



AUDITING THE CESAREAN SECTION RATE BY ROBSON'S TEN GROUP CLASSIFICATION SYSTEM AT TERTIARY CARE HOSPITAL.

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ABSTRACT... Objectives: To analyze the trends of cesarean sections, categorize them into Robson's Ten Group Classification System (RTGCS), to identify the groups contributing the most to overall lower segment cesarean section (LSCS) rate and to formulate strategies for reducing these rates. **Study Design:** Cross sectional study. **Setting:** Gynecology and Obstetrics Department of Kahuta Research Laboratories (KRL) hospital, Islamabad. **Period:** From 1st Nov, 2017 to 30th April, 2018. **Material & Methods:** The births during this period were distributed into the RTGCS on the basis of past obstetric history and fetal characteristics along with mode of onset of labour. Overall LSCS rate was calculated and contribution of each group was analyzed separately by SPSS version 23. **Results:** Our study showed 617 LSCS out of 964 deliveries making a high LSCS rate of 64%. Group 5, 2 and 10 of RTGCS contributed to the majority of LSCS performed with the percentages of 47.5%, 18.5% and 12.8% respectively. Group 5 of RTGCS which contributed to the highest LSCS rate had 354 subjects which were previous scars out of which 199 had previous 1 scar making the percentage 56.21%. It contributed 32.3% to the overall LSCS rate. **Conclusion:** RTGCS is a very useful tool for auditing the LSCS rate at local, national and international levels. Once the LSCS are classified into specific RTGCS, analysis can be done about the reasons for the increasing rates of LSCS and then strategies can be devised to reduce them.

Key words: Audit, Cesarean Section, Robson's Ten Group Classification System, RTGCS.

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INTRODUCTION

William an obstetrician in chief at John Hopkins University in 1931 stated that "the excellence of an obstetrician should be judged not by the number of cesareans which he performs but rather by those which he does not do."¹ To date this stands true and to achieve a low LSCS rate much have been said and done.

There were times in USA when for several decades the rate remained between 4-6% but between 1968 to 1978 the rate tripled to 15.2%. In 1981 National Institute of Health expressed concern about rising LSCS rate and for the first time recommendations for reducing LSCS by vaginal birth after cesarean (VBAC) were promoted.² Later by Year 2000, a 15% LSCS rate as a US health promotion objective was given.³

Simultaneously WHO also concluded that there was no justification for any region to have a LSCS rate higher than 10-15%.⁴ This rate was a clear indicator of good maternal and neonatal outcome in European countries. However, from the beginning of this millennium, a significant increase in this rate was observed worldwide.⁵ A rate of 30% was documented in some countries. By the year 2011, 1 in 3 women gave birth by cesarean deliveries.⁶

As these rates started to increase, many obstetricians became alarmed across the globe to revisit the factors which were key responsible for its rise. It was observed that indications for primary LSCS were mostly labour dystocia, non-reassuring fetal heart rate tracing and suspected fetal macrosomia.⁷ A new indication of maternal request was added to the above list and a

frequency of 3% was seen in 2011 in USA, while in India, in the same year, it was 29%.⁸

The absence of a universally accepted classification for LSCS to analyze the trends and to monitor the rates remains the biggest hurdle in understanding the reasons for increase in LSCS rates. A systemic review in 2011 inferred that amongst the different classifications available RTGCS could be used to meet the global requirements. It was stressed upon that attempts to develop a standardized classification be made on developing this classification further.⁹

Robson proposed a simple, reliable and dependable 10 group classification system of LSCS in 2001. WHO on 10th April 2015 recommended RTGCS as an international means of evaluating, observing and comparing LSCS rates.¹⁰ This system classifies LSCS into one of the ten categories based on the maternal current and past obstetrics history and involves five features for categorizing the cesarean section which are parity, gestation age, fetal presentation, onset of labour and number of fetuses.¹¹

The objective of this study was to

1. Analyze the LSCS at KRL Hospital over 6 months period.
2. Categorize them into RTGCS.
3. Recognize the groups contributing substantially to increase the overall LSCS rates.
4. To formulate strategies for reducing these rates.

MATERIAL AND METHODS

After taking approval from hospital’s ethical committee, this cross sectional study was conducted from 1st Nov, 2017 to 30th April, 2018 at Obstetrics and Gynecology department of KRL hospital, Islamabad.

It included all the patients that had Emergency and Elective LSCS during the study period. The exclusion criterion included women who had missing data and thus could not be classified into Robson Ten Group Classification (RTGCS).

