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RETROSPECTIVE ANALYSIS OF DATA OF MOTHERS DELIVERING UNDER VARIOUS CATEGORIES OF ROBSON'S CLASSIFICATION IN ORDER TO DETERMINE THE TREND OF CAESAREAN SECTIONS IN A TERTIARY CARE HOSPITAL OF WESTERN RAJASTHAN

Gynaecology

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ABSTRACT

AIM: Caesarean section(CS)is a component of Emergency Obstetric Care (EmOC) and this points towards the availability of caesarean section to prevent maternal and fetal morbidity and mortality. This paper aims to find the CS rate in a newly established tertiary care centre catering to high risk obstetric population.

Methods: We conducted a retrospective study to examine caesarean delivery rates and trends at our department based on the Robson's Ten Group Classification System, over a period of 1.5 years.

Results: Overall caesarean section rate in our labour unit was 39.2%. Maximum number of women were present in Robson group 1 out of which 19.53% women had CS. Largest contribution to the total CS rate was by group 5, contributing 44.22%, which was also the second largest group. Caesarean section rate in group 5 was 87.74%. Most women in this group had CS before onset of labour (5 c category). VBAC rate at our centre was 12.2%. Third largest group of women were in Robson group 3 of which 4.8% underwent CS. Group CS rate for women in group 2A was high at 40.25%.

Conclusion: Robson 10-group classification helps in internal auditing of one's own institutional and labour room protocols in order to improve vaginal delivery rates especially in women who undergo induction of labour and trial of labour after caesarean section. Our study suggests that targeted focus on groups 1, 2 and 5 can lead to maximum effect on total caesarean section rates over time.

KEYWORDS

Caesarean section classification, Robsons criteria, Antenatal care

INTRODUCTION:

The caesarean section (CS) rates are increasing over the years all over the world and this has caused increasing concerns.[1,2] The CS rate is used as a quality indicator of maternal health care. It is a component of Emergency Obstetric Care (EmOC) which points towards the availability of CS to prevent maternal and fetal morbidity and mortality.[3]

World health organization, in 1985 recommended the optimum CS rate to be 10-15% . CS rates above this was not justified as it was observed not to be associated with decrease in maternal and infant mortality rates.[4] A new classification system, 10 group classification (TGCS) or Robson classification was proposed by Dr Michael Robson in 2001.This system categorizes women on some simple characteristics like gestational age, parity, fetal presentation, onset of labor without including the indication of CS. Categorization of women prospectively in this manner makes the groups mutually exclusive and completely inclusive. A systematic review which evaluated various classification systems found that Robson classification was easy to understand, clear, was reproducible and it allowed prospective identification of categories.[5]The WHO in 2015 proposed that this classification system should be used as a global standard for categorizing, assessing and comparing CS rates.

The aim of this study was to examine Caesarean delivery rates and trends at the department of Obstetrics and Gynaecology, All India Institute of Medical Sciences, Jodhpur based on the Robson's TGCS. The labor unit of this tertiary care hospital caters to high risk obstetric patients who are either booked or referred from other district and peripheral hospitals of western Rajasthan. In order to audit and improve our own standard operating protocols for induction of labor and trial of labor following caesarean section (TOLAC), we wanted to see our rates of successful inductions and vaginal birth after LSCS (VBAC). The long term aim is to compare our caesarean section rates in different groups of Robson's classification at different timepoints.

MATERIALS AND METHODS

This study was carried out over a period of 1.5 years from January 1, 2017 to June 30, 2018 after approval of the institutional ethics committee of All India Institute of Medical Sciences, Jodhpur. All Vaginal deliveries and CSs performed over this period were included in the analysis. Data were collected retrospectively from the departmental records which are meticulously maintained in institutional data registers as well as government approved labor records. The records are periodically audited by the senior faculty members supervising the labor unit. Overall CS rate, relative size of each group, CS rate in each group and relative contribution of each group to overall CS rate were calculated. Women were categorized into 10 groups as described by Robson. All the patient characteristics were entered into Microsoft excel sheet and evaluated.

