Original Article

A recent way of evaluating cesarean birth

Singh Abha [1], Channawar Reema [2],

[1] *Professor and Head,* [2] *JR-III*

Department of Obstetrics and Gynaecology, Pt. JNM Medical College and Dr. BRAM Hospital, Raipur (CG).

Abstract

Objectives: Implementing Robson's ten group classification (TGCS) to analyze Cesarean section (C-section) rate. *Methods:* The TGCS divides women in ten groups based on the category of pregnancy, previous obstetric records, course of labor and delivery and gestational age. C-Section rates within each group and contribution of each group to the total C-section rate were calculated. Depending upon the result of 2006, a prospective study was conducted in 2007 and groups with high cesarean rate were scrutinized and efforts made to reduce the rate wherever possible. Statistical analysis was done by chi-square test. *Result:* The contribution of group 1, 2, 3 and 5 in the year 2006 was 10%, 2.2% 1.6% and 8.2% respectively and the contribution in 2007 was 8.3%, 1.6%, 0.5% and 6.6% respectively (p<0.05). The overall C-section rate became 20.7% in 2007 which was 26.2% in 2006. *Conclusion:* TGCS provides helpful information in the assessment of C-section rate and if successfully implemented, will lead to acceptable cesarean rate.

Key words: cesarean section rate, Robson's ten group classification (TGCS).

Introduction

Cesarean section is one of the most rewarding surgeries performed. The number of cesarean sections has been growing rapidly in many countries. The increase has been a global phenomenon and concern has been expressed at the growing rate of cesarean section in some countries with some referring to it as an emerging "global epidemic". In 1985, the WHO issued a consensus statement suggesting there were no additional benefits associated with a cesarean section rate above 10-15%.

Though C-section rate varies from hospital to hospital, according to ICMR study conducted in 30 teaching institutes in India, the overall rate of cesarean section increased from 21.8% in 1993-1994 to 25.4% in 1998-1999 [1].

Sreevidya[2] found that the total population cesarean section rate was 32.6% in Madras. Total cesarean section rates in the public, charitable and private sectors were 20%, 38% and 47%, respectively.

To justify the reducing cesarean section rate, what constitutes a high cesarean section rate needs to be defined. For analyzing the C-section rate, we need to compare the different indications. The comparison needs to be done not only nationally but at international levels too. Robson has suggested a simple and useful classification. His 10 group classification [3] has made possible comparing of cesarean section rate not only in the same unit but between different units also. If this

classification can be used uniformly in all the hospitals, then the results would be better compared and analyzed. The group with the highest number of cesarean would be aimed at, to bring down the C-section rate.

The 10 group classification is currently being used internationally and provides helpful information in the assessment of C-section rate.

Methods

The TGCS was used to classify all women who had registered for delivery in our institution which is a teaching and referral hospital. All women who delivered in the past year from January – December 2006 and from January – December 2007 were classified by TGCS.

Depending upon the results of retrospective study during January – December 2006, a prospective study was conducted from January to December 2007, in which the groups with high C-section rate were targeted and an attempt was made to reduce the rate wherever possible.

The details of women were obtained under following heads:-

1. Category of pregnancy

- Single cephalic
- Single breech
- Single oblique or transverse lie
- Multiple pregnancy

2. Previous obstetrics records

- Nulliparous
- Multiparous (without previous cesarean section)
- Multiparous (with previous cesarean section)

3. Gestation

Gestation age at the time of delivery. These women were categorized into 10 groups as follows-

Group 1   Nulliparous, single cephalic, $\geq$37 weeks, in spontaneous labor

Group 2   Nulliparous, single cephalic, >37 weeks, induced or cesarean section before labor

Group 3   Multiparous, excluding previous cesarean section, single cephalic, $\geq$37 weeks, in spontaneous labor

Group 4   Multiparous, excluding previous cesarean section, single cephalic, $\geq$37 weeks, induced or cesarean section before labor

Group 5   Previous cesarean section, single cephalic, $\geq$37 weeks

Group 6   All nulliparous breech

Group 7   All multiparous breeches including previous cesarean section

Group 8   All multiple pregnancies including previous cesarean section

Group 9   All abnormal lie including previous cesarean section

Group 10   All single cephalic $\leq$36 weeks including previous cesarean section.

