Analysis of Ceserean Section Rate -According to Robson's 10-Group Classification

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ABSTRACT

Introduction: World Health Organisation suggest the use of Robson Classification as standard globally for assessing, maintaining and comparing Cesarean Section (CS) rates. It is aimed to examine CS trend at a tertiary center according to Robson Ten-Group Classification System (TGCS) over two year period (2019-2021). Study aimed to analyse cesarean section (CS) using Robson 10- group classification system in Tertiary Care Centre.

Material and methods: This prospective observational study was conducted for a period of 2 years from Sep 2019 – Aug 2021 in Chalmeda AnandRao Institute of Medical Sciences, Bommakal, Karimnagar, Telangana. All the women were delivered during this period in the labor ward were included. All relevant obstetric information (parity, mode of previous deliveries, previous CS and indications, gestational age, onset of labor, spontaneous or induced labor) were entered. Results were calculated at the end of this period. Before proceeding, approval was sought from hospital ethical and research committee.

Results: Most 0f the women with one or multiple previous cesareans with cephalic presentation (group V) contributes to the maximum number of cesareans (32.7%), closely followed by group I (23.4%) and group IIA (11.12%), and 30.72% of the total cesareans were elective cases. Robsons Ten Group Classification system (TGCS) can be easily understood , clear, exclusive and mutual , reproducible system to classify cesareans in every level of Institutions. Most of the women who had elective cesareans, most of them were of Group V who were not ready to consent for TOLAC or those who has two cesareans previously . In spontaneously laboring women, 36% were due to meconium stained liquor and 35% was because of fetal distress, there fore leading to a vast scope for decrease in the rate of cesarean sections.

Conclusion: Robsons TGCS is a commonly used method in all institution to monitor cesarean based on time trends and for comparision between various instutions. target of the intervention should be at increasing normal deliveries, decreasing primary cesareans and providing TOLAC where ever possible. protocols in the institution should be laid out to define indications like nonprogress of labour, fetal distress, protocols for their managements, and failed induction.

Keywords: Ceserean Section Rate, Robson's 10-Group Classification

INTRODUCTION

Throughout the world, in the past few decades there has been a tremendous increase in cesarean delivery rates upto 50%-60% in many centres.[2-5]

The Cesarean delivery rates in 2005 were 8% which has doubled to 17% in 2016 in India.

There is increased rate in caesarean section upto 24% in primigravida due to improved health delivery system whereas it was 15.6% in second to third gravida.coming to literacy, there is equal to increase rates as illitrate women contribute to 6% only, where as women who have accomplished their high school education contribute to 33.6%. according to Wealth index, increase in CS rates in poor class is 4.4% and maximum being in higher class women which is 35.9% . In India , public health facility shows a rate of 11.9%, whereas it is 41% in private facility. The ideation of profit making, increasing literacy and on demand CS are the reasons behind thos highest rate.

It is uunderstood that rise in cesarean deliveries need not necessarily optimize neonatal and maternal outcome, whereas there has been a huge economic downfall in the number of maternal and neonatal complications.

The classification is simple,reproducible,mutually exclusive and clinically relevant.

WHO focused on decreasing caesareans so its been suggested to classify women in delivery period into a reliable, uniform, standard, grouping system. Among many classification systems,FIGO and WHO recognised Robsons Ten Group Classification System (TGCS) as the most accurate classification system that can be used on a global scale for understanding, monitoring and comparing cesarean rates over a time period and among various institutions.[8-11]

The classification divides women into ten mutually exclusive groups , two of which can be disaggregated further into an expanded 12-group version. These groups cover all the situations based on six maternal and fetal characterstics (parity,gestational age,plurality,fetal presentation, mode of onset and previous cesarean section).[12]

MATERIAL AND METHODS

Study Design: Prospective Observational Study
Study Period: Sep 2019- Aug 2021
Study Duration: 2 years

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Setting: Chalmeda AnandRao Institute of Medical Sciences, Bommakal. Karimnagar,Telangana

Inclusion criteria

All pregnant women who presented to labor room in the period of 2 years i.e., Sep 2019 to Aug 2021 underwent cesarean section regardless of women's obstetric or medical characteristics, level of risk,education or socioeconomic status.

Exclusion criteria

1. All the pregnant women who had delivered through vaginal route.
2. Patient who are not willing to participate in the study.

