Original Article

# Distribution of Robson Ten Group Classification System Among Patients Undergoing Caesarean Section

**Mashal Naseem Awan[1], Arshad Khushdil[2], Madiha Ahmed[3], Touseef Fatima[4], Mah Rukh Noor[5], Nabila Essa[6]**

[1]Consultant Gynaecologist, THQ city hospital Talagang, [2]Consultant pediatrician, Pak Emirates Military Hospital, Rawalpindi, [3]Senior Registrar, Fauji Foundation hospital Rawalpindi, [4]Consultant Gynecologist, Fauji Foundation hospital Rawalpindi, [5]PGT Gynae, Fauji Foundation hospital Rawalpindi, [6]Demonstrator Quetta Institute of Medical Sciences, Quetta

**Correspondence:** *Dr. Arshad Khushdil*
*Consultant pediatrician, Pak Emirates Military Hospital, Rawalpindi*
*drarshad104589@yahoo.com*

## Abstract

Objective: To determine frequency of Robson Ten Group Classification System among patients coming for cesarean section.

Methodology: This retrospective study was conducted at Department of Obstetrics and Gynecology, Fauji Foundation Hospital, Rawalpindi from June 2023 to December 2023. A total of nine hundred women were enrolled in the study. Both nulliparous and multiparous patients between 18 and 35 years of age, admitted for elective or emergency caesarean section at > 28 weeks gestation having cephalic or breech presentation were included in the study. However, patients who delivered by spontaneous or assisted vaginal delivery were excluded from the study

Results: Our results showed that the group making the largest contribution to the cesarean section rate (60.3%, n=570/945) was Robson group V (women with at least one previous cesarean section and a term, singleton, cephalic-presenting pregnancy) followed by Robson group II (induced labor or Caesarean section before labor) (20.8%, n=197/945).

Conclusions: Robson group V (women who had one past cesarean section and a term, singleton, cephalic-presenting pregnancy) was most frequent group in this study followed by Robson group II (induced labor or Caesarean section before labor)

Keywords: Cesarean delivery, Robson Classification, Induced labor.

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## Introduction

Caesarean section is a crucial and important surgical procedure where unavoidable complications can occur at the time of delivery. Since it is a major surgical procedure, it has many immediate as well as late maternal and neonatal complications[1]. During the last decades rate of caesarean section has increased dramatically. In one of its survey, World Health Organization found a 25.7% global cesarean section rate, of which 27.3% occurred in Asia, 19.0% in Europe and 29.2% in Latin America.[2] Such an alarmingly high cesarean section rates have become an important public health issue. This rapid rise in caesarean section has led the World Health Organization to advise that Cesarean section rates should not be more than 15%. Evidence shows that rates above 15% are not associated with additional reduction in maternal and neonatal mortality and morbidity.[3]

The determinants of this rising rate of cesarean section worldwide are debatable. Some studies indicate a significant proportion of these Cesarean sections are performed without medical indications (on maternal request). Understanding of these drivers has been complexed by non-availability of international consensus for a universally accepted cesarean section classification system. The classification system suggested by Robson is considered to be practical when comparing surgery rates.[4]

The Robson Ten Group Classification System is a structured method and good tool that has been used for monitoring cesarean section rates. This ten-category classification system is based on the following obstetric parameters that include characteristic Cesarean

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section of the pregnancy, gestational age, previous obstetric record, fetal presentation, and course of labor and delivery. According to a study conducted in South Africa[5] the RTGCS, percentage contribution by each group to the overall caesarean section rate is group 1 (n = 296,27.4%), 2(n=85,7.9%), 3(n=164,15.2%), 4(n=66,6.1%), 5(n=186,17.2%), 6(n=10,9%), 7(n=5,5%), 8(n=17,1.6%), 9(n=0,0%) and Group 10 (n = 253, 23.4%). In most of the studies Group 1, 5 and 10 were major contributors to the overall cesarean section rate.[6,7,8,9,10] This study will help to identify those groups in the obstetric Cesarean section population that contribute to the high caesarean section rate in our setup and for which focused actions may decrease caesarean section rate. This study was planned to determine distribution of Robson ten group classification system among patients coming for Cesarean section.

