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Rising Caesarean Rates: A Reason for Concern

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Abstract

Background: Caesarean section has become increasingly common in both developed and developing countries. Robson proposed a new classification system, Robson's Ten –Group classification system to allow critical analysis according to characteristics of pregnancy. The objective was to evaluate the CS rate in each group and strategies to reduce the CS rate in each category.

Methods: This retrospective study was conducted for a period of one year from 1st January 2016 to 31st December 2016 at a 100 bedded hospital, ABGH hospital. Govt of NCT of Delhi, New Delhi. All the women delivered during this period were included in this study. Women were classified into 10 groups according to Robson's classification. For each group we calculated its relative size, CS rates in each group and its contribution to the overall CS rates.

Results: The total number of women delivered for this period of one year were 1697, out of which CS deliveries were 397.Hence the CS rate was 23.4% in the present study. Group 5 made the highest contribution in the overall CS rates (31.5%). 2^{nd} highest contribution was given by group 2 (24.43%). Group 1 stood 3^{rd} in the LSCS contribution rates,(20.15%). Groups 8, 9 and 10 made

minimal contribution in the overall caesarean rates (0.5%, 0.76% 2.52% respectively).

Conclusions: As concluded World by Health Organisation, Caesarean sections are effective in saving maternal and infant lives, but only when they are required for medically indicated reasons. At population level, caesarean section rates higher than 10% are not associated with reductions in maternal and newborn mortality rates. Hence to reduce the overall LSCS rates, much needed effort is needed to reduce the primary caesarean rates and also giving a boost to Trial of labor after caesarean (TOLAC) for encouraging vaginal deliveries in previous CS women.

Keywords: Robson's Ten –Group classification system, Caesarean rates.

Introduction

It is well acknowledged fact that the caesarean section (CS) rates have continued to increase worldwide ^{1,2} and the rate of increase is highest in low income countries.³ The world wide rise in CS is a major public health concern and cause of considerable debate due to potential maternal and perinatal risks, cost issues and inequity in access.^{4,5} Additional concerns and controversies surrounding CS include inequities in the use of procedure,

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not only between countries but also with in countries and the costs that unnecessary caesarean sections impose on financially stretched health systems.⁶

Trends In The Rate Of CS - Worldwide, CS rates increased from 6.7% in 1990 to 19.1% in 2014, which represent a 12.4% absolute increase and AARI (Average annual rate of increase) of 4.4%. Less developed countries showed the largest absolute increase, 14.6 points (from 6.3% to 20.9%; AARI – 5.1%). More developed countries followed with 12.7 points of absolute increase in the CS rate (from 14.5% to 27.2%; AARI -2.6%). The rate of CS in least developed countries only rose by 4.2 points (from 1.9% to 6.1%; AARI – 5%.

Latin America and Caribbean which started with the highest rate in 1990 (22.8%) is also the region with the highest rate in 2014 and the largest absolute increase in CS rates (19.4 points). The region with the second largest absolute increase was Asia going from a CS rate of 4.4% in 1990 to 19.5% in the latest estimates^{.7} According to an Indian Council of Medical Research (ICMR) task force study, the CS rate has increased to 28.1% in 2005-06, that was 21.8% in 1993-94.^{8,9}

Worries over such increases have led the World Health Organisation to advise that caesarean section rates should not be more than 15%, with some evidence that CS rates above 15% are not associated with additional reduction in maternal and neonatal mortality and morbidity.¹⁰ Robson, proposed a new classification system , the Robson Ten – Group Classification to follow critical analysis according to characteristics of pregnancy. The characteristics used are:

- Single or multiple pregnancy
- Nulliparous , multiparous or multiparous with a previous CS
- Cephalic , breech or other malpresentation
- Spontaneous or induced labor

- Term or preterm births.
- Robson's 10 Group Classification No. Groups
- 1. Nulliparous ,single cephalic >37 weeks in spontaneous labor.
- Nulliparous , single cephalic > 37 weeks , induced or CS before labor.
- Multiparous (excluding previous CS), single cephalic ,> 37 weeks in spontaneous labor.
- 4. Multiparous (excluding previous CS) ,single cephalic> 37 weeks , induced or CS before labor.
- 5. Previous CS, single cephalic >37 weeks.
- 6. All nulliparous breeches.
- 7. All multiparous breeches (including previous CS)
- 8. All multiple pregnancies (including previous CS)
- 9. All abnormal lies (including previous CS)
- All single cephalic ,< 36 weeks (including previous CS)

The present study was conducted to evaluate the caesarean section rates ,make analysis on the 10-Group Classification and to adopt strategies to reduce the CS rate in different groups.