A Performa was designed after consulting the senior obstetrician on which details including

baseline characteristics (age, parity, onset of labour, previous cesarean section, type of gestation, type of fetal presentation, and gestational age), indication for cesarean, Robson Classification, outcome and whether the patient is an entitled or paying were recorded. The births were distributed into the RTGCS on the basis of pregnancy, maternal past obstetric history and fetal characteristics along with onset of labour whether it was spontaneous, induced, or patient was operated electively without taking labour. Table-I.

RTGC S
Group 1: Nullipara, single, cephalic, term pregnancy, spontaneous labour
Group 2: Nullipara, single, cephalic, term, induced labour or planned CS
Group 3: Multipara without uterine scar, single, cephalic, term, spontaneous labour
Group 4: Multipara without uterine scar, single, cephalic, term, induced labour or planned CS
Group 5: Multipara with uterine scar, single, cephalic, term
Group 6: Nullipara, single, Breech presentation
Group 7: Multipara, single, breech, including previous C-Section
Group 8: Multiple Pregnancy
Group 9: Single, abnormal lie, including previous scar
Group 10: Single, Cephalic, Preterm including previous scar
Table-I. Robsons Ten Group Classification System (RTGCS).

Variables used for this study included.

- Gestational age in weeks calculated from last menstrual cycle and/or ultrasound performed in 1st trimester till 13 weeks.
- Term included gestational age of 37 or more completed weeks
- Multiple pregnancy: woman who had 2 or more fetuses confirmed on ultrasound
- Onset of labour:
 1. Spontaneous
 2. Induced: use of medication or amniotomy for labour
 3. Cesarean Section before labour
- Lie:
 1. Longitudinal Lie: either with cephalic or breech presentation.

2. Abnormal Lie: transverse or oblique presentation.

Data were analysed using statistical package for social sciences (SPSS) version 23. Descriptive statistics were used to calculate frequency and percentages for all the baseline characteristics and LSCS rate including its distribution into RTGCS.

RESULTS

During the study period, a total of 964 deliveries took place, making a cesarean section rate of 64% in our setup [Figure-1]. Out of these, Elective LSCS were 403 (65.3%) and Emergency LSCS were 214 (34.7%).

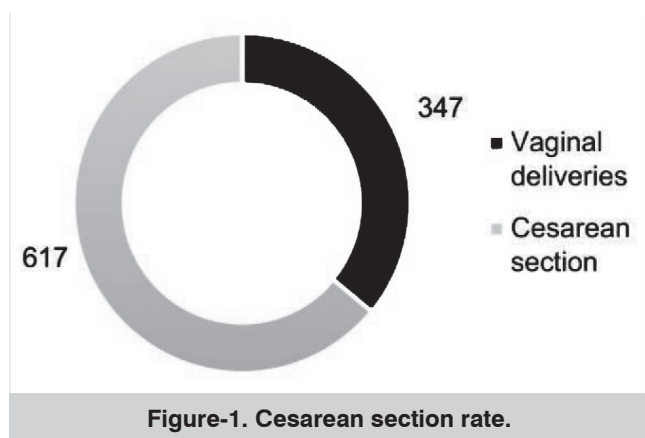


Figure-1. Cesarean section rate.

Majority of the study participants belonged to age group of 20-30 years, were multipara and had term singleton pregnancy with cephalic presentation. More than half were delivered via LSCS before spontaneous onset of labour or labour induction (72%). Around 42% patients who underwent LSCS had no history of previous LSCS. Table-II.

Group 5 of RTGC contributed to the overall LSCS rate of 47.5%. (Figure-2) This group was further subdivided into two subgroups for more clarification. Those with previous 1 scar contributed 32.3% to overall LSCS rate, and this figure was slightly higher than those who had two or more previous scars (25.2%). The second and the third highest contributor to LSCS rate was the group 2 and group 10 of RTGC contributing to the overall LSCS rate of 18.5% and 12.8% respectively. Rest of the groups of RTGC contributed 21.2% to overall LSCS rate as shown in Figure-2.

Maternal Age	Number (n)	Percentage (%)
<20	8	1.3
20-30	421	68.2
30-40	187	30.3
>40	1	0.2
Parity		
0	211	34.2
1-3	374	60.6
>3	32	5.2
Onset of Labour		
Spontaneous	108	17.5
Induced	65	10.5
C-Section before Labour	444	72.0
Previous C-Section		
None	263	42.6
Previous 1 Scar	199	32.3
>1 Scar	155	25.1
Type of Gestation		
Single	611	99
Multiple	6	1
Type of Fetal Presentation		
Cephalic	583	94.5
Breech	31	5
Abnormal Lie	3	0.5
Gestational Age		
Term	548	88.8
Preterm	69	11.2

Table-II. Characteristics of study participants.

