Original Research Article

Retrospective study of cesarean section by using the Robson's ten group classification system

Manoj Bhatt, Gunvant Kadikar*, Dipti C. Parmar, Medha Kanani

Department of Obstetrics and Gynecology, Sir T. Hospital and Government Medical College, Bhavnagar, Gujarat, India

*Correspondence:
Dr. Gunvant Kadikar,
E-mail: drgunvant2010@gmail.com

ABSTRACT

Background: The present study was done to determine the relative contribution of each of ten groups of robson´s classification to overall cesarean section rate and identify modifiable group for intervention to reduce the cesarean rate.

Methods: Retrospective review of record of cesarean section from the statistical Dept of Obstetrics and Gynecology sir T. hospital, Bhavnagar from January 2017 to October 2017 and classify them in to Robson´s ten group classification system to find out total number of cesarean among total number of delivery in above 10 months duration.

Results: Total number of delivery in my study institute in 10 months was 3804 out of them 1182 was cesarean section, so the overall cesarean section rate in Sir T. hospital, Bhavnagar was 31%. Group 1 (Nulliparous, single cephalic, >37 weeks in spontaneous labor), 2 (Nulliparous, single cephalic, >37 weeks, induced or CS before labor) and 5 (Previous CS, single cephalic, >37 weeks) contributes for around 66% of total cesarean. Group 5 (Previous CS, single cephalic, >37 weeks) was the major contributor among all. Least common cause of cesarean was group 8 (All multiple pregnancies (including previous CS)) and group 9 (All abnormal lies including previous CS).

Conclusions: Incidence of cesarean was more common with patient having previous cesarean section. So, to decrease cesarean rate trial of labour should be given to the patient who was suitable for vaginal birth after cesarean section. Adequate assessment of pelvis and giving trial to patient having borderline pelvis also decrease the rate of cesarean in primi gravid (group 1).

Keywords: Cesarean section, Previous CS, Robson's classification system, Retrospective study

INTRODUCTION

It is a well acknowledged fact that the caesarean section rates have continued to increase worldwide and the rate of increase is highest in low income countries.[1-3]

The worldwide 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] An increase in the use of CS particularly in the public sector and in low-resource settings may notably affect health services by increased rates of maternal/neonatal complications but also in economic terms.[6,7]

It has been noted that no agreement has been reached on an appropriate caesarean section rate.[1,8-10] However, WHO and the US Healthy People 2000 initiative,

suggested 10-15% as the optimal caesarean section rate.[11,12] It is however difficult to determine optimal rates for institutions, especially referral centers. Setting up optimal rates needs to consider the possibility of unmet need for caesarean sections as well. It has been suggested that caesarean section rates should no longer be thought has been too high or too low but rather whether they are appropriate or not, after taking into consideration all relevant information.[13]

To capture all relevant information the Robson criteria with various modifications have been put forward and been used in many centers worldwide.

The Robson classification system allows reflection, research at local, regional and national levels to better guide future care and the modified versions enable comparisons of rate and indications as well.[14]

The Robson criteria is a ten group classification system (RTGCS) using 10 mutually exclusive and totally inclusive categories for caesarean section i.e. all women can only be classified into only one group, as shown below.

Sir T. Hospital, Bhavnagar is the main tertiary referral center conducting approximately 5,000 deliveries annually. It has 2 operating obstetric theatres. Over the years various attempts have been made to reduce caesarean section rates with no success. In the last five years the rate has persisted between 30-35%.

It has been noted that obstetricians and midwives may know less about events and outcomes in their own unit compared with their knowledge of published research and that professionals have a responsibility to practice evidence-based medicine, but they should not forget their responsibility to collect the evidence to ensure that they are providing good quality care to their patients.[2]

Against this background the aim of this study was to measure the incidence of cesarean section in present institute and to identify modifiable groups for intervention to reduce cesarean rate. This would then enable the development of appropriate auditing and targeted interventions to reduce caesarean section rates appropriately.

METHODS

All cesarean section and normal delivery carried out in gopanath maternity home, Sir T. Hospital, Bhavnagar during January 2017 to October 2017 were reviewed retrospectively and all data collected retrospectively.

From this data rate of cesarean section can be calculated by simple mathematics.

Total number of cesarean can be classified in ten group of Robsons´s classification given below (Table 1).[15]

Table 1: Robson's ten group classification system.

Groups	
1	Nulliparous, single cephalic, >37 weeks in spontaneous labor
2	Nulliparous, single cephalic, >37 weeks, induced or CS before labor
3	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)
10	All single cephalic, <36 weeks (including previous CS)

The aim of the study is to improve and decrease the modifiable cause of cesarean section.

