

Original Article

Analysis of Primary Lower Segment Caesarean Section Using the Robson 10-Group Classification System (RTGCS)

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Abstract

Objective: To determine the frequency of primary lower segment cesarean section in term pregnancies using the Robson 10-group classification system (RTGCS) at a tertiary care Hospital.

Methodology: This descriptive cross-sectional study was conducted at department of Gynae and Obstetrics, from February 2022, to August 2022, at Liaquat University Hospital, Hyderabad. All the women with term singleton and cephalic fetus pregnancy aged 20-45 years, who were scheduled for deliveries of either parity and booking status were included. Patients were categorized into Robson 10-group classification system using Modified Robson criteria. The patients undergoing lower segment cesarean section and their indications was noted. Data were entered and analyzed using SPSS version 26.

Results: Overall maternal mean age was 28.97±3.65 years. Lower segment cesarean section was noted in 39 (25.2%) patients. A significant association of Robson group was observed with lower segment cesarean section (p-value 0.003). As per indications the fetal distress was observed in 12 (30.8%), failed induction of labor in 6 (15.4%), Cephalo-pelvic disproportion 11 (28.2%), failure to progress in 8 (20.5%), whereas maternal wish in 3 (7.7%) patients.

Conclusion: Primary lower segment cesarean section was observed in 25.2%. Based on RTGCS, findings observed that the rates of c-sections vary significantly across term pregnancies, with Group 2 contributing the highest proportion of primary LSCS.

Keywords: Lower segment cesarean section, cephalo-pelvic disproportion, Robson 10-group classification system.

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Introduction

The cesarean section is a life-saving surgical procedure to protect the mother or baby when certain problems occur during pregnancy or labor, and it has become one of the most commonly performed major operations throughout the world.^{1,2} Based on the past thirty years, the rate of cesarean births has risen sharply at world level, rising from approximately 6% in 1990 to around 21% in 2018, with some middle-income nations higher than 50%.^{1,3} The question is now; what was previously an uncommon procedure has now become the most frequent way numerous women deliver their newborns.¹ Pakistani data also showed a comparable trend, where rates of the C-section have risen from 3.1% to 22.3%

over the past 20 years, with current estimates representing rates of around 18% in rural areas and 32% in urban areas.⁴ However it is a major operation that carries short-term risks for both mother and baby, potential long-term effects, and can affect future pregnancies.⁵ By means of cesarean delivery is clearly the safest option for both mother and baby in certain situations, some cases raise doubts about whether the benefits be more important than the risks.⁶

Subsequently it is very important to document the rates of C-section, adopt effective measures to improve their management, advance strategies of the treatment, and enhancing monitoring of the patients are all key efforts

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that can support to reduce the frequency of CS and may protect the well-being of both infants and mothers.⁷ Accordingly, efforts were made in 2011 to identify a incorporated, globally recognized classification system, and the RTGCS was ultimately endorsed as the most suitable initially through the WHO in 2015 and later in 2016 by the International Federation of Obstetrics and Gynecology (FIGO).^{8,9} It is projected to be straightforward, consistent, reliable, meaningful clinically, and applicable in advance allowing each woman admitted for delivery to be placed immediately into one of ten groups.⁴ This system based on six obstetric factors: parity, history of previous cesarean delivery, gestational age, presentation of the fetus, one fetus or multiples and whether labor began induced or spontaneously. The advantages keys include straightforward application, no need for additional records, and the ability of easy auditing and analyzing facilities.^{4,8}

There is growing concern about the increased use of cesarean sections in Pakistan detailed auditing basis on TGCS is rarely done. When the cesarean deliveries are conducted without valid medical requirements, they can trigger a number of unnecessary medical interventions and may pose serious health risks to the health of both mothers and newborns, both immediately and in the future pregnancies. In an area with a high rate of maternal mortality and morbidity due to inadequate access to health services, comprehensive knowledge about indications and mode of delivery is very important. Additionally at local level, the specific contribution of each group within the TGCS to the overall rate of cesarean deliveries remains inadequately undeclared.¹⁰ However, without the standardized TGCS-based monitoring, it is difficult to decide which obstetric groups are most responsible for the increasing the burden of cesarean deliveries.¹⁰ Nevertheless, the proper assessment using the TGCS is therefore important, as it enables accurate categorization of cesarean deliveries, evaluation of the highly contributing groups, and informed decision-making to prevent the unnecessary cesarean deliveries. Taking above gaps this study has been planned and conducted to evaluate the analyze current trends in rates of C-sections and to categorize them according to the TGCS at our tertiary-care Hospital. Hence, information obtained can point us toward the kinds of interventions that might help reduce the rates of cesarean sections, when and where such reductions are desirable.

