DOI: https://doi.org/10.53350/pjmhs2115123627

ORIGINAL ARTICLE

Use of Modified Robson Criteria for an audit of Caesarean Section at a Tertiary Care Hospital

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ABSTRACT

Objective: To find out the incidence of C-Section rate and reducing it after auditing by use of Modified Robson Criteria.

Methodology: This study was conducted by collecting data prospectively. All C-Sections were classified according to Modified Robson Criteria in 12 Groups after modification. Calculations were made as size of each group, rate of C-Section and contribution of each group. Audit of C-Section carried out after first six months, and then strategies were made to reduce the rate, which was implemented. Re-audit was carried out after six months, thus completing the audit cycle. Frequency and percentage were calculated by data analysis using Excel 2010

Result: C-Section rate was 51.54% initially then re-audit showed a reduced rate of 39.74%. Maximum contribution 26.05% to total C-Section rate was made by group 5 which was reduced to 20.04% in re-audit. While 11.48% was contributed by group12 which was reduced to 8.44% in re-audit.

Conclusion: Modified Robson Criteria is an effective tool for the audit of C-section. It also allow us for exact identification of area for improvement and making modification of clinical practice to reduce C-Section rate

Keywords: C-Section rate, Modified Rosbson Criteria, Clinical Audit and Re-Audit.

INTRODUCTION

Rising caesarean section (CS) rate is a worldwide concern, as it is constantly rising in both developed and developing countries. One of the data indicates that one in five women undergo this procedure in most of the region of the world[1]. In 1985 WHO statements having more than 10-15% of CS birth or higher rates are not associated with any additional reduction in neonatal morbidity and mortality[2]. Data gathered from Eastern Mediterranean region was around 10% but it has its own flaws.

The cause and determinants of rising caesarean section is controversial, some suggests increasing medical indicated caesarean section are one of the rising determinants. In fact due to absence of international consensus regarding universal classification system for caesarean section, it was quite cumbersome to set standard[2].

In 2001 Robson introduced Ten (10) Group Classification System (TGCS). This system classifies group according to various feature of pregnancy Table1.

The beauty of this classification system is it has been used to analyze trends and determinants of CS in both high income and low income countries[3], and it also helps institution specific monitoring, auditing and offer a standardized comparison method between institutional studies and hospital registries[4].

In our study the modification for this TGCS classification system is carried out by adding two new groups, which were considered as the limitation of this classification system which is more prevalent in our country i.e. antepartum hemorrhage, fetal distress , past and present medical illness. The objective of this clinical audit was to use Modified Robson's criteria for classification of caesarean section and its determinants, further decreasing it in future after re-audit.

METHODOLOGY

This clinical audit was conducted at CMH Quetta. Duration of study was one year, where data was collected six months from January 2020 to June 2020 for audit and another six months from August 2020 to Jan 2021 for re-audit. After informed consent all women delivering during the described duration were included, while women undergoing hysterectomy and termination of pregnancy were excluded. The sampling technique was consecutive non probability method.

A structured performa based on Modified Ten Group Classification System (MTGCS) was designed. A detailed obstetric history, previous deliveries, caesarean section and their indication, spontaneous or induced labour were entered on performa. In our study MTGCS is added with two more groups 11 and 12 (Table 1) which covered placenta previa and fetal distress respectively. The data was analyzed on percentage of caesarean section, size of each group, c section rate in each group and contribution of each group in percentage.

After the first six month audit, main determinants were identified. Series of meeting under the head of department were carried out, where each case was critically analyzed among junior, senior residents and senior consultant.

In the view of their discussion five main points strategies was formulated, which was implemented in unit for next six months of study to re-audit.

The strategies made to target the group 5, 2 and 12 and they are as follow.

1. Counseling for women with previous caesarean delivery during the antenatal visit regarding vaginal birth after caesarean section.
2. Consultant led care i.e. 24 hours senior registrar presence on the floor.
3. Identification of labour evidence based practice of labour management, judicious use off induction of labour.
4. Review of all women with failed induction by a senior obstetrician and joint decision for c section.
5. Correct interpretation of cardiotocography by arranging regular classes of junior / senior resident and staff.