Approval was taken from ethical committee , informed consent has been taken fron the patient.

RESULTS

During the study period a total of 12046 deliveries have been conducted. Out of which 9145 (75.9%) were vaginal deliveries and 2901(24.08%) were delivered through cesarean route. Out of total cesarean deliveries, 5 were laparotomy and 2896 were through Cesarean section. Among the Cesarean section deliveries, 2500 were included and 396 were excluded from the study.

Demographic data

In our study we included a total of 2500 women with mean age of the women taken to be 26.01 years and mean gestational age to be 37.5 weeks. Out of total women, Elective and emergency CS performed were 768 & 1732 respectively. Out of total CS performed multiple pregnancy includes 52 (2.08%) and preterm births include 199 (7.96%). Out of patients underwent Artificial Reproductive Techniques(ART), 528(21.12%) were by ovulation induction and 120(4.8%) were by IVF/ICSI. New borns with birth weight less than 2.5kgs were 188(7.51%) and more than 2.5kgs were 2312(92.48%) with NICU admissions being 86(3.4%).

Robsons ten group classification system (TGCS)

Out of all the women who were undertaken for study (2500), 585 were nulliparous, >37weeks with single live intrauterine fetus with cephalic presentation in spontaneous labor; 278 were nulliparous , >37 weeks with single live intrauterine fetus with cephalic presentation with induced labor; 40 were nulliparous,>37weeks with single live intrauterine fetus with cephalic presentation with CS done before labor;163 were multiparous (excluding previous CS) >37weeks with single live intrauterine fetus with cephalic presentation in spontaneous labor; 62 were were multiparous (excluding previous CS) >37weeks with single live intrauterine fetus with cephalic presentation in induced labor; 28 were multiparous (excluding previous CS) >37weeks with single live intrauterine fetus with cephalic presentation with CS done before labor; 818 being >37 weeks with single live intrauterine fetus with cephalic pesentation with previous CS;

I	Nulliparous, single cephalic, >37 weeks in spontaneous labor
IIA	Nulliparous, single cephalic, >37 weeks induced
IIB	Nulliparous, single cephalic, >37 weeks, CS done before labour
III	Multiparous (excluding previous cs), single cephalic, >37 weeks in spontaneous labor
IVA	Multiparous (excluding previous cs), single cephalic, >37 weeks induced
IVB	Multiparous (excluding previous cs), single cephalic, >37 weeks, CS before labour
V	Previous CS, single cephalic, >37 weeks
VI	All nulliparous breeches
VII	All multiparous breeches (including previous CS).
VIII	All multiple pregnancies (including previous CS)
IX	All abnormal lies (including previous CS).
X	All single, cephalic,<37 weeks (including previous CS)
Table-1: Robson group classification	

No.of women included in the study		2500
	Elective CS	768
	Emergency CS	1732
Mean age of patient		26.01years
Mean gestational age		37.5weeks
Multiple pregnancy		52(2.08%)
Preterm birth		1999(7.96%)
Artificial reproductive technology (art)		
	Ovulation induction	528(21.12%)
	IVF/ICSI	120(4.8%)
Birth weight		
	<2.5KG	188(7.51%)
	>2.5KG	2312(92.48%)
NICU admission		86(3.4%)
Table-2:		