Material And Methods

This retrospective study was conducted for a period of one year from 1st January 2016 to 31st December 2016 at a 100 bedded hospital ABGH hospital, Govt of NCT of Delhi, New Delhi.

All the women who delivered during this period were included in this study. Women were classified into 10 groups according to Robson's classification , using maternal characterstics and obstetrical history. For each group , we calculated it's relative size , caesarean rates in each group, and their contribution to the overall caesarean rate.

Results

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The total number of women delivered during this period of one year were 1697, out of which CS deliveries were 397. Hence the CS section rate in this specified period was 23.4%. Analysis of the data by Robson's 10 Group Classification yield the following information :

Group 5 (previous CS, single cephalic >37 weeks) made the greatest contribution to the total CS rates (31.5%) followed by Group 2 (nulliparous, single cephalic >37 weeks, induced or CS before labor);24.43%. Group 1 (nulliparous, single cephalic > 37 weeks in spontaneous labor) made third highest contribution in the total CS rates;20.15%. Minimum contribution was given by group 8,0.5% and group 9, 0.76%.(table no.1)

Nonreassuring fetal status was the most important indication of caesarean section accounting for 40.8% of all cases, followed by previous caesarean in 31.5% of all cases. Other causes were CPD 8%, NPOL 6.1%, Failed IOL 6.3% ,Malpresentation 7.3% including transverse lie , breech presentation and brow presentation respectively. (table no 2)

Discussion

During the study period of one year, the total number of deliveries were 1697, out of which CS deliveries were 397.Hence the CS rates in this specified period was 23.4% which is very much comparable to Mbaye $M^{11}(18.2\%)$,Kazmi T¹² (20.3%) but lower than Dhodapkar SB¹³(32.6%) and Ramesh B¹⁴(52.6%)

The Robson 10 group classification system facilitates comparative analysis of caesarean sections between hospitals / centres nationally , internationally and globally. According to Dr M. Robson (2001) group 1 & 2 should comprise of 35-40% of total women and group 1 > group 2. Group 3 & 4 usually account for 30-40% of women; Group 3 should be larger than group 4. Group 5 should comprise no more than 10% of women. Group 6& 7 should comprise 3-4% of all women, and group 6 is usually twice the size of group 7. Group 8 should include 1.5 - 2% of women unless the site has an IVF program or is a referral centre. Group 9 should comprise 0.2-0.6% of women with a CS rate of 100%. Group 10 includes approximately 5% of women.

In our study, Groups 1 & 2 accounted for 40.36% and group 1 was larger than group 2. 45.2% women were in groups 3 & 4 and group 3 was larger than group 4. Group 5 comprised of 7.4% of women. Groups 6 & 7 included 1.94% of all women. Group 8 had 0.4% of women. Group 9 comprised of 0.2% of women and 4.5% women were in Group 10.

In present study, we found that the maximum contribution in LSCS rates has been made by group 5, 2 and 1. Group 3 and 4 made smaller contributions i.e 8.56% and 6% respectively. Hence we need to focus on groups 5,2 and 1 if we want to reduce the C.S rates of our hospital .According to Dr. Robson ,with good perinatal outcomes ,a CS rate of 50-60% in group 5 is excellent. But in our study it was 100%.Even Group 5 made largest contribution i.e (31.5%) in total LSCS rates. Trial of Labor after caesarean (TOLAC) is the remedy to decrease the caesarean rates in this group. In our hospital TOLAC is not offered to the patients, being a 100 bedded hospital and lack of facilities like blood bank, Intensive care units per se, hence LSCS rates in this group were 100%. Making available blood and blood products as well as ICU care would be imperative, not forgetting multidisciplinary approach to patient care.

