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Original Research Article

Analysis of caesarean section rates using Robsons ten group classification: the first step

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ABSTRACT

Background: The Caesarean section (CS) rate is steadily increasing worldwide including India. The overall CS rates are reported but rarely the women are classified. According to WHO Robson ten –group classification is useful as a global standard for assessing, monitoring and comparing cesarean section rates. Our objective was to classify women delivering in our hospital according to various categories as per the 10-group classification (Robsons classification) and analyzing the CS rate in each group.
Methods: This was a cross sectional study conducted at JSS Medical College, Mysore. The data was collected for all women delivering in hospital from January 2016-December 2016 and the women were classified according to Robsons 10 group classification. The proportion of women delivering in each group, the CS rate of each group, and the relative contribution to CS rate from each group was calculated.
Results: Among a total of 5016 women delivering during the study period 37.65% of women were delivered by CS. Maximum no of pregnant women belonged to primigravida group (group 1 and 2). Major contributor to CS rate were primigravida (group 2) at 32.2%. Next contributors were group 5 and group 1 at 28.9 % and 18.6% respectively. Overall the three groups 1, 2 and group 5 contributed to 79.7% of the CS rate while the other group contributed to only 21.3% of CS rate.
Conclusions: Applying Robsons criteria to classify pregnant women allowed for easy classification to identify the category of women most likely to have CS. Reducing primary CS rate and increasing VBAC rates will help to reduce CS rate.

Keywords: Caesarean rate, Primary CS rate, Robsons classification

INTRODUCTION

Although WHO has recommended that CS rates should not be more than 15%, as rates above these are not beneficial the incidence of CS rates is increasing.[1]

In India also the CS rate has increased to 28.1% as compared to 21.8% in 1993-94.[2] Identifying cause for increasing rates is need of the hour as LSCS is associated with increasing mortality and morbidity.[3,4] For analyzing it would be helpful to classify women according into different groups, as not women undergoing LSCS are same.[5]

In 2001, Robson proposed a new classification system, the Robson Ten-Group Classification System to allow critical analysis according to characteristics of pregnancy.[6]

The characteristics used were:

- Single or multiple pregnancy

- Nulliparous, multiparous, or multiparous with a previous CS
- Cephalic, breech presentation or other malpresentation
- Spontaneous or induced labor
- Term or preterm births.

Based on these characteristics all women delivering in the hospital were divided into 10 groups (Table 1).

Table 1: Robson' 10-group Classification.

NO	Groups
1	Nulliparous, single, cephalic, >37 weeks in spontaneous labor
2	Nulliparous, single cephalic, >37 weeks, 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, induced or CS before labor
5	Previous CS, single cephalic, >37 weeks
6	All nulliparous breeches
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, <36 weeks (including previous CS)

It was proposed that by this classification effective strategies to reduce CS rates could be implemented.[7]

In a systemic review conducted by WHO 2011, on various classification system it was found that a woman based classification in general and robsons classification in particular was best for auditing, analyzing and comparing CS rates across different setting and to implement effective strategies to optimize CS rate.[8]

The aim of the study was to analyse the CS rate in various groups after classifying the deliveries in our institution according to Robson' ten group classifications. By this we aimed to identify specific group of women to be targeted to reduce CS rates.

METHODS

This retrospective study was conducted at JSS Medical College and hospital, a tertiary care teaching hospital in Mysore, South India. All the women delivered during a period of one year from January 2016 to December 2016 were included in the study.

The data was collected from the institutional medical and delivery records. A customized case report form was used to collect the data (parity, mode of previous deliveries, previous CS and indications, gestational age, onset of labor, spontaneous or induced labor).

Statistical analysis

All the data was then entered in the Microsoft excel spreadsheet 2013 and was analyzed by using SPSS version 16.0 software. Among the women delivered by CS proportions in various groups according to Robson's ten group classification were calculated.

RESULTS

A total of 5016 women delivered during the study period.

Table 2: Relative size of each group according to Robson's ten-group classification system.

Group number	Robson's ten-groups classification	Relative size of each group (N=5016)	%
1	Nulliparous, single cephalic, >37 weeks in spontaneous labor	2140	42.66
2	Nulliparous, single cephalic, >37 weeks induced or CS before labor	759	15.10
3	Multiparous (excluding previous CS), single cephalic, >37 weeks in spontaneous labor	915	18.24
4	Multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labor	161	3.2
5	Previous CS, single cephalic, >37 weeks	550	10.96
6	All nulliparous breeches	48	1.00
7	All multiparous breeches (including previous CS)	27	0.53
8	All multiple pregnancies (including previous CS)	28	0.55
9	All abnormal lies (including previous CS)	31	0.61
10	All single cephalic, <36 weeks (including previous CS)	357	7.2
	Total	5016	100

When they were analyzed according to Robsons classification, group 1 and 2 contributed to 57.76% of all deliveries and group 3 and 4 to 21.44%. The women in group 5 contributed to 10.96% of deliveries. All the other groups contributed to 3.3% of all deliveries (Table 2).

