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ANALYSIS OF CAESAREAN SECTIONS USING ROBSON'S TEN GROUP CLASSIFICATION SYSTEM IN A TERTIARY CARE HOSPITAL

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ABSTRACT   **Background -** Over the last decades, there has been a progressive increase in rate of deliveries by caesarean section (CS) in most countries. Rising CS rates are major public health concern and cause worldwide debates due to potential maternal and perinatal risks. In order to propose and implement effective measures to reduce CS rates, it is necessary to have a tool to monitor and compare CS rates .WHO proposes the Robson Classification system as a global standard for assessing, monitoring and comparing caesarean section rates within healthcare facilities over time, and between facilities. **Method -** This cross-sectional study was conducted at "The Department of Obstetrics and Gynecology, MTH Hospital , Indore, Madhya Pradesh". The study population included total of 4508 women who underwent CS in hospital during 12 months of study period from January 2022 to December 2022.Women having laparotomy for uterine rupture or those with missing records excluded.Demographic profile and all relevant parameters noted and cases categorized as one of Robson's criteria. **Results -** As per Robson's criteria,Group-5 and Group-1 were found to be most contributing among deliveries done in our study. Previous cesarean section and fetal distress were most common indications of cesarean section. **Conclusion -** Robson's criteria can be used as auditing tool for the increasing number of caesarean sections being performed around the world. To minimize or optimize the CS rate, one needs to regularly check the indications of induction of labour and indications of CS.

KEYWORDS : Robson's Classification , caesarean section rate, indications of caesarean section

INTRODUCTION

Over the last decades, there has been a progressive increase in rate of deliveries by caesarean section (CS) in most countries. Rising CS rates are major public health concern and cause worldwide debates due to potential maternal and perinatal risks associated with this increase, inequity in access and cost issues.In order to propose and implement effective measures to reduce CS rates, it is necessary to have a tool to monitor and compare CS rates.[1]WHO proposes the Robson Classification system as a global standard for assessing, monitoring and comparing caesarean section rates within healthcare facilities over time, and between facilities. The classification is simple, robust, reproducible, clinically relevant, and prospective.

WHO expects that use of Robson Classification will help health care facilities to:[1]
- Identify and analyze the groups of women which contribute most and least to overall CS rates.
- Assess the effectiveness of strategies or interventions targeted at optimizing the use of CS.
- Assess the quality of care and of clinical management practices by analyzing outcomes by groups of women and to assess the quality of the data collected.

OBJECTIVE

To analyze caesarean sections (CS) using Robson 10-group classification system in a tertiary care hospital.

METHOD

This cross-sectional study was conducted at "The Department of Obstetrics and Gynecology, MTH Hospital , Indore, Madhya Pradesh". The study population included total of 4508 women who underwent CS in hospital during 12 months of study period from January 2022 to December 2022.Written consent taken from all study participants.Women having laparotomy for uterine rupture or those with missing records excluded. Demographic profile and all relevant parameters like obstetric history, fetal lie and gestational age collected from records. Based on those parameters, cases categorized as one of Robson's criteria.The criteria consist of 10 groups ranging from 1 to 10.The overall CS rate , Relative size of each group, contribution of each group to the overall CS rate, and CS rate within each group calculated.All completed data entered in SPSS version 26.0 for analysis.

RESULTS

During the study period, there were 11379 deliveries, of which 4508 (39.61%) were Caesarean Sections. The mean age of participants was 27.5 years.The mean gestational age was 39.5 weeks. Most of the women, 3028 (67.1%) were between 20 to 35 years of age followed by the age group ≥35 years with 1241 women (27.5%) and with age group <20 years as many as 239 women (5.3%) .Majority of the women, 2639 (58.5%) belonged to rural areas of residence, 2295 (50.9%) were primigravida and the remaining 2213 (49%) were multigravida . 3220(71.4%) gestational aged between 37-42 weeks and the remaining 575 (12.75%) cases were preterm pregnancies.1542 (34.2%) cases had history of cesarean section and 4146 (91.9%) had cephalic fetal presentation. (Table 1)

Table No. 1 Characteristics Of Study Participants

Characteristics		Number (%)
Age (years)		
	< 20	239 (5.3%)
	20-35	3028 (67.1%)
	> 35	1241 (27.5%)
Area of Residence		
	Urban	1869 (41.5%)
	Rural	2639 (58.5%)
Gravidity		
	Primigravida	2295 (50.9%)
	Multigravida	2213 (49%)
Parity		

	Nulliparous	2295 (50.9%)
	Multiparous	2213 (49%)
Gestational Age (weeks)		
	<37	575 (12.75%)
	37-42	3220 (71.4%)
	>42	713 (15.8%)
History of Previous Cesarean Section		
	None	2966 (65.8%)
	1	834 (18.5%)
	>1	708 (15.7%)
Fetal Presentation		
	Cephalic	4146 (91.9%)
	Breech	362 (8.03%)

In our study, single cephalic presentation at term and previous CS (group 5) were the highest contributors to overall CS rate, contributing 13.5% of all CS as these patients usually offered scheduled CS procedures, also these patients often refuse to do vaginal delivery trials even though it has been offered.

