

An Audit of Caesarean Section Rate Using Modified Robson Criteria at a Tertiary Care Hospital

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ABSTRACT

Objective: To evaluate the rising rate of caesarean section (CS) and its contributing factors at a tertiary care hospital.

Study Design: Clinical audit.

Place and Duration of Study: Obstetrics and Gynecology Department, Pak Emirates Military Hospital (PEMH), Rawalpindi, from January to December 2017.

Methodology: All caesarean sections were classified according to modified Robson criteria into twelve groups, after modification. The size of each group, rate of caesarean section and contribution of each group was calculated. A re-audit was carried out after 6 months under the same protocol thus completing the audit cycle.

Results: CS rate was 54% (n=3878). The maximum contribution 27.42% (n=1976) to total CS rate was made by Group 5, 12.07% (n=870) by group 12 and 7.34% (n=531) by group 2. Re-audit showed a reduced CS rate of 38.2% (n=1342) with contribution by Group 5 reduced to 16.05% (n=563), Group 12 to 7.47% (n=262) and Group 2 reduced to 5.7% (n=202), respectively.

Conclusion: Modified Robson Criteria is an effective auditing tool which identifies the exact areas where efforts and strategies are required to reduce the overall CS rate.

Key Words: Caesarean section, Modified Robson criteria, Clinical audit.

INTRODUCTION

The decision to end a pregnancy before the onset of natural labour is one of the most crucial step that obstetricians have to take. CS rate is constantly increasing both in the developed and the developing countries for various reasons.¹ To date, no standard method is in practice for assessment of these caesarean deliveries. Hence, the comparison of data in an institution over time or between different institutions internationally is difficult. In 2001, Robson put forward the Robson Ten-Group Classification System (TGCS) grouped according to the various features of pregnancy as shown in Table I. TGCS has been sporadically used internationally for comparison between institutional studies and hospital registries.² A systematic review was conducted by World Health Organization in 2014 for analysing the experience of users and consequences with Robson classification. It proposed Robson criteria as a global standard for comparison of CS rates within and between the health-care facilities.³ Similarly, a recent systematic review on the comparison of different classifications of caesarean deliveries showed TGCS to be a comprehensive tool for evaluating the rate and causes of CS.⁴

According to the authors of this classification system, it is flexible, and changes can be made for further clarity and to address the institutional and patient specific requirements.² The TGCS in this study was modified and two new groups were added considering limitations of this classification system for not addressing emergency situations like antepartum hemorrhage, fetal distress and past medical disorders. Auditing the CS rate according to a standard criterion will lead to strategies to avoid unnecessary intervention and advising CS only after deliberation and for standard objective indications.

The aim of this clinical audit was to use the Modified Robson Criteria (MRC) for classification of caesarean deliveries and identifying the major contributing factors towards the precipitously rising rate of CS. This may provide important insight in devising the solution to address this alarming issue.

METHODOLOGY

This clinical audit was conducted in Obstetrics Unit of Pak Emirates Military Hospital, Rawalpindi. The data was collected prospectively for 6 months from January to June 2017 for audit and from July to December 2017 for re-audit. All women delivering during this period were included after informed consent by consecutive non-probability sampling technique. A detailed obstetric history, previous deliveries, CS and their indications, spontaneous or induced labour was entered on a questionnaire based on TGCS parameters. Patients undergoing hysterotomy and termination of pregnancy were excluded from the study.

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Patients were classified by MRC into 12 groups. Group 11 and 12 were added which covered placenta previa/accreta spectrum and fetal distress, respectively. The size of each group, frequency of caesarean sections, cesarean section rate and contribution of each group towards overall CS was calculated. The results were calculated in terms of frequencies and percentages. The audit cycle was completed by identifying the problem areas, and devising and implementing recommendations. A re-audit was conducted after 6 months to analyse the changes. The strategies devised were to target the main three contributor groups 5, 2 and 12. Selection of patients for trial of labour after cesarean, consultant-led care, waiting and objective identification of labour was done. The second significant contributor was fetal distress observed by the non-reassuring Cardiotocography (CTG). For the correct interpretation of CTG and to minimise the inter-observer variance, regular classes were arranged for staff. The third significant Group-2 was effectively curtailed by practising evidence-based labour management and judicious use of induction of labour which, by far, was the most significant contributing factor in this group. Re-audit was done under the same protocol and, frequencies and percentages were calculated by data analysis Excel 2017.

