

## Caesarean Section Rate Analysis According To Robson's Classification At Tertiary Centre

Dr Shish Ram, Dr.Rizwana Shaheen, Dr.Neetu Gehlot  
Corresponding Author: Dr Shish Ram

### I. Introduction

Caesarean Section rate is increasing worldwide. This has raised a professional debate about appropriate indications for the operations. Caesarean Section is the centre of discussion due to most significant delivery event. Recent data indicate that one in five women undergo CS and in most region of world CS rate continue to rise.<sup>1</sup> CS has become increasingly common in both developed and developing countries by many reasons. Rate of C-section in India- there is rapid increase in CS deliveries in India also with increase in institutional deliveries. The rate of caesarean increased steadily over last 20 years in India. Rate of all over C-section in India is 2.4% in 1992, 6.8% in 1996, 8.5% in 2005-2006 which increased to 17.2% in 2015-2016.<sup>2</sup>

Unnecessary CS are costly and potentially life threatening. Risks are associated with CS like- postpartum haemorrhage, hysterectomy, postoperative pain, infections, Anaesthetics complications, Placenta previa and accreta in future and increase risk of morbidity and mortality. Risk of maternal mortality by CS is 5 to 7 times higher than vaginal birth (report of NIHS 2006). Complications during and after surgery may include a number of injuries to the mother's health such as injury to uterus, bladder and blood vessels which cause severe hemorrhage, pulmonary embolism and paralyzed bowels. Baby born by CS are more likely to develop breathing or respiratory problems.

In 2001 Robson proposed a classification system for easy comparison and obstetrics care improvement Robsons criteria also known as TGCS (ten group classification system).it is a standard classification. This system stratified women according to their obstetrics characteristics so that minimum confounding factors presents during comparison of CS rate.

### ROBSON'S 10 GROUP CLASSIFICATION

GROUP	DESCRIPTION
1	Nulliparous women with a single vertex pregnancy, at $\geq 37$ week's gestation in spontaneous labour
2	Nulliparous women with a single vertex pregnancy, at $\geq 37$ week's gestation, who had labour induced or who had CD before labour.
3	Multiparous women, without a uterine scar, with a single vertex pregnancy at $\geq 37$ week's gestation in spontaneous labour
4	Multiparous women, without a uterine scar, with a single vertex pregnancy at $\geq 37$ week's gestation, who had labour induced or who had CD before labour.
5	Multiparous women, with at least one previous scar with a single vertex pregnancy at $\geq 37$ week's gestation
6	All nulliparous women with a single breech pregnancy
7	All multiparous women with a single breech pregnancy, including women with a uterine scar
8	All women with a multiple pregnancies including women with a uterine scar
9	All women with a single pregnancy with a transverse or other abnormal presentation, including women with a uterine scar
10	All women with a single vertex pregnancy at $\leq 36$ week's gestation, including women with a uterine scar.

### Aims And Objectives

1. To study incidence of caesarean section in our institution.
2. To compare the frequency of caesarean rates in the Robson's 10 groups classification.

### II. Material And Methods:

This prospective study conducted in MDM Hospital which is attached with Department of Obstetrics and Gynecology of Dr. S. N. Medical College, Jodhpur. Our study is "caesarean section rate analysis according to Robsons classification at tertiary centre" carried out from June 2018 to November 2018. Study population - All women delivered  $\geq 28$  weeks of gestation. Inclusion criteria-all women delivered  $\geq 28$  weeks of gestation whether booked or unbooked. Exclusion criteria-All women delivered  $< 28$  weeks of gestation are excluded from this study.