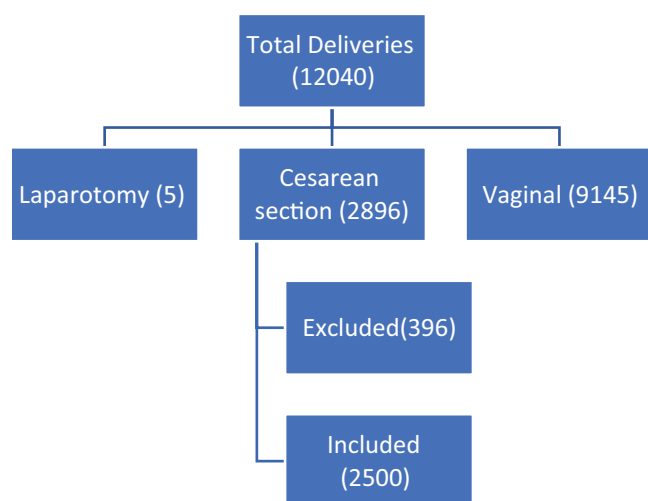| Class	Description	Total no. of patients = 2500	% Contribution to the total CD
I	Nulliparous, single cephalic, >37 weeks in spontaneous labo r	585	23.4%
IIA	Nulliparous, single cephalic, >37 weeks induced	278	11.12%
IIB	Nulliparous, single cephalic, >37 weeks, CS done before labour	40	1.6%
III	Multiparous (excluding previous cs), single cephalic, >37 weeks in spontaneous labor.	163	6.52%
IVA	Multiparous (excluding previous cs), single cephalic, >37 weeks induced	62	2.48%
IVB	Multiparous (excluding previous cs), single cephalic, >37 weeks, CS before labour	28	1.12%
V	Previous CS, single cephalic, >37 weeks	818	32.72%
VI	All nulliparous breeches	136	5.44%
VII	All multiparous breeches (including previous CS).	103	4.12%
VIII	All multiple pregnancies (including previous CS).	52	2.08%
IX	All abnormal lies (including previous CS).	36	1.44%
X	All single, cephalic,<37 weeks (including previous CS).	199	(7.96%)
Table-3:			

Robsons group	No.of patients	% of total CD(2500)	% total elective CD (768)
II B	48	1.9	6.2
IV B	28	1.12	3.64
V Elective	418	16.72	54.42
VI Elective	96	3.84	12.5
VII Elective	50	2	6.51
VII Elective	36	1.4	4.68
IX	36	1.4	4.68
X Elective	56	2.24	7.29
Table-4:			

Group 5 distribution	N	%
Previous 1 CS	659	80.5
Previous 2 CS	123	15.03
Previous 3 CS	8	0.9
Previous 3 CS	10	1.2
Previous myomectomy repair	18	2.2
Total	818	100
Table-5		

Total Deliveries (12040)
— Laparotomy (5)
— Cesarean section (2896)
   — Excluded(396)
   — Included (2500)
— Vaginal (9145)

All nulliparous breeches were 136; 103 were all multiparous breeches (including previous CS); 52 were all multiple pregnancies (including previous CS); 36 with abnormal lies(including previous CS) and all >37weeks with single

live intra uterine fetus with cephalic presentation(including previous CS) were 199.

- Since table 4 showing maximum contribution to the total CD, it has been seen 659(80.5%) patients were with previous 1 CS ; 123 were previous 2 CS; 8 were previous 3 CS; 10 were previous classical CS and 18 being previous myomectomy repair with total being 818.
- Distribution of elective Cesareans in different Robsons categories.

- 48 were nulliparous,>37weeks with sinle live intrauterine fetus with cephalic presentation with CS done before labor
- 28 were multiparous (excluding previous CS) >37weeks with single live intrauterine fetus with cephalic presentation with CS done before labor.
4818 being >37 weeks with single live intrauterine fetus with cephalic pesentation with previous CS;
- 96 being all nulliparous breeches
- 50 being were all multiparous breeches (including previous CS);
- 36 were all multiple pregnancies (including previous CS);
- 36 with abnormal lies(including previous CS) and
- all >37weeks with single live intra uterine fetus with cephalic presentation(including previous CS) were 56.

DISCUSSION

Robson and Denk analysis on cesareansas found to be easily understandable , mutually exclusive, reproducible, clear and at the same time allowing identifying categories

prospectively. After 2015, Robsons Ten Group Classification system (TGCS) has been found to be used by majority of the studies to analyse cesareans globally.

Groups V,I and II respectively are the highest contributors for the study on cesarean. On comparing the study of brazil and india it is very similar in socioeconomic development terms. Three particular goals were noted. First was to avoid cesarean for better future implications in obstetrics. Second as to motivate more number of TOLACS and the third was the goal of achieving maximum natural births as it is a physiological event,

Based on A study conducted in Australia, similarly noted more number of cesareans in Group V (previous cesarean with term cephalic babies) followed by I (primiparous mothers in spontaneous labour). the study noted cesarean rate to be 23.5%.group V women   (with previous cesarean) contributed for 46.3% of the total cesareans when compared to 32% [7]. A study in African country included women having previous cesareans (Groups I,III,V)and Women, beyond 37 weeks with cephalic presentation in spontaneous labor onset were the primary contributors of cesareans. The common indications were major APH and obstructed labour.[14-16] Inductions were low in many low income settings due to inadequate cesarean facilities.[17] In contrast, hospitals catering to high income groups had more cesareans in Group V (women with previous cesareans).[18,19] Most studies show that Group V is a major contributor in both low resource and high resource settings.[20] This indicates the importance of primary cesareans prevention.

