate it is important to reduce the primary CS rates. More analytical studies need to be done based on Robson TGCS to evaluate the indications of CS within each group.

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