## Methodology

This cross sectional study was performed at the department of Obstetrics and Gynecology, Fauji Foundation Hospital Rawalpindi from June 2023 to December 2023. The aim of study was to find out the most common indications for Cesarean section according to Robson's ten group classification (Figure 1). Total of 945 patients fulfilling the inclusion criteria were included in the study. Sample size was calculated using WHO sample size calculator taking confidence Level of 95%**,** anticipated Population Proportion of 0.016 with absolute Precision of 0.008.[11] Both nulliparous and multiparous patients between 18 and 35 years of age, admitted for elective or emergency caesarean section at > 28 weeks gestation having cephalic or breech presentation were included in the study. However, patients who delivered by spontaneous or assisted vaginal delivery were excluded from the study.

Approval from the ethical review board was sought before the start of study and Patients fulfilling the inclusion criteria were included in the study. Demographic data like name, age, gender and address were recorded. They were then assigned into different groups Robson Ten Group Classification and then frequency of C-section was determined. Fetal distress was detected by abnormal fetal heart rate such as fetal tachycardia, bradycardia, repetitive variable deceleration and late deceleration. The data was entered in a specially designed Performa for each participant and then duly verified by consultant.

Data was entered and analyzed using SPSS version 16. Frequency of Robson 10 groups (nulliparous/multiparous, cephalic/breech presentation, singleton/multiple pregnancy, spontaneous/induced labor and mode of previous delivery SVD /C-section) was calculated. Age and GA was calculated as mean± SD. Effect modifiers like age, gestational age and parity were controlled by stratification. Post stratification chi-square test was applied and a P-value of ≤0.05 was considered significant.

| Robson group | Characteristics |
|---|---|
| I | Nulliparous; single cephalic term pregnancy; spontaneous labour |
| IIA | Nulliparous; single cephalic term pregnancy; induced labour |
| IIB | Nulliparous; single cephalic term pregnancy; planned caesarean delivery |
| III | Multiparous without uterine scar; single cephalic term pregnancy; spontaneous labour |
| IVA | Multiparous without uterine scar; single cephalic term pregnancy; induced labour |
| IVB | Multiparous without uterine scar; single cephalic term pregnancy; planned caesarean delivery |
| V | Multiparous with previous caesarean section; single cephalic term pregnancy |
| VI | Nulliparous; single breech pregnancy |
| VII | Multiparous; single breech pregnancy |
| VIII | All women with multiple pregnancy |
| IX | All women with a single oblique or transverse pregnancy |
| X | All women with a single cephalic preterm pregnancy |

## Results

Total of nine hundred and forty-five (n=945) women were enrolled in the study with mean age of 30.1 ± 2.7 years. Mean gestational age was 38.4 ±1.6 weeks. 120 (12.7%) patients were between 18- 27 years of age while 825 (87.3%) were between 28-35 years of age. Among the study population, 752 (79.6%) patients were between 28- and 39-weeks gestation while 193 (20.4%) were more than 39 weeks gestation. 352 (37.2%) females were nulliparous and 593 (62.8%) females were multipara.

Our results showed that the group making the largest contribution to the cesarean section rate (50.5%, n=477/945) was Robson group V (women with at least one previous cesarean section and a term, singleton, cephalic-presenting pregnancy) followed by Robson group II (induced labor or Caesarean section before labor) (20.8%, n=197/945). These results are tabulated in table I.

**Table I: RTGCS groups in study sample.**

| RTCOG | N | % |
|---|---|---|
| **GROUP I** | 19 | 2.0 |
| **GROUP II** | 197 | 20.8 |
| **GROUP III** | 8 | .8 |
| **GROUP IV** | 48 | 5.1 |
| **GROUP V** | 570 | 60.3 |
| **GROUP VI** | 26 | 2.8 |
| **GROUP VII** | 17 | 1.8 |
| **GROUP VIII** | 18 | 1.9 |
| **GROUP IX** | 11 | 1.2 |
| **GROUP X** | 31 | 3.3 |
| **TOTAL** | 945 | 100.0 |

## Discussion

Cesarean section rates are continuously on the rise without a clear understanding of the main reasons leading to the increase in such rates. Absence of an internationally-accepted classification system to monitor and compare cesarean section rates is one of main barriers to a better understanding of this trend. The Robson classification system is based on various obstetrical parameters like parity, previous Cesarean section, gestational age, onset of labor, fetal presentation and number of fetuses but it does not include the exact indication or reason for cesarean section. This classification has gained lots of popularity assess contribution ~~of~~ to those groups in our patients coming for caesarean delivery. This would help in identifying the group contributing to the high caesarean section rate for which focused actions may decrease caesarean section rate.

