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Corresponding Author
Shalini Rakesh,
Department of Obstetrics and Gynaecology, Shri Vinoba Bhave Civil Hospital, Silvassa, Daman

Author Designation
Doctor

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Identification of Specific Indications of Caesarean Section in a Particular Group of Robson Ten Group Classification System

Shalini Rakesh
Department of Obstetrics and Gynaecology, Shri Vinoba Bhave Civil Hospital, Silvassa, Daman

ABSTRACT
Caesarean section on demand threatens national resources and is an expensive and dangerous luxury. Moreover, FIGO states that performing caesarean section for non-medical reasons is ethically not justified. To identify the specific indications of caesarean section in a particular group of this ten group classification. This Prospective observational study was conducted among pregnant mothers admitted for delivery in labour ward or antenatal ward post- operative ward during a period May 2019 to April 2020. While analysed the indication of LSCS in Group 1 the most common indications were Fetal compromise (52.34%) followed by CPD (22.82%) followed by PROM (10.06%). m In these cases the preventive/reduction of LSCS should include: More objective assessment and documentation of Fetal Distress. More importance towards Intrauterine resuscitation, careful monitoring of Fetal Heart Rate and adequate documentation of same. The indication of LSCS in Group 1 the most common indications were Fetal compromise (52.34%) followed by CPD (22.82%) followed by PROM (10.06%).

INTRODUCTION

The rate of Caesarean section varies in different institutions which could be due to different characteristics of patients, type of institution, availability of resources, different institutional protocols for obstetric practice and pregnancy and labor management. The overuse of Caesarean section in recent decades is supported and facilitated by improved anaesthesia technique, use of antibiotics, blood transfusion facilities making this surgical procedure relative safe. But overuse of Caesarean section can lead to increase in medical costs and beside there is increase in risk for poor maternal and fetal outcomes[1].

In any setup the rate of Caesarean section is considered appropriate only when the required obstetric information is available to justify medical indications for the Caesarean section. In private setups, the Caesarean section deliveries are mainly due to motive of earning money instead of medical indications[2].

As the scientific evidences that suggests maternal and perinatal benefits from the increase in Caesarean section rate is actually lacking rather most of the studies shows that increase in Caesarean section rate actually causes maternal and neonatal morbidity and mortality but then also the Caesarean section rate is continuously increasing all over the world both in high and low income societies and thus not only became a major public health concern but economy of the country is also affected. Thus there is a serious need to make strategies that will help in avoiding unnecessary caesarean section and these strategies need to be followed up seriously by the all setups.

Caesarean section rate is a qualitative health care indicator in India. But with the dramatic increase in the caesarean section rate, there is need to audit, analyse and compare the caesarean section rate across the different settings which could be effectively facilitated by Robson TGCS. The Robson TGCS is simple and easy to use and it can be implemented even in low income settings. Effective medical audit of labour management with Robson TGCS can help in reducing the rate of caesarean section.

Currently caesarean section rate is approx. 17.2% in India, 23.8% in West Bengal and 50% in most of the teaching institution of Kolkata and this has increased in the recent 5 years, leading to more caesarean section related complications, so there is urgent need of resolution of the crisis of epidemic of caesarean section. WHO had identified increasing rate of caesarean section as the major public health problem and it was suggested that an appropriate practically applicable caesarean section classification is the starting point to identify the magnitude and distribution of the problem. A 2011 systematic review by Torlon and colleagues of 27 caesarean section classification systems identified the group classification system proposed by Robson in 2001 as the most appropriate to compare surgery rates[3]. Robson's system classifies all deliveries into one of the groups on the basis of 5 parameters: obstetric history (parity and previous caesarean section), onset of labour (spontaneous, induced or caesarean section before onset of labour), fetal presentation or lie (cephalic, breech or transverse), number of neonates and gestational age (preterm or term)[4]. Hence this study was conducted to identify the specific indications of caesarean section in a particular group of this ten group classification

MATERIALS AND METHODS

The present study was conducted in the Department of Obstetrics and Gynaecology, Chittaranjan Seva Sadan, Kolkata, a tertiary care teaching hospital run by the Department of Health and Family Welfare, Government of West Bengal, India. It includes all the necessary data from 14 September 2019 to 27 November 2019.

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, on set 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-squire test with Yate's correction and p>0.05 or less were considered significant. Continuous variables were expressed as mean with SD and comparison was made by student t-test.

