

Analysis of caesarean sections using Robsons classification system in a tertiary centre at CIHSR, Dimapur, Nagaland, India

Bendangtoshi Jamir, Kanili Jimo, Rebeki Momin

Corresponding author: Dr Bendangtoshi Jamir, Senior Consultant, Department of Obstetrics and Gynaecology, Christian Institute of Health Sciences and Research, Dimapur, Nagaland, India; Email – jamirbendangdr@gmail.com

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ABSTRACT

Objectives: The objectives of the study were to assess the rate of caesarean section rate and analysis the caesarean sections using Robson's TGCS. **Methods:** A retrospective cohort study was done at CIHSR, Dimapur, Nagaland using total enumerative sampling technique of all caesarean deliveries from 1st January 2019 to 31st December 2019. **Results:** Of the total 971 deliveries, 299 had caesarean deliveries which give and overall caesarean rate of 30.79%. Group 5 contributes the maximum number of caesareans (32.44%) followed by group 2 and group 1 contributing 25.75% and 13.04% respectively. Group 3 and group 4 constituted a total of 11.7% of caesarean section in our study. Total breech delivery by caesarean was 25 (7.02%) out of which 21 (84%) were delivered by caesarean section. The rest multiple pregnancy (group 8), abnormal lie (group 9) and preterm (group 10) constitutes 3.01%, 0.67% and 6.35% respectively. **Conclusions:** In our study, the maximum overall caesarean section rate was contributed by group 5 (32.44%) which was followed by group 2 (25.75%) and group 1(13.04%). So reduction of the primary caesarean sections for primi mothers by following proper induction protocols is needed to reduce the cesarean sections.

Keywords: Robson's TGCS, caesarean section, induction, cesarean rate reduction.

Caesarean section (CS) is an important lifesaving procedure for both the mother and the baby in obstetrics practice but it has been observed that there is a rise in caesarean section rate in almost all the centers around the world. Even though it's a lifesaving procedure, unnecessary caesarean section can lead to increased morbidity and mortality. In addition to the health risk of increase rates of caesarean section, it also puts an additional financial burden, particularly in low and middle class community. The World Health Organization recommends a caesarean section rate of 15% or less^{1, 2} to balance the benefits and risks of caesarean section. In spite of recommendation from WHO, caesarean delivery rates have been on the rise in the last few decades around the world, going even upto 50- 60%^{3, 4} in some centres.

Robson's Ten Group Classification System (TGCS) is the most accepted appropriate classification globally by different institutions^{5, 6}. Robson's Ten Group Classification System (TGCS) proposes a system that classifies women into 10 groups based on their obstetric characteristics such as parity, mode of previous deliveries, caesarean section before labour, gestational age, fetal presentation, no. of fetus, onset of labor, spontaneous or induced labor, abnormal lies and preterm delivery.

Although a few of similar studies are reported from India and other countries, not many of them were conducted from North East part of India. CIHSR and Hospital is a tertiary care centre in Nagaland, India and conducts more than 1000 deliveries annually with a significant number of caesarean deliveries, amounting to 37 % and 30% in 2018 and 2019

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respectively.

The objective of the present study was to classify the caesarean deliveries in this center and analysis as per Robson's TGCS which will help the institution in making decision and policies in regards to reduction in caesarean section rate.

Methodology

The study was a retrospective cohort study at CIHSR, Dimapur, Nagaland. The samples were women who had caesarean section and the total enumerative sampling technique was used.

Inclusion criteria - All women delivered by caesarean section during a period of one year from 1st January 2019 to 31st December 2019, irrespective of birth outcome were included in the study.

Exclusion criteria - Women who had caesarean section outside of CIHSR, normal vaginal deliveries, and instrumental deliveries were excluded. Incomplete record or details were also excluded from the study.

Data collection - Data collection from Hospital IP records maintained in medical record department (MRD). Data were collected by the principal investigator and co investigator. Completeness of the data were checked by the first author.

Statistical analysis - Variables based on TGCS are entered and analysed in Microsoft Excel. Descriptive statistical analysis was used.

