Original Article

A Step Forward: The Robson Ten Group Classification System For Outcomes Other Than Cesarean Section

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Abstract

BACKGROUND: Higher than recommended caesarean section (CS) rates may increase the risk of morbidity and mortality for both mother and child. Both advanced and developing nations have seen an increase in the number of CS delivery in recent years. The Robson categorization system splits all deliveries into ten groups that are mutually exclusive and entirely inclusive based on a set of preset obstetric features. Some of these include gestational age, parity, prior CS, the beginning of labour, fetal presentation, and the overall number of fetuses

OBJECTIVE: To determine the rate of cesarean section, and evaluate perinatal outcome among women classified bases on Robson Classification.

STUDY DESIGN: An analytical cross-sectional study

PLACE AND DURATION: Hayatabad Medical complex Medical and Teaching Institute Peshawar Pakistan for a period of 03 years

METHODOLOGY: All the women admitted to the hospital with pregnancy were included in the study. Data was collected from the files available in hospital record. The patients were classified in ten groups based on Robson Classification to evaluate the caesarian section rate and perinatal outcomes among groups. In addition, sociodemographic parameters such as age, place of residence, caesarean type, referral status, antenatal care, parity, gestational age, start of labour, fetal presentation and birth weight, indications for the caesarean section, as well as perinatal outcomes were noted. Data was entered and analyzed using SPSS version 24.

RESULTS: The overall caesarian section rate in this study was 24.31%, the group 3 and 5 were major contributors for overall caesarian section cases, 15.38% women in the study went for elective caesarian section and rest of the 84.62% went for emergency caesarian section, 42.44 % neonates were admitted to the neonatal ICU, 34.7% were preterm and 29.41% were low birth weight, 157 perinatal mortalities were reported including NNM and still births.

CONCLUSION: We evaluated the caesarian section rates in the groups based on Robson classification in our setting. Group 3- and 5 were was the leading contributor to the overall CS rate. This study also revealed the major perinatal outcomes among the groups.

KEYWORDS: Cesarean section, Robson 10 group of classification, perinatal outcome

INTRODUCTION

One of the most frequent surgical procedures performed on pregnant patients is a caesarean section (CS), and whether regional or general anesthesia is used depends on the patient's clinical indications [1, 2].

Thirty years after the WHO guidelines were published, there is still disagreement regarding the optimum CS rate and how to interpret this indication. Confounding factors and a lack of external validity are problems that plague the majority of recent attempts to identify the appropriate CS rate [3, 4]. The frequency of caesarean sections (CS) is a population-level indication of access to and the caliber of maternal health services provided in a nation, notwithstanding its limitations [5].

Caesarean section rates are rising daily, yet there are a number of variables that can affect the reported rates of CS. The intrinsic differences in patient characteristics, institution type, and resource accessibility are among them. Institutional variations in obstetric practice and standards for labor and delivery management can possibly account for this heterogeneity [6]. According to the World Health Organization (WHO), the ideal caesarean section rate should be between 5% and 15% [7].

Higher than recommended caesarean section (CS) rates may increase the risk of morbidity and mortality for both mother and child. Both wealthy and developing nations have seen an increase in the number of CS delivery in recent years. The Robson categorization system splits all deliveries into ten groups that are mutually exclusive and entirely inclusive based on a set of preset obstetric features. Some of them include gestational age, parity, prior CS, the beginning of labor, fetal presentation, and the overall number of fetuses [8].

The present study was aimed to evaluate the rate of cesarean section, and evaluate perinatal outcome among women classified bases on Robson classification to assess the significance of difference in outcome among Robson groups.

METHODOLOGY

An analytical cross sectional study was conducted at Hayatabad Medical Complex and Medical Teaching Institute Peshawar Pakistan for a period of 03 years. All the women admitted to the hospital with pregnancy were included in the study. Data was collected from the files available in hospital record. According to the record, patients were classified in ten groups based on Robson Classification (Table I) [8]. Each group's frequency and caesarean section percentage were calculated independently. In addition, sociodemographic parameters such as age, place of residence, caesarean type, referral status, antenatal care, parity, gestational age, start of labour, fetal presentation and birth weight, indications for the caesarean section, as well as perinatal outcomes and death, were noted. Input and analysis of data were done using SPSS version 24.

Table I Caesarean Section Classification System using the Robson 10 Group

Group	Description
1	Nulliparous, single cephalic, ≥37 weeks, in spontaneous laborA.
2	Nulliparous, single cephalic, ≥37 weeks, induced or CS before labor.
3	Multiparous (excluding previous CS) A, single cephalic, ≥37 weeks, in spontaneous labor.
4	Multiparous (excluding previous CS) A, single cephalic, >37 weeks, induced or CS beforeA labor.
5	Previous CS, single cephalic, ≥37 weeks.
6	All nulliparous breeches.
7	All multiparous breechesA (including previous CS) A.
8	All multiple pregnanciesA (including previous CS) A.