### III. Methodology

Taken history and examination of patients which are selected for study, under standard pre structural protocol. All routine investigations sent as per institutional standard protocol, General physical examination was

*Caesarean Section Rate Analysis According To Robson's Classification At Tertiary Centre*

done. Patients detailed menstrual history, obstetric history, past medical and surgical history were also elicited. Follow up the patients completely. Patients classify according to this Robsons TGCS.:

Observations And Results

**Table No. 1 Incidence Of Cesarean Section**

Total no. of deliveries	Total no. of cesareans	Incidence in Percentage
5034	1605	31.88

**Table No 2 Relative Group Size – Number Of Deliveries In The Group/Total Number Of Deliveries**

Robsons group	Total No. of deliveries during study period	Total No. of deliveries in each group	Percentage of deliveries in each group
1	5034	1820	36.15
2	5034	894	17.75
3	5034	819	16.27
4	5034	261	5.18
5	5034	717	14.24
6	5034	142	2.82
7	5034	122	2.42
8	5034	85	1.69
9	5034	14	0.28
10	5034	160	3.18

**Table No 3 Cesarean Rate In Each Group**

Robsons group	Total No. of deliveries in each group	Total No. of caesarean in each group	Percentage
1	1820	288	15.82
2	894	318	35.57
3	819	69	8.42
4	261	63	24.13
5	717	661	92.19
6	142	88	61.97
7	122	36	29.51
8	85	15	17.65
9	14	14	100
10	160	53	33.13

**Table No 4 Relative Contribution-Number Of Cesarean In The Group/Total Number Of Cesareans**

Robson group	Total no. of cesareans	No. of Cesareans	Contribution made by each group to overall cesarean rate
1	1605	288	17.94
2	1605	318	19.81
3	1605	69	4.30
4	1605	63	3.93
5	1605	661	41.18
6	1605	88	5.48
7	1605	36	2.24
8	1605	15	0.93
9	1605	14	0.87
10	1605	53	3.30

**IV. Results:**

The incidence of cesarean section in our institute was 31.88% (table no.1).

The relative group size is maximum of Nulliparous women with a single vertex pregnancy, at > 37 weeks gestation in spontaneous labour that is group no 1 (36.15%) followed by group no.2 (17.75%) followed by group no 3 (16.27%) followed by group no 5 (14.24%). The relative size of group 1 & 2 combined is 53.91% which is above the expected range of 35- 40%. Group 1 was larger than group 2 but cesarean rate in group 2 was more than group 1. Group 3 & 4 included 21.45% of deliveries which was lower than expected range of 30-40%. As anticipated group 3 (16.27%) is much larger than group 4 (5.18%). The contribution made by group 5 to all over delivery was 14.24% (which is higher than 10% women according to Robsons expectation).group 6 and 7 include 5.2% of women (near to 3-5% according to Robsons expectation). group 8 and group 9 and group10 include 1.69% and 0.28% and 3.18% respectively of women which was also within expected range according to Robsons. (table no 2).

The CS rate is 100% in group 9(with in Robsons expectation).In group 5 it is 92.19% (which is higher than 50-60% CD Rate according to Robsons expectation). In group 4 it is 24.13% (higher than robsons

expectation of below 12%). CS Rate in group 1 is 15.82% (less than 10% is desirable). Group 1, 2, and 5 account for two-thirds of all caesarean deliveries as expectation. (table no 3).

The relative contribution to all over CS rate was given maximally by group 5(41.18%) than by group 2(19.81%) than by group 1(17.94%). (table no 4).

## V. Discussion

**Incidence-** In our study the CS rate was 31.88% that is well above the WHO guidelines of 10-15%. similar high rates was also observed in study by Patel RV<sup>41</sup> around 40%, by Abdel-Aleem H<sup>study</sup> in Egypt<sup>3</sup> (32-38%), Queensland<sup>4</sup> (33%) when compared to other countries our rates are near to USA (31.1%) and Australia (30%) and Asian countries (27.3%).<sup>4-5</sup> The largest contributor to this CS rate was group 5 than group 2&1 than group 6