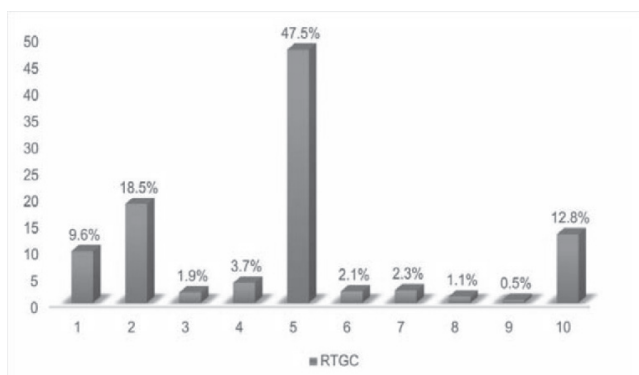


Figure-2. Distribution of LSCS into RTGC.

When cesarean section were analyzed according to their indications, previous scar was the main indication (46.8%), followed by fetal distress and Cephalopelvic Disproportion (CPD) (11% and

8.4% respectively) as shown in Table-III.

Indications	Frequency (n)	Percent (%)
Fetal distress	68	11.0
CPD	52	8.4
Failed Induction of labour (IOL)	36	5.8
Breech	32	5.2
Hypertensive disorders of pregnancy (HDP)	19	3.1
Previous Scar	289	46.8
Abruption	6	1.0
Placenta Previa	6	1.0
Multiple Pregnancy	7	1.1
Fetal Macrosomia	3	.5
Maternal Request	15	2.4
Failure to progress	27	4.4
Meconium	18	2.9
Others	39	6.3
Total	617	100.0

Table-III. Distribution of LSCS according to their indication.

Taking the financial aspect into account 399 out of 617 subjects that had LSCS were paying pts as illustrated by Figure-3.

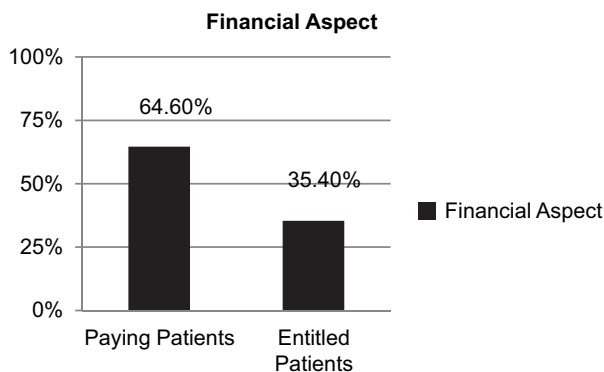


Figure-3. Financial aspect.

DISCUSSION

Our study has shown alarmingly high LSCS rate of 64% in our setup which is far higher than 15% recommended by WHO. The main contributor to increased cesarean section rate was group 5, followed by group 2 and 10 of RTGCS. Previous scar, fetal distress and CPD were the main indications for cesarean section.

In contrast to our LSCS rate of 64%, a survey done by Lumbiganon P et al¹² in Asia the LSCS rate was around 27.3% but ranging from the lowest of 14.7% in Cambodia to the highest of 46.2% in China. Our hospital is a tertiary care hospital with referrals from other less equipped hospitals so our LSCS rate does not represent the rate of general population but that of a tertiary care hospital. This percentage is comparable to other LSCS rates of tertiary care hospitals in Pakistan. Studies done at Isra university hospital Hyderabad Sindh by Haidar G et al and another conducted by Shamshad et al at Gynae B unit, Ayub Teaching Hospital, Abbottabad reported caesarean section rates of 67.7% and 45.1%.^{13,14}

The LSCS rate of CMH Hyderabad was 41.96% in a study published in 2016.¹⁵ Amin N et al reported LSCS rate of 42.6% in CMH Attock¹⁶ while CMH Rawalpindi had a LSCS rate of 56% in a study done by Jabeen J et al.¹⁷ In contrast to these rates a study published in 2015 of Gynecology unit-A of Lady Reading Hospital Peshawar reported LSCS rate of 21.7% in 2010-2011.¹⁸

This increasing trend of cesarean section has many implications like low threshold for labour pains, less expertise of instrumental deliveries, malpractice concern, fear of trial of labour after cesarean (TOLAC), excessive use of CTG, labour inductions without indication, maternal request etc.

