Analysis of Cesarean Sections in a Tertiary Care Hospital: According to Robson’s 10-group Classification

ABSTRACT

Aim: High cesarean birth rates are an issue of international public health concern. Evidence shows that cesarean section (CS) rates above 15% are not associated with additional reduction in maternal and neonatal mortality and morbidity. Robson proposed a new classification system, the Robson 10-group classification system, according to characteristics of pregnancy. The aim of this study was to analyze the CS based on the 10-group classification to evaluate its relevance in our setting.

Materials and methods: This cross-sectional observational study was conducted over a period of 6 months from January 2015 to June 2015 at a Tertiary Care Referral Hospital. Relevant obstetric information of all women delivered during this period in the labor ward was recorded. The characteristics used were category of pregnancy, previous record of pregnancy, course of labor and delivery, and gestational age. Data were analyzed according to the four obstetric concepts defined by Robson.

Results: The total number of women delivered for the period of 6 months was 3,080, with 2,020 vaginal deliveries and 1,060 were by CS. Overall, CS rate calculated was 34.4%. On analysis of CS according to Robson’s classification, different rate of each group was calculated, highest number of women were found in group II, followed by group V and then group I.

Conclusion: The 10-group classification has made possible comparisons of CS over time in one unit and between different units, in different countries. This helped us estimate our rate for different indications and helped us audit and compare with other referral centers.

Clinical significance: By keeping records in Robson’s proposed classification, it will be easier to audit, compare, and make suggestions for our CS rates. It will help identify target areas for interventions and resources to reduce CS, which would result in considerable reduction in maternal morbidity, decreased hospital stay, and overall cost effectiveness.

Keywords: Cesarean, Multiparous, Observational study, Primigravida, Robson’s classification.

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INTRODUCTION

Cesarean section (CS) is one of the most frequently performed surgical operations in the world today. Increase in the CS rates of both developed and developing countries are an issue of international public health concern. It is essential to identify in which subgroup of women undergoing CS, the rates are too high. The lack of standardized internationally accepted classification system to monitor and compare CS rates was one of the factors preventing a better understanding in this trend. Robson’s 10-group classification system classified women into 10 groups based on their obstetrics characteristics not using the indication of CS. Categories are totally inclusive and mutually exclusive. The aim of this study was to analyze the CS rates based on the 10-group classification over a period of 6 months at a Tertiary Care Referral Hospital to evaluate its relevance in the setting.

MATERIALS AND METHODS

The cross-sectional study was conducted over a period of 6 months from January 2015 to June 2015 at a Tertiary Care Referral Hospital. All women who delivered during this period were included. Relevant obstetric information was recorded. Data were analyzed according to the four obstetric concepts defined by Robson: Category of pregnancy, previous record of pregnancy, course of labor and delivery, and gestational age.

RESULTS

In 2011, World Health Organization (WHO) conducted a systematic review of systems used to classify CS, and concluded that the Robson classification is the most appropriate system to fulfill current international and local needs and recommended building upon this to develop an internationally applicable CS classification system. In the present study, total number of women delivered during the study period were 3,080; CS was performed in 1,060, giving a CS rate of 34.42% (Table 1).
Table 1: Analysis of all CS according to Robson’s classification

