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Original Research Article

## Classification of births according to Robson 10 group classification: an emerging concept to audit the increasing caesarean section rate

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### ABSTRACT

**Background:** High caesarean birth rates are an issue of international public health concern. Worries over such increases have led the WHO to advice that caesarean section rate should not be more than 15%. WHO proposes that the health care facilities to use the Robson's 10 group classification system to audit their CS rates. Our aim was to investigate the CS rates in a period of 6 months using Robso's 10 group classification.

**Methods:** This was a cross sectional study conducted for a period of 6 months from July 2018 to December 2018 in Department of Obstetrics and Gynecology, Siddhartha medical college which is a tertiary care center. All women delivered during this period in labour ward were included. All relevant obstetric information (parity, mode of previous deliveries, previous CS and indications, gestational age, onset of labor) was entered on a questionnaire and classified into Robson's 10 classes and percentages were calculated.

**Results:** Total number of deliveries in 6 months is 4719 out of which C-sections are 1816 which accounts for 38.48%. Highest contribution was by group 5 and group 2. Together these two groups contribute to 62.4% of the total caesarean sections. Group 6 and group 9 by themselves did not contribute much but within their groups had 100% C-section rates.

**Conclusions:** Robson's 10 group classification provides easy way in collecting information about caesarean section rate which obtains good insight into certain birth groups. Number of women who attempt VBAC has declined over recent years due to fear of uterine rupture. Reducing primary C-section rates, adequate counseling and changing norms for non-reassuring fetal status could reduce contribution of Robson's groups towards absolute C-section rates.

**Keywords:** Caesarean section, Deliveries, Labour, Robson's classification, Robsons groups, VBAC

### INTRODUCTION

"Rising caesarean section rates are a major public health concern".<sup>1</sup> Over the decades there has been a progressive increase in rate of deliveries by caesarean section in most countries but the drivers for this trend are not completely understood. This increase have led the World Health Organisation to advice that CS rates should not be more than 15%.<sup>2</sup> (WHO), the population-based Caesarean

Section (CS) rate should range between 10-15%.<sup>3</sup> to positively impact maternal and neonatal health outcomes.<sup>4,5</sup> However, recent data from 150 countries indicate that average CS rate is 19%, ranging from a high of 40% in Latin America to a low of 7% in the African region.<sup>6</sup> It is necessary to have a tool to monitor and compare CS rates in same setting over time and between different settings. Variations in overall CS rate between different settings or over time are difficult to interpret and

compare because of intrinsic differences in hospital factors and infrastructure. Eg. Primary vs. tertiary level, differences in clinical management protocols, differences in characteristics of population etc. Ideally there should be a classification system to monitor and compare CS rates at facility level in a standardized, reliable, consistent and action oriented manner.<sup>1</sup> In 2001 Dr. Michael Robson of National Maternity Hospital, Dublin, proposed the new Ten group classification system (TGCS).<sup>2</sup> The “10 - groups classification system” or “Robson classification” was introduced by WHO in 2015 and FIGO in 2016 to prospectively identify well defined, clinically relevant groups admitted for delivery and to investigate differences in CS rates. Robson classification is for all women who deliver at specific setting and not only for women who deliver by CS. It is a complete perinatal classification which is simple, robust, reproducible, and clinically relevant and prospective.<sup>1</sup>

**The 10 groups are based on six basic obstetric variables**

- Parity: nullipara/multipara
- Previous caesarean section: yes/no
- Onset of labour: spontaneous/induced/no labour
- Number of fetuses: singleton/multiple
- Gestational age: preterm/term
- Fetal lie and presentation: cephalic/breech/transverse lie.

**The 10 groups of the Robson classification includes**

Group 1: Nulliparous women with single cephalic pregnancy >37 weeks GA in spontaneous labour.

Group 2: Nulliparous women with single cephalic pregnancy >37 weeks GA who either had labour induced or were delivered by CS before labour.

Group 3: Multiparous women without a previous uterine scar, with a single cephalic pregnancy >37 weeks GA in spontaneous labour.

Group 4: Multiparous without a previous uterine scar, with single cephalic pregnancy>37 weeks GA who either had labour induced or were delivered by CS before labour.

Group 5: All multiparous woman with at least one previous uterine scar, with single cephalic pregnancy, >37 weeks GA.

Group 6: All nulliparous women with single breech pregnancy.