A community center in india has examined cesareans over a decade and made a study , which included 10093 cesareans and all deliveries were classified under the Robsons TGCS. The major contributor to total cesareans was I, V and III (37.62 %, 17.06 % and 15 %). This large numbers of Group V and small number of IIAs can be explained by the fact that the community centers usually cater to low risk women and have few inductions and TOLACs as in India referrals are more common in case of high risk mothers .[21]

In the present study 25% of all cesareans were done for non reassuring fetal heart patterns and 14.81% were done for meconium stained liquor. A lot of attention needs to be given in managing the labour ward protocols at an institutional level while keeping in mind all the available technical resources and manpower at that level. All meconium stained liquors or all non reassuring fetal heart rate patterns do not always indicate need for cesarean section and at the same time ,adequate and skilled monitoring facilities are not available and delay may increase neonatal mortality and morbidity. Sensitization of all staff to reinforce normal delivery in patients CTG interpretation needs to be done along with repeated training of residents on labour management . Fetal scalp blood sampling may aid to make decisions in cases of suspicious CTGs, though its availability is scarce. Fetal scalp stimulation may be used instead of fetal scalp blood sampling.[22] Infusion pumps are used for accurate titration of oxytocin dose and avoids hyper stimulation. Education regarding advantages of normal deliveries to the patients is needed. Patients should be taught about the need for antenatal exercises and patients are educated that inductions should be avoided unless indicated.

About a third (32.72%) of all cesareans are accounted by women with previous cesareans which is similar to De Tripathi and Gupta etal study. Refusal of TOLAC was the most common indication for women with previous cesarean section . Awareness should be created among these women and their families about the success of TOLAC in selected cases. In the third trimester, the mode of delivery should be discussed antenatally. The best predictor of success of TOLAC is spontaneous onset of labour. So, in some cases of selected women with spontaneous onset of labour, they may be convinced for TOLAC and educate them to wait till 41 weeks before termination. During antepartum, intrapartum and postpartum periods, a careful supervision should be done. Among the women of Group V, availability of adequate CTG monitoring should be mandatory.

Cesareans accounted for 5.44% and 4.12% of the total cesareans done in primiparous and multiparous breech (groups VI and VII) respectively which is similar to DeTripathi and Gupta etal study. While most of the obstetricians are cautious about vaginal delivery in primiparous breech, but in selected cases of multiparous women a trial can be given.

By training residents about the art of breech delivery and external cephalic versions in the antenatal period, cesareans done for breech presentation can be reduced . Even in conditions of late preterm, a reasonable attempt of vaginal delivery can be done.

The first step on the path to reduce cesarean rates is to classify under the Robsons TGCS. Periodic analysis should be done using the classification, so that specific measures can be introduced in the relevant group and after the changes are made, analysis of the impact by subsequent audit should be done. The major difficulty of Robsons TGCS is that it does not include the neonatal morbidity or some of the maternal high risk factors like a history of infertility, recurrent pregnancy losses or medical disorders like preeclampsia, GDM and others. Thus analysis of the cesareans should be done in broad aspect by including additional maternal and neonatal morbidity. In this era where informed decisions are taken by the patient, the idea of cesarean on demand comes in a grey zone. In situations where there is availability of taking a second opinion or a second counselling by another obstetrician within the department, it has found in the reduction of the cesareans on demand and many women are encouraged for TOLAC.[23]

Future studies should be concentrated on group specific cesarean rates. For the reduction of cesareans, interventions should be applied and then changes should be evaluated.

CONCLUSION

Categorization of all deliveries and cesareans should be done by the Robsons TGCS. Analysis should be done regularly on groups contributing most to cesareans and all the required interventions should be taken. All those interventions should be focused at reducing primary cesareans and encouraging

patients for TOLAC wherever it is possible. There should be availability of institutional protocols for defining situations like fetal distress, non progress of labour and failed induction. Inductions should be implemented only in the cases where it is necessary. For rationalization of cesarean rates, a regular audit should be done in all institutions. Impact of interventions in order to decrease cesarean rates should be studied and documented.

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