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ANALYSIS OF CESAREAN SECTION RATE ACCORDING TO ROBSON'S 10 GROUP CLASSIFICATION

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ABSTRACT **BACKGROUND :** CS rates continue to increase worldwide, particularly in middle and high income countries, and become a major public health concern. To address concern over rising rate of CS & to provide a mechanism for feedback, 10 group classification system was proposed by ROBSON'S in 2001. Objective of study is to Analyze rate of cesarean section according to Robson's 10 group classification. **METHOD:** This prospective observational study, done in the dept. of OBGY, GMERS medical college, Himmatnagar from July 2020 to December 2020 in which hospital births were grouped into modified Robson's 10 group classification Categories. All obstetrics population who underwent cesarean section during Study period were included in study and classified. Relative contribution of each group to overall CS rate, relative size of each group and CS rate were calculated. **RESULT:** Robson's group 5 has highest rate of cesarean among the obstetrics population & responsible for 41.1% of total cesarean performed. Robson's group 2 has 2nd highest rate of cesarean among obstetrics population & responsible for 24.27% of total cesarean performed, together both group contribute 58% 0f total cesarean delivery performed. **CONCLUSION:** The ROBSON'S classification system is a simple, standard tool to identify group making the most signification contribution to the overall CS rate. This findings will allow us to determine which target group to investigate further to help us learn more about the underlying reasons for the difference in the CS rate over time and between units both nationally and internationally.

KEYWORDS : CS rate, Robson's classification, parity, gestational age

Introduction

The crude rate of caesarean section surgery is an important global indicator for majoring access to obstetrics services1. Worries over such increases have lead WHO to advice that Caesarean section rate should not be more than 20% of all deliveries with some evidence that caesarean section rates above this are not associated with additional reduction in maternal and neonatal morbidity and mortality 2. CS rates continue to increase worldwide, particularly in middle and high income countries, and become a major public health concern. To address concern over rising rate of CS & to provide a mechanism for feedback, 10 group classification system was proposed by ROBSONS in 2001[3].

The Robson's classification system groups women in the obstetrics population according to plurality, fetal presentation, parity, obstetrics history, course of labor and delivery and gestational age. In this classification overall rate of CS is presented as a composite of individual rates from 10 groups. The ROBSONS classification would help to understand the internal structure of this rates at individual health facilities and specific population groups. Identifying the indications that lead to each group's contribution to caesarean section rates would help in formulating guidelines to reduce the rates. Within groups without compromising maternal and fetal welfare in 2015, WHO issued an official statement concerning caesarean section rate and promoting the use of ROBSONS classification as a tool for optimizing the caesarean section rate at health care facility.[4]

This not only permits examination of group specific rate to determines their appropriateness, but also demonstrate how The overall rate of CS is affected by both magnitude of group specific rates and relative size of each group thus identify groups that makes largest contribution to overall rate of CS. The purpose of this study was to examine rate of CS using Robeson's 10 group classification to identify groups within obstetrics populations that contribute to most of CS rate. If used on continuous basis, some studies suggest that this classification system can provide critical assessment of care at delivery and be used to change the practice.

Aims & Objectives

Analysis of caesarean section rate by Robson's 10 group classification.

Objectives:

1. To determine the groups within the obstetrics population contributing most substantially to the caesarean section rate.
2. Identify and analyze the group of women who contribute most and least to overall CS rate.
3. Formulate strategies or interventions targeted at optimizing the use of CS.

Material and method

This prospective observational study, done in the dept. of OBGY, GMERS medical college & hospital, Himmatnagar from July 2020 to December 2020 in which hospital births were grouped into modified Robson's 10 group classification Categories. All obstetrics population who underwent cesarean section during Study period were included in study and classified. Relative contribution of each group to overall CS rate, relative size of delivery in each group and CS rate were calculated.

Inclusion criteria: All obstetrics population who underwent cesarean section at GMERS Medical college & hospital during study period from 1st July 2020- 31st December 2020 were included.
Robson's 10 group classification :

1. Nulliparous with singleton cephalic pregnancy >37 weeks gestation in spontaneous labour.

2. Nulliparous with singleton cephalic pregnancy >37 weeks gestation who either had labour induced or were delivered by CS before labour.

3. Multiparous without a previous uterine scar, with singleton cephalic pregnancy >37 weeks gestation in spontaneous labour.

4. Multiparous without a previous uterine scar with singleton cephalic pregnancy >37 weeks gestation who either had labour induced or were delivered by CS before labour.

5. All multiparous with at least one previous uterine scar, with singleton cephalic pregnancy >37 weeks gestation.

6. All nulliparous women with singleton breech pregnancy.

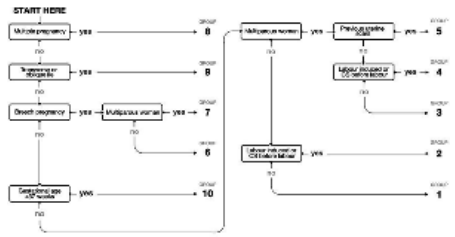
7. All multiparous women with singleton breech pregnancy including women with previous uterine scar.