Result

The total numbers of women delivered over the study period from Jan 2019 to Dec 2019 were 971, out of which cesarean section deliveries were 299 which gives and overall caesarean rate of 30.79 %. Table 1 describes the various groups of modified Robson's ten group classification system along with the number and percentage of each group. Group 5 (previous caesarean section, singleton, cephalic, ≥37 weeks' gestation) contributes the maximum number of caesareans (32.44%) followed by group 2 and group 1(nulliparous, singleton, cephalic, ≥37 weeks' gestation, in spontaneous labour/ induced labour or caesarean section before labour) contributing 25.75% and 13.04% respectively. Multiparous women without previous caesarean section (group 3 and group 4) constituted a total of 11.7% of caesarean section in our study. Total breech delivery by caesarean was found to be 7.02% out of which 4.68% were nulliparous and 2.34% were multiparous. The rest multiple pregnancy (group 8),

Table 1: Modified Robson's ten-groups classification

Group No	Modified Robson's ten-groups classification system	No of C/S (Total-299)	C/S rate (%)
1	Nulliparous, singleton, cephalic, ≥37 weeks' gestation, in spontaneous labour	39	13.04
2	Nulliparous, singleton, cephalic, ≥37 weeks' gestation, induced labour or caesarean section before labour	77	25.75
	Induced	32	10.70
	Caesarean section before labour	45	15.05
3	Multiparous (excluding previous caesarean section), singleton, cephalic, ≥37 weeks' gestation, in spontaneous labour	17	5.68
4	Multiparous without a previous uterine scar, with singleton, cephalic pregnancy, ≥37 weeks' gestation, induced or caesarean section before labour	18	6.02
	Induced	5	1.67
	Caesarean section before labour	13	4.35
5	Previous caesarean section, singleton, cephalic, ≥37 weeks' gestation	97	32.44
	Spontaneous labour	24	8.03
	Induced	1	0.33
	Caesarean section before labour	72	24.08
6	All nulliparous with a single breech	14	4.68
	Spontaneous labour	3	1.00
	Induced	0	0
	Caesarean section before labour	11	3.68
7	All multiparous with a single breech (including previous caesarean section)	7	2.34
	Spontaneous labour	4	1.34
	Induced	0	0
	Caesarean section before labour	3	1.00
8	All multiple pregnancies (including previous caesarean section)	9	3.01
	Spontaneous labour	1	0.33
	Induced	0	0
	Caesarean section before labour	8	2.67
9	All women with a single pregnancy in transverse or oblique lie (including those with previous caesarean section)	2	0.67
	Spontaneous labour	1	0.33
	Induced	0	0
	Caesarean section before labour	1	0.33
10	All singleton, cephalic, <37 weeks' gestation pregnancies (including previous caesarean section)	19	6.35
	Spontaneous labour	5	1.67
	Induced	0	0
	Caesarean section before labour	14	4.68

abnormal lie (group 9) and preterm (group 10) constitutes 3.01%, 0.67% and 6.35% respectively.

Table 2 show that out of 971 deliveries, 30% (299) had caesarean section, 2% (17 women) had instrumental delivery and 1% (5 women of total caesarean) had VBAC (vaginal birth after caesarean). Figure 1 shows that out of 971 deliveries 249 (25.64%) underwent induction of labour. Of which 211(85%) had vaginal delivery and only 38(15%) had to undergo caesarean section.

There were 13 twin deliveries (1.3%), out of which 4 (31%) had vaginal delivery and 9 (69%) underwent caesarean section and out of 25 (2.57%) breech deliveries, 4 (16%) delivered vaginally and 21 (84 %) underwent caesarean section (figure 2).

Table 2: No of deliveries by different mode (N 971)

Categories	No	%
Caesarean section	299	30
Instrumental deliveries	17	2
VBAC *	5	1

*of total caesarean section

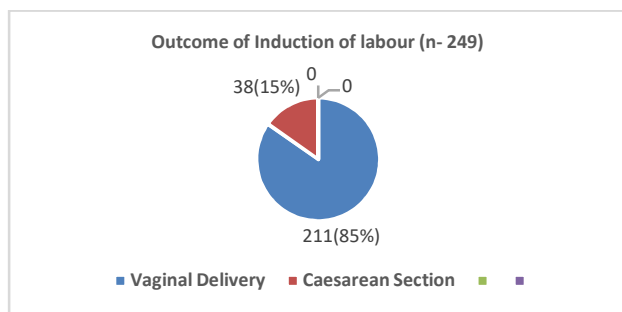


Figure 1: Outcome of induction of labour (n-249)

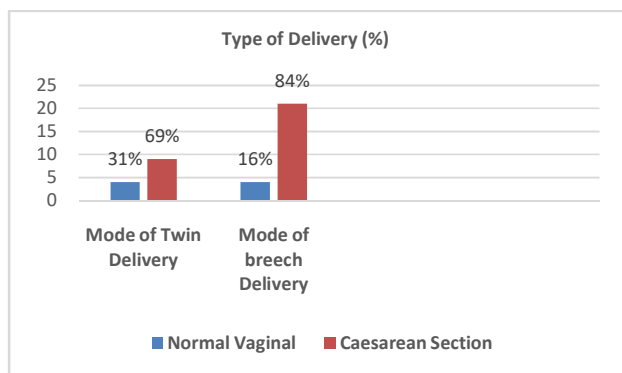


Figure 2: Mode of deliveries in twin (n-13) and breech pregnancies (n-25).