2nd largest contribution was made by group 2 ,i.e 24.43%. induction of labor has a considerable impact on women's experience of labor and birth as it may be less efficient, more painful and more likely to require epidural analgesia and assisted birth. ¹⁵Therefore well defined clinical indication is needed, with careful consideration of the benefits and risks, together with a clear explanation to

the woman prior to the decision being made.¹⁶3rd largest contribution was given by group 1 in the present study, 20.15% . Robson stated that CSR in group 1 should be below 15% but in our study it is slightly higher ,i.e 17.43%, which was in accordance with the study done by Shirsath A^{17} (19.6%) & Kansara Vijay¹⁸ (20.11%) but was slightly lower than Dhodapkar SB $^{14}(23.5\%)$. The most important indication for LSCS in this group was Nonreassuring FHR pattern. The CS rate can be reduced by reducing the interobserver difference in interpretation of CTG by implementing frequent teaching workshops for the obstetric staff.. Secondly CTG should not be taken as a only criteria for fetal distress as it has 50% false positive rates. Cochrane review based on metaanalysis suggests a reduction in CS deliveries for fetal distress if fetal scalp blood sampling (FBS) is used. ²⁰ There is a role of STAN system to determine fetal status in labor, but it needs extensive training and experience.

The CS rate for group 3 should be 2.5-3%. In our study the CS rate in group 3 was 5.55% which again was comparable to Shirsath A $^{17}(4.8\%)$ and KansaraVijay¹⁸ (5.4%)

The CS rate in group 4 should be below 20% . CSrate in our study in this group was 15.38%, which is similar to Dhodapkar SB $^{13}(12.2\%)$ with some variations.

Caesarean section rates in group 6 and group 7 were 72.2% and 60% respectively in the present study, which were lesser than reported by Kazmi T^{12} (90.9%, 90.2% respectively) and Dhodapkar SB ¹³ (100% each). Though these groups made small contributions in total LSCS rates i.e 3.27% & 2.27% in the present study, but practices like 'External Cephalic Version' and 'Art of Breech Delivery' should be reinvented to further reduce the CS rates in these groups.

Groups 8,9 and 10 made minimal contributions to the total LSCS rates (0.5%, 0.76%, 2.52%) respectively, which is very much similar to Kazmi T^{12} ,Dhodapkar SB ¹³ and Ramesh B¹⁴

Conclusions

As concluded by WHO, caesarean sections are effective in saving maternal and infant lives, but only when they are required for medically indicated reasons. At population level, caesarean section rates higher than10% are not associated with reductions in maternal and newborn mortality rates. Hence to reduce the overall LSCS rates, much needed effort is needed to reduce the primary caesarean rates and also giving boost to TOLAC for encouraging vaginal deliveries in previous CS women.

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Table No.1: Categorisation of Patients according ToRobson'sClassification:

Groups	Total	%age	LSCS	% of	Contribution
	no of			patients	in total
	patients			(LSCS)	LSCS
1	459	27.04%	80	17.43%	20.15%
2	226	13.32%	97	42.92%	24.43%
3	612	36%	34	5.55%	8.56%
4	156	9.2%	24	15.38%	6.05%
5	125	7.4%	125	100%	31.5%
6	18	1.06%	13	72.2%	3.27%
7	15	0.88%	9	60%	2.27%
8	7	0.40%	2	28.57%	0.5%
9	3	0.2%	3	100%	0.76%
10	76	4.5%	10	13.16%	2.52%
	1697	100%	397		100%

Table No. 2: Indications of Caesarean Section:

Indications	% age
Non reassuring Fetal Heart Rate	40.8%
Previous LSCS	31.5%
Cephalo pelvic Disproportion	8%
Non Progress of Labor	6.1%
Failed IOL	6.3%
Malpresentation	7.3%
Total	100%