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Original Article

Robson Criteria to Determine the Risk of Cesarean Section in Females Presenting to Sir Ganga Ram Hospital (SGRH), Lahore

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ABSTRACT

Rates of caesareans have increased, resulted in unfavourable outcomes in subsequent pregnancies. Robson categorization enhances standard of care by optimising the use of C-sections and evaluating methods to lower caesarean rates. **Objective:** To determine the frequency of caesarean section and to determine frequency of Robson 10 group classification system in patients who undergo caesarean. **Methods:** In this cross-sectional study, 140 pregnant selected via simple random sampling, were enlisted from Gyne department of SGRH, Lahore. According to Robson 10-group categorization those who underwent C-section were divided into ten groups and indication of C-section was studied. Data scrutiny was done using SPSS version 26.0. Mean and SD was used for quantitative variables and frequency for qualitative data. Data were stratified for effect modifiers, p-≤0.05 was taken as significant. **Results:** Mean age of patients calculated was 31.94 ± 2.14 years. Out of 140, 23.6% had C-section and 76.4% had vaginal delivery. According to class of modified Robson criteria, 12.1% had class 1, 12.1% had class, 2, 21.2% had class 3, 36.4% had class 5, and 3.0% each had class 4, 6, 7, 8, 9, and 10. **Conclusions:** According to our findings, considerable percentage of C-sections occur with previous C-sections serving as most common indicator. This pattern emphasizes how crucial it is to concentrate on primary preventive techniques in order to lower its rate. Large number of C-sections performed on nulliparous both those in spontaneous labour and those who were not indicates that labour management procedures and decision-making processes need to be closely examined.

INTRODUCTION

Caesarean section, can save patient's life when difficulties during pregnancy or labour emerges. It is major surgery with direct vulnerability to both mother and fetus, despite its vital significance in some cases. In addition, there may be long-term consequences from C-sections that are currently being studied, as well as complications for subsequent pregnancies [1, 2]. The number of caesareans performed worldwide is on rise, especially in growing Asian countries. This increase is happening despite lack of data indicating that higher rates of caesarean sections offer significant benefits for mothers and newborns [3]. Because of this steady rise, lack of agreement over ideal rate for caesareans, short and long-term dangers and expenses involved, caesarean rates continue to raise concerns worldwide [2]. WHO reports that caesarean proportions have been rising in both industrialized and

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underdeveloped nations? According to WHO, rate for caesareans should be between 10-15%. % [4]. In Pakistan, frequency of unnecessary C-sections has been doubled during last 20 years [4, 5]. In 1985, WHO stated that more than 10-15% of caesareans performed lacked medical rationale? While the number of caesareans executed globally has increased significantly over the next three decades, questions have been raised about accuracy of this historic 1985 remark [6]. So, WHO advises using Ten-Group Robson classification as international strategy for evaluating caesarean procedures in order to enable meaningful comparisons [7-9]. Ten-Group Classification was proposed by Robson to permit dire inquiry agreeing to individualities. Features are: (i) solo or multiple pregnancy, (ii) nulliparous/multiparous/multiparous with former cesarean, (iii) cephalic, breech/other mal-presentation, (iv) unplanned/induced labor, and (v) term/preterm. On foundation of these variables, there are divisions of females in 10 groups [8, 10]. In one study done on pregnant who underwent C-section, frequency of cesarean noted was 30% for primigravidas and 70% for multigravidas [11]. In another study done, 20.3% females underwent cesarean. According to Robson, class 1 found was 13%, 8.1% class 2, 2.6% in class 3, 61% class 4, and 58.2% class 5 [12]. Another study found that rate of females who fell in class 1 was 12.8%, in class 2 was 18.1%, in class 3 was 26.5%, in class 4 was 2.1%, in class 5 was 27.7%, in class 6 was 0.33%, in class 7 was 0.35%, in class 8 was 1.6%, in class 9 was 2.2% and in class 10 was 5.9%. Maximum contribution 27.42% to total cesarean section rate was made by Group 5 and 7.34% by Group 2. These three groups contributed 87% towards total cesarean section rate. Small Groups 6, 7, 8, 9, and 10 had high cesarean section rates but small overall contribution [13]. Rationale of this study is to determine frequency of cesarean delivery and frequency of cesarean delivery in females obtain particular score of modified Robson criteria. Through literature, it has been noticed mostly females fell in classes 5-9. So this classification can help to determine the mode of delivery of fetus and can help to preserve labor time and plan appropriate mode of delivery instead of waiting for labor or complications. But, not much work has been done in this regard. So, there is a need to conduct this study to get local data and implement results of this study in local setting and can improve our practice. Objective of this study is to determine the frequency of cesarean presenting at term and to determine the frequency of Robson 10 group classification system in patients who undergo cesarean.