Methodology

This cross-sectional descriptive study was conducted at Department of Gynecology and Obstetrics, Liaquat University Hospital, Hyderabad. Study was done during a period of six months from February 2022, to August 2022. All the women with term singleton and cephalic fetus pregnancy aged 20-45 years aged, who were scheduled for primary deliveries (vaginal or c-section) of either parity and booking status were included.

Women with history of previous cesarean section, obstetrical complications like preterm premature rupture of membrane, placenta previa, breech presentation or transverse lie and with congenital anomalies of the fetus were excluded. A sample size of 155 patients was calculated by taking proportion of (frequency of LSCS 27%),¹⁰ with margin of error =7% and confidence level 'CI'=95%. The non-probability consecutive sampling technique was used. Following the obtaining informed consent and explaining the objectives and purpose of the study, a brief medical history and clinical examination were conducted for each patient. All the selected women who delivered during the study period, whether by cesarean section or NVD, were managed according to standard hospital protocols and the specific obstetric indications. Subsequent to deliveries, each woman was systematically evaluated and categorized using the Robson Ten-Group Classification System. The classification was basis on essential obstetric parameters as well as, gestational age, parity, onset of labor, presentation of fetus, previous cesarean section, and quantity of fetuses. The approach was allowed for uniform eveluation of the study population and simplified the comparison of deliveries patterns. Basis on these variables, women were categorized into the Robson Ten-Group Classification System using the modified Robson criteria. The findings of continuous and categorical variable were documented by study proforma. The relevant data were analyzed on SPSS Version 20. Mean and standard deviations for the quantitative variables like maternal age and gestational age was calculated. Frequencies and percentages for the qualitative variables. Chi square test was applied taking p-value of ≤ 0.05 .

Results

This study enrolled the 155 patients, with the majority (94 patients, 60.6%) being ≤ 30 years old. Overall mean

gestational age of the patients was 38.85 ±1.07 weeks. Out of all, 71(45.8%) were rural resident and urban residence women were 84 (54.2%. The educational status of women showed that 31(20%) were illiterate, 78(50.3%) had equal to matric and 46(29.7%) had intermediate and graduation level of education. Employment history was observed in 23(14.8%) mothers. The 75(48.4%) women were nulliparous and 80(51.6%) were multiparous. Table I

Table 1: Clinical and baseline characteristics of the patients. (n=155)

Variables	N	%
Age groups		
≤30 years	94	60.60%
>30 years	61	39.40%
Parity		
Primiparous	75	48.40%
Multiparous	80	51.60%
Residence		
Rural	71	45.80%
Urban	84	54.20%
Socioeconomic status		
Poor	94	60.60%
Middle	61	39.40%
Educational status		
Illiterate	31	20.0%
Up to metric	78	50.30%
Intermediate to graduate	46	29.70%
Occupational status		
Employed	23	14.80%
Un-employed	132	85.20%

Most of the women 61 (39.4%) were presented with Robson group 2, followed by 59 (38.1%) with group 4, in group 1 were 20 (12.9%), and 15 (9.7%) of the women were in group 3. Figure 1.