Re-audit was done maintaining the same protocol during the last six months of study (July2020 – Jan 2021). Data was analyzed using Excel

RESULT

During the period of 1st Jan 2020 to 30th June 2020, total numbers of deliveries were 714, where 368 underwent cesarean section making rate of 51.54%. Majority of women who delivered by C-section belong to group5, that is 28.29% followed by group 2, that is 18.76%. Maximum absolute contribution to C-Section rate 26.05% was made by group 5 followed by group 12 ,that is 11.48%, then group 2, that is 6.44%. Group 4, 6, 7, 9, and 11 have higher cesarean rate in group but shows small contribution in overall cesarean section rate. Table 1 shows the above given statistics of Audit (1st Jan2020 to 30th June 2020).

Re-Audit was carried out after having 1 month pause from1st August 2020 till 31st Jan2021 for analysis and making strategies to reduce the rate of C-Section in department. After implementation of strategies the rate fell to 39.74%. Again the maximum absolute contribution to C-Section rate was made by group 5 (20.04%) followed by group 12 (8.44%) then group 2 (4.92%). This pattern was also observed in Audit but having quite lesser C-section rate in department as shown in Table 2. Group 6, 7and 11 has 100% rate in group due to unavoidable circumstances which was constant in Audit and Re-Audit.

Table 1: Audit from 1st Jan 2020 to 30th June 2020 Total deliveries 714. Cesarean Section 368(51.54%)

Group #	% of cesarean Section	Size of group %	Cesarean section rate in group%	Contribution of each group%
Group 1	3/84	11.76	3.57	0.42
Group 2	46/134	18.76	34.32	6.44
Group 3	4/106	14.84	3.77	0.56
Group 4	14/16	2.24	87.5	1.96
Group 5	186/202	28.29	92.07	26.05
Group 6	4/4	0.56	100	0.56
Group 7	2/2	0.28	100	0.28
Group 8	8/12	1.68	66.66	1.12
Group 9	13/15	2.10	86.66	1.82
Group 10	3/43	6.02	6.97	0.42
Group 11	3/3	0.42	100	0.42
Group 12	82/93	13.02	88.17	11.48

Table 2: Re-Audit from 1st Aug 2020 to 31st Jan 2021 Total deliveries 853. Cesarean Section 339(39.74%)

Group #	% of C-Section	Size of Group	C-Section rate in Group	Contribution of each Group
1	4/109	12.77	3.66	0.46
2	42/172	20.16	24.41	4.92
3	5/135	15.82	3.70	0.58
4	9/25	2.93	36	1.05
5	171/206	24.15	83.01	20.04
6	4/4	0.46	100	0.46
7	2/2	0.23	100	0.23
8	9/21	2.46	42.85	1.05
9	14/25	2.93	56	1.64
10	3/58	6.79	5.17	0.35
11	4/4	0.46	100	0.46
12	12/92	10.78	13.04	8.44

Group 1: Nulliparous single cephalic >37 weeks spontaneous labour
Group 2: Nulliparous single cephalic >37 weeks, induction or cesarean section before labour
Group 3: Multiparous except previous cesarean section, single cephalic >37 weeks spontaneous labour
Group 4: Multiparous except previous cesarean section, single cephalic >37 weeks induction or cesarean section before labour
Group 5: Previous cesarean section single cephalic >37 weeks
Group 6: All nulliparous breech
Group 7: All multiparous breech including previous cesarean section.
Group 8: All multiple pregnancies including previous cesarean section
Group 9: All abnormal lies including previous cesarean section
Group 10: All single cephalic >36 weeks including previous cesarean section
Group 11: Placenta previa and placenta accreta spectrum
Group 12: Fetal distress