METHODS

This cross sectional study, was conducted at department of Obstetrics and Gynecology, SGRH, Lahore from 30-07-2022 to 30-01-2023 after taking ethical approval from IRB and acceptance of proposal from CPSP/REU/OBG-2019-059-9373. 140 females were estimated by keeping confidence level 95%, margin of error 7% and expected prevalence of cesarean section as 23.5% [14]. Written informed consent was taken from all patients. Patients aged 18 to 40 years, primigravidas and multigravida (upto 3), having gestational age >37 weeks on LMP and on regular antenatal checkup were included. Those with congenital fetal abnormalities, placenta previa/increta/accrete/percreta/ abruption (detected on ultrasound), pregnancy induced hypertension (BP≥140/90mmHg), gestational diabetes (BSR>200 mg/dl), Cephalic pelvic disproportion, previous more than 2 c/section and grand multipara (>3) were excluded. After taking consent their demographic summary i.e. age, gestational age, parit and BMI noted on given proforma. All females were delivered either by cesarean sections or normal vagina delivery. Then females who underwent C-section were evaluated for modified Robson criteria and divided in 10 groups according to classification (table 1). Females were followed till delivery. Females undergoing cesarean, were classified for Robson 10 group classification system. Data were collected using questionnaire comprises two sections: 1) Section one acquired information on sociodemographic variables such as age, parity, BMI, mode of delivery etc. 2) Section two collects data based on the Robson classification system as shown in table 1. SPSS version 26.0 was used to enter to analyze the collected data. Mean and SD were computed for age, gestational age and BMI. Frequency and percentage was computed for cesarean section, parity and Robson class. Chi-square test was applied to compare the frequency of cesarean section among data stratified for age, gestational age, parity and BMI. Post-stratification, Chi-square test was applied. P-value≤0.05 was taken as significant. Out of 69 primigravidas 49 (71.0%) had C-sections. In table 1, distribution of patients undergoing caesarean section according to the Robson 10 Group Classification System elaborated.

Table 1: Robson 10 Group Classification System

Groups	Clinical characteristics
1	Nulliparous, singleton, cephalic, ≥ 37 weeks, spontaneous labor
2	Nulliparous, singleton, cephalic, ≥ 37 weeks, induced labor or cesarean section before labor
3	Multiparous without previous cesarean section, singleton, cephalic, ≥ 37 weeks, spontaneous labor
4	Multiparous without previous cesarean section, singleton, cephalic, ≥ 37 weeks, induced labor or caesarean section before labor
5	Multiparous without prior cesarean section, singleton, cephalic, ≥ 37 weeks
6	All nulliparous breeches
7	All multiparous breeches (including previous cesarean section)
8	All multiple pregnancies (including previous cesarean section)

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9	All pregnancies with transverse or oblique lie (including those previous cesarean section)
10	Singleton, cephalic, ≤36 weeks (including previous cesarean section)

RESULTS

Table 2 showed demographic characteristics of our study population in terms of mean ± SD. Mean age calculated was 31.94 ± 2.14 years, gestational age 39.69 ± 1.14 weeks and mean of BMI noted was 27.77 ± 5.91 kg/m^2.