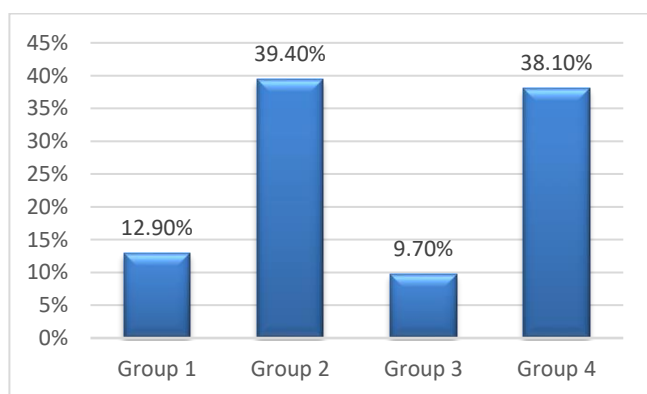


Figure 1. Frequency of Robson group classification. (n=155)

Frequency of lower segment cesarean section was noted in 39 (25.20%) of the patients. Figure 2. The lower segment cesarean section was least frequent in Group 1 (10%) and more common in Group 3 (20%) and 4 (15.3%), while Group 2 showed the highest proportion of

cesarean deliveries (41%). Overall statistically significant LSCS rates across these groups (p = 0.003), indicating that Group 2 (nulliparous, singleton, cephalic, ≥37 weeks with induced labor or pre-labor cesarean) had the highest proportion of cesarean deliveries, representing that women in Group 2 were more likely to undergo LSCS compared to other groups of RTGCS. Table II

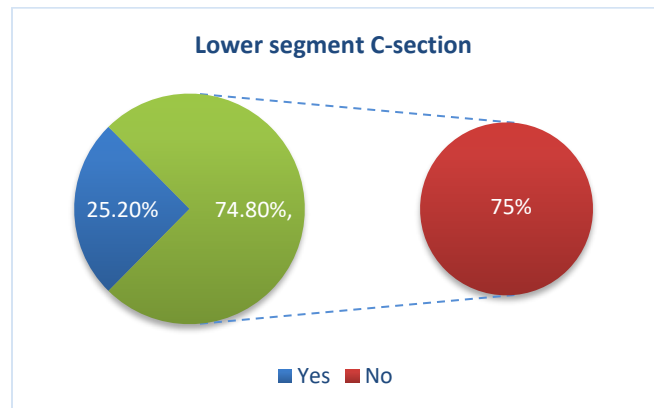


Figure 2. Frequency of Robson group classification. (n=155)

Table II: Comparison of lower segment cesarean section with Robson group classification. (n=155)

Robson Group	Lower Segment Cesarean Section		Total	p-value
	Yes	No		
	n (%)	n (%)		
Group 1	2 (10.0)	18 (90.0)	20 (100)	0.003
Group 2	25 (41.0)	36 (59.0)	61 (100)	
Group 3	3 (20.0)	12 (80.0)	15 (100)	
Group 4	9 (15.3)	50 (84.7)	59 (100)	

Furthermore, the indications showed that fetal distress was observed in 12 (30.8%), failed induction of labor in 6 (15.4%), Cephalo-pelvic disproportion 11 (28.2%), failure to progress in 8 (20.5%), whereas maternal wish was observed in 3 (7.7%) patients. Table: 3.

Table III: Indication of Lower Segment Cesarean Section. (n=39)

Indications	N	%
Fetal distress	12	30.8
Failed induction of labor	6	15.4
Cephalo-pelvic disproportion	11	28.2
Failure to progress	8	20.5
Maternal wish	3	7.7

Discussion

Rates of the C- section are increasing very rapidly, yet the procedure should be performed exclusively when medically justified because of its potential complications. For the systematically document and monitoring these

procedures, the TGCS was adopted. However according to the current study findings, frequency of lower segment cesarean section was observed in 25.2% patients. Consistently the few other local studies done by Mustafa N et al¹¹ and Gilani et al¹² found the prevalence of primary lower segment cesarean section to be 19.4 and 27%.^{11,12} The C-section rates have risen throughout the world in recent decades, raising concerns because CS carries higher risks of blood transfusion, hysterectomy, and maternal death, and previous uterine scars can lead to complications in upcoming pregnancies. Additionally, the cesarean deliveries are more expensive than vaginal deliveries, performing them routinely without medical necessity can strain healthcare resources and potentially worsen health biases.^{13,14}