**Group 5-(Single, term, cephalic, previous cesarean scar)-**In our study it was the largest contributor to the total CS rate with 41.18%.similar contribution(41.7%) in study of Arpitay.reddy et al. Higher rates found in study of Shaheen Hussain et al accounted for 44% in group 5and also in the study of kansara vijay<sup>6</sup> 46.1%. group 5 was the highest contributor in also study by chong c<sup>7</sup> in Singapore, Triunto s<sup>8</sup> et al in Italian population 36 from 1999 to 2011. In our study CS rate in group 5 is 92.19% which is very higher than Robsons criteria (50-60%) and higher than Dr Nishu in ummaid hospital Jodhpur in 2013 (80.1%) and nearly (85%) to Ray et al. In our study there are total 717 women with previous section, out of them 56 delivered vaginally by VBAC. Remaining 661 by CS, out of them 76 women have previous 2 and 3 section and 585 had previous 1section so previous one is the leading cause for increase CS rate in this group. The cause for increase rate in previous section 1 was refusing for VBAC, patients was counselled for VBAC whose bishop score was good but mostly refuse for VBAC. (26.32%) On asking the reason we got answer as afraid to open prior stitches, if one has been done so why not two. Another cause is increasing elective LSCS of patient with head free (21.1%) & HDOP and patient referred from other institute with scar tenderness (16.18%) and APH.

**Group 2 (nulliparous, term, cephalic, had an induction or cesarean done before labor) and Group 1 (nulliparous, single, term, cephalic, in spontaneous labor) & were the 2nd & 3 rd largest contributor to the cesarean rate i.e.19.81% & 17.94% respectively in our study. Similarly study conduct by Amita ray et al showed that group 2 (4.93%) and 1(1.52%) contribute the 2 nd& 3 rd largest cesarean rate. In our study the CS rate in group 2 (35.57%) is more than group 1 (15.82%). Similarly study by Amita ray et al CS rate in group 2 (45%) and in group 1 is (6.94%) It means that induction &cesarean before labour increases cesarean rate in nulliparous women. Fisher<sup>9</sup> et al found that there is no difference in cesarean rates of group1&2 major indication being for fetal distress & failure to progress**

**Group 3 & 4 contributing 4.30% & 3.93% respectively to overall cesarean rate but cesarean rate in group 3and4 is 8.42% & 24.13% respectively. It indicates that induction &cesarean before labour increases cesarean rate in multiparous women also.**

**Group 6 (nulliparous, breech) was found to be 4th largest contributor to the cesarean rate i.e. 5.48% & had a cesarean rate of 61.97%. Slavin identified that group 6 was 4th largest contributor to cesarean rate. Perinatal services British Columbia(PSBC) found in their study that group 6 had cesarean rate of 95.1% contributed 7.1% to cesarean rate similar to our study**

**Group 7 had cesarean rate of 29.51% contributing 2.24% to overall cesarean rate in our study. This finding is contrary to other studies like SinghAbha<sup>found</sup> cesarean rate of 80% in this group and PSBC(Perinatal services British Columbia) also found cesarean rate of 87%.we are promoting vaginal breech delivery in nulliparous and multiparous woman.so our rate in group 6 and 7 is lower. CS rate of group 7 is less than group 6, as the incidence of breech is more in primigravida.**

**Group 8- In our study the relative contribution to CS rate is 0.93% and CS rate in this group is 17.65%.it is heterogenous group, contributing less to the overall CS rate. Our centre is receiving cases from other referral centres. After infertility or twin with high risk cases were handled by CS. Our study found that contribution by groups 1,2,3,5 to overall cesarean rate was 83.23%. We can reduce cesarean rate by targeting these groups**

## VI. Summary

In our study the incidence of CS in our tertiary institute is 31.88% which is well above WHO criteria so there is a great need to bring down cesarean rate. → The largest contributor to CS rate in our study is group 5 (Single, term, cephalic, previous cesarean scar) (41.18%).Main cause for this is refusion for VBAC(26.32%) and increasing elective LSCS of previous 1 LSCS patient with free head (21.1%) & HDOP and patient reffered with scar tenderness(16.18%). → The second and third largest contributor to CS rate is group 2 (nulliparous, term, cephalic, had an induction or cesarean done before labor) (19.81%) and group1 (nulliparous, single, term, cephalic, in spontaneous labor) (17.94%) respectively. Main cause in group 2 is failed induction (55.97%) and group1 is fetal distress (60.76%). → Group 6 (nulliparous, breech) was found to be 4th largest contributor to the

