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Original Research Article

Cesarean audit using Robson's ten group classification system at a tertiary care centre UP

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Abstract

Background: The global rise of cesarean rate is an issue of public health concern as it is associated with the complications and increase risk of maternal morbidity and mortality. To address this issue caesarean audit at various health facilities is needed. This study aimed to analyze the cesarean section according to Robson's Ten Groups Classification System (TGCS) at tertiary care hospital.
Materials and Methods: This cross-sectional study was conducted at department of obstetrics and gynecology, Hind institute of medical sciences atria, Sitapur from 1st October 2023 to 31st March 2024. The study population included a total of 165 women who underwent CS in the hospital during the specified study period. For each case, we collected data regarding maternal characteristics and pregnancy-related information. The dependent variable was Robson classification group.
Result: Most of the patients, 41(24.84%) turned out to be from TGCS Group-5. Whereas Group-2 and Group-10 were the 2nd and 3rd most common group, accounting for 33(20.0%) and 24(14.54%) cases respectively. Previous cesarean section (23.0%) and fetal distress (20.6%) were found to be the most common indications leading to cesarean section.
Conclusion: As per Robson's Ten-Group Classification, Group-5 and Group-2 were found to be the most contributing among deliveries made. Previous cesarean section and fetal distress were the most common indications of cesarean section.

Keywords: Caesarean section, Foetal distress, Delivery, TGCS.

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1. Introduction

Caesarean has become the most performed surgery all over the world. There is steady rise in the caesarean section rate, as per NFHS data, it has risen from 17% during National Family Health (NFHS) survey- 4 (2015-2016) to 21.5 % during NFHS-5 (2019-21) in India.[1,2] According to WHO the ideal rate of caesarean section to be b 10%-15%.[3,4] It is lifesaving procedure and often performed when there is risk to foetus or mother in conducting vaginal delivery by trained medical personnel. The global rise in caesarean delivery is worrisome as it is associated with higher maternal morbidity and mortality and affect the outcome of subsequent pregnancy in comparison to normal vaginal birth. Some of the common complications associated with caesarean section are increase chances of PPH, retained placenta, need for blood transfusion, postpartum infection, bladder injury and scar ectopic etc. Although most of the women with previous section have fair outcome when it is done by trained person but, still there are increased risk of placenta previa, placenta accreta and uterine rupture requiring hysterectomy in future pregnancies.[5,6] Caesarean section is not only associated with complication but also having high health care cost in comparison to vaginal delivery.[7,8]

It is a real challenge to optimize caesarean section rate while maintaining safe outcome for both mother and foetus

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and requires constant audit of caesarean being performed in health care settings, which will help in planning and implementation of effective strategies and improvement in clinical practice. The Robsons classification system or ten group of classification system of caesarean section was introduced by world health organization (WHO) in 2015 and the international federation of gynaecology and obstetrics (FIGO) in 2016 as a global standard for comparing and monitoring of the caesarean rate all over the world.[9] This system classifies all women into 10 categories based on various obstetric characteristics (parity, singleton or multiple, onset of labour, term / preterm, presentation /lie).[10,11]

So, the study aimed to evaluate the caesarean rates and the groups with highest risk of caesarean section at a tertiary care centre HIMS UP.

2. Materials and Methods

This cross-sectional study was conducted from 1st October to 31st March 2024 (6 month) in the department of obstetrics and gynaecology, Hind institute of medical sciences atria Sitapur. The study population was comprises of a total 165 antenatal women who underwent caesarean section in the hospital during the specified study period. For each case we collected data regarding parity, gestational age, lie presentation, multiple pregnancy, onset of labour spontaneous or induced, mode of delivery in previous pregnancies. All these variables were used to classify the women according to Robsons classification. Data analysis was done using SPSS software version 21. The categorical variables were presented as number, percentages (%), mean and SD. The study was conducted after approval from institutional ethical committee of Hind institute of medical sciences.

3. Result

A total of 352 deliveries were conducted during the study period, out of which 165 were caesarean section with a caesarean rate 46.87%. The overall mean age of study participants was 26.53± 5.1 years, while most of the women, 125(78.12%) were between 20-35 years of age. Majority of the women, 138(83.63%) belonged to rural areas of residence, 123(74.54%) of women were multiparous, while nulliparous constituted only 42(25.45%) of the study (**Table 1**).