8. All women with multiple pregnancy including women with previous uterine scar.

9. All women with singleton pregnancy with transverse lie or oblique lie, including women with previous uterine scar.

10. All women with a singleton cephalic pregnancy <37 weeks, including women with previous scar.

Flow chart of ROBSON'S 10 group classification[4]



All the women who delivered by cesarean during this 6 month period were classified into ROBSONS 10 group according to above criteria. All booked and un booked cases were taken into consideration.

Results and Observation

Table 1:- Overall rate of cesarean deliveries

Total number of delivery	4245
Total number of caesarean delivery	1508
Rate of caesarean section	35.52%

Above table shows the overall rate of cesarean deliveries in relation with total number of deliveries .In the present study Total number of deliveries during the 6-month time period were 4245. Total number of caesarean section during this time period were 1508.The overall rate of caesarean at our hospital was 35.52%.

Table 2:- Analysis of CS rate in each group, relative size of delivery in each group and relative contribution of each group to overall CS rate according to Robson's classification group

Robson's group	No. of cesarean section (A)	No. of vaginal delivery	Total no of delivery (B)	Rate of cesarean in each group(A/B×100) (C)	Relative size of deliveries in each group(B/total no of deliveries×100)(D)	Contribution on of each group to overall Cs rate(A/total number of deliveries ×100)
1	133	509	642	20.7%	15.12%	3.13%
2	366	539	905	40.44%	21.31%	8.62%
3	103	1081	1184	8.69%	27.89%	2.42%
4	83	208	291	28.52%	6.85%	1.95%
5	620	250	870	71.26%	20.49%	14.60%
6	81	08	89	91.01%	2.09%	1.90%
7	39	10	49	79.59%	1.15%	0.91%
8	19	45	64	29.68%	1.50%	0.44%
9	12	01	13	92.30%	0.30%	0.28%
10	52	86	138	37.68%	3.25%	1.22%
Total	1508	2737	4245			

Above table shows the analysis of CS rate in each group, relative size of delivery in each group and relative contribution of each group to overall CS rate according to Robson's classification group. In present study, the number of caesarean sections and total number of deliveries in each group are listed in columns A and B respectively. The caesarean section rate in each group were calculated by dividing the number of caesarean sections by total number of deliveries(vaginal + cesarean deliveries) in each group and expressing it as a percentage as presented in column C. The relative size of each of 10 groups was calculated by dividing the number of deliveries in each group by total number of deliveries in obstetrics population and expressing it as a percentage in column D. Finally the percentage contribution made by each group to overall CS rate is shown in column E, which was calculated by dividing the number of caesarean section in each group by total number of deliveries in the obstetrics populations. The contribution made by each group to overall CS rate is thus not only dependent on the rate within the group but also on the size of the obstetric population in the group.

In present study, the cesarean rate in each group was highest in group 9 which was 92.3% but this group made relatively small contribution to overall Cs rate because of relatively small number of pts with transverse or oblique presentation. This was followed by group 6 which was 91.01%. These followed by group 7 contribute 3rd highest 79.59%, followed by group 5 (71.26%). the cesarean rate in each group was lowest in group 3 which was 8.69%. In present study, the relative size of delivery was highest in group 3(27.89%) followed by group 2(21.31%) and group 5(20.49%). It was lowest in group 9(0.30%). In present study, contribution to total caesarean section rate was highest by group 5(14.60%) followed by group 2(8.62%). Together these two groups contribute to two third of total cesarean delivery. Then comes group 1, group 3, group 4, group 6, group 10, group 7, group 8 and group 9. Group 9(0.28%) contribute lowest rate.

Table 3:- Analysis of different indication of caesarean section to overall cesarean deliveries:

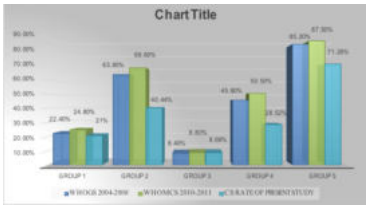
Indication of C-section	Number of C-section	Percentage of C-section
Previous C-section	642	43%
Non reassuring fetal heart rate	212	14%
Malpresentation	132	8%
NPOL	114	8%
Induction failure	50	3%
Elective CS	111	7%
Cord prolapse	28	2%
Placenta Previa	57	4%
Multiple pregnancies	19	1%
Abruption	29	2%
CPD	72	5%
Obstructed labour	42	3%
Total number of CS	1508	100%

Above table shows the Analysis of different indication of caesarean section to overall cesarean deliveries. In present study, total number of cesarean sections were 1508. Among them most common indication was previous cesarean section that contribute 43% of total cesarean deliveries followed by non reassuring fetal heart rate that contribute 14% of total cesarean sections followed by malpresentation that contribute 8% of total cesarean sections.