Inclusion criteria

It includes all the LSCS carried out for the duration of January 2017 to October 2017 in Sir T. Hospital, Bhavnagar, India.

Exclusion criteria

All normal delivery.

RESULTS

Total number of delivery in my study institute in 10 months was 3804 out of them 1182 was cesarean section so incidence of cesarean section in Sir T hospital Bhavnagar was 31% during January 2017 to October 2017.

Table 2: Percentage of cesarean section in all group.

Groups	Total cesarean	Percentage
1	258	21.8
2	141	11.9
3	93	7.8
4	39	3.29
5	393	33.24
6	111	9.39
7	42	3.55
8	21	1.7
9	24	2.03
10	60	5.07
Total	1182	100

The most common cause of cesarean section was previous cesarean section (group 5) which is responsible for 33% of all cesarean section. Group 1 (Nulliparous, single cephalic, >37 weeks in spontaneous labor) is 2nd most common cause of cesarean section responsible for 22% of all cesarean section.

Group 8 and 9 are least common cause of cesarean section in my study. Group 8 contributes for only 1.7% of all LSCS.

Table 3: Incidence of cesarean in each group.

Groups	Incidence
1	6.82
2	3.72
3	2.41
4	0.99
5	10.23
6	2.91
7	1.10
8	0.55
9	0.62
10	1.57
Total	30.92

Total incidence of cesarean section in my institute was 30.92%. Group 5 is responsible for 10.23% incidence, which was maximum among all. Group 4,8 and 9 are least common cause. Group 8 was responsible for only 0.55% which is least common amongst all.

Table 4: Total number of cesarean and normal delivery in each group.

Groups	Total cesarean	Total normal delivery
1	258	512
2	141	325
3	93	521
4	39	380
5	393	396
6	111	32
7	42	90
8	21	108
9	24	0
10	60	258
Total	1182	2622

According to this all the patient with abnormal lie (group 9) undergone cesarean section. that means all the patient with abnormal lie having cesarean rate of 100%

Cesarean delivery in patient having previous LSCS (Group 5) has 50% LSCS rate remaining 50% patient with previous LSCS delivered vaginally.

Around 33% of patient in group 1 undergone cesarean delivery. 31% of cases from group 2 undergone cesarean delivery. 15% of cases from group 3 undergone cesarean

delivery. 9.3% of cases from group 4 undergone cesarean delivery.

DISCUSSION

The caesarean section rates across the globe have been increasing though rates have varied from center to center. In caesarean section rate in sir t hospital, Bhavnagar. of 31% is comparable to rates in the countries with high development index (HDI) such as Brazil, Mexico, China etc., but much higher than country averages of low development index (LDI) countries such as Kenya, Nigeria, Uganda. Sir t hospital, being a biggest referral center could be partly responsible for this disparity.

From the Robson classification, groups 1,2 and 5 contributed nearly half (66.94%) of the overall caesarean section rate. This clearly demonstrates the significance of the Robson criteria, where different institutions and countries would have to develop different strategies to address the caesarean section rates.

Increase incidence of cesarean section in primi gravida may points towards increase awareness regarding per vaginal examination, pelvic assessment and trial of labour should be given to patient having borderline pelvis and avoid unnecessary induction in primi gravida.

Trial of labour after caesarean section (TOLAC) is the only remedy to decreasing group 5s contribution to caesarean section rates but the criteria for TOLAC has never being straight forward and tends to be at the discretion of individual obstetrician and risk taking attitude and often times counseling of the patient is undirected towards this attitude. And in the event of untoward outcome, labour wards staffs (residents and midwives) are so chastised so severely that it kills their initiative and boldness to manage such cases appropriately and so they tend to intervene too soon. Addressing this would mean consultants who offer TOLAC to clients must also review these clients regularly with junior colleagues.

However, it must be made clear that decreasing the primary caesarean section rates is the key to reducing overall caesarean section rates and so attempts should be made to perform most caesarean sections for obstetric reasons.the main risk of TOLAC are emergency cesarean section and uterine rupture.[16] For all other groups optimizing maternal health and inducing labour appropriately would work especially for group 10.

Making available blood and blood products as well as emergency drugs would be imperative, not forgetting multidisciplinary approach to patient care.