Table 2: Sociodemographic Characteristics of the Participants Presented with Mean and Standard Deviation (n=140)

Variables	(Mean ± SD)
Age (Years)	31.94 ± 2.14
BMI (Kg/m^2)	27.77 ± 5.91
Gestational Age (Weeks)	39.69 ± 1.14

Table 3 showed qualitative variables in terms of frequency and %, parity distribution of patients was done, it showed that 49.3 % (n=69) were primigravidas whereas 50.7% (n=71) were multigravida. Frequency of age distribution has shown that out of 140 patients, 21.4 % (n=30) were in age group of 18-30 years and 78.6 % (n=110) were in age group of 31-40 years. Total of 140 females, 23.6% (n=33) had cesarean section and 76.4% (n=107) had normal vaginal delivery.

Table 3: Characteristics of the Participants Presented with Frequency and Percentages

Variables	N (%)
Age	
18-30 Years	30 (21.4%)
31-40 Years	110 (78.6%)
Total	140 (100%)
Parity	
Primigravida	69 (49.3%)
Multigravida	71 (50.7%)
Total	140 (100%)
Mode of Delivery	
Cesarean Section	33 (23.6%)
Normal Vaginal Delivery	107 (76.4%)
Total	140 (100%)

As shown in table 4, According to class of modified Robson criteria on 33 patients who underwent C-section, 12.1% (n=4) had class 1, 12.1% (n=4) had class, 2, 21.2% (n=7) had class 3, 3.0% (n=1) had class 4, 36.4% (n=12) had class 5, 3.0% (n=1) had class 6, 3.0% (n=1) had class 7, 3.0% had (n=1) class 7, 3.0% (n=1) had class 8, 3.0% (n=1) had class 9, and 3.0% (n=1) had class 10.

Table 4: Frequency Distribution of Modified ROBSON Criteria among Patients having C-section

Class of Modified Robson Criteria	N (%)
Nulliparous, Single Cephalic, >37 Weeks in Spontaneous Labor	4 (12.1%)
Nulliparous, Single Cephalic, >37 Weeks, Induced Or Cs Before Labor	4 (12.1%)
Multiparous (Excluding Previous CS), Single Cephalic, >37 Weeks in Spontaneous Labor	7 (21.2%)
Multiparous (Excluding Previous CS), Single Cephalic, >37 Weeks, Induced or CS Before Labor	1 (3.0%)
Previous CS, Single Cephalic, >37 Weeks	12 (36.4%)
All Nulliparous Breeches	1 (3.0%)
All Multiparous Breeches (Including Previous CS)	1 (3.0%)
All Multiple Pregnancies (Including Previous CS)	1 (3.0%)
All Abnormal Lies (Including Previous CS)	1 (3.0%)
All Single Cephalic, <36 Weeks (Including Previous CS)	1 (3.0%)
Total	33 (100.0%)

Data stratification with respect to age, BMI, gestational age and parity remained statistically not significant p >0.05, as shown in table 5. Data stratification of parity has shown that among primigravidas out of 69, 20 (29.0%) had C-section and 49 (71.0%) had vaginal delivery and among multigravidas out of 71, 13 (18.3%) had C-section and 58 (81.7%) had vaginal delivery, p=0.137, statistically not significant. For BMI 17-25 Kg/m^2 out of 37 patients 9 (24.3%) had C-section and 28 (75.7%) had vaginal delivery, for BMI >25 Kg/m^2 out of 103 patients 24 (23.3%) had C-section and 79 (76.7%) had vaginal delivery, p=0.900 not significant statistically. For >37-40 weeks out of 100 patients 25 (25.0%) had cesarean mode of delivery, while 75 (75.0%) had vaginal delivery and for >40 weeks, out of 40 patients 8 (20.0%) had C-section while 32 (80%) had vaginal delivery, p=0.529. For age group 18-30 years, out of 30 patients 8 (26.7%) had C-section, while 22 (73.3%) had vaginal delivery, and for 31-40 years out of 110 patients 25 (22.7%) had C-section and 85 (77.3%) had vaginal delivery, p=0.652 this difference was not significant statistically.