Table 3: CS rates among women groups according to Robson's Ten-group classification system.

Group number	Robson's ten-groups classification	No. of CS	No. of women in each group	CS rate in each group (no of CS/No of women in each group%)	Relative contribution made by each group to overall CS rate(n=1889)
1	Nulliparous, single cephalic, >37 weeks in spontaneous labor	353	2140	16.4	18.6
2	Nulliparous, single cephalic, >37 weeks induced or CS before labor	609	759	80.23	32.2
3	Multiparous (excluding previous CS), single cephalic, >37 weeks in spontaneous labor	84	915	9.18	4.4
4	Multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labor	58	161	36.02	3
5	Previous CS, single cephalic, >37 weeks	546	550	99.2	28.9
6	All nulliparous breeches	47	48	97.9	2.4
7	All multiparous breeches (including previous CS)	26	27	96.2	1.4
8	All multiple pregnancies (including previous CS)	28	28	100	1.4
9	All abnormal lies (including previous CS)	31	31	100	1.6
10	All single cephalic, <36 weeks (including previous CS)	107	357	29	5.7

During this period 1,889 women were delivered by CS. Percentage of the total number of Cesarean births to the total birth number was 37.65 %. Contribution of various groups to CS rate is given in Table 3.

Of all the groups, the maximum contribution to CS rate was from nulliparous group 2 with relative contribution of 32.2% with CS rate of 80.23%. The next contribution for CS was by group 5 were the relative contribution to CS was 28.9% with CS rate being 99.2%. The third contribution to CS was from nulliparous group 1 with relative contribution of 18.6% and CS rate was of 16.4%. Both the CS rate and relative contribution to CS rate was lower in nulliparous group1 compared to group 2. Relative contribution for CS from multiparous group 3 and group 4 was 7.4% (4.4% and 3%). In this group, also the CS rate was more in group 4 (induced or elective CS before labour) V/s group 3 (spontaneous) with CS rate being 36.02 % vs 9.18% respectively.

Among the remaining groups, in women from Group 6, 7, 8 and 9 although the CS rate was high, approaching 100% (97.9, 96.2, 100, 100%) respectively, the relative contribution for LSCS from these three group was low (2.4%, 1.4%, 1.6%, 1.4%) respectively. The preterm (Group 10) LSCS rate was 29% with relative contribution to LSCS rate being 5.7%.

DISCUSSION

The CS rate in our study was 37.65% which is similar to that reported to by other studies from India and higher than the WHO criteria for optimal care.[9,10] If the women were not classified of the 5070 women delivering in our hospital with CS rate of 37.65%,1889 women would have to be monitored and supervised to reduce CS rate. Applying the 10-group classification has made it possible for us to identify specific group of women to be targeted to reduce CS rate.

Maximum contribution to CS rate was from the nulliparous group (group 1 and 2) at 50.8% and CS rate in this group was 96.6%. In a study conducted in France, when they combined groups 1 and 2, they found that nulliparous women with cephalic singleton fetuses contributed most to the overall caesarean rate; they accounted for nearly one-third of all their caesarean sections performed.[11] On further analysis those entering the labour spontaneously had a low Lscs rate (16.4%) while those with induced labour /Cs before labour (group 2) the CS rate was high (80.23%). In a study done by Sherry K et al those with induced labour or Caesarean section before labour (Robson Group 2) had CS rates ranging from 34.4%-44.6% in British Columbia (accounting for 13.1% of all deliveries), and those with spontaneous onset of labour (Robson Group 1) had CS rates of 14.5% to 20.3% (accounting for 23.6% of all deliveries).[12] In multiparous women though the LSCS rate is expected to be low in our study the LSCS rate was 40% again CS rate was high in group 4 v/s 3 (36.02% vs 9.18%).

In present study, 28.9% of the total CS rate was contributed by Group 5, which is similar to a study done by Wanjari SA (32.8%) 15, while in studies done by Shirsath A and Kansara Vijay CS rate was 54.5% and 46.2% respectively.[14,15] The high CS rate in this group was due to low VBAC while repeat CS rate was 99.2%. Successful vaginal birth after caesarean section (VBAC) with strict monitoring protocols would give a percentage of 67%, comparable to international standards.[16] In group 6- 10 although the CS rate was high, it was mostly due to unavoidable obstetric indications. Other studies also show similar high incidence in this group.[17,18]

Thus, by applying Robsons criteria we were able to identify three potential areas for reducing CS rate, namely all nulliparous cephalic term with induction /LSCS before labour, previous CS group, and nulliparous cephalic term taken for LSCS in labour as major contributor for the high CS rate. Similarly, in Ireland in an audit Robsons classification was used to audit the deliveries and causes were then further analysed.[19] The 10-group classification has made possible comparisons of CS over time in one unit and between different units, in different countries.[6] This data can be used as a starting point to examine the causes for CS in each group.

