

IDENTIFICATION OF CAUSES OF CAESAREAN SECTION IN AN URBAN TEACHING HOSPITAL BY USING ROBSON TEN GROUP CLASSIFICATION SYSTEM: AN OBSERVATIONAL STUDY

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Abstract

Background: Caesarean section is one of the commonly performed major obstetrics surgical intervention, primarily aimed to improve both maternal and perinatal outcome. Objectives: To classify caesarean section according to Robson Ten Group Classification System. **Materials and Methods:** This Prospective observational study was conducted among pregnant mothers admitted for delivery in labour ward or antenatal ward post-operative ward. Study period was May 2019 to April 2020. Sample size – Total sample size would be 1000. **Result:** During the study period, the rate of caesarean section in this institution is 43.31% which is very high. In this study, 1000 cases of LSCS were included as a consecutive sample for analysis as per Robson TGCS. **Conclusion:** The Robson TGCS is a simple tool and easy to implement in any set up (low/high income group). It helps in detecting the causes (indications) of increased caesarean section rate in each group.

INTRODUCTION

In past few years the rate of caesarean section is increasing rapidly. To save life of mother and baby caesarean section is very important but only if the indication is medically justifiable. Now-a-days caesarean section became very common to deliver the baby either for the ease of mother or convenience to a doctor; so with the increase in caesarean section rate, maternal and perinatal complications, morbidity and mortality increases.

WHO has suggested that caesarean section rate >15% is hardly justifiable and a high caesarean section could lead to more maternal and perinatal morbidity and mortality. Keeping this point in focus, it is presumed that current caesarean section rate 50% can't be justifiable/ acceptable in our setup.

Women who have previously had a caesarean section are an increasingly important determinant of overall caesarean section rates.^[1] In one study it has been seen group 1 and group 2 has spiralling effect on group 5, So strategically we can emphasis to reduce the caesarean section rate in specific and selective groups of Robson Ten Group Classification System (TGCS) to reduce overall caesarean section.^[1] So Robson Ten Group Classification System helps in identifying the target groups for intervention to reduce caesarean section rates.

Caesarean section initially was done only as an emergency procedure where the only motive was

lifesaving but in the last few decades its use has been increased significantly in both developed and developing countries. The reasons contributing to increased rate of Caesarean section are the use of electronic fetal monitoring becoming prevalent and its suboptimal evaluation, increased labor induction, first pregnancy being at more advanced age, decreased practice of labor induction in preeclamptic condition, increase use of assisted reproductive technologies and multiple pregnancy accordingly, performing Caesarean section in all breech presentation cases, not preferring vaginal delivery after Caesarean section and fear of vaginal delivery in young pregnant women, decrease use of instrumental delivery (forceps and vacuum), and increase pressure on obstetricians due to medicolegal issues which is on peak nowadays.

The current study put forward this hypothesis that a significant proportion of caesarean section can be prevented with more careful scrutiny of the indications and appropriate obstetrics decision making/intervention. The study is primarily a study for generating hypothesis rather than proving the hypothesis. The study has an objective to classify caesarean section according to Robson Ten Group Classification System in a tertiary teaching hospital. This is intended to explore possible ways and means to reduce the caesarean section rate in our hospital.

MATERIALS AND METHODS

This Prospective observational study was conducted among pregnant mothers admitted for delivery in labour ward or antenatal ward post- operative ward. Study period was May 2019 to April 2020. Sample size – Total sample size would be 1000.

Inclusion Criteria

- Parity – Nulliparous

Multiparous

- Without uterine scar
- With uterine scar – Previous caesarean section
- Onset of labour – Spontaneous

Induced

No labour (pre labour caesarean section)

- No. of fetus – Singleton
- Multiple
- Gestational Age – Preterm (<37 weeks)

Term (≥37 weeks)

- Fetal presentation – Cephalic Breech Transverse lie
- Fetal lie – Longitudinal Transverse Oblique

Exclusion Criteria

- Patients with missing information
- Antenatal patients with abortion
- Antenatal patients willing for MTP

Study Tools

- Antenatal Records – Antenatal history, past history, treatment history
- Examination – General examination, obstetrics examination
- Investigation –

Lab investigation – CBC, RFT, LFT, thyroid profile, blood serology, RBS

Routine urine analysis

USG, early dating scan, anomaly scan, USG for fpp, AFI, placental localisation

- New born record, Baby record
- Robson Chart and Classification chart
- The Robson classification with subdivision for the ten groups :2

Methods of Data Collection: The current study will be carried out in 1000 consecutive women after the motive of the study is being explained to them at Chittaranjan Seva Sadan College of obstetrics, gynaecology and child health.