A total of 945 women between 18-35 years of age and gestational age >28 weeks admitted for elective and emergency caesarean section were enrolled in the study. Our results showed that the group making the largest contribution to the cesarean section rate (50.5%, n=477/945) was Robson group V (women with at least one previous cesarean section and a term, singleton, cephalic-presenting pregnancy) followed by Robson group II (induced labor or Caesarean section before labor) (20.8%, n=197/945).

Our results were also similar to already published data on the subject. Kelly S, et al grouped hospital births from five different provinces into Robson's 10 classification categories. Their results showed that in all five provinces, the group contributing to largest relative contribution towards the cesarean section rate was women with at least one previous Cesarean section and a term, singleton, cephalic-presenting pregnancy (Robson Group 5). This group contributed from 76.1% to 89.9% of total cesarean section in the study population. The second contributing group was composed of nulliparous women having term, singleton, cephalic-presenting pregnancy. Those with induced labor or cesarean section before labor (Robson Group 2) had rates from 34.4% to 44.6% and those with spontaneous onset of labor (Robson Group 1) had cesarean section rates of 14.5% to 20.3%.[16] Our results also correlate with studies conducted in different parts of Pakistan where group 5 is the main contributor to this high Cesarean section rate.[17,18,19] Kazmi T, et al in their cross sectional study also found that Group 5 (previous cesarean section group) made the greatest contribution to the total cesarean section rate. Group 1 (Nullipara, Term, spontaneous deliveries) had the second highest contribution to the cesarean section rate and then group 2 (Nullipara, Term, elective cesarean section or after failed induction) placed third.[20]

This pattern indicates that there is less practice of trial of labor after Cesarean section. Evidence has shown that VBAC has success rate of around 75%. A successful VBAC is cost effective and also reduces risk of complications in future pregnancies. This aspect is very important in developing countries where couples tend to have large families. However, in contrast the health care professionals and patients have been found to prefer elective repeat Cesarean section over VBAC. The possible reasons could be fear of scar rupture, lack of facility of Continuous electronic fetal monitoring in many centers or patient's preference in order to avoid any emergency procedure or possible complications associated with VBAC. Further research is required to find out hurdles in trial of labor after a Cesarean section. Establishing VBAC clinics could help in reducing G5 Cesarean section rates.

The second group in most studies has also been Group two that includes nullipara at term with induced labor or

without labor. The possibility of Cesarean section before labor could be maternal request which could be because of fear of pain during labor, avoiding risk of instrumental delivery or emergency Cesarean section or fear of perineal trauma. This could be reduced by appropriate counselling in antenatal period and by providing appropriate forms of analgesia like Entonox or epidural and partner support during labor.

Our results were in contrast to study performed by Yadav RG, et al who found that Groups 1 and 3 represented 60 % of the total obstetric population.[21]

Our study was also different from a study conducted at Nishtar hospital- where the the most common group was group 10- that is Cesarean section before term. The reason was attributed to hospital having a higher number of pregnancies with complications like hypertensive disorders or fetal growth restriction.

In summary, the Robson classification system is being increasingly used worldwide. Despite its limitations, this classification system is easy to implement as well as easy to interpret. Several suggested modifications could be useful to help facilities and countries as they work towards its implementation. This classification system identifies relevant areas for interventions to reduce rates of Cesarean section. All health care facilities where deliveries are being conducted can use this system as part of a quality improvement initiative to monitor cesarean section rates in their health care facilities and work towards improvement.

## Conclusion

Robson group V (women with at least one previous cesarean section and a term, singleton, cephalic-presenting pregnancy) is the most frequent group in our study followed by Robson group II (induced labor or Caesarean section before labor). Robsons Ten Groups classification system identifies relevant areas for interventions and resources to reduce rates of cesarean section.

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