RESULTS AND DISCUSSIONS

In Robson Group 1, It includes all nulliparous women with a single cephalic pregnancy, ≥ 37 weeks

Table 1: Caesarean sections with indications fetal compromises in Robson Group 1

Fetal compromise 156 (52.34%)		
Fresh still birth	Admitted	Live and healthy
1 (0.64%)	8(5.128%)	147(94.23%)

Robson Group 1 Total = 298 (29.8%) Fetal Compromise

Table 2: Caesarean sections with indications fetal compromises with babies either still birth or admitted in Robson Group 1

		Indications
Fresh still birth 1 (0.64%)		Pathological CTG
	LBW 3 (37.5%)	2 Pathological CTG 1 Fetal distress + oligo
Admitted 8 (5.12%)		2 Pathological CTG
	Birth asphyxia 5 (62.5%)	1 Fetal distress 1 Thick MSL+ abnormal progress of labour 1 Elderly primi+ less FM+ h/o subfertility

Table 3: Caesarean sections with indications fetal compromises with babies live and healthy and where CTG was documented in Robson Group 1

CTG is done for 64 (43.54%)

Normal 6 (9.37%)	Suspicious 22 (34.37%)	Pathological 36 (56.25%)
2 IUGR (birth wt) 2Oligohydramnios 1 MSL+ post dated 1 severe pre eclampsia + thick MSL	18 MSL 2 fetal distress 1 severe pre eclampsia + MSL 1 suspicious CTG	24 Pathological CTG 6 Fetal distress in the evidence of pathological CTG 1 pathological CTG + MSL 2 pathological CTG + PROM 3 pathological CTG + HDP

Robson Group 2 (b) Total = 127 (12.7%) Fetal Compromise

Table 4: Caesarean sections with indications fetal compromises in Robson Group 2(b)

Fetal compromise 84 (66.14%)	
Admitted	Live and healthy
3 (3.75%)	81 (96.43%)

Table 5: Caesarean sections with indications fetal compromises with babies Admitted in Robson Group 2(b)

		Indications
Admitted 3 (3.75%)	Preterm + LBW 1 (33.33%) LBW 2 (66.66%)	Abnormal Doppler + persistent less fm 1 oligohydramnios, suspicious CTG 1 IUGR+ abnormal Doppler+ persistent less fm

Table 6: Caesarean sections with indications fetal compromises with babies live and healthy and where CTG was documented in Robson Group 2(b)

CTG is done for 69 (85.18%)

Normal 32(46.37%)	Suspicious 15(21.73%)	Pathological 22 (31.88%)
4 PROM+ Oligohydramnios 5 oligohydramnios+ less fm 4 post dated+ Oligohydramnios 4 persistent less fm 1 Abnormal CD+ IUGR 2 severe preeclampsia+ fetal Distress 9 post dated+ less fm 2 GDM+ HDP+ less fm+ oligohydramnios 1 elderly primi+ HDP+ Oligohydramnios	2 persistent less fm 2 suspicious CTG 1 IUGR+ Oligohydramnios 5 persistent less fm+ suspicious CTG 2 oligohydramnios 2 post dated+ suspicious CTG 1 less fm+ suspicious CTG+ big baby (3.28kg)	2 oligohydramnios+ pathological CTG+ abnormal CD 2 IUGR+ pathological CTG 5 pathological CTG+ fetal distress 2 pathological CTG+HDP 1 pathological CTG+ reduced liquor 8 pathological CTG 1 pathological CTG+ Polyhydramnios 1 pathological CTG+ abnormal CD+ primary sub fertility

Robson Group 10 Total = 103 (10.3%) Fetal Compromise

Table 7: Caesarean sections with indications fetal compromises in Robson Group 10

Fetal compromise 84 (81.55%)	
Admitted	Live and healthy
3 (3.57%)	81 (96.43%)

Table 8: Caesarean sections with indications fetal compromises with babies live and healthy and where CTG was documented in Robson Group 10

CTG is done for 18 (60%)