Table 1: Sociodemographic variables of study participants

Characteristics		Number (%)
Age (years)	<20	18(10.90%)
	20-35	125(78.12%
	>35	22(13.33%)
Area of residence	Urban	27(16.36%)
	Rural	138(83.63%)
Parity	Nulliparous	42(25.45%)
	Multiparous	123(74.54%)

A history of previous caesarean section was present in 34(20%) of women, while 64.84% of women had normal vaginal delivery. Most of the caesarean section was at term pregnancy (65.45%), while preterm caesarean section was noted in 34.54% of women. Out of total study participants, 20.60% of patients were admitted with labour pain while Induction of labour was done in 24.24% of cases. In 51.15% of women caesarean section was performed before onset of labour pain. The cephalic presentation was the most common foetal presentation (81.21%) with single gestation (93.3%). (**Table 2**)

Table 2: Obstetric characteristics of study participants

Variables	Number (N)	Percentage (%)
History of previous caesarean section	None	107(64.84%)
	1	34(20.0%)
	>1	24(14.54%)
Gestational age	<37	57(34.54%)
	37-40	108(65.45%)
	>40-42	0
Onset of labour	Spontaneous	34(20.60%)
	Induction of labour	40(24.24%)
	Pre-labour Caesarean	91(51.15%)
Foetal presentation	Cephalic	131(79.39%)
	Breech	30(18.18%)
	Transverse lie	4 (3.22%)
Number of foetuses	Singleton pregnancy	154(93.33%)
	Twin	11(6.66%)
	Triplet	None

Table 3 shows distribution of caesarean by Robsons TGCS classification. In this study, group 5 participants (All with prior caesarean, singleton, cephalic, >37 weeks) were the major contributors, contributing 24.84% to the overall caesarean section and 11.64% to all deliveries. Group 2 participants (nulliparous, singleton, cephalic,>37 weeks, induced labour or CS before labour) were the second highest contributors, contributing 20.0% to the overall caesarean and 9.37% to all birth.

The third highest contributors were all single cephalic, < 37 weeks (including previous caesarean) group 10 contributing 14.54% to the overall caesarean rate and 6.81% to all deliveries. (**Table 3**)

Table 3: Distribution of caesarean by Robsons TGCS classification

Classification (groups)	Description of Robson's ten group classification	Number	(%) contribution made by each group to overall CS
1	Nulliparous, single, cephalic,>37 weeks, in spontaneous labour.	10	6.06%
2	Nulliparous, single, cephalic,>37 weeks, induced or Caesarean Before labour	33	20.0%
3	Multiparous (excluding previous Caesarean) single, cephalic, >37 weeks, in spontaneous labour.	7	4.24%
4	Multiparous (excluding previous caesarean) single, cephalic,>37 weeks, induced or caesarean before labour.	16	9.69%
5	Previous caesarean single, cephalic,>37 weeks	41	24.84%
6	All nulliparous breeches.	8	4.84%
7	All multiparous breech (including previous caesarean)	7	4.24%
8	All multiple pregnancies (including previous caesarean)	10	6.06%
9	All abnormal lie ((including previous caesarean)	9	5.45%
10	All caesarean single cephalic, < 37 weeks (including previous caesarean)	24	14.54%

The fourth highest contributors were multiparous (excluding previous CS), single cephalic, >37 weeks, induced or Caesarean before labour (group 4) 9.69% contributing to the overall caesarean rate and 3.40%to all deliveries.

The remaining groups (group 1,3,6,7,8 and 9) contributed 30.90% of all caesarean and 14.4% of all deliveries. The Chi-square test showed that the Caesarean section rate was significantly higher in groups 5, 2 and 10 compared to other Robson groups (p value < 0.001). (**Table 4**

Table 4: Contribution of different subgroup of TGCS

Robsons group	N	N1	N2
1	10	6.06%	2.84%
2	33	20%	9.37%
3	7	4.24%	1.98%
4	16	9.69%	4.54%
5	41	24.84%	11.64%
6	8	4.84%	2.27%
7	7	4.24%	1.98%
8	10	6.06%	2.84%
9	9	5.45%	2.55%
10	24	14.54%	6.81%