Discussion

The overall rate of caesarean section in present study is 35.52%. It has been 30 years since the World Health Organization first recommended maximum CS rate of 15%. Recent analysis suggest optimal global caesarean section rate is 20%. WHO propose that at a population level caesarean section rate higher than 10% are not associated with reduction in maternal and newborn mortality rate. Our higher rates reflects the hospital section rate and not the population section rate. Caesarean section rates were higher which could be explained by last minute referral, unavailability of caesarean section and transfusion facility at primary booking centres.

The results of my study were comparable to WHO multicounty survey of maternal and newborn health(WHOMCS) 2010-2011, WHO global survey of maternal and perinatal health (WHOGS)2004-2008.[5]



Above graph shows comparison of caesarean section rate in WHO global Survey of Maternal and Perinatal Health(WHOGS) 2004-2008, WHO Multicounty Survey of Maternal and Newborn Health (WHOMCS) 2010-2011, and caesarean section rate in present study conducted at tertiary hospital in 2020. According to this comparison rate of caesarean section in group 1 was 22.4% in WHOGS 2004, increases 24.8% in WHOMCS 2010, and 20.7% in present study. Rate of cesarean in group 2 is 63.8% in WHOGS 2004, 68.6% IN WHOMCS 2010, and 40.44% in present study. Rate of caesarean in group 3 is 8.4% in WHOGS 2004, increase in WHOMCS 2010 to 8.8%, in present study rate of CS in group 3 is 8.69%. Rate of caesarean in group 4 is 45.8% in WHOGS 2004, increases to 50.5% in WHOMCS 2010 and in present study rate is 28.52%. so caesarean section rate in group 4 is lower at our institute as compare to both study. In group 5 rate of caesarean section is 85.2% in WHOGS 2004, that increase to 87.5% in WHOMCS2010, and further increases to 71.26% in present study.

Conclusion

The ROBSON'S 10 group classification system is a simple, standard tool to identify group making the most significant contribution to the overall CS rate. This classification findings will allow us to determine which target group to investigate further to help us learn more about the underlying reasons for the difference in the caesarean section rate over time and between units both nationally and internationally. This system can be used to facilitate comparisons across time and clinical settings since it accounts for the background composition of the obstetrical population which is likely to differ across time and place.

Rate of cesarean section at our institute is 35.52% that is more than WHO recommended rate of cesarean section, due to tertiary centre work load. In my study, most common indication of cesarean section is women with previous cesarean delivery followed by non reassuring fetal heart rate pattern, together contribute 58% of total cesarean delivery. So following different strategies can be adopted to reduce CS rate in robson's different group.

Promoting VBAC in case of women presenting with previous cesarean section by giving trial of labour after cesarean (TOLAC). All women with previous cesarean section should be given TOLAC according to VBAC guidelines. Recommendation based on current findings on safety of VBAC compared to repeat caesarean section, indicating that 60-80 % of women can achieve safe vaginal delivery after previous lower uterine segment caesarean section6. A similar recommendation also emerged from the National Institute of health VBAC conference pannel in March 20107. Proper monitoring and interpretation of fetal heart rate pattern is important to reduce cesarean section in non-reassuring fetal heart rate pattern group. Reducing primary caesarean section by giving trial of labour in all women having mild cephalopelvic disproportion. All women presenting to us before 36 weeks with malpresentation without any other contraindication, should be offered the option of external cephalic version, to reduce rate of cesarean delivery. Proper conduction of trial of labour, monitoring of progress of labour by partograph and implementation of guideline for induction of labour can effectively reduce CS rate. The goal is to implement policies and practices to target reduction of primary caesarean section rate, to reconsider VBAC deliveries and to have these policies and practices accepted by consumers, maternal newborn healthcare providers and public health stakeholders.

Scientific advances, cultural and social changes and medicolegal considerations seem to be the main reasons for increasing acceptability of cesarean section. An increasing rate of cesarean section is a burden on the health system. Cesarean section is however, is associated with increased risk to both mother and child. It should only be performed when it is clearly advantageous. Therefore, decision to perform a cesarean delivery must be chosen carefully and should not be profit oriented. We suggest that all hospitals and health authority use this standardized classification system periodically as a key component of their quality improvement initiative for monitoring caesarean section rates as well as to reduce cesarean section rate. Among all other factors, perhaps the place of delivery(private or public medical institute) is becoming strongest one that influencing cesarean section rate. Utilization of ANC, better doctor patient communication, Doctor's commitment to reduce the rate of cesarean section, government's initiative to develop better health care infrastructure may help to reduce the high and increasing rate of cesarean delivery.

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