Group 7: All multiparous women with a single breech pregnancy, including women with previous uterine scars.

Group 8: All women with multiple pregnancy including women with previous uterine scars.

Group 9: All women with a single pregnancy with a transverse lie /oblique lie including women with previous uterine scars.

Group 10: All women with single cephalic pregnancy <37 weeks GA including women with previous scars.

To investigate the caesarean section rates in department of Obstetrics and Gynaecology at Siddhartha Medical College, Vijayawada for a period of 6 months from July 2018 to December 2018 using ROBSON’s 10 group classification.

Objective of this study was:

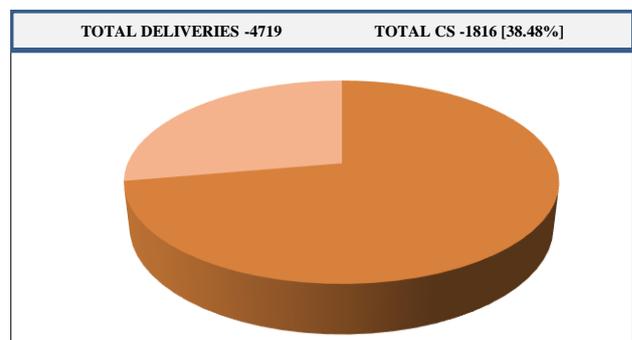
- To classify our population into Robsons 10 groups
- To identify which among these groups have the highest caesarean section rates
- To formulate the plans of reducing these rates.<sup>2</sup>

**METHODS**

This cross sectional study was conducted for a period of 6 months from July 2018 to December 2018 in department of OBG at Siddhartha Medical College, Vijayawada. The study population included all live births and stillbirths of atleast more than 28 weeks gestational age. All women delivered during this period in labor ward were included. The identity of women was obtained from delivery logbook, admission and discharge register, and operation logbook of our college. All relevant obstetric information (parity, mode of previous deliveries, previous CS and indications, gestational age, onset of labor, spontaneous or induced, fetal presentation, number of fetuses) was entered on a questionnaire and classified into Robson’s 10 classes.<sup>3</sup> Overall CS rate, relative size of each group, CS rate and relative contribution of each group to overall CS rate were calculated.<sup>2</sup>

**RESULTS**

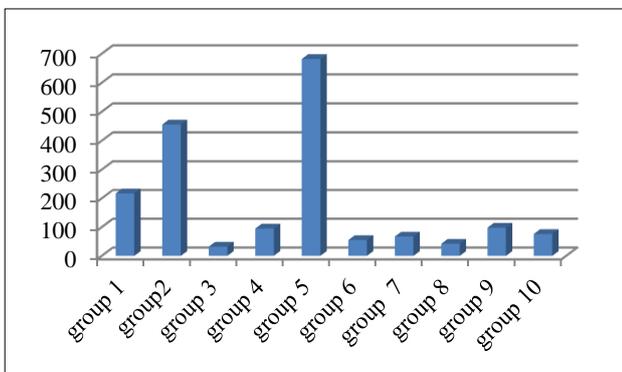
Total number of women who delivered over the period from July 2018- august 2018 was 4719. Total number of cesarean sections over the period were 1816 and over all CS rate for this period at our hospital was 38.48%.



**Figure 1: Representation of total caesarean sections among total deliveries.**

**Table 1: Analysis of data of our study and CS rate.**

Group	Relative size of groups (% of total no. of births)	CS rate in each group	Contribution of each group to CS %
1	25.36%	217/1197 (18.1%)	4.58%
2	20.7%	456/978 (46.62%)	9.64%
3	13%	32/618 (5.17%)	0.67%
4	6.9%	95/327 (29.05%)	2%
5	14.6%	678/689 (98.4%)	14.33%
6	1.16%	55/55 (100%)	1.16%
7	2.33%	67/110 (60.9%)	1.41%
8	1.2%	42/58 (72.41%)	0.8%
9	2.07%	98/98 (100%)	2.07%
10	12.48%	76/589 (2.9%)	1.6%
<b>Total</b>	<b>100%</b>	<b>1816/4719</b>	<b>38.48%</b>



**Figure 2: Contribution of each group to cesarean sections.**

**Table 2: Ranking of group contributions to overall CS rates.**

Rank	Group	Percentage contribution
1	Group 5	14.33%
2	Group 2	9.64%
3	Group 1	4.58%
4	Group 9	2.07%
5	Group 4	2%
6	Group 10	1.6%
7	Group 7	1.41%
8	Group 6	1.16%
9	Group 8	0.8%
10	Group 3	0.67%

Highest contribution of CS was by group 5 and group 2. Together these two groups contribute 62.4% of total CS.