RESULTS

There was a total of 1278 deliveries conducted in the department out of which 776 were vaginal and 502 were caesarean deliveries at All India Institute of Medical Sciences, Jodhpur. Overall CS rate of our labor unit was 39.2% in which the maximum contribution was by women undergoing CS under group V (44.22%). Around 87.74% (222/253) underwent CS in group V and around 50% of these women (129/253) underwent CS before onset of labor (V c category). Maximum number of women were present in Robson group I (n=384) which was out of which 19.53% women had CS (n=75), this was followed by group V being the second largest group (n=253). The third largest group of women were in Robson group III (n=229) of which 4.8% (n=11) underwent CS. The group CS rate for women in group IIA was also unexpectedly high i.e. 40.25%. Table 1 represents the categorisation of all deliveries under Robson's TGCS and contribution of each group in the overall CS rate.

Table 1: Total deliveries under Robson's TGCS and contribution of each group in the CS rate:

Robson's Category	Number of patients	Number of vaginal deliveries	Number of caesarean deliveries	CS Rate (% of number of women in each group)	Relative size of group	% contribution in total CS

I . Nulliparous, singleton, cephalic, ≥ 37 weeks, spontaneous labor	384	309	75	19.53%	(30.05%)	14.94%
II. Nulliparous, single cephalic, ≥37week A.Induced B. CS before labor	186 159 27	95 0	64 27	48.38%(91/186) 40.25%(64/159)	(14.55%)	12.78% 2.53%
III. Multiparous, single cephalic, ≥37weeks, spontaneous labor	229	218	11	4.80%	(17.92%)	2.19%
IV. Multiparous, single cephalic, ≥37weeks A. Induced B. CS before labor	48 44 4	35 0	9 4	27.08% (13/48) 20.45% (9/44)	(3.76%)	1.79% 0.79%
V. Previous CS, singleton cephalic, ≥37weeks A. Spontaneous B. Induced C. CS before labor	253 118 6 129	30 1	88 5 129	87.74%(222/253) 74.57% (88/118)	(19.79%)	44.22% 17.53% 0.99% 25.69%
VI. All nulliparous breeches	29	3	26	89.65%	2.27%	5.17%
VII. All multiparous breeches	17	4	13	76.47%	1.33%	2.58%
VIII. All multiple pregnancies (including previous CS)	25	14	11	44%	1.96%	2.19%
IX. All abnormal lies	3		3	100%	0.23%	0.59%
X. All singleton cephalic, ≤36weeks A. Spontaneous B. Induced C. CS before labor	104 61 27 16	49 17	12 10 16	36.54%(38/104) 19.67%(12/61) 37.04%(10/27)	8.14%	7.56% 2.39% 1.99%
Total	1278	776	502	39.28%		

DISCUSSION

The Robson 10 group classification was applied successfully to our study population. Though smaller in size (19.79%) group V had the highest number of CS contributing around 44.22% of all LSCS performed. Our finding that the largest share in CS is contributed by group V is consistent with results of Robson et al and similar other studies.[6-9]High rate of CS in this group is mostly due to repeat CS prior to onset of labor in these women (group Vc) which is mostly because of maternal request. To our surprise, 75% women with previous CS who came in spontaneous labor also had to undergo repeat LSCS mainly because they did not give consent for TOLAC. Although we do not have the percentage of women who attempted TOLAC but it was noted that there was a high degree of reservation against vaginal delivery following previous history of LSCS. The possible reason is generalized misconceptions among both obstetricians and patients related to the adverse complications following TOLAC like rupture uterus, sudden fetal demise and need for an emergency surgery. Another reason could be the absence of well-equipped labor units in this part of the country. The primary pre-requisites of TOLAC is availability of electronic fetal monitoring and stringent patient monitoring by an experienced obstetrician. Both of these pre-requisites cannot be fulfilled by busy labor units unless there is a supportive infrastructure. Unfortunately, VBAC rate, defined as number of successful VBAC divided by women who underwent previous caesarean delivery, was only 12.25% at our centre despite the availability of both electronic fetal monitoring and adequate experienced staff. The major reason was inability to convince patients for TOLAC due to the long held prejudice against vaginal delivery in this population. We sincerely plan to work upon improving our VBAC rates as the trial of vaginal birth after caesarean is considered not only safe but is also an indicator of an efficient labor unit.[10-12]Encouraging women about VBAC beginning right from their very first antenatal visit, assisting them in making an informed choice, conducted periodic staff training for conducting safe VBAC's and audit of individual consultant's caesarean section rate would surely help in decreasing CS rates in this group.