CONCLUSION

Robson 10-group classification provides easy way in collecting information about Cesarean section rate Applying the classification helps to identify broad categories of women who can be targeted to reduce raising CS rate. By further analyzing causes for CS in the major groups (1, 2 and 5) contributing to CS and formulating specific protocols like having a strict Vaginal birth after CS protocol, and protocols for reducing primary CS we can reduce CS rate. Further studies analyzing CS rate before and after institution of these approaches is the need of the hour.

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REFERENCES

1. World Health Organization. Monitoring emergency obstetric care: a handbook. Geneva, Switzerland; 2009.
2. Kambo I, Bedi N, Dhillon BS, Saxena NC. A critical appraisal of cesarean section rates at teaching hospitals in India. Int J Gynecol Obstet. 2002;79:151-8.
3. Althabe F, Belizán JM. Caesarean section: the paradox. (comment). Lancet. 2006;368(9546):1472-3.
4. Villar J, Carroli G, Zavaleta N, Donner A, Wojdyla D, Faundes A, et al. Maternal and neonatal individual risks and benefits associated with caesarean delivery: multicentre prospective study. BMJ. 2007;335:1025.
5. McCarthy FP, Rigg L, Cady L, Cullinane F. A new way of looking at Caesarean section births. Aust N Z J Obstet Gynaecol. 2007;47:316-20.
6. Robson M. Classification of caesarean sections. Fetal Matern Med Rev. 2001;12:23-39.
7. Robson MS. Can we reduce the caesarean section rate? Best Pract Res Clin Obstet Gynaecol. 2001;15(1):179-194.
8. Torloni MR, Betran AP, Souza JP, Widmer M, Allen T, Gulmezoglu M et al. Classifications for cesarean section: a systematic review. PLoS One. 2011;6:e14566.
9. Patel RV, Gosalia EV, KJ, Vasa PB, Pandya VM. Indications and trends of caesarean birth delivery in the current practice scenario. Int J Reprod Contracept Obstet Gynecol. 2014;3:575-80.
10. Katke RD, Zarariya AN, Desai PV. LSCS audit in a tertiary care center in Mumbai: to study indications and risk factors in LSCS and it's effect on early perinatal morbidity and mortality rate. Int J Reprod Contracept Obstet Gynecol. 2014;3:963-8.
11. Le Ray C, Blondel B, Prunet C, Khireddine I, Deneux-Tharaux C, Goffinet F. Stabilising the caesarean rate: which target population? BJOG. 2015;122:690-9.
12. Kelly S, Sprague A, Fell DB, Murphy P, Aelicks N, Guo Y et al. Examining Caesarean Section Rates in Canada Using the Robson Classification System. J Obstet Gynecol Can. 2013;35(3):206-214.
13. Wanjari SA. Rising caesarean section rate: a matter of concern? Int J Reprod Contracept Obstet Gynecol. 2014;3:728-31.
14. Shirsath A, Risbud N. Analysis of cesarean section rate according to Robson's 10-group classification

system at a tertiary care hospital. Int J Sci Res. 2014;3(1):401-2.
15. Kansara V, Patel S, Aanand N, Muchhadia J, Kagathra B, Patel R. A recent way of evaluation of cesarean birth rate by Robson's 10-group system. J Med Pharmaceut Allied Sci. 2014;01:62-70.
16. Russillo B, Sewitch MJ, Cardinal L, Brassard N. Comparing rates of trial of labour attempts, VBAC success, and fetal and maternal complications among family physicians and obstetricians. J Obstet Gynaecol Can. 2008;30(2):123-128.
17. Stavrou EP, Ford JB, Shand AW, Morris JM, Roberts CL. Epidemiology and trends for Caesarean section births in New South Wales, Australia: a population-based study. BMC Pregnancy Childbirth. 2011;11:8.
18. Lumbiganon P, Laopaiboon M, Gulmezoglu AM, Souza JP, Taneepanichskul S, Ruyan P et al. Method of delivery and pregnancy outcomes in Asia: the WHO global survey on maternal and perinatal health 2007-08. Lancet. 2010;375(9713):490-9.
19. Robson M, Murphy M, Byrne F. Quality assurance: The 10-Group Classification System (Robson classification), induction of labor, and cesarean delivery. Int J Gynecol Obstet. 2015;131:S23-7.

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