Original Research Article

Assessment of indications of caesarean section among high risk women by Robson criteria: a prospective study

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ABSTRACT

Background: Caesarean section (CS) is a surgical intervention for safe delivery other than natural vaginal route. World Health Organization (WHO) has recommended ten group classification systems of Robson criteria which we have used to analyse CS at our center. The objective of the study to analyse the lower section caesarian section (LSCS) data under Robson criteria for implementation in regular practice in tertiary care center and to understand the need of it for future practice.

Methods: A prospective analysis done for deliveries in Obstetric Department of Shalby Multispecialty Hospital of central India by Robson ten group classification criteria. The study was carried out for the period of two year from April 2016 to April 2018 including antenatal women attending labour room with high risks or referred cases from other centers.

Results: The study reflected overall 196 live birth of high risk cases which were having other co morbidities like pre-eclampsia, eclampsia, hypothyroidism, diabetes, acute viral hepatitis. The data compared with Robsons guidelines and reflected that the centre is dealing with high risk primigravida (47.51%, 35-42% Robson criteria) cases with high CS rate (16.8%, group 5). There was multiple pregnancy, group 8, (2.32 %, >1.5-2% Robson Criteria) and preterm births as in group 10, 18.02 % (5% in Robson Criteria), exclusively high.

Conclusions: The Robson criteria help to classify the population handled by the canter to develop the strategies for betterment of services. It has limitation in view of qualitative assessment of the data for comorbidities and severity of the disease.

Keywords: High risk LSCS, Induction of labour, IUGR, Pre-eclampsia, Previous section, ROBSON criteria

INTRODUCTION

The modern era of obstetrics is well focused with safe confinement and safe mother. The invention of caesarian delivery has changed the modern practice of obstetrics and improved the neonatal morbidity and mortality rate.[1] Though, there is a growing body of literature claiming that excessive CS is increasing the maternal and infant morbidity and mortality.[2,3] Therefore, focusing on strategies to avoid unnecessary CSs need to be developed. Another group of literature says that high risk cases are more recognized now and requires timed appropriate management to avoid morbidity and mortality.[4,5]

Caesarean section is a surgical intervention which is carried out to ensure safety of mother and child when vaginal delivery is not possible (emergency CS) or the danger to the mother and baby would be greater with a vaginal delivery (planned CS). It is a comparative judgment taken by surgical team and patient in present time. The present study is to evaluate these factors and decision.

Objective of this study is to understand the possible reasons of very high rate of CS in current scenario and to analyse the high-risk cases turning into LSCS under Robson criteria for implementation in regular practice and

assessment of limitation of the Robson criteria in corporate set up dealing with high risk cases.

METHODS

The data of all patients coming to obstetrics & gynecology department as referred cases, who were handled in PHC's, CHC's, private nursing homes, and referred to us for further management and decision for CS taken, with or without comorbidities, assuming that they were high risk and therefore referred to the tertiary center, enrolled for the study.

All those women attending our center as booked Antenatal without any comorbidities mentioned were excluded from the study. The records of these subjects enrolled as per Robsons ten group classification system including our modification into serial database excel sheets under sub headings parity, previous CS, number of fetuses, fetal presentations or lie, gestational age, onset of labour, IUGR/ Preterm, oligohydramnios, preeclampsia, diabetes mellitus/gestational diabetes, eclampsia, hepatitis, hypothyroidism, anemia. The collected data tabulated in Robson ten group classification tables, (Table 2) compared with the standard criteria and the further results were evaluated.

RESULTS

A total of 316 deliveries conducted in the study period of April 2016 to April 2018 in the present center. Among

these 196 live birth cases were labeled as high risk cases due to associated co morbidities like hypothyroidism (16.58%) prevalent in this geographic area, preeclampsia (10.55%), eclampsia (1.51%), elderly primigravida 26.63%, previous one or two section (15.58%) GDM/ DM (13.07%) noted and included in the study (Table 1).