9	All abnormal lies (including previous CS) A.
10	All single cephalic, <37 weeks (including previous CS) A.

RESULTS

In this study, it was observed that there were 16929 cases reported at obstetric ward during 2019 to 2022. Amongst, 4116 cases undergone CS and rest of the 12813 went through normal delivery. The overall caesarian section rate was 24.31%, in of total 4116 caesarian section cases, there were 4138 newborns (twins included), and 157 perinatal mortalities were reported including NNM and still births. As shown in Fig. I

The sociodemographic details of the study participants are detailed in table II. The Distribution of cases of CS and total births among Robson groups and their percentage in the group is described in table III. It was observed that 42.44 % neonates were admitted to the neonatal ICU, 34.7% were preterm and 29.41% were low birth weight. As shown in Table IV

Table II Sociodemographic details of patients undergoing Cesarean section during the year 2019-2022

Variable	**Frequency**	**%**
Age (Years)		
<20	452	10.98
20–35	3316	80.56
>35	348	8.45
Residence		
Rural	1643	39.92
Urban	2473	60.08
Type of CS		
Elective	633	15.38
Emergency	3483	84.62
Referral status		
Self-referral	3410	82.85
Referred from other facilities	706	17.15

Antenatal care (at least one)		
Yes	3690	89.65
No	426	10.35
Parity		
0	893	21.70
1–4	409	9.94
>4	2814	68.37
Gestational Age (Weeks)		
Preterm (<37)	132	3.21
Term (37–41) A	3571	86.76
Post-term (≥42) A	413	10.03
Birth Weight (g)		
<2500	155	3.77
2500–4000	3496	84.94
>4000	465	11.30

Fig. I Graphical presentation of number of total reported cases, deliveries, CSs, Newborns and Perinatal Mortality.

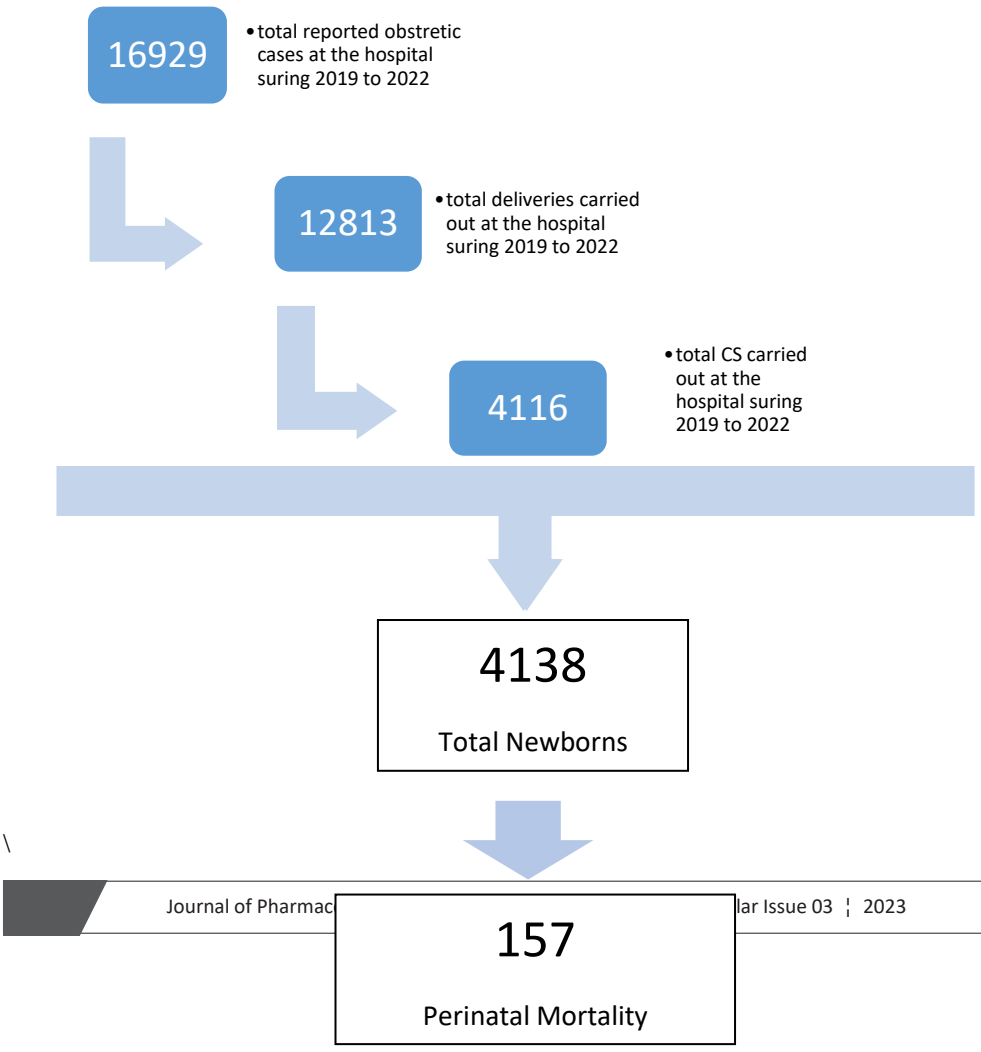

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Table III Distribution of cases of CS and total births among Robson groups