Group 6 and group 9 by themselves did not contribute much but within their groups had 100% CS rates followed by group 5 and group 8. Of the 689 women in group 5, 678 women had cesarean sections and CS rate is 98.4% within this group and contribution to CS rate is 14.33%.

Robson's group 1 (25.36%) had greatest representation in our population followed by group 2 (20.7%) and group 3 (13%). Group 6 (1.16%) and group 8 (1.2%) had least representation in our population.

Ranking of group contribution to over-all CS rate is group 5 (14.33%) > group 2 (9.64%) > group 1 (4.58%) > group 9 (2.07%) > group 4 (2%) > group 10 (1.6%) > group 7 (1.41%) > group 6 (1.16%) > group 8 (0.8%) > group 3 (0.67%).

**DISCUSSION**

The Robson 10 group classification system facilitates comparative analysis of CS rates between hospitals /centres nationally, internationally and globally. Tertiary care centres have high C-Section rates but areas where health care facilities are not available may have maternal deaths due to lack of C-Section facilities.<sup>8-10</sup> Our overall CS rate is 38.48% and it was higher which could be explained by last minute referrals, unavailability of cesarean sections and transfusion facilities at primary booking centres. Contribution of CS rate in group 5 is highest even though vaginal birth after one cesarean section has been advocated as safe option. Number of women who attempt VBAC has declined over recent years due to fear of uterine rupture. Group 2 was next greatest contribution to CS rate after group 5 and two most common indications for CS in this group are failed induction and non-reassuring CTG. Limiting induction of labor (IOL) for which there is no clear indication especially those with unfavorable cervix would have significant effect on CS rate. It is possible that some women may be having a CS for failure to progress when they have not even begun to be in active labor. IOL for past dates should be considered to women after crossing 41 wks of gestational age. We aim to review on a daily basis all primary emergency cesarean sections in previous 24 hours to critically evaluate this as an indication. We implement partograms to every case to detect actual cases of failure to progress. Increasing CS rates among women

with breech presentation is a common phenomenon and group 6 and 7 consists of women with breech presentation and showed high CS rates. Despite the criticisms of term breech trial many hospitals including ours have been reluctant to offer vaginal breech birth. We

should however be more proactive in offering external cephalic version to all eligible women with breech presentation and consider offering vaginal breech delivery to suitable cases.<sup>4,11</sup>

**Table 3: Comparison of our study with other studies.**

Group	Study at Siddhartha Medical College, VJA	Study at Sri Devaraj URS Medical College, Karnataka	Study at Ipswich Hospital, Australia
1	4.58%	6.06%	2.2%
2	9.64%	6.21%	2.9%
3	0.67%	2.25%	1.0%
4	2%	0.62%	2.3%
5	14.33%	9.24%	10.9%
6	1.16%	0.85%	0.8%
7	1.41%	1.08%	1.0%
8	0.8%	0.54%	0.8%
9	2.07%	0.31%	0.5%
10	1.6%	3.65%	1.1%
<b>Overall CS rate</b>	<b>38.48%</b>	<b>30.84%</b>	<b>23.5%</b>

1) With study of R. L. Jallappa Hospital, Sri Devaraj URS Medical College, Kolar, Karnataka from January 2017 to June 2017<sup>2</sup>

2) With study of Ipswich Hospital, Ipswich, QLD, Australia, University of Queensland from January 2015 to December 2015<sup>3</sup>

## CONCLUSION

Robson's 10 group classification provides easy way in collecting information about caesarean section rate which obtains good insight into certain birth groups. Detailed analysis of 10 groups help us to detect the causes of increased caesarean section rates for each group. It is important that efforts to reduce the overall CS rates should focus on reducing the primary CS rate (group 1 and 2) and on increasing VBAC (group 5).

### *Steps to reduce the contribution of Robson's groups towards absolute CS rates are*

- Reducing primary CS rates
- Adequate counseling and encouraging VBAC
- Changing norms for dystocia and non-reassuring fetal status
- Training and encouraging obstetricians to perform versions when not contraindicated.

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*Ethical approval: The study was approved by the Institutional Ethics Committee*

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