Table 1: High risk antenatal cases n=199 (total births).

No. of cases	Percent
Elderly >30	26.63
Preeclampsia	10.55
Eclampsia	1.51
Previous section	15.58
Malpresentation	6.53
Hypothyroidism	16.58
GDM/DM	13.07
Obstructed labour	2.51

The women who delivered by CS were classified according to Robson system again from the main data sheet and evaluation of only these has been done for the study.

The remaining all 144 women without any comorbidities and booked antenatal of the present center were excluded from the study. Out of 316 cases 172 were delivered by LSCS. The ten groups of Robson classification are detailed in Table 2.

Table 2: The ten group classification of Robson criteria.

Subgroups	Total	CS rate overall birth n=316	CS rate among the group n=172
Nulliparous, single cephalic, 37 weeks, spontaneous labour	44	13.92	26%
Nulliparous, single cephalic, 37 weeks		0.00	
(a) Induced	20	6.33	11.63%
(b) CS before labour	17	5.38	9.88%
Multiparous, single cephalic, 37 weeks, spontaneous labour	7	2.22	4.07%
Multiparous, single cephalic, 37 weeks	-	0.00	-
(a) Induced	3	0.95	1.74%
(b) CS before labour	3	0.95	1.74%
All Multiparous women with at least one previous CS, with a single cephalic pregnancy, ≥37 weeks gestation	-	0.00	-
(a) With one previous CS	23	7.28	13.37%
(b) With two or more previous CSs	6	1.90	3.49%
All Nulliparous women with a single breech pregnancy	10	3.16	5.81%
All multiparous women with a single breech pregnancy including women with previous CS(s)	2	0.63	1.16%
All women with multiple pregnancies including women with previous CS(s)	3	0.95	1.74%
All women with a single pregnancy with a transverse or oblique lie, including women with previous CS(s)	3	0.95	1.74%
All women with a single cephalic pregnancy < 37 weeks gestation, including women with previous CS(s)	31	9.81	18.02%
Total	172	53	100%

An overall CS rate was 54.43%. The largest contributor group for this was Robsons group 1 and group 2 47.51% from all nulligravida, singleton, cephalic, >37 week with or without labour.

The second largest was 18.02% of overall LSCS by singleton <37 week with or without labour pain including previous section. The multigravida had major contribution by default due to previous section (16.86%), abnormal lies 1.74%, or multiple pregnancies (1.16%).

DISCUSSION

The Robson system (RS) which is the most widely accepted classification system available for analyzing characteristics of delivering women worldwide. Authors' also used the same in the prospective study of the women attending labour room in the present center.[6] The 10 Groups classification (also known as the "TGCS-Ten Groups Classification System" or the "Robson Classification") was created to prospectively identify well-defined, clinically relevant groups of women admitted for delivery and to investigate differences in CS rates within these relatively homogeneous groups of women.[7]

WHO expects that the use of the Robson Classification will help health care facilities to

- Identify and analyze the groups of women which contribute most and least to overall CS rates.
- Compare practice in these groups of women with other units who have more desirable results and consider changes in practice.
- 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.
- Assess the quality of the data collected and raise staff awareness about the importance of this data, interpretation and use.

The size of the group 1 and 2 reflects that center is dealing with large number of nulligravida 47.51% (Table 3).

The Robson guidelines expects a center with 35-42% nulligravida is a good contributor, but if the data is high than the range it reflects that most of the population entering the center is nulligravida and hence there will be high expectation of CS rate with nulligravida by itself. The detail study of their record reflected either this were effluent women not willing to go for vaginal delivery with labour pain (4.06%) or with fetal distress (13.95%). The maternal choice of CS is an increasing trend in many centers and studied worldwide.[8,9] The non-availability of labour analgesia in present setup may be the one of the contributors for high CS rate in nulligravida.