N= total no. of CS in each group of TGCS. N1= contribution of each group to total CS (%) =N/totals x 100. N2= contribution of each group to total birth (%) =n/ total deliveries x 100. Total delivery - 352. Total CS- 165. Caesarean rate- 46.87%

Previous caesarean section (23.0%) and foetal distress (20.6%) were found to be most common among the various indications of caesarean section. (**Table 5**)

Table 5: Indications of caesarean sections

Indications	Number (%)
Previous caesarean section	38(23.0%)
Foetal distress	34(20.6%)
Hypertensive disorders of pregnancy	5(4.03%)
Failed induction of labour	6 (4.8s%)
Cephalopelvic disproportion	11(8.87%)
Maternal request	9 (7.25%)
Contracted pelvis	7(5.64%)
Breech	7(5.64%)
Abruption	4(3.22%)
Placenta previa	8(6.45%)
Transverse lie	4(3.22%)

4. Discussion

In our study, the overall caesarean section rate was 46.87% which is quite high. The rate of caesarean section has been increasing in almost all institute all over the world.[1-3] Many reasons are attributed to this rise mainly the better diagnostic procedures like colour doppler and electronic foetal monitoring and growing medicolegal issues. Robsons groups 5,2 and 10 were the major contributors to the overall Caesarean section rate in our institution which is similar to other studies but in different order.[10,11]

While in the study conducted by Pati et al,[12] group 2 was the major contributor followed by sgroups1,3 and 10. In the study by Sungkar et al,[13] group 10 was the major contributor, followed by groups 1,3 and 8. Multiparous women with previous LSCS (Robsons group 5) and nulliparous women who had induction of labour or prelabour caesarean (Robson

group 2) contributed to 44.84% of total caesarean section. Similar result was reported in a study done by Pammy Pravina et al.[14] Group 5 alone contributed 24.84% of caesarean section which may be due to low rate of VBAC (Vaginal birth after caesarean).[15] The standard practice is considered VBAC in women with one previous caesarean section who had caesarean section for nonrecurrent indications. Although we did not explore about the women who planned or attempted for VBAC, it is a possibility that many women with previous caesarean section did not opt for VBAC because of associated risk of maternal and foetal morbidity. So, this needs adequate counselling of the women as well as the family to make informed choices on the mode of delivery in successive pregnancy. VBAC rate may also be low because of awareness of patients and medicolegal fear of the obstetrician. Short inter-conception period may also a one of the reasons for not considering for VBAC because of poor contraceptive practices. Robsons group 2 (all nulliparous women with single cephalic term pregnancy who had induction of labour or planned caesarean) was the second largest contributor (20.0%) to overall caesarean section after group 5. High caesarean section rate for this group has also been reported in the study conducted by Shenoy et al[16] Women in this group are potentially low risk women, hence the high CS rate indicates extensive possibility for intervention that may result into reduction of caesarean rate. The third largest contributor to overall caesarean section rate was group 10 (preterm birth) with a caesarean section rate of 14.54%. Of total caesarean section. It is probably that the caesarean section caried out for this group of women were done to improve perinatal outcome. All women in group 6 (nulliparous breech) and group 9 (abnormal lie) had Caesarean section, this was justified as these women had foetal malpresentation or abnormal lie. The lower rate of Caesarean section in group 3 (4.24%) compared to group 1 (6.06%) was not unusual as nulliparous women are more vulnerable to have dysfunctional labour then multiparous women.[17]

As there is significant contribution of group 5, 2 10 & 4 in overall caesarean rate, special attention and analysis is required for these groups.

5. Conclusion

As there is variation among the contributors at different institute, this clearly indicates the significance of Robsons classification for caesarean audit. It is a good tool to identify the target groups where intervention aimed to reduce caesarean section rate will be most effective and will helps in planning centre specific strategies for specific group to check the rising caesarean section rate effectively.

Every institute must conduct such audit time to time to reanalyse the existing protocol and to plan new policies to reduce caesarean section rate without compromising the mother or foetal health at their centre. Hence an internationally accepted Robsons TGCS must be implemented in all obstetric setups to critically analyse the caesarean section rate.

6. Source of Funding

None.

7. Conflict of Interest

None.

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