Data will be collected with predesigned format after taking informed consent. The predesigned format include Robson classification system groups, age of the patient, parity, gestation age, any complications in pregnancy, onset of labour, any induction of labour, mode of delivery, indication of LSCI, baby details like baby weight, sex, APGAR score at 1

min. and 5 min., baby complication and outcome, post natal mother complications and duration of stay of mother in hospital.

Pregnant women who got admitted in labour ward and antenatal ward are followed up till they delivered and discharged along with their babies outcome. Their antenatal records are reviewed, looked for any complication their per abdomen and per vagina examination findings are noted and then reviewed if spontaneous onset of labour or any induction of labour has been done then followed for the type of delivery either vaginally or caesarean delivery. If caesarean delivery then their indication is noted then baby is followed up for outcome and complications and mother is followed for any post-operative complications till her discharge. Their events and findings are recorded in a case record form for each case of caesarean section, their groups would be identified in the Robson group of classification, their indication of caesarean section would be reviewed and each case of indication would be further analysed to justified appropriateness by 2 consultant and for each case any sector which could help to prevent that caesarean section would be identified if any. From those review it was also intended to identify any deficiency of gadgets which could have helped to precisely justified (or otherwise) nullified the indication. Then in each case neonatal outcome would also be reviewed in details by multiple clinical parameters and investigations.

Statistical analysis: Nominal data have been expressed as percentage and comparison between two groups would be done by Chi-square test with Yates' correction, and P value of 0.05 or less were considered significant. Continuous variables were expressed as mean with SD and comparison was made by student t-test.

RESULTS

Women who have undergone the maximum number of caesarean sections belonged to the age range between 21 years and 25 years. Age below and above this range had significant lower rates of caesarean section. Age has no correlation with Robson Group. Maximum numbers of caesarean sections were carried out in the primigravidas (55.7 %). As is already known to us obstetricians that there may be varied indications of caesarean sections like non progress of labour, foetal distress, antepartum haemorrhage, pregnancy induced hypertension and medical comorbidities, still such huge numbers cannot the correct indications.

Table 1: Distribution of age (years) according to Robson TGCS

RobsonGroup	Age (Years)					
	≤20Years	21-25Years	26-30Years	31-35Years	36-40Years	>40Years
1	76	139	60	15	8	0
2(a)	20	35	10	2	0	0
2(b)	40	52	23	10	2	0
3	2	7	14	6	3	0

4(a)	1	2	2	2	1	0
4(b)	5	13	18	5	0	0
5	13	90	109	42	8	1
6	9	14	7	5	0	0
7	2	1	2	3	4	0
8	1	4	2	3	0	0
9	1	3	0	0	0	0
10	20	42	28	12	1	0

The previous table can be justified that the maximum number of caesarean sections were carried out in primigravidas in age group 21-25years. The additional data available from this table is that these primigravidas belong to group 1 where they had already entered in spontaneous labour.

Table 2: Distribution of Gravida according to Robson TGCS

Robson Group	Gravida						
	Primi	2 nd	3 rd	4 th	5 th	6 th	7 th
1	281	15	2	0	0	0	0
2 nd (a)	62	4	1	0	0	0	0
2 nd (b)	126	1	0	0	0	0	0
3 rd	0	23	6	3	0	0	0
4 th (a)	0	4	4	0	0	0	0
4 th (b)	0	27	11	1	1	1	0
5 th	0	201	55	7	0	0	0
6 th	32	2	1	0	0	0	0
7 th	0	3	6	2	0	0	1
8 th	6	2	2	0	0	0	0
9 th	2	2	0	0	0	0	0
10 th	48	39	13	3	0	0	0

The Group having the highest impact on the overall caesarean section rates in Chittaranjan Seva Sadan is Group 1 (29.8 %) followed closely by Group 5 (26.3 %) and then Group 2(b) (12.7%) and then Group 10 (10.3%) again justifying the previous tables. The minimum contribution is from Group 9 (0.4%) followed by Group 4(a) (0.8%), which is quite expected as transverse and oblique lies are much less common forms of malpresentations.