RESULTS

There were 7,206 deliveries from 1st January to 30th June 2017, out of which 3,878 were delivered by CS, making a CS rate of 54%. The maximum contribution 27.42% (n=1976) to total CS rate was made by Group 5, 12.07% (n=870) by Group 12 and 7.34% (n=531) by Group 2. These three groups contributed 87% towards total CS rate. Small Groups 6, 7, 8, 9, and 10 had high CS rates but small overall contribution as shown in Table I. Primary caesarean section contributed approximately 20% (Groups 1, 2, 6, 11, 12) to the overall caesarean sections.

Table I: Overall CS rate (%) 3878/7206: 54%.

Modified Robson criteria	% of cesarean sections	Size of group %	Cesarean section rate in group %	Contribution of each group%
Nulliparous single cephalic ≥37weeks spontaneous labour	26/919	12.7	2.82	0.36
Nulliparous single cephalic ≥37 weeks induction or cesarean section before labour	531/1305	18.1	40.68	7.36
Multiparous except previous caesarean sections single cephalic ≥37 weeks spontaneous labor	42/1096	15.20	3.83	0.58
Multiparous except previous caesarean sections single cephalic ≥37 weeks induction or cesarean before labour	96/150	2.08	64	1.33
previous cesarean section single cephalic ≥37 weeks	1976/1996	27.6	98	27.42
All nulliparous breech	22/24	0.33	91.6	0.30
All multiparous breech including previous caesarean sections	20/25	0.34	80	0.27
All multiple pregnancies including previous caesarean sections	87/115	1.59	75.65	1.20
All abnormal lies including previous caesarean sections	156/160	2.22	97.5	2.16
All single cephalic ≥36 weeks including previous caesarean sections	28/425	5.86	6.58	0.38
Placenta praevia and placenta accreta spectrum	24/24	0.33	100	0.33
Fetal distress	870/967	13.4	90	12.07

Size of each group = Total number of women in each group
 Total deliveries
 CS rate in each group = Number of CS
 Total number of women in each group
 Contribution of each group to overall CS rate = Number of CS in each group
 Total deliveries

Re-audit was conducted after 6 months to evaluate the strategies to reduce the CS rate. The CS rate in the re-audit was reduced to 38.2% (n=1342) with Group 5, 16.05% (n=563); still being the biggest contributor to CS rate while Group 12 was reduced to 7.47% (n=262) and Group 2 reduced to 5.7% (n=202). So the main contributors remained the same but their frequency decreased after identifying them through the audit and devising policies to address the modifiable factors. The results showed a reduction in the overall CS rate on re-audit, as shown in Figure 1.

DISCUSSION

The purpose of the current study was to demonstrate the usefulness of Modified Ten Group Classification System (MTGCS) as a standard tool for audit of deliveries by cesarean section. There has been a global increase in the rate of CS but the determinants of this increase are varied for different countries, institutions and at different times. The reported overall CS rate for Pakistan is 21.7%, but varies in different cities and even institutions.⁵ In Asian countries, it was reported as 47.6% in China, 40% in Iran, 19.3% in India and 18.6% in Japan. Towards

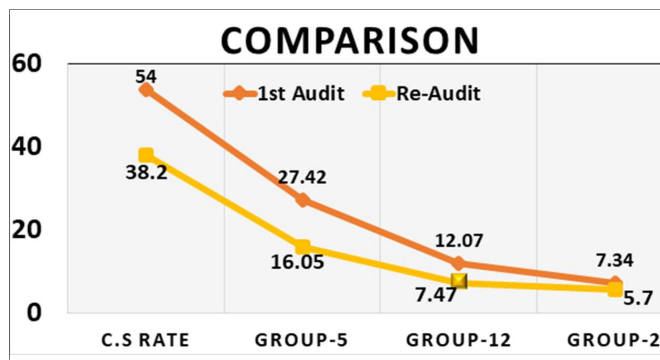


Figure 1: Comparison of audit and re-audit.

the other end of spectrum, 2% CS rate reported for Ethiopia could be a contributor to the high perinatal and maternal mortality.⁶ In developed world, CS rate reported for USA was 31.1%.⁷ In this study, the CS rate was 54%, which is high in comparison with above CS rates. Thus, decrease or increase in the rate of CS other than the recommended does not protect against poor maternal and neonatal outcomes. A single centre study conducted at Abbasi Shaheed Hospital, Karachi, Pakistan showed CS rates of 30.7% in the year 2013 and 26.4% in the year 2016, respectively although no standardised criteria was used.⁸

Comparing the Groups after analysing the CS rates in different Groups, Group 5 was responsible for majority (27.42%) of all the CS which is comparable to studies in Oman and Egypt.^{9,10} The second most significant group was Group 12 which contributed 12.07%, while Group 2 contributed (7.34%) to the overall CS rate. In another study, the maximum contribution towards the rate of CS was made by Group 5, followed by Group 2, which is in agreement with this study;¹¹ but is quite higher than another audit conducted in Ireland.¹² Groups 6-11 were small groups having high percentages of CS but small overall contribution to the total CS rate. These high percentages could be explained due to inevitable obstetric indications where CS is a must. Comparing them with the international data, almost all studies showed the same results in the Groups 6,7,8 and 9.¹³ Another study conducted in Tamil Nadu, India showed CS rate to be 41.5%. The CS rate was lowest in Group 3 and 100% in Group 9. Group 5 made the greatest contribution 42.77% to the total number of CS,¹⁴ which is in agreement to this study.