cesarean rate i.e. 5.48%. Rate in this group decreased by practising vaginal breech delivery after proper counselling and explained risks. → Our study found that contribution by groups 1,2,3,5 to overall cesarean rate was 83.23%. So need to reduce cesarean rate by targeting these groups. → Group 3 & 4 contributing 4.30% & 3.93% respectively to overall cesarean rate but cesarean rate in group 3 and 4 is 8.42% & 24.13% respectively. 46 → Strategies to reduce the frequency of the CS should include avoidance of medically unnecessary primary caesarean section. Adequate counselling and encouraging for VBAC. Change the norms for non-progress of labour & for fetal distress with meconium continuous electronic fetal monitoring should be done. Improved case selection for induction and pre labour caesarean section could also reduce caesarean section rates. → Cesarean rate was also found to be high in groups 7,8,9,10 but relative size of these groups was very small, therefore these groups contributing very less to overall cesarean rate so these are not the areas for modification. → Thus Robson's TGCS system found to be a useful framework for auditing and analyzing different cesarean section rates and their reasons

## VII. Conclusion

The RTGCS is easy to use and helps us to detect the causes of increased CS rates for each group. Attention should be made because CS rate is rising up and will be problematic in our low resource country. It is time to interfere to lower the CS rate. Reducing primary section rates, adequate counselling and encouraging for VBAC, change the norms for non-progress of labour and foetal distress such as labelling active phase only once cervix is more than 6 cm dilated compared to the previously learnt 4 cm dilatation which hopefully may reduce the caesarean rates in non-progress group & for fetal distress with meconium continuous electronic fetal monitoring should be done, change the trend of induction ie induce labour for postdates after 41 completed weeks, trained obstetrician to perform versions these helps us to decrease CS rate in our institute.

## References

- [1]. Betran AP, Ye J, Moller AB, Zhang J, Gulmezoglu AM, Torloni MR. The Increasing trend in caesarean section rates: global, regional and national estimates: 1990–2014. *PLoS ONE* 2016; 11:e0148343
- [2]. Cavallaro FL, Cresswell JA, França GVA, Victora CG, Barros AJD, Ronsmans C. Trends in caesarean delivery by country and wealth quintile: cross-sectional surveys in southern Asia and sub-Saharan Africa. *Bulletin of World Health Organization* published on line on August 2013. Obtained from <http://www.who.int/bulletin/volumes/91/12/13-117598/en/> accessed on August 2014.
- [3]. Katke RD, Zarariya AN, Desai PV. LSCS audit in a tertiary care center in Mumbai: to study indications and risk factors in LSCS and its effect on early perinatal morbidity and mortality rate. *Int J Reprod Contracept Obstet Gynecol.* 2014;3:963-8.
- [4]. Stavrou EP, Ford JB, Shand AW, et al. Epidemiology and trends for Caesarean section births in New South Wales, Australia: a population-based study. *BMC Pregnancy Childbirth* 2011;11:8,2393.doi:10.1186/1471-2393-11-8
- [5]. Lumbiganon P, Laopaiboon M, Gulmezoglu AM, Souza JP, Taneepanichskul S, Ruyan P, et al. Method of delivery and pregnancy outcomes in Asia: the WHO global survey on maternal and perinatal health. *Lancet*; 2007-08:490-499
- [6]. Shirsath A, Risbud N. Analysis of cesarean section rate according to Robson's 10-group classification system at a tertiary care hospital. *Int J Sci Res.* 2014 Jan;3(1):401-2.
- [7]. Chong C, Su LL, Biswas A. Changing trends of caesarean section births by the Robson Ten Group Classification in a tertiary care teaching hospital. *Acta Obstet Gynecol Scand.* 2012;91(12):1422-7
- [8]. Triunfo S, Ferrazzani S, Lanzone A, Scambia G. Identification of Obstetrics targets for reducing caesarean section rate using the 54 Robson Ten Group Classification in a tertiary level hospital. *Eur J Obstet Gynecol Reprod Biol.* 2015;189:91-5.
- [9]. University of Utah, Department of Obstetrics and Gynaecology, Salt Lake city, [Yvette.lacoursiere@hsc.utah.edu](mailto:Yvette.lacoursiere@hsc.utah.edu).

Dr Shish Ram. "Caesarean Section Rate Analysis According To Robson's Classification At Tertiary Centre." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 9, 2019, pp 11-14.