Similarly, if the proportion of multi gravida is high than the group 3 and 4, it will have large contribution (usually 30%) which is 6.39% in the study. It suggests that either

the large number of multigravida is delivering vaginally or else the entry of previous section is expected more.

Table 3: Steps to assess type of population by the size of group.

Steps to assess type of population by the size of group	Recommended	Patel et al*
Group 1 + Group 2	35-42%	47.51%
Group 3 + 4	30%	6.39%
Group 5	54.43%	16.8
Group 6 + 7	3-4%	6.97%
Group 8	1.5 -2%	2.32%
Group 10	<5%	18.02%
Ratio of Group 1 versus Group 2	≥2/1	1.18
Ratio of Group 3 versus Group 4	>2/1	1.16%
Ratio of Group 6 versus Group 7	2	5

*Patel et al –the present study

A major group of fetal distress cases (13.95%, n=24) had ultrasonographic finding of cord around the neck with single or double loops (6.9%, n=12) almost similar to previous studies.[10] CTG variation of these cases taken from labour room record and various indications figured out. (Figure 1).
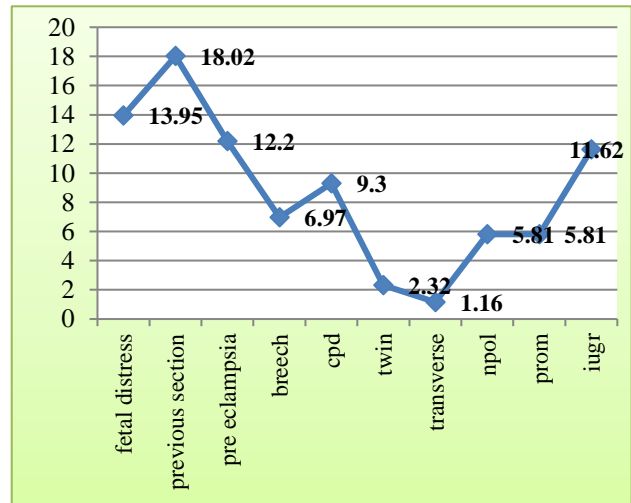

Figure 1: Indications for LSCS.

The variation in cardiotocography of these women made them to land in early CS. If we go through the literature, Zhejiang University and Ain Shams University Maternity Hospital, Cairo, Egypt conducted a study on multiple umbilical cord around the neck and it evidences that the cord around the neck significantly results in variation in cardiotocography and poor upgar score in vaginal deliveries.[11] There was a significant high rate of CS seen in primigravida who were induced (84.37%) and among these the high failure rate was in preeclamptic women

(31.25%). Regardless of gravida status the conversion of CS was high in the preeclamptics either due to failed induction, poor BISHOP SCORE, fetal distress or worsening of eclamptic condition (Figure 2).
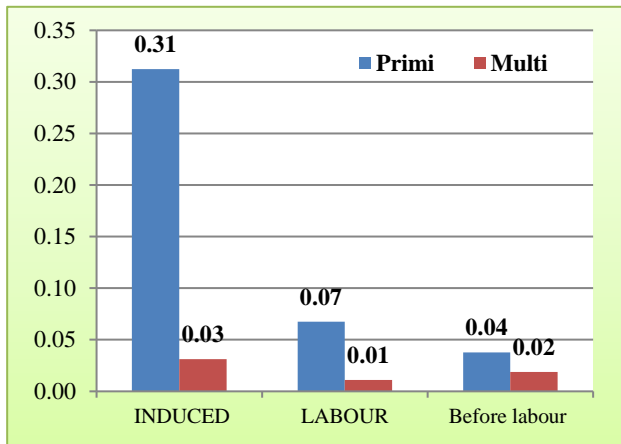

Figure 2: The labour status among the study population.