Table 5: Data Stratification

Variables		Mode of Delivery N (%)		Total	p Value
		Cesarean Section	Normal Vaginal Delivery		
Parity	Primigravida	20 (29.0%)	49 (71.0%)	69	0.137
	Multigravida	13 (18.3%)	58 (81.7%)	71	
	Total	33 (23.6%)	107 (76.4%)	140	
BMI Group	17-25 Kg/m^2	9 (24.3%)	28 (75.7%)	37	0.900
	>25 Kg/m^2	24 (23.3%)	79 (76.7%)	103	
	Total	33 (23.6%)	107 (76.4%)	140	
Gestational Age Group	>37-40 Weeks	25 (25.0%)	75 (75.0%)	100	0.529
	>40 Weeks	8 (20.0%)	32 (80.0%)	40	
	Total	33 (23.6%)	107 (76.4%)	140	
Age Group	18-30 Years	8 (26.7%)	22 (73.3%)	30	0.652
	31-40 Years	25 (22.7%)	85 (77.3%)	110	
	Total	33 (23.6%)	107 (76.4%)	140	

DISCUSSION

Our study shows that out of 140 patients, 21.4 % (n=30) were in age group of 18-30 years and 78.6 % (n=110) were in age group of 31-40 years. Mean age was calculated as 31.94 ± 2.14 years. Distribution of gestational age was 39.69 ± 1.14 weeks and BMI was 27.77 ± 5.91 kg/m2. Parity stratifications of patients shows that 49.3 % (n=69) were primigravidas

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whereas 50.7% (n=71) were multigravida. Out of Total of 140 females, 23.6% (n=33) had cesarean section delivery and 76.4% (n=107) had normal vaginal delivery. In one preceding study, caesarean section rate noted was 48.28% which is quite high paralleled to WHO criteria (15%) [15]. One study conducted has shown frequency of caesarean sections 46.93% slightly high from our frequency noted, and similar to our results among them Group 5 had greatest rate of caesareans (39.60%) and Group 2 had 18.21% [16]. Similarly, study from 2016-2017 in, Nepal, on 3,817 women and were investigated by means of this classification. Women with previous CS (Group 5) encompass main proportion (9.4%) of total 26.41% CS rate. In India, one study found that there was trend of amplified fraction of cesarean in group and 2 which was 36% and 36.71% respectively [17]. Likewise, in India 2004 to 2013, cesarean rate was 25.17 %. Major influences to this were found to be group 1 (37.62 %) [18, 19]. Based on proportion of live births in each of Robson's categories and proportion of C-sections for every group, one study has examined the pregnancies in which 2, 764, 373 pregnant women had C-sections yielding 51.9% overall C-section rate. R5 group's C-section rate rose gradually from 22.2% in 2013 to 24.3% in 2016. This pattern is explained by the fact that C-sections performed in R1-4 group's cause these women to become pregnant again, which forces them to undergo C-sections [20]. Overall caesarean section CS rate found in one recent study was 35.08%, almost similar to our observation and among them largest group was Group 1 (35.69%), followed by Group 3 25.75% and Groups 1 and 2 had lower CS rates compared to other groups, but these rates were still higher than WHO implementation guidelines. In the analyzed sample study population, the CS rate due to fetal distress was 28.54%, and rate due to previous CS was 25.85% [21]. Missing data can distort the estimate of intended result and reduce representativeness of sample. Convenience sample could create selection bias. We are unable to generalise the results to target population since subgroups in sample are underrepresented in population of interest. The current study's cross-sectional methodology and small sample size limit the quantity of data that can be gathered at any given time. Future clinical practice should focus on developing standardized guidelines and enhancing training for healthcare providers to ensure the appropriate use of caesarean sections.

CONCLUSIONS

According to our findings, Robson categorization system may be used to analyze, screen, audit, and compare caesarean rates. It can also be used to develop and implement efficient plans aimed at achieving WHO-recommended C-section rates.

Authors Contribution

Conceptualization: SH, HMZ, SK[1]
Methodology: AN
Formal analysis: SK[1]
Writing, review and editing: HMZ, AN, MF, BJ, AY, SK[1], SA, Sk[2]

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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