Table 3: Distribution of Robson TGCS

Group	Frequency	Percentage
1	298	29.8
2(a)	67	6.7
2(b)	127	12.7
3	32	3.2
4(a)	8	0.8
4(b)	41	4.1
5	263	26.3
6	35	3.5
7	12	1.2
8	10	1.0
9	4	0.4
10	103	10.3
Total	1000	100

Table 4: Distribution of category of pregnancy

Category of Pregnancy	Frequency	Percentage
Multiple Pregnancy	10	1
Oblique lie	1	0.1
Transverse lie	3	0.3
Single Breech	47	4.7
Single Cephalic	939	93.9
Total	1000	100

The information obtained from this table is that single pregnancies with cephalic presentation underwent a significantly higher number of caesarean sections (93.9%) than any of the malpresentations which are supposed to be more common indications of caesarean sections than cephalic presentations. The difference in the percentages being such huge may be related to several factors like expectedly these may include the ones with previous CS who are not given TOLAC, but the next table reveals different story.

Table 5: Distribution of Category of Pregnancy according to Robson TGCS

Robson Group	Single Cephalic	Single Breech	Multiple Pregnancy	Oblique Lie	Transverse Lie
1st	298	0	0	0	0
2 nd (a)	67	0	0	0	0
2 nd (b)	127	0	0	0	0
3rd	32	0	0	0	0
4 th (a)	8	0	0	0	0
4 th (b)	41	0	0	0	0
5th	263	0	0	0	0
6th	0	35	0	0	0
7th	0	12	0	0	0
8th	0	0	10	0	0
9th	0	0	0	1	3
10th	103	0	0	0	0

From this table, the astonishing feature is that the numbers of caesarean sections done in Group 1 are much more than Group 5 which indicates that primigravidas are undergoing higher number of caesarean sections even they have already entered into labour. This should not be encouraged as again we are eventually landing into and achieving a greater population of women with previous CS and the complications and risks that come along with it.

The striking feature of the data obtained is that maximum number of women underwent CS even after they have entered into labour (53%). The reasons for this can be varied but such a huge percentage again cannot justify the correct indications for doing CS.

Table 6: Distribution of Course of Labour according to Robson TGCS

Robson Group	Caesarean section before labour	Induced	Spontaneous
1 st	0	0	298
2 nd (a)	0	67	0
2 nd (b)	127	0	0
3 rd	0	0	32
4 th (a)	0	8	0
4 th (b)	41	0	0
5 th	164	0	99
6 th	8	0	27
7 th	3	0	9
8 th	3	0	7
9 th	0	0	4
10th	45	4	54

As is expected from this hospital where negligible numbers of VBAC are carried out, Group 1 tops this chart with the maximum number of caesarean section followed by Group 5 and Group 2(b) which again is unacceptable as these women entered spontaneously into labour but efforts were not made so that they can deliver normally.

The maximum number of caesarean sections (88.2%) is performed after 37 completed weeks if not indicated otherwise as the survival of the neonate is also a concern at the back of the mind of an obstetrician. And hence, among the ones with preterm gestational ages, the age range of 32 weeks 1 day to 36 weeks 6 days have a much higher percentage (11.5 %) than the age range of 28-32 completed weeks (0.3%)

The striking factor from this data is that caesarean sections are being done in women with no previous CS contrary to the common belief. It is even less than half (29.8%) of the number of CS being performed on women with no previous CS (68.9%).

DISCUSSION

Robson classification system has recently been used to make international comparisons in caesarean

section rates. In multicentre studies in Latin America (120 hospitals in eight countries),^[2] and North America, Europe, Australia, and New Zealand (nine hospitals in nine countries),^[3] the classification system was easily implemented across different countries, hospital sites, and data collection systems, suggesting it is a robust and useful tool for ongoing surveillance.^[3]The total number of deliveries from 14 September 2019 to 27 November 2019 is 2309 in this institution. Out of which 1309 (56.69%) cases have undergone NVD while 1000 (43.31%) cases have undergone caesarean section.

So, according to our study the rate of caesarean section in our institution is 43.31% which is well above the WHO guidelines of 10-15%. The result of this study reveals that the greatest contributor to the overall rate of caesarean section is Group 1 (29.8%) followed by Group 5 (26.3%) followed by Group 2 (b) (12.7%) and then followed by Group 10 (10.3%). The World Health Organization (WHO) and the International Federation of Gynaecology and Obstetrics (FIGO) recommend the Robson TGCS as a standard for monitoring and comparing CS rates within health care facilities.^[4,5]

CONCLUSION

During the study period, the rate of caesarean section in this institution is 43.31% which is very high. In this study, 1000 cases of LSCS were included as a consecutive sample for analysis as per Robson TGCS. The Robson TGCS is a simple tool and easy to implement in any set up (low/high income group). It helps in detecting the causes (indications) of increased caesarean section rate in each group. So, it must be recommended for auditing in all medical maternity units and should be repeated over time to monitor the change in the rate of caesarean section and thus helps in improving the quality of patient care and in reducing the caesarean section rate.

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