Analysis of Caesarean Section Rate in a Hospital of Central India: According to Robson's 10-Group Classification

Amruta Choudhary (Ladke)[1], Kshipra Bhangadia[2], Deepti Shrivastav[3]

[1]MBBS, DGO, DNB; Assistant Professor, Department of OBGY, Datta Meghe Medical College, Nagpur, (DMIMS, Sawangi, Wardha), [2]MBBS; CPS Student (OBGY), Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi. Wardha, [3]MBBS MD; Professor, Department of OBGY, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi. Wardha

Abstract

Introduction: Caesarean section is most common surgery performed worldwide, but increasing rate of caesarean birth has become an international concern of public health. According to WHO (World Health Organisation), rate of caesarean section should not be more than 15%.

Aims and Objective: The main aim of this study was to classify the caesarean section according to Robsons's citeria and to identify the rising causes of caesarean section in our scenario.

Material and Method: This was a cross sectional observational study and data was collected over a period of six months from every single patient, who underwent caesarean section in our hospital.

Results: During the study period, total number of deliveries in this hospital was 519, out of which there were 300 caesarean section, thus, we have 57.80% rate of caesarean section. Maximum rate of caesarean section was in group 5 i.e. Multiparous with prior caesarean section, singleton, cephalic, ≥37 weeks followed by group 2 i.e. Nulliparous, singleton, cephalic, ≥37 weeks, induced labour or caesarean section before labour.

Conclusions: This attempt of classifying the caesarean section by Robson's criteria helped to audit and identify the problem and to think about modifying the hospital protocols for reduction of rate of caesarean section.

Keywords: *Caesarean section, Central India, Robson's classification.*

Introduction

Caesarean section is most common surgery performed worldwide and crude rate of caesarean section is considered an important indicator for measuring the accessibility of obstetric services to people[1]. However, increasing rate of caesarean birth has become an international concern of public health. Currently the rate of caesarean section in world is around 30%[1] whereas according to WHO (World Health Organisation), it should not be more than 15% because increasing rates did not show any evidence of improvement in maternal and neonatal health[2] . But on the contrary, it increases maternal morbidity like adherent placenta, uterine rupture, converting the normal pregnancy into a high risk one[3-5]. For evaluation of the different indication of caesarean sections, MS Robson proposed the standardized classification of cesarean section in the year 2001 which is known as Robson's classification. It is a 10 group classification and it was then appreciated

Corresponding Author:
Amruta Choudhary (Ladke)
MBBS, DGO, DNB (Obs-Gynae), Assistant Professor at Datta Meghe Medical College, Wanadongari, Nagpur, (Datta Meghe Institute of Medical Sciences, Wardha) Maharashtra, India
e-mail: amrutaladke2003@gmail.com
Mobile No.: 8600031166

and approved by WHO (2014) and FIGO (2016)[6,7]. In this classification, all women who underwent caesarean section were categorised into 10 groups based on their obstetric characteristics like parity, gestational age, previous CS (caesarean section), fetal presentation, mode of onset of labour, and number of fetuses. These groups are structured in such a way that they are mutually exclusive and totally inclusive[8].

Robson's classification of cesarean section[6,9]:

1. Nulliparous, singleton, cephalic, ≥37 weeks, spontaneous labor
2. Nulliparous, singleton, cephalic, ≥37 weeks, induced labor or cesarean section before labor
3. Multiparous without previous cesarean section, singleton, cephalic, ≥37 weeks, spontaneous labor
4. Multiparous without previous cesarean section, singleton, cephalic, ≥37 weeks, induced labor or caesarean section before labor
5. Multiparous with prior cesarean section, singleton, cephalic, ≥37 weeks
6. All nulliparous breeches
7. All multiparous breeches (including previous cesarean section)
8. All multiple pregnancies (including previous cesarean section)
9. All pregnancies with transverse or oblique lie (including those previous cesarean section)
10. Singleton, cephalic, ≤36 weeks (including previous cesarean section)

Aims and objectives: The main aim of this study was to classify the caesarean section based on their indication according to Robsons's citeria and objective of this study was to identify the rising causes of caesarean section in our scenario.

Materials and Method

This was a cross sectional observational study and data was collected over a period of six months from November 2019 to April 2020 in Obstetrics and Gynecology department of our hospital. All data collected were entered in a preformed structured performa.

Inclusion criteria: Patients delivered by caesarean section during the period of November 2019 to April 2020 in our hospital were considered for study and they were classified according to Robson's 10 group classification system.