The retrospective study conducted by Lenna et al among preeclamptic women for induction of labour suggests that there is more conversion of CS regardless of parity which is similar in present study.[12]

On the other hand Nassar AH et al long back assessed the same and opined that Labor induction should be considered a reasonable option for patients with severe preeclampsia at ≤=34 weeks' but chances of successful delivery increases with advancing gestational age as well as the Bishop score on admission is one of the best predictor of success.[13]

This is always a debatable situation that what is the best mode of delivery for preeclamptics, the other relevant studies by Pecher et al and Alanis et al suggests that the early onset preeclampsia mostly requires a preterm delivery and can be handled by either vaginal or CS with no significant effect on neonatal outcome.[14,15]

The next large contribution was all women with repeat caesarian cases in Robson group 5 with labour pains or scar tenderness or leaking.

The group 5 reflects the previous section group (16.8%) and is expected to half of total CS rate. In the current study the overall CS rate and previous section ratio is 3.2:1(54.48%:16.8%) but the previous CS group <36 week (preterm/borderline term) 18.02% and preeclampsia (12.20%) which suggests that center is dealing with high risk cases in almost 50 % time which means the referred or poorly handled cases needed a timed delivery in an equipped center the previous scar cases needs a good evaluation for vaginal delivery. Studies says that when a case after CS is planned for vaginal delivery the case should be labeled for trial of labour (TOL) and after good counseling about the morbidities associated with trial

should be taken. Even in the best circumstances 40% rate of emergency CS after TOL can be expected as reflected in one of the prospective analysis by Gupta et al.[16,17]

Partographic evaluation is an important tool in the management of the labor and delivery of previous LSCS patients.[13] In the present study 74.19% previous scar cases received in labour pains with poor bishop score (<6), 3.22% were induced while 16.12% opted for elective CS. The 6.47% cases were with other co factors like abnormal presentation, PROM or preterm.

The data of TOL for vaginal birth after CS (VBAC) has not been included in the present study but the failed induction reflects the poor bishop score affects TOL for VBAC as previous studies says that If the cervix is not effaced at induction, the repeat Caesarean section rate is higher than if the cervix has started to efface.[18] Since the center has received already handled cases at periphery for TOL, the more guarded approach towards delivery by patients themselves is very expected due to exhaustion and fear of rupture of scar and in such state even a good counseling with guarded results may not change the decision to avoid TOL.

Groups 6 and 7 consist of women with breech presentation and showed high CS rates. The Robson criteria recommendation states the 100% CS rate in this group which is similar in present study. Even the studies do not recommend external cephalic version and advice LSCS.[19,20]

The group 8 as per Robson criteria should be 1.5-2% which is 2.32%. This is the group with or without previous sections all multiple pregnancies. It may be nulligravida after Infertility or multigravida with high age. Since our center is receiving cases from other referral centers thus after infertility or twin with high risk cases were handled by CS.

The last group, GROUP 10 which includes singletons <36 week either in labour or without labour is third major contributor (11.04%). In this group the singleton preterm was either with preeclampsia or PROM requiring safe confinement with safe mother.

The oligohydramnios with poor indices in colour Doppler studies are the decision maker in such cases because these required NICU admission for preterm births. Determination of AFI is a valuable screening test for predicting fetal distress in labor requiring cesarean section. In the presence of oligohydramnios, the occurrence of non-reactive NST, abnormal FHR tracings during labor and thick meconium-stained liquor; development of fetal distress the rate of LSCS and poor APGAR score is tending to be high.[21] The studies on IUGR says that its mostly PIH, obesity and poor antenatal care which affects the intra uterine growth resulting in abnormal CTG, poor AFI and CS delivery.[22]

CONCLUSION

The Robson criteria help to classify the population handled by the canter to develop the strategies for betterment of services. It has limitation in view of qualitative assessment of the data for comorbidities and severity of the disease. But it is a good tool to understand the need of the center to develop for future according to the cases handled by it. It gives an overall idea about the class of population handled, the requirement of improvement of Labour Unit and NICU as most preterm dealt, multidisciplinary team to handle medically high risk cases.

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