Normal 6 (33.33%)	Suspicious 2 (11.11%)	Pathological 10 (55.56%)
1 oligohydramnios+ PROM+ Induction Failure	1 Thick MSL	3 Pathological CTG
1 oligohydramnios	1 Persistent less fm	2 Pathological CTG+ Oligohydramnios
1 oligohydramnios + PROM		2 Pathological CTG+ PROM
1 MSL		1 Pathological CTG+ Fetal distress
1 Persistent less fm		1 Previous 1 LSCS+ IUGR+ Pathological CTG
1 Abnormal CD+ less fm		1 Fetal distress

Table 9: Caesarean sections with indications fetal compromises with babies live and healthy and where CTG was not documented in Robson Group 1, 2(b), 10

CTG is not done for following cases with fetal compromise

Group 1 83 (56.46%)	Group 2 (b) 12 (14.81%)	Group 10 12 (40%)
39 MSL + Fetal Distress	4 oligohydramnios+ fetal Distress	1 Abnormal progress of labour + fetal Distress
26 Fetal distress	1IUGR+ fetal distress	2 Previous 1 LSC in labour+ MSL
9 Thick MSL	1 post term+ fetal distress	2 Thick MSL
4 Fetal distress + oligohydramnios	1 severe oligohydramnios+ post Dated	2 Fetal distress
3 Fetal distress + post dated	3 fetal distress	1 Thick MSL+IUGR (2.28 kg)
1 Thick MSL + Abnormal progress of labour	1 Abnormal CD	4 Thick MSL+ Fetal Distress
1 DTA + MSL + Fetal distress	1 less fm	

Table 10: Caesarean sections with indications CPD in Robson Group 1, 2(b), 10

Group 1 68 (22.82%)	Group 2 (b) 18 (14.17%)	Group 10 2 (1.94%)
1 CPD + Borderline pelvis	1 CPD+ Borderline pelvis	1 CPD+ contracted Pelvis
3 CPD + Big baby (>3.3 kg)	17 CPD	1 CPD
1 CPD + Big baby (2.9 kg)		
63 CPD		

gestation who went into labour spontaneously and is the largest contributor (29.8%) to the overall caesarean section rate in this hospital which is surely alarming and a matter of concern. Most of the cases in this group had undergone caesarean section even after they had entered spontaneously into the labour but were not waited till they could go into the active phase of labour, so the detailed study has been done to evaluate the reasons which could be modified and thus we can reduce the rate of caesarean section. The most common indications in this group are Fetal compromise (52.34%) followed by CPD (22.82%) followed by PROM (10.06%). Fetal distress in our study is defined as sustained foetal bradycardia <100 bpm and of irregular Fetal Heart Rate may or may not associated with meconium stained liquor which is detected by intermittent auscultation. Above data shows that among 6 (9.37%) normal CTG cases who has undergone caesarean section, 2 are IUGR, 2 are oligohydramnios, 1 is MSL + post dated cases and among 22 (34.37%) suspicious cases, 18 are MSL and 1 suspicious CTG. These cases were already in labour but were not allowed to undergo NVD and had taken to caesarean section. These cases should had been allowed to enter into active phase of labour and thus allowed for the NVD and should had been monitored by trained doctors throughout their intrapartum period with the help of modern technology like CTG.

As we know India being high populous country the ratio of patient to doctor (trained staff and nurses) is very high, so, low risk women could be managed by midwives who shall be properly trained, so that trained doctors could be available to manage high risk cases. Teaching hospitals like this (Chittaranjan Seva Sadan) where junior doctors are available, high risk patient should be managed more efficiently. Being tertiary care, we must allow high risk cases to undergo NVD because at anytime during monitoring if the need arise then these patients can be taken to caesarean section and as these tertiary care are equipped with all facilities which are require 24 hrs during emergency like OT, Anaesthetist, blood bank, ICU.