Parameters considered for classification were:

- Parity (with/without previous CS);
- Gestational age (>37/<36 weeks),
- Onset of labour (spontaneous/induced/prelabour CS).
- Fetal presentation (cephalic/breech/abnormal lie)
- Number of fetuses (singleton/multiple)

Exclusion criteria:

- Women delivered normally or by instrumental vaginal delivery.
- Women delivered outside this hospital (either vaginally or by caesarean section).

This study was conducted after approval by the ethical committee of our institute. Simple statistical measures like percentage and proportion were used for analysis of data. Descriptive statistical analysis was done.

Results

During the study period, total number of deliveries in this hospital were 519, out of which there were 300 caesarean section. Thus, we have 57.80% caesarean section rate in our hospital. After analysis of data, we have maximum rate in group 5 i.e. Multiparous with prior caesarean section, singleton, cephalic, ≥37 weeks (93.97%) followed by group 2 i.e. Nulliparous, singleton, cephalic, ≥37 weeks, induced labour or caesarean section before labour (63.86%). In group 1, where nulliparous patients went into spontaneous labour, 50.4% had caesarean section. Caesarean section rate in multiparous patients in group 3 and 4 were 27.94% and 39.02% respectively. All the patients in group 6 to 9 undergone caesarean section (100%). In group 10 i.e. Singleton, cephalic, ≤36 weeks (including previous cesarean section), 57.14% women underwent ceasarean section. The major contribution of caesarean section in our hospital were from group 2 and 5, i.e. (2)Nulliparous, singleton, cephalic, ≥37 weeks, induced labor or cesarean section before labor and (5)Multiparous with prior cesarean section, singleton, cephalic, ≥37 weeks, respectively.

Table: 1 Classification of Cesarean Section Rate By Robson's Citeria

Robson's criteria	Total no. of deliveries in each group	Total no. of caesarean in each group	Caesarean section rate present	Contribution of each group to caesarean section rate
1	123	62	50.4%	20.66%
2	119	76	63.86%	25.33%
3	68	19	27.94%	6.33%
4	82	32	39.02%	10.66%
5	83	78	93.97%	26.0%
6	9	9	100%	3.0%
7	6	6	100%	1.66%
8	3	3	100%	1.0%
9	5	5	100%	1.66%
10	21	12	57.14%	4.0%
Total	**519**	**300**	**57.80%**	

Discussion

In our hospital, we tried to classify the caesarean section into different groups based on some obstetrical parameters according to Robson's classification. In the present study, we had caesarean section rate of 57.8%, which is quite higher than the standard rate recommended by WHO[2]. In the study of Kant A et al[3], rate of caesarean section was also similarly high i.e 53.86%, whereas in the study of K.Tanaka et al[8], rate was 23.5%. In the WHO global survey (2004-2008) and WHO multi country survey (2010-2011), rate of caesarean section were 26% and 31% respectively[1]. This higher rate of caesarean section in our hospital could be because we had maximum number of patients reffered from primary health centre in view of high risk pregnancy. All the patients from group 6-9 underwent caesarean section (100%) as these criteria were considered as indications for caesarean section and neither of the patient were given trial of vaginal delivery. Majority of caesarean sections were seen in group 5 i.e. Multiparous with prior cesarean section, singleton, cephalic, ≥37 weeks (93.97%). In the study of Kant A et al[3], rate of caesarean section in group 5 was 94.49%, while in the study of K.Tanaka et al[8], it was 76.5%. Majority of patients from group 5 who delivered vaginally were already in active labour with cervical dilatation of more than 4 cm and 80% effacement. But the other patients with previous caesarean section were not ready for TOLAC(trial of labour after caesarean section), either because they did not want to take risk for their baby and also they wanted procedure of tubal ligation to be done simultaneously during the same surgery. In group 2 and 4 where labour was induced or decision of caesarean section taken prior to labour, rate of caesarean section was more i.e 63.86% and 39.02% when compared with the patients of group 1 and 3 who were allowed spontaneous labour i.e 50.4% and 27.94% respectively. Similar higher rates were seen in group 2 and 4 in the studies of Kant A et al[3], K.Tanaka et al[8],Jacob KJ et al[10], where induction was done. Every hospital has different policy regarding induction of labour (IOL) depending on the obstetrical parameters of patients, fetal parameters and its prognosis and available institutional resources, but the unindicated induction surely increases the rate of caesarean section specially primary caesarean section which ultimately increases the rate of group 5. The studies of Pandey D[11], Mbaye M et al[12] were of similar views. However, the Robsons criteria did not consider the antenatal factors for induction of labour, and also regarding the fetal distress and failure of induction, in its classification, we could not held the procedure of IOL solely responsible for increasing cesarean section rate because some studies like S Wood et al[13] and E. Mishanina[14] did not show co-relation of IOL and increasing caesarean section rates. In our study, in group 10, rate of caesarean section was 57.14%, whereas in the study of Kant A et al[3], rate was 50.9% and in K.Tanaka et al[8] it was 24.2%. This group 10, consist of preterm pregnancy where head of fetus is not engaged, it has unstable lie resulting in prolonged labour and increasing incidences of fetal distress due to