In this study according to the indications of cesarean deliveries the fetal distress was observed in 30.8%, failed induction of labor in 15.4%, Cephalo-pelvic disproportion 28.2%, failure to progress in 20.5%, whereas maternal wish was observed in 7.7% patients. Consistently in a previous study reported that the indications of lower segment cesarean section were fetal distress 11%, cephalo-pelvic disproportion 8.4 %, failed induction of labor 5.8%, failure to progress 4.4% and maternal request 2.4%.¹⁵ According to another study by Taj N et al¹⁶ reported that the most common indications for cesarean deliveries were (20.1% fetal distress, 15.0% previous c-section, 18.8% obstructed labor or progress failure to, 8.4% breech presentation, 6.5% unsuccessful induction of labor and both cephalopelvic disproportion and PIH in 3.9%.

Considerate the primary indications for cesarean deliveries is very important to evaluating the clinical practices and identifying areas where interventions could reduce unnecessary surgical practice. With the analyzing the relative contributing factors, healthcare providers can prioritize targeted management strategies to improve health outcomes of both fetus and mother.

In the present study, most of the mothers were presented with Robson group 2, i.e., 39.4%, followed by group 4 in 38.1%, group 1 in 12.9%, and group 3 in 9.7%. A significant association of Robson group was observed with lower segment cesarean section. RTGC is a widely recognized as a standard method for evaluating and comparing the rates of cesarean deliveries throughout the world.¹⁷ Though the causes for performing a cesarean may differ depending on the obstetrician, the Robson system provides an objective way to evaluate the rates of this procedure across women with varying

obstetric pattern. In aligns to study Afridi SA et al¹⁸ reported that the according to RTGC, the cesarean section rates were as follows: Group 1 (16.81%), Group 2 (78.95%), Group 3 (1.56%), Group 4 (77.14%), Group 5 (89.22%), Group 6 (83.33%), Group 7 (67.86%), Group 8 (40%), Group 9 (100%), and Group 10 (46.97%). Overall their findings indicated that the Groups 5, 4, and 2 were the leading contributors to the overall rate of the cesarean deliveries. Consistently D'Agostini Marin DF et al¹⁹ reported the women who were classified within Robson groups 1 to 4 showed a substantial decrease in C-section rates 21.4%, declining from 49.1% to 38.6%, whereas Robson groups 5 and 2 continued the largest contributors to the overall C-section rate, collectively accounting for > 60% of all c-section. In the study Tura AK et al²⁰ reported that the Robson groups 3, 5, and 1 noted for most cesarean deliveries, primarily due to the obstructed labor, fetal distress, and history of previous cesarean section. Comparatively Rookesh Z et al²¹ demonstrated that the cesarean deliveries accounted for 63.4% of all births, with Group 5 contributing the largest group at 46.6%, followed by Group 2 at 19.5% of c-sections. There were some variations noted between this study and other studies may be due to differences in the group's analysis. As in this study, Group 2 appeared most frequently, while most of the other studies report higher rates in the more advanced groups of Robeson classification. The difference is expected because those advanced groups often include women with a previous cesarean delivery, which is one of the strongest predictors of a repeat C-section. Meanwhile our analysis focused only on the standard Robson groups without those extended groups, the distribution of cases obviously fluctuated.

Additionally, present study contributes new insight by showing that among women with no prior cesarean section, those who were nulliparous with a singleton, cephalic pregnancy at ≥ 37 weeks and who underwent induced labor or a pre-labor cesarean had the highest likelihood of requiring a cesarean section. Though, the study has notable limitations, mainly the small sample size and the prevalence was first measured, and only the identified cases were then classified using the Robson system, which may limit the generalizability of the study findings. Hence, future studies involving only cesarean section patients and with substantially greater sample sizes are recommended to validate us among women without previous cesarean scars.

Conclusion

Study revealed that the RTGCS is an effective and practical tool for estimating practices of c section in term pregnancies, by categorizing patients into clearly defined groups, where it allows meaningful comparison of cesarean deliveries rates and highlights the obstetric populations contributing most to primary LSCS. Findings underscore that the, Group 2 showed the highest proportion of c-section, indicating that nulliparous women at term with induced labor or pre-labor cesarean section signify a key target group for interventions aimed to decreasing the unnecessary c-sections.

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