Primigravida who were induced (group IIA) also had a higher CS rates 40.25% as compared to 19.53% in primigravida patients who had spontaneous onset of labor (group I). This is comparable to the 21.1 % found in the study by Barber et al. It is standard policy at our centre to induce postdate women at completion of 41 weeks. A large number of induced women were high risk and were referred to us with severe preeclampsia, gestational diabetes, fetal growth restriction etc. Induction of labor in women due to various reasons is increasing which ultimately reflects in increased CS in case of induction failure. Induction of labor should be evidence based and unnecessary induction with no clear-cut benefit should be limited by making standard protocols for improving case selection for induction.[13,14] It is extremely prudent to decrease CS rate in this group by decreasing non medically indicated inductions and caesareans by following strict standard operating protocols(SOP'S) which will not only affect the total CS rate in present but will also help in reducing the women in group V in future.[15] There were no non- medically indicated inductions or caesareans in this study population and the department follows evidence based SOP's for inductions and strict criterias are followed for diagnosing failed inductions.

Women in group III (multiparous, single cephalic, ≥37weeks with spontaneous labor) constituted 17.9% of total study population with CS rate of 4.8%. This group is relatively low risk group with lesser obstetric indication for CS thus CS rates are expected to be low while among the multiparous women who were induced at term(Group IV), the LSCS rate was 20% which is also acceptable.

Women in group VI to X had relatively higher percentage of CS because of group specific characteristics. But their overall contribution to total CSs is relatively low (18.1% of 39.28%) similar to the findings of WHO global survey in Latin America. (8)Amongst these, group 10 which had women with singleton pregnancy, cephalic presentation < or = to 36 weeks wherein preterm induction group (Xb) had comparable CS rate to the term induction group (II a) i.e.37.04 % and 40.25 % respectively. CS before labor in group Xc was attributable to obstetric emergencies like placenta praevia, eclampsia, cord prolapse, chorioamnionitis and thick MSL.

Overall CS rate in this study at our centre was 39.28%. Though much higher than recommended rate of 15%, our overall rate was consistent with result of WHO global survey of 35.4% and 36.5% as per study by Barber et al.[8,16] This higher rate is mainly due to the fact that our institute is a tertiary care centre with referrals of complicated cases from the periphery. In a study by Barber et al., the caesarean delivery rate increased from 26 % to 36.5 % between 2003 and 2009; 50 % of the increase was attributable to an increase in primary caesarean delivery. The majority of primary CSs were attributable to labor arrest disorders more specifically arrest of dilatation, non-reassuring fetal heart rate tracings, and malpresentation. The largest contributor to increasing CS rates was non-reassuring fetal heart rate.[16] In order to limit CS rate due to the indication of non-reassuring fetal heart rate in our labor unit, we strictly follow the NICE guidelines [17]for CTG

interpretations which is read by atleast two experienced obstetricians and electronic fetal monitoring is used only for monitoring high risk patients, in others intermittent auscultation is employed.

CONCLUSION

The Robson 10-group CS classification is a standard tool for categorizing women into specific groups. From this data, contribution of different population groups to total caesarean rate can be studied and groups requiring close surveillance can be recognized. However, this classification does not take into account the various variables like BMI, coexisting medical conditions etc which can ultimately affect the CS rate. Robson 10-group classification also helps in internal auditing of one's own institutional and labor room protocols in order to improve vaginal delivery rates especially in women who undergo induction of labor and trial of labor after CS. As seen in this study targeted focus on groups I, II and V will lead to maximum effect on total CS rates over time.

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