fetal prematurity resulted in higher caesarean section rate.

Conclusion

This study showed higher rate of caesarean section in our hospital, where majority of contribution is from previous caesarean group and induction group. This attempt of classifying the caesarean section by Robson's criteria helped to audit and to identify the problem and to think about modifying the hospital protocols for reduction of rate of caesarean section. Since the aim of every obstetric unit is achieving good fetal outcome without jeopardising the maternal health, this study will help to improve the obstetrical techniques and protocols for right selection of patient for induction of labour and also encouraging the trial of labour after caesarean section.

Ethical Clearance: Taken from institutional ethics committee.

Source of Funding: Self.

Conflict of Interest: Nil.

References

1. Use of the Robson classification to assess caesarean section trends in 21 countries: a secondary analysis of two WHO multicountry surveys. Lancet Glob Health 2015; 3: e260–70 Published Online April 10, 2015
2. Kazmi T, Saiseema V et al. Analysis of Cesarean Section Rate- According to Robson's 10-group Classification. Oman Medical Journal (2012) Vol. 27, No. 5: 415-417
3. Kant A, Mendiratta S. Classification of cesarean section through Robson criteria: an emerging concept to audit the increasing cesarean section rate. Int J Reprod Contracept Obstet Gynecol 2018;7:4674-7.
4. Marshall NE, Fu R, Guise JM. Impact of multiple cesarean deliveries on maternal morbidity: a systematic review. Am J Obstet Gynecol. 2011;205(3):262.e1-8.
5. Souza JP, Gülmezoglu AM, Lumbiganon P, Laopaiboon M, Carroli G, Fawole B, et al. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004–2008 WHO Global Survey on Maternal Perinatal Health. BMC Med. 2010;8(1):71
6. FIGO Working Group on Challenges in Care of Mothers and Infants during Labour and Delivery,"Best practise advice on the 10-Group Classification System for caesarean deliveries," Int J Gynecol Obstet. 2016;135(2);232-3.
7. WHO Statement on Cesarean Section Rates; WHO/RHR/15.02. Available at http://www.who.int/reproductivehealth/publications/maternal_perinatal_heal th/cs-statement/en/.
8. Tanaka K and Mahomed K. The Ten-Group Robson Classification: A Single Centre Approach Identifying Strategies to Optimise Caesarean Section Rates. Obstetrics and Gynecology International Volume 2017,
9. Robson M, Murphy M, Byrne F, Quality Assurance, The 10 group classification system (Robson Classification), induction of labour and Caesarean delivery. Int J Gynaecol Obstet. 2015;131(S1):S23-7
10. Jacob KJ, Jayaprakash M, Hibina KP. TMC (Thrissur Medical College) modified Robson criteria for caesarean sections. Int J Reprod Contracept Obstet Gynecol 2017;6:5038-43.
11. Pandey D. Robson criteria: an emerging concept. Open Access J Gynecol. 2017;2(2):2474-9230
12. Mbaye M, Gueye M, Gueye MDN, Niang NKS, Moreau JC. Analysis of caesarean section rate according to Robson's classification in an urban health center in Senegal. Int J Reprod Contracept Obstet Gynecol. 2015;4(4):1100-2.
13. S. Wood, S. Cooper, and S. Ross, "Does induction of labour increase the risk of caesarean section? A systematic review and meta-analysis of trials in women with intact membranes," BJOG: An International Journal of Obstetrics and Gynaecology, vol.121,no.6,pp.674–685,2014.
14. Mishanina, E et al. "Use of labour induction and risk of cesarean delivery: a systematic review and meta-analysis," CMAJ, vol.186, no.9,pp.665–673,2014.