<table>
<thead>
<tr>
<th>Groups</th>
<th>Robson’s 10-group classification</th>
<th>Total</th>
<th>LSCS (%)</th>
<th>Vaginal delivery (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Primipara, single cephalic, &gt;37 weeks, spontaneous labor</td>
<td>688</td>
<td>160 (23.25)</td>
<td>528 (76.74)</td>
</tr>
<tr>
<td>II</td>
<td>Primipara, single cephalic, &gt;37 weeks, induced, or LSCS before labor</td>
<td>777</td>
<td>327 (42.08)</td>
<td>450 (57.91)</td>
</tr>
<tr>
<td>III</td>
<td>Multipara, single cephalic, &gt;37 weeks, spontaneous labor</td>
<td>579</td>
<td>64 (11.05)</td>
<td>515 (88.94)</td>
</tr>
<tr>
<td>IV</td>
<td>Multipara, single cephalic, &gt;37 weeks, induced, or LSCS before labor</td>
<td>410</td>
<td>60 (14.63)</td>
<td>350 (85.36)</td>
</tr>
<tr>
<td>V</td>
<td>Previous LSCS, single cephalic, spontaneous, induced, LSCS before labor</td>
<td>402</td>
<td>302 (75.12)</td>
<td>100 (24.87)</td>
</tr>
<tr>
<td>VI</td>
<td>Primipara breech</td>
<td>91</td>
<td>76 (83.51)</td>
<td>15 (16.4)</td>
</tr>
<tr>
<td>VII</td>
<td>Multipara breech, include prev LSCS</td>
<td>11</td>
<td>9 (81.81)</td>
<td>2 (18.18)</td>
</tr>
<tr>
<td>VIII</td>
<td>Multipara pregnancy, include prev LSCS</td>
<td>54</td>
<td>34 (62.96)</td>
<td>20 (37.03)</td>
</tr>
<tr>
<td>IX</td>
<td>All abnormal lie, exclude breech, include prev LSCS</td>
<td>21</td>
<td>21 (100)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>X</td>
<td>Single cephalic, &lt;36 weeks, include prev LSCS</td>
<td>47</td>
<td>7 (14.89)</td>
<td>40 (85.1)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>3080</td>
<td>1060 (34.42)</td>
<td>2020 (65.58)</td>
</tr>
</tbody>
</table>

LSCS: Lower segment cesarean section

Graph 1: Analysis of CS according to Robson’s classification

Analysis was done according to Robson’s classification. Highest number was of group II (primipara, single cephalic, >37 weeks, induced, or lower segment cesarean section (LSCS) before labor), followed by group V (previous LSCS, single cephalic, spontaneous, induced, LSCS before labor) and group I (primipara, single cephalic, >37 weeks, spontaneous labor) (Graph 1).

In the present study, 15.09% women were previous CS. A total of 75.81% of these had a repeat CS in different subgroups: V, VII, VIII, IX, X contributing to 33.3% of the total CS. Of these, we analyzed that the only group where we could decrease the rate was group V, under very close monitoring of fetal heart and vital parameters of woman (Table 2).

Advantages of the Robson classification were its simplicity, reproducibility, and minimal resource requirement for its implementation. Classification was clinically relevant and categorized women prospectively.

**DISCUSSION**

In the study, the overall CS rate was very high as it was conducted in a Tertiary Care Referral Hospital. Cesarean section rates should no longer be thought of as being too high or too low, but rather whether they are appropriate or not, after taking into consideration all the relevant information.

The CS rate reported in Australia ranges from 28% in Tasmania to 33.1% in Queensland. This CS rate is higher than Saudi Arabia (20%), but lower than that reported in China, 43.9 to 36.1% in 2005 to 2011, and in Egypt 38%. A study from Iran reported an increase from 35 to 40%, while study from Oman reported a rate of 20.3%, which is low compared to other reports but still above the WHO criteria of a CS rate of not more than 15%.

As in our study, a study from Oman too, the contribution of repeat CS was 33%. In a study from Singapore too, multipara women with a previous cesarean birth (group V) were the greatest contributor to the CS rate, followed by nullipara women with singleton cephalic full-term pregnancy in spontaneous labor (group I). These two groups contributed to 75% of the rise in the CS rate from 2000 to 2010. It is important that efforts to reduce the overall CS rate should focus on reducing the primary CS rate (groups I–IV).

If used on a continuous basis, the 10-group classification will make possible comparisons of CS over time in
one unit and between different units, in different countries. Thus, it can provide critical assessment of care at delivery and may be used to change practices, to reduce CS rates and to help analyze the contribution of inductions to the overall CS rate.\textsuperscript{11}

We found few limitations in the Robson classification. It did not provide insight into the indications of the CS. It did not allow the analysis of CS by demand and indicated CS for specific conditions (e.g., placenta previa, preeclampsia, or fetal distress). It did not account for preexisting medical, surgical, or fetal disease; indications and methods used for induction of labor; and degrees of prematurity, all of which may influence the rate of CS. Group V included two very different groups – those who had an elective repeat CS and those in whom vaginal birth after cesarean was tried but failed.

**CONCLUSION**

It is important that efforts to reduce the overall CS rate should focus on reducing the primary CS rate. All hospitals and health authorities should use the Robson classification system as part of a quality improvement initiative to monitor CS and to identify trends in each subcategory. However, the classification should be considered flexible so that one may choose to further subclassify the major categories to address the specific research and clinical issues.

**REFERENCES**