There has been much concern about the appropriate management of the first stage of labour, when the active phase actually begins and therefore when to intervene by using modified WHO partograph.[17] The important thing is

to individualize every labour and so long as monitoring is good and mother and fetus are well, don't set a time limit while patient is in a tertiary center. However, remember to involve patients in the decision-making process. One wonders looking back, how many patients had caesarean sections on account of prolonged latent phase. And therefore, is history not telling us in a subtle way to be careful at setting time limits for labour.

There is the general reluctance to offer external cephalic version despite clear protocols and instruction on the procedure, and yet the surgeon's knife awaits the breech in labour. Generally, the fear and reluctance to carry out ECV is also translated to the fear and reluctance to carry out an assisted vaginal breech delivery. Both skills must be taught and reinforced by whatever means appropriate extenal cephalic version should be tried in patient of primi breech after 36 weeks of pregnancy if not contraindicated.[18]

CONCLUSION

From this Robson classification of caesarean sections in Sir T Hospital Bhavnagar and Government Medical College, Bhavnagar, groups 1, 2 and 5 were found to be the major contributors to the overall caesarean section rates and the modifiable factors for consideration in reducing caesarean section rates would be a strategy to improve number of inductions of labour as well number of successful inductions. To improve the training of per vaginal examination and giving trial to the patient having borderline pelvis. This will decrease primary caesarean section rates, decrease number of previous caesarean sections and obviously decrease the numbers for trial of labour after cesarean section. TOLAC should be offered as per protocols and not left only to individual obstetrician.

REFERENCES

1. Betrán AP, Merialdi M, Lauer JA, Bing-shun W, Thomas J, Van Look P, et al. Rates of caesarean section: analysis of global and regional and national estimates. Paediatr Perinat Epidemiol. 2007;21:98-114.
2. Robson M, Hartigan L, Murphy M. Methods of achieving and maintaining an appropriate caesarean section rate. Best Pract Res Clin Obstet Gynaecol. 2013;27:297-308.
3. Tapia V, Betran AP, Gonzales GF. Caesarean section in peru: analysis of trends using the Robson classification system. PLoS One. 2016;11:e0148138.
4. Gonzales GF, Tapia VL, Fort AL, Betran AP. Pregnancy outcomes associated with Cesarean deliveries in Peruvian public health facilities. Int J Women's Health. 2013;5:637-45.
5. 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.
6. Boutsikou T, Malamitsi-Puchner A. Caesarean section: impact on mother and child. Acta Paediatr. 2011;100:1518-22.
7. Grytten J, Monkerud L, Hagen TP, Sørensen R, Eskild A, Skau I. The impact of hospital revenue on the increase in caesarean sections in Norway. A panel data analysis of hospitals 1976-2005. BMC Health Serv Res. 2011;11:267.
8. Gibbons L, Belizan JM, Lauer JA, Betran AP, Merialdi M, Althabe F. Inequities in the use of cesarean section deliveries in the world. Am J Obstet Gynecol. 2012;206:331.
9. Ecker JL, Frigoletto FD. Cesarean delivery and the risk-benefit calculus. N Engl J Med. 2007;356:885-8.
10. Fuglenes D, Øian P, Kristiansen IS. Obstetricians' choice of cesarean delivery in ambiguous cases: is it influenced by risk attitude or fear of complaints and litigation? Am J Obstet Gynecol. 2009;200:e1-e8.
11. WHO. Appropriate technology for birth. Lancet. 1985;24: 4360-4370.
12. Department of Health and Human Services; Centers for Disease Control and Prevention; National Center for Health Statistics. Healthy People 2000: national health promotion and disease prevention objectives: Full report, with commentary (DHHS publication no.(PHS) 91-50212). Washington: Government Printing Office.
13. Robson MS. Can we reduce the caesarean section rate? Best Pract Res Clin Obstet Gynecol. 2001;15:179-94.
14. Farine D, Shepherd D Classification of caesarean sections in canada: the Modified Robson Criteria. J Obstet Gynaecol Can. 2012;34:976-9.
15. Robson MS. Classification of caesarean sections. Fetal Mat Med Rev. 2001;12:23-39.
16. American College of Obstetricians and Gynecologists. Vaginal birth after cesarean delivery: Deciding on a trial of labor after cesarean delivery.
17. Kwast BE, Lennox CE, Farley TM, Olayinka I. World health organization partograph in management of labour. Lancet. 1994;343(8910):1399-1404.
18. Alarab M, Regan C, O'connell MP, Keane DP, O'herlihy C, Foley ME. Singleton vaginal breech delivery at term: still a safe option. Obstet Gynecol. 2004 Mar;103(3):407-12.