The second highest contributor was group 1 contributing 7.8% of all CS. The third highest contributor was group 10 contributing 5.05 % of all CS rate. Group 2 was the fourth largest group accounting for 4.4 % to overall CS. In group 2, presence of labor induction beforehand was found to play role in increasing number of CS. This was followed by Group 3 and Group 6 which accounted for 2.8 % and 2.8 % respectively to overall CS rate.(Table 2)
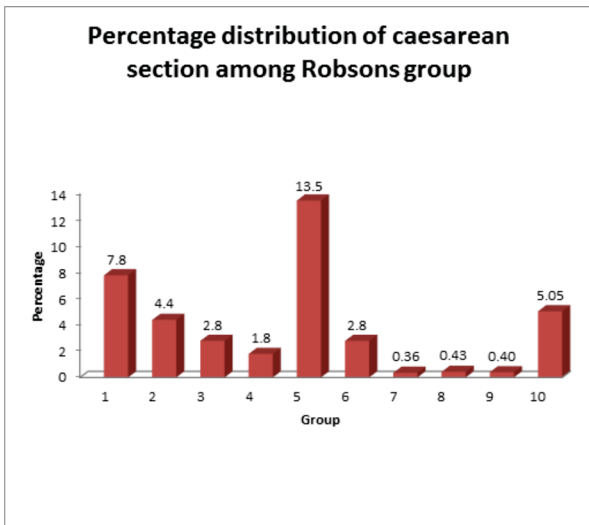
Graph 1 : Percentage Distribution Of Ceasarean Sections Among Robson's Group

**Table No. 2: Distribution Of Caesarean Section In Terms Of Robson's Ten Group Classification System**

Group	Descrip-tion of Robson's 10-Groups Classi-fication	No. of Caesarean Section in group	No. of women in group	Group size(%)	Group Caesarean Section rate(%)	Absolute Group contri-bution to overall Caes-arean Section rate(%)
1	Nulliparous, single cephalic, ≥37 weeks, in spont-aneous labour.	896	3260	28.6	27.5	7.8
2	Nulliparous, single cephalic, ≥37 weeks, induced or caesarean section (CS) before labour.	504	1164	10.2	43.3	4.4
3	Multiparous (excluding previous CS), single cephalic, ≥37 weeks, in spontaneous labour.	324	2040	17.9	15.8	2.8
4	Multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labour.	209	1090	9.6	19.2	1.8
5	Previous CS, single cephalic, ≥ 37 weeks.	1542	1884	16.5	81.84	13.5
6	All nulliparous breeches.	320	320	2.8	100	2.8
7	All multiparous breeches (including previous CS).	42	42	0.36	100	0.36
8	All multiple pregnancies (including previous CS).	50	84	0.74	59.5	0.43
9	All abnormal lies (including previous CS).	46	46	0.40	100	0.40
10	All single cephalic, <37 weeks (including previous CS)	575	1449	12.73	39.6	5.05

According to our study, Previous caesarean section (34.2%) and fetal distress (24%) were found to be most common indications. Other indications for performing CS were failed induction of labor (15.8%) , Hypertensive disorders of pregnancy(7.7%), breech presentation(8.03%), contracted pelvis (1.95%), cephalopelvic disproportion (1.37%), Placenta previa (1.24%), Abruptio placentae (1.06%), severe oligohydramnios (1.02%), obstructed labor (0.5%), Transverse lie (0.57%), Deep transverse arrest(0.48%),Multiple pregnancy (0.55%) , Others like compound presentation, uterocervical descent, face presentation, cancer cervix (1.44%).(Table 3)