In this study, group 5, 2 and 10 contributed most to the overall LSCS rate with the leading group being group 5. While in the studies conducted by Bolognani CV et al. and Brennan DJ et al. the main groups contributing to the cesarean section rate were 5, 1, 2.^{10,19} In a study at Singapore by Tan JKH et al, the main contributor to the overall LSCS rate was group 5 followed by Group 2 and Group 10 each contributing 25.9%, 18% and 16.1% respectively.²⁰ These results are in comparison with our study which shows that VBAC is not being done from fear of uterine rupture and women are opting for elective repeat LSCS after one scar.

In the region of subcontinent there is a trend of marriage at an early age and lack of contraceptive practices along with low education which has led to childbirth at an early age. Our study participants were mainly therefore between 20-30 yrs of age which is the same age group in other studies which had showed high LSCS rate.²¹ In contrast to this, Parrish KM et al. in his study conducted at USA reported the mean age of participants to be more than 40 years which shows the trends of delayed marriage and late childbirth seen in that region.²²

Financial incentives such as higher payments for LSCS and specifics for reimbursement arrangements seem to influence the clinical decision of as to whether to perform LSCS or not.

Previous scar and fetal distress has been reported as the main indications by studies conducted by Rahman H et al. and Yadav S et al.^{8,23} which is the same as in our study.

In group 1 and 2 consisting of nulliparous women with term, single, cephalic presentation in spontaneous labour, and those induced or having cesarean before labour, the main indications for LSCS were fetal distress, failure to progress, failed IOL and maternal request. The use of partogram for monitoring of labour²⁴ and reassessing the indication of intrapartum LSCS²⁵ can help reduce LSCS rate in these groups. Women admitted to indoor department when not in active labour, have a 15.8% probability of having a cesarean section which is 2.5 times at higher risk.²⁶ Shrewd assessment for IOL considering the cervical conditions and reconsidering the indications of IOL²⁷, waiting for natural labour to begin where possible and not embarking on cesarean section without a solid indication is the key in reducing the primary cesarean section rate.

Group 3 contributed 1.9% to the overall LSCS rate in our study which is within the maximum 2% cesarean section rate expected in this group.²⁸ As such no intervention is required to further reduce the LSCS rate in this group.

For group 4 multiparous women; avoiding

unnecessary IOL without indications, admissions of women who aren't in active labour, expertise in maintaining and interpreting partogram, reassessing for intrapartum cesarean indication and avoiding the primary cesarean section at all possible costs remain the specific goals for this group.

In our study Group 5 consisting of women with previous scar had the maximum rate. The aim for reducing the rate for this group should be, to give TOLAC instead of considering elective repeat LSCS.²⁹

Group 6, 7 of RTGCS consists of nullipara and multipara with breech presentation and Group 9 include transverse or oblique lie. The results of Term Breech Trial which were published in 2000 led to rapidly increased LSCS rates for breech presentation.³⁰ The contribution of these groups to the overall LSCS rate remained low. To further reduce the rate in these groups, the technique of external cephalic version and method of breech vaginal delivery should be mastered and applied in term pregnancies with abnormal lie.

Group 8 of RTGCS comprises of multiple pregnancy. The mode of delivery is driven by the presentation of the first baby. Amongst multiple gestations, diachorionic diamniotic twins with first cephalic presentation can be delivered vaginally. Nothing much can be done in higher order gestations and even in twins where first twin is having an abnormal lie.

Surprisingly Group 10 emerged as the third largest contributor to overall cesarean rate in our study. All singleton, cephalic, preterm pregnancies were included in this group. Its representation in the overall LSCS rate was 12.8%. Cesarean sections in this group were usually performed due to maternal and obstetric complications such as HDP, decreased fetal movements, fetal distress, intrauterine growth restrictions, preterm prelabour rupture of membranes, antepartum hemorrhage and scar tenderness. This high percentage may be due to the fact that this is a tertiary care unit with availability of ventilator support for newborn resulting in referrals and in utero transfer of high

risk cases to our hospital.

CONCLUSION

In conclusion RTGCS is very useful in auditing the cesarean section rate and in categorizing the cesareans to different groups. It also helps in identifying the particular groups which are contributing to high cesarean rates. Effort can then be directed towards those groups, strategies can be devised and policies and practices modified to help reduce the LSCS rate until we achieve the ideal rate recommended by WHO.



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2	Irum Sohail	Concept of study, supervision of every step of research article.	
3	Maria Habib	Analysis of results, Proof reading.	