Group	Description	CS births	Total Births	Group contribution to total births (%)	Group contribution to CS births (%)
1	Nulliparous, single cephalic, A≥37 weeks, in spontaneous labor.	795	2510	14.83	19.31
2	Nulliparous, single cephalic, A≥37 weeks, induced or CS before labor.	234	643	3.80	5.69
3	Multiparous (excluding previous CS), single cephalic, ≥37 weeks, in spontaneous labor.	1026	7823	46.21	24.93
4	Multiparous (excluding previous CS), single cephalic, ≥37 weeks, induced or CS before labor.	401	1589	9.39	9.74
5	Previous CS, single cephalic, ≥37 weeks.	1108	2891	17.08	26.92
6	All nulliparous breeches.	77	65	0.38	1.87
7	All multiparous breeches.	92	452	2.67	2.24
8	All multiple pregnancies (including previous CS).	156	298	1.76	3.79
9	All abnormal lies (including previous CS).	78	234	1.38	1.90
10	All single cephalic, ≤36 weeks (including previous CS).	149	424	2.50	3.62
	Total	4116	16929	100	100

Table IV Perinatal Outcomes of the children with cesarean section (n=4116)

Outcome	**n**	**%**
LBW	1217	29.41
Low Apgar Score	928	22.43
Preterm	1436	34.70
SGA	1135	27.43
NICU Admission	1756	42.44
Perinatal Mortality	157	3.79

DISCUSSION

Over the previous few decades, the caesarean section (CS) rate has risen. Although there is no precise optimal CS rate, rates above 10% did not improve mother or infant health [3]. When vaginal birth is either impossible or dangerous, C-Section is carried out [9–12].

The overall caesarian section rate in this study was 24.31%. Comparatively higher proportion (34.5%) was reported by Geze S et al [14]. In the present study it was observed that the group 3 and 5 were major contributors for overall caesarian section cases. The highest contribution of C Section births was 26.92% by group 5 followed by 24.93 % by group 3 with 1108 and 1026 births respectively. Our findings are in line with results of a study conducted in Ethiopia in 2016-17 by Tura AK et al [13]

In our findings 15.38% women in the study went for elective caesarian section and rest of the 84.62% went for emergency caesarian section, comparatively higher percentage for emergency caesarian section was reported by Tura AK et al [13]

Our results revealed that out of 4138 newborns to women undergoing caesarian section, 157(3.79%) neonates died. This figure is in line with the neonatal mortality in developed countries as 23.2% in 2021 in Pakistan [15]

According to the findings of our study 42.44 % neonates were admitted to the neonatal ICU, 34.7% were preterm and 29.41% were low birth weight, However, Tura AK et al [13] reported lesser proportion (16.1%) of low birth weight neonates. While Talreja W et al reported that there were 17.16% preterm and 14.9% LBW 13.81% in a study conducted in Pakistan in 2020 [16]. Moreover a hospital based study in Pakistan revealed that 70.1% neonates during the year 2020 had birth weight below 2500 grams [17]

In light of the findings reported in the present study, spontaneous premature birth, uterine rupture, and aberrant placentation might jeopardize subsequent pregnancies. Women in low-resource environments with inadequate access to comprehensive obstetric care are at higher risk [18.19].

The strength of this study is that we have included all the caesarian section cases for three years at the hospital However, to decrease the overall recurrent caesarean sections in the future, it is important to investigate any probable causes for the rise in CS. To determine the percentage of CS within each Robson group, a comparative study with both vaginally and surgically delivered women is required and to compare the perinatal outcome in both groups cesarean section and normal deliveries.

CONCLUSION

We evaluated the caesarian section rates in the groups based on Robson classification in our setting. The largest contributors to the total CS rate were groups 3 and 5. Also, the main perinatal outcomes for each group were disclosed by this investigation. For the purpose of identifying potentially modifiable factors and implementing targeted interventions to lower the CS rate, these target populations necessitate more thorough analysis to compare perinatal outcome among normal deliveries and CS cases.

CONFLICT OF INTEREST

Authors declared no any conflict of interest.

FINDINGS

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