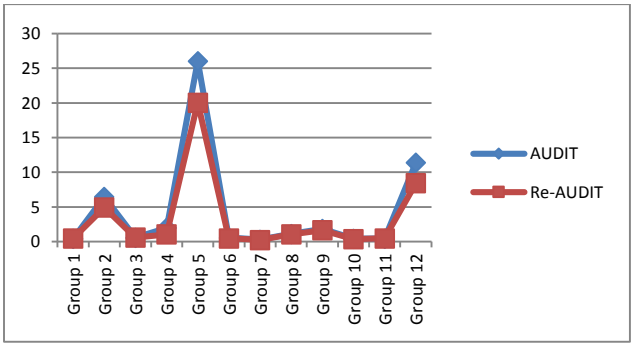

Figure 1: Comparison of audit and re-audit of cesarean section rate in each group

DISCUSSION

Robson Classification was used at times for demonstration of cesarean section trend in different countries. Previously Robson's Classification was the only strategy used for feedback, discussion and improvement of outcome in clinical audit cycle for cesarean section within countries or one country[2,3]. This study shows the usefulness of Modified Ten Group Classification (MTGCS) as a standard tool for

audit of deliveries by cesarean section. We modify the classification by adding two more Groups 11 and 12. The Classification helped to determine the rates in various groups. After analysis and feedback the rate of cesarean section fell from 51.54% to 39.74%, which is demonstrated in Table 1 and 2. The Modified Classification helped to identify the rates in different groups and enabled us to make strategies to reduce the rate of cesarean section.

Cesarean section rate varies at different countries due to different determinants, level of health care service, legal apprehension and medical disorder etc. A single center study carried out at Pak Emirate Military Hospital (PEMH) shows the rate of 54% but it was decreased to 32% by auditing and making strategies[4]. Reported overall cesarean section rate in Pakistan is 21.7%, but varied in different cities and institutions[5]. In developed countries like USA study shows the rate of 31.1% while one of the Australian study shows 23.5%[7]. In our study the rate is 51.4% which is quite high.

According to Pakistan Demographic Health Survey (PDHS) 2012-13, C-Section rate was 14%[6]. When comparing C-Section rate within different hospitals of our country , it is 33% in PIMS[7], 37% in Holy Family Hospital Rawalpindi, 49% at Fauji Foundation Hospital Rawalpindi and 56% at CMH Rawalpindi[8]. In our study the rate is 51.54% which is quite high.

CMH Quetta is a 600 bedded tertiary care hospital with 60 beds for Obstetrics and Gynaecology department with 07 Senior Obstetricians, other post graduate trainees and house officers. It caters a large population of military, paramilitary and civilian population of Quetta and surroundings. It is also a referral institute from almost all over Balochistan. Patient's preference for mode of delivery, risk of litigation, pregnancy at advanced age group and especially referred cases are the main reason for high C-Section rate.

As reported by other studies, group 5 were the main contributors to C-Section rate[3,4,6,9,10,11]. In our study, Group5 also has the highest contribution with26.05% which is comparable to other studies [4,6,12,13].

This high rate is due to many reasons which include patients own refusal for VBAC, unavailability of monitoring facility and risk of scar rupture. In our study after Group 5, maximum contribution towards

C-Section rate in Group12, followed by Group 2, which is in agreement with study of Robson[11] . Group 6 to Group 11 were smaller groups with high percentage of C-Section specially Group6,7,and 11 where rate is 100%. This high rate is due to unavoidable obstetrics indications. The lowest c section rate was found in Group 1 and 3 that is 3.57% and 3.77%respectively which is in agreement with a study at PEMH[4].

CONCLUSION

The modified Robson Classification is an effective tool for comparison of C-Section rate over a period of time, within and between institutions and globally too. The main limitation in the classification system is inability to account for the urgency of C-Section. By using this system on regular basis of clinical audit and re-audit then setting the criteria and its implementation in department can improve patients care in the view of reduction of C-Section.

Informed Consent: Written informed consent was taken from study participants

Conflict Of Interest: None

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