Discussion

Robson Ten Group Classification System for classifying the women undergoing caesarean section being widely accepted internationally was used for comparison purpose in our study. This study is one of the first few studies in North East part of India conducted in a tertiary hospital. The increase in caesarean section rate has been a global phenomenon, and marked differences in caesarean section rates across nations persist. The average caesarean section rate in Asian countries reported was 27.3% and that reported in the USA was 31.1%^{7,8}. Another study in United Kingdom reported 36.8%⁹ while the study from Iran reported almost 40%⁸. Where as in India in one study by Arpita De et al

reported 31.29%¹⁰. The overall caesarean section rate in this study was 30.79% which is similar to the studies around the globe but much higher than the rate recommended by WHO (15%)^{1,2}. The reason for high caesarean section rate could be due to very low institutional deliveries in this part of the country¹¹ with a high number of complicated case referrals from peripheral centers, and those of trial labours at home by untrained local dais (traditional birth attendants).

Group 5 contributes the maximum number of caesareans (32.44%) similar to the study reported by Arpita De et al¹⁰ (32.52%). In our study there are total 97 women with previous section, out of which only 5 delivered vaginally by VBAC (1%). Reason for increase caesarean section in this group could be refusal to undergo VBAC, scar tenderness, CPD or multiple caesarean section. The only option available to decrease the caesarean section rate in group 5 is to do more of VBAC in favorable conditions. And the second thing is to reduce the overall size of group 5 by reducing the primary caesarean section rates.

Group 2 and 1 combined contributes the maximum number of caesareans (38.79 %) with 25.75% and 13.04% respectively which is similar to the study reported by Dr Shish Ram et al¹² with group 2 (19.81%) and group 1 (17.94%). The finding is also similar with that of Priyanka D. Jogia et al¹³ (21%). This tells that the induction of labour is more prone to caesarean section than spontaneous ones. Moreover, research also suggests that induction of labour in nulliparous women have increased the caesarean section rates¹⁴. There were 249 labour inductions (25.64%) in this study, out of which 211 (85%) had normal delivery and 38 (15%) underwent caesarean section. Most of the inductions in our study were due to postdatism which probably might have led to early fetal distress. The reasons for caesarean section in this group is also mostly due to failed induction and fetal distress. Group 3 and 4 contributed 5.68 % and 6.02% respectively to overall caesarean rate.

Groups 6 - 10 were smaller groups with high percentages of caesarean section (almost 80%) in all the groups. But since the groups are small, its contribution to the overall caesarean section is small. High percentage in these groups was due to high risk pregnancies. When compared with other studies internationally, almost all studies conveyed comparable results in groups 6-10.^{15,-17}

Of the 25 breech deliveries, only 4 (16%) delivered vaginally and the rest 21(84%) were delivered by caesarean section as compare to Lise Lund Haheim et al¹⁸ where breech vaginal deliveries is found to be about 40%. So

stressing on vaginal delivery by giving trial of labor on selected case may decrease the caesarean section rate in breech pregnancies.

Conclusion

Robson Ten Group Classification System was used for comparison purpose in our study which is a very user friendly tool in classifying the caesarean sections into groups. In our study, the maximum overall caesarean section rate was contributed by group 5 (32.44%) which was followed by group 2 (25.75%) and group 1(13.04%). This indicates that the probability of caesarean section increases greatly with prior caesareans deliveries or with inductions of labour. So, reduction of the primary caesarean sections for primi mothers by following proper induction protocols is needed to reduce the cesarean sections. Even though over all contributions of cesarean section rate by group 6,7,8 are less, its individual group wise contribution to caesarean section rates are very high (almost 80%), therefore skills trainings on ECV, assisted vaginal breech delivery and twin deliveries would lead to reduction of caesarean section rates.

Conflict of interest: None. **Disclaimer:** Nil.

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Bendangtoshi Jamir¹, Kanili Jimo², Rebeki Momin³

¹ Senior Consultant, Department of Obstetrics and Gynaecology, Christian Institute of Health Sciences and Research, Dimapur, Nagaland, India; ² Consultant, Department of Obstetrics and Gynaecology, Christian

Institute of Health Sciences and Research, Dimapur, Nagaland, India; ³ Senior Consultant, Department of Obstetrics and Gynaecology, Christian Institute of Health Sciences and Research, Dimapur, Nagaland, India.