In Robson Group 2 (b), It includes all nulliparous women with a single cephalic pregnancy, ≥37weeks gestation who has undergone caesarean section before entering into labour and is the third largest contributor (12.7%) to the overall caesarean section rate in this hospital. These cases have undergone caesarean section before entering into the labour. So the detail discussion is being done about the indications so that rate of caesarean section can be reduced. The most common indications in this group are fetal compromise (66.14%) followed by CPD (14.17%) followed by PROM (2.36%). Above data shows that among 32 normal CTG cases, 5 oligohydramnios + less fm, 4 post dated+ oligohydramnios, 4 persistent less fm, 9 post dated+ less fm and among 15 suspicious CTG cases, 2 persistent less fm, 2 suspicious CTG, 5 persistent less fm + suspicious CTG, 2 oligohydramnios, 2 post dated + suspicious CTG. All these group of women are primi gravida which are not in labour. Among 32 normal CTG cases, these 22 cases appears to have scope for induction of labour with careful fetal monitoring as in these cases CTG of fetus shows reassuring fetus. These women were with the evidence of oligohydramnios where the fetal Doppler didn't show any fetal compromise. However, induction of labour is fraught with the possibility of acceleration of fetal hypoxia. This can be overcome by using Modified technique such as use of Foley's catheter instead of Prostaglandin or oxytocin. Data from this hospital shows favorable outcome with Foley's induction. The success rate of Foley's induction in this hospital is 65.1% (MD. Mofijul Mondal master's thesis, 2019)[5]. However, my study shows that almost all unit has adopted a tendency for caesarean section in these cases.

Similarly women with less FM and with normal CTG and reassuring fetus can be given a trial of labour.

Induction of labour can be tried either by Prostaglandin or by Foley's induction along with careful CTG monitoring and with this left lateral position and kick count is very important. All these women are primi gravid and now when they have undergone caesarean section done then there is high chance of caesarean section to be done in subsequent pregnancy. Therefore, these caesarean section is likely to have a spiraling effect on the overall rate of caesarean section because it will increase the rate of caesarean section in group 5 (post caesarean section).

Among 15 suspicious CTG cases, 13 cases could had been given trial of labour with careful monitoring. With the help of CTG monitoring and left lateral position, induction can be tried in these patients. Induction can be done either with Foley's or prostaglandin. In Robson Group 10, It includes all women with a single cephalic pregnancy < 37 weeks of gestation, including women with previous caesarean section and is the third largest contributor (10.3%) to the overall caesarean section rate in this hospital. Women of this group have undergone caesarean section when they have not reached their term pregnancy. The most common indications in this group are fetal compromise (81.55%) followed by CPD (1.94%) followed by PROM (2.91 %). Above data suggests that among 6 Normal CTG cases, 1 is oligohydramnios, 1 Persistent less fm and among 2 suspicious CTG cases, 1 persistent less FM. Since these cases are less than 37 weeks and indications are such that efforts could had been made by using various methods like LLP (left lateral position), continous fetal monitoring and could had been given trial for NVD and thus reducing rate of caesarean section and complications associated with it. These preterm cases had been taken to caesarean section without making any effort for the NVD the probable reasons could be that the obstetricians might fear of medical litigation which is on surge nowadays, so even if the slight change from the normal parameters led clinicians to be on the safer side landing into increasing number of caesarean section.

CTG is not done for 83 (56.46%) cases in Group 1, 12 (14.81%) in Group 2 (14.81%) and 12 (40%) in Group 10 and had been taken to caesarean section under the indication fetal compromise but there is no availability of any evidence like CTG is not done for 83 cases which is a huge number and very significant. Those patient who had fetal bardycardia or tachycardia detected by stethoscope or Doppler, they are no more considered as low risk and potentially susceptible to intrapartum fetal hypoxia. Thus these women deserve more intrapartum monitoring by CTG. Indeed, it is found that 83 cases with clinical evidence of fetal distress by stethoscope or Doppler, CTG could not be done probably because of 2 reason.

The number of CTG machine available in Labour Room is inadequate to monitor large number of patients. Inadequate technology could be the major concern. Certain, the residents are more convinced on the basis of their clinical findings. Inaccessibility of technology promote them to undertake the caesarean delivery in order to cut short the valuable time available to save the baby. This type of decision perpetuates an attitude to ignore technology even if it's available in certain situation. To add to this, there is a climate of pressure on the obstetricians to take a decision in the favour of caesarean section and it often trans into pressure tactic in form of violence in the event of any adverse effect. Keeping all this in mind there is always a tendency to proceed for a caesarean section when there is any sign of fetal distress and it is a way that these signs of fetal distress has high proportion of false positive rate.

CONCLUSION

Considering the proportion of contribution of groups, it appears that primary target for lowering the caesarean section rate in this institution should be directed towards Primi gravid women, in labor (Robson Group 1) or without labor (Robson Group 2). The indications in these group has been analysed according to the documentation/record. While analysed the indication of LSCS in Group 1, the most common indications were Fetal compromise (52.34%) followed by CPD (22.82%) followed by PROM (10.06%).

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