CS rate in Pakistan has been analysed previously also but using the MRC was done in limited studies. A systematic review of audits done using Robson classification suggests that it is useful within clinical audit cycles.¹⁵ The main limitation of Robson system is its inability to account for the urgency of CS. The use of Robson criteria in combination with the urgency criteria may prove more valuable for analysis and comparison of CS performed worldwide.

CONCLUSION

MRC is an effective tool for comparison of CS rate over time and between the institutions globally and also the evaluation of various indications of CS. This was evident in results of audit and re-audit in this study. Doing regular clinical audits based on this criteria and implementing recommendations can help improve clinical practice and patients' care. Overall CS rate can be reduced as Robson identifies exact areas which need modification.

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REFERENCES

1. Mbaye M, Gueye M, Gueye MDN, Niang NKS, Moreau JC. Analysis of cesarean section rate according to Robson's classification in an urban health centre in senegal. *Int J Reprod Contracept Obstet Gynecol* 2015; **4**:1100-2.
2. Vogel JP, Betrán AP, Vindevoghel N, Souza JP, Torloni MR, Zhang J, *et al.* Use of the Robson classification to assess caesarean section trends in 21 countries: A secondary analysis of two WHO multicountry surveys. *Lancet Global Health* 2015; **3**:e260-70.
3. Robson MS. Can we reduce the caesarean section rate? *Best Pract Res Clin Obstet Gynaecol* 2001; **15**:179-94.
4. Torloni MR, Betran AP, Souza JP, Widmer M, Allen T, Gulmezoglu M, *et al.* Classifications for cesarean section: A systematic review. *PLoS One* 2011; **6**:e14566.
5. Mohammad N, Muhammad Z, Syed HA. Rate and indications of elective and emergency caesarean section: A study in a tertiary care hospital of Peshawar. *J Ayub Med Coll Abbottabad* 2015; **27**:151-4.
6. Yazdizadeh B, Nedjat S, Mohammad K, Rashidian A, Changizi N, Majdzadeh R. Cesarean section rate in Iran, multidimensional approaches for behavioral change of providers: A qualitative study. *BMC Health Serv Res* 2011; **11**:159.
7. MacDorman MF, Menacker F, Declercq E. Cesarean birth in the United States: Epidemiology, trends, and outcomes. *Clin Perinatol* 2008; **35**:293-307.
8. Imtiaz R, Husain S, Izhar R. Adoption of Robson's ten group classification system (RTGCS) to analyze caesarean section rates at a tertiary care centre in Pakistan. *Ann Abbasi Shaheed Hospit Karachi Med Dent Col* 2018; **23**:46-52.
9. Kazmi T, Sarva Saiseema V, Khan S. Analysis of cesarean section rate - according to Robson's 10-group classification. *Oman Med J* 2012; **27**:415-7.
10. Dawood AS, Dawood AGS, El-Shwaikh SL. A three-year retrospective study of caesarean section rate at Tanta university hospitals. *J Gyn Obs* 2017; **5**:25-30.
11. Robson M, Murphy M, Byrne F. Quality assurance: The 10-group classification system (Robson classification), induction of labour, and cesarean delivery. *Int J GynecolObstetr* 2015; **131**:S23-7.
12. Stavrou EP, Ford JB, Shand AW, Morris JM, Roberts CL. Epidemiology and trends for caesarean section births in New South Wales, Australia: A population-based study. *BMC Pregnancy Childbirth* 2011; **11**:8.
13. Ray A, Jose S. Analysis of caesarean-section rates according to Robson's ten group classification system and evaluating the indications within the groups. *Int J Repro Contr Obs Gyne* 2017; **6**:447.
14. Panicker S, Chitra TV. Analysis of caesarean delivery rates using the ten group classification system in a tertiary care hospital. *Int J Repro Contr Obs Gyne* 2016; **5**:3153-7.
15. Boatin AA, Cullinane F, Torloni MR, Betran AP. Audit and feedback using the Robson classification to reduce caesarean section rates: A systematic review. *BJOG* 2018; **125**:36-42.