Table 3: Indications For Performing Ceasarean Sections In The Present Study

	Indications	Number (%)
1	Previous Caesarean Section	1542 (34.2%)
2	Fetal Distress	1082 (24%)
3	Hypertensive Disorders of Pregnancy	348 (7.7%)
4	Failed Induction of Labour	713 (15.8%)
5	Cephalopelvic Disproportion	62 (1.37%)
6	Contracted Pelvis	88 (1.95%)
7	Breech	362 (8.03%)
8	Abruption	48 (1.06%)
9	Placenta Previa	56 (1.24%)
10	Severe Oligohydramnios	46 (1.02%)
11	Obstructed Labor	23 (0.5%)
12	Transverse Lie	26 (0.57%)
13	Deep Transverse Arrest	22 (0.48%)
14	Multiple Pregnancy	25 (0.55%)
15	Others	65 (1.44%)
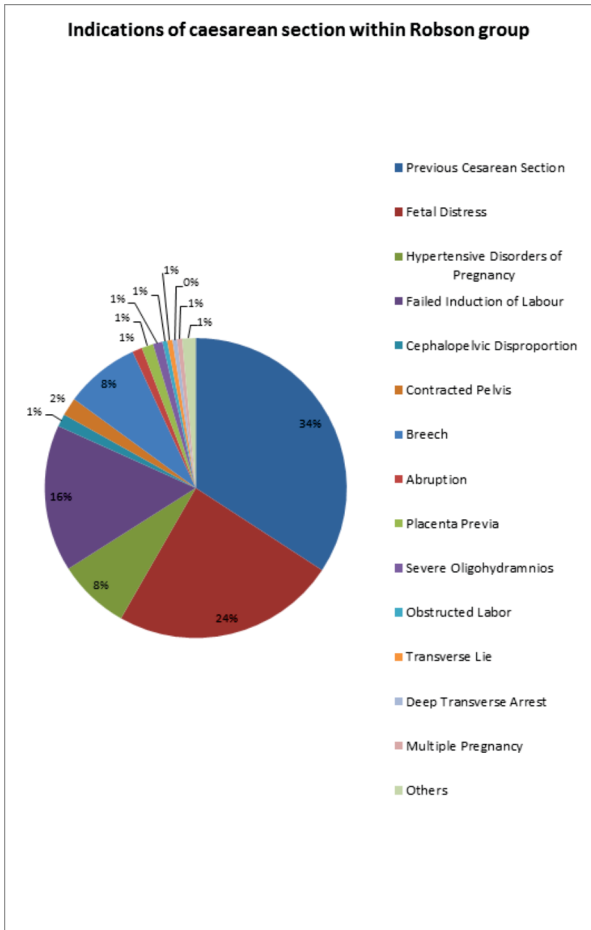
Graph 2: Indications Of Caesarean Sections In Robson's Group

DISCUSSION

In present study, Group-5, Group-1 and Group-10 were most prevalent groups accounting for 13.5%, 7.8%, 5.05% to overall CS rate respectively.As observed vaginal delivery can lead to uterine rupture among women with previous history of caesarean section.So women undergoing delivery after previous scar usually opt for CS leading to highest contribution of group 5 to overall CS rate. Group 1 and group 10 are the major contributor after group 5 to overall CS rate in our study showing that these women are having multiple obstetric complications and referred to our facility as high risk cases, contributing to overall CS rate.Group 2 was fourth largest group accounting for 4.4 % to overall CS rate. Probable

cause for increase in rate of the cesarean section could be obstetricians inducing labor for unjustified indications and resorting to cesarean section if the induction fails.

Different to our findings, Khan MA et al.[2] observed Group-5 and Group-2 to be the most common. Gilani S et al.[3] found Group-5 and Group-1 to be the commonest groups showing 30.7% and 21.4% cases respectively. A study done by Poudel R, et al. at Kathmandu Model Hospital showed Group 1 was the major (24.2%) contributor to the overall caesarean section rate.[4] Similarly, Gautam B, et al. did a retrospective cross sectional study in Nepal and found that women with previous CS (Group 5) comprise the largest proportion (9.4%) of the overall 26.41% CS rate.[5]

Most commonly reported indications in our study for CS were fetal compromise and previous CS ; similar indications also reported from eastern Ethiopia[6] According to our study rate of caesarean section in our hospital was found to be 39.61% which is quite high compared to WHO criteria (15%).It is because our hospital is referral hospital where most women need emergency management.

According to our study, CS rate in Robson group 1 was 27.5%, which is much higher than Robson's which showed that rates under 10% are achievable.[1] The proportion of group 3 was 15.8%.This may reflect that normal spontaneous deliveries take place at lower health facilities and ours is referral hospital where there are more high risk cases leading to higher CS rate.

In our study, CS rate in group 2 (43.3%)was higher than Robson's guideline (CS rate between 20% - 35%).[1] and in group 4 (19.2%)which should rarely be higher than 15%. It may be due to a high proportion of failed inductions in these cases. CS rate in group 5 in our study was 81.84%, which is higher than Robson guideline (50%–60%).[1] This indicates that in our study, very few women were offered a trial of labour after having previous Cesarean Section.

CS rate for breech in group 6 and group 7 in our study was similar to Robson's guidelines.CS rate in group 8 was 59.5% which is comparable to Robson 's guidelines(60%)

WHO manual stated that size of group 9 should be less than 1% of the total and the CS rate should be 100% for this group.[1] In our study, size of group 9 was 0.4% and the CS rate in this group was 100%.

Group 10 was found to be third-largest obstetric group. The CS rate in group 10 was 39.8%. Our study done in tertiary referral hospital with dedicated maternal-fetal medicine unit, increasing likelihood of iatrogenic prematurity.

CONCLUSION

Robson's criteria can be used as auditing tool for the increasing number of cesarean sections being performed around the world. As per Robson's criteria,Group-5 and Group-1 were found to be most contributing among deliveries done in our study. Previous caesarean section and fetal distress were most common indications of caesarean section.To minimize or optimize the CS rate, one needs to regularly check the indications of induction of labour and indications of CS. Caesarean Section is a lifesaving procedure but needs to be done for truly indicated cases correctly only weighing its risk and benefit. Unless we reduce rate of primary cesarean section, it may not be possible to reduce cesarean section rate.

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