4. Course of labor and delivery

- Spontaneous
- Induced
- Cesarean section before labor (elective/emergency)

Results

The C-section rate in each group was calculated. The contribution made by each group was studied. This helped us to form a strategy to find out the 'target groups' which would be aimed at reducing cesarean rates.

The contribution of groups 1, 2, 3 and 5, to the overall cesarean rate in the year 2006 was found to be 10%, 2.2%, 1.6% and 8.2% respectively (Table 1).

In the next year of our study, we specially targeted these groups to bring down the cesarean rate. In the year 2007, the incidence of C-section rate was 8.3%, 1.6%, 0.5% and 6.6% in groups 1, 2, 3 and 5 respectively (Table 2). The overall C-section rate which was 26.2% in 2006 became 20.7% in 2007.

No statistical significance was found between the relative size of target groups in the two study periods (p>0.05, Table 3). The comparison of contribution of each target group to overall cesarean rate in the study periods was found to be statistically significant (p<0.05, Table 4).

Table 1. Rates of C-section in each group in 2006.

Group	Overall C-section rate (%) – 1852/7082 (26.2%)		
	Relative size of groups (Total no of deliveries in group/total no of deliveries)	**C-section rate in each group** (Total no of C-section in group/total no of delivries in group)	**Contribution made by each group to overall C-section rate of 26.2%** (Total no of C-section in group/total no of deliveries)
1	2586/7082 (36.5%)	708/2586 (27.4%)	708/7082 (10.0%)
2	699/7082 (9.9%)	153/699 (21.9%)	153/7082 (2.2%)
3	2122/7082 (30%)	112/2122 (5.3%)	112/7082 (1.6%)
4	182/7082 (2.6%)	36/182 (19.8%)	36/7082 (0.5%)
5	787/7082 (11.1%)	583/787 (74.1%)	583/7082 (8.2%)
6	76/7082 (1.1%)	65/76 (85.5%)	65/7082 (0.9%)
7	67/7082 (1.1%)	19/67 (28.4%)	19/7082 (0.3%)
8	68/7082 (1.0%)	30/68 (44.1%)	30/7082 (0.4%)
9	45/7082 (0.6%)	45/45 (100%)	45/7082 (0.6%)
10	450/7082 (6.4%)	101/450 (22.4%)	101/7082 (1.4%)

Table 2. Rates of C-section in each group in 2007.

Group	Overall C-section rate (%) – 1355/6548 (20.7%)		
	Relative size of groups (Total no. of deliveries in group/total no. of deliveries)	**C-section rate in each group** (Total no. of C-section in group/total no. of deliveries in group)	**Contribution made by each group to overall C-section rate of 20.7%** (Total no. of C-section in group / total no of deliveries)
1	2469/6548 (37.7%)	543/2469 (22.0%)	543/6548 (8.3%)
2	585/6548 (8.9%)	105/585 (17.9%)	105/6548 (1.6%)
3	1951/6548 (29.8%)	33/1951 (1.7%)	33/6548 (0.5%)
4	236/6548 (3.6%)	46/236 (19.5%)	46/6548 (0.7%)
5	681/6548 (10.4%)	432/681 (63.4%)	432/6548 (6.6%)
6	62/6548 (0.9%)	41/62 (66.1%)	41/6548 (0.7%)
7	55/6548 (0.8%)	28/55 (50.9%)	28/6548 (0.4%)
8	62/6548 (0.9%)	35/62 (56.2%)	35/6548 (0.6%)
9	29/6548 (0.4%)	29/29 (100%)	29/6548 (0.4%)
10	418/6548 (6.5%)	63/418 (15.1%)	63/6548 (0.9%)

Table 3. Comparison of relative size of target groups.

	Year 2006	Year 2007	P value
Group 1	2586	2469	0.15
Group 2	699	585	0.06
Group 3	2122	1951	0.83
Group 5	787	681	0.17

Table 4. Comparison of contribution made by each target group to overall C-section rate.

	Year 2006	Year 2007	P value
Group 1	708	543	0.005*
Group 2	153	105	0.017*
Group 3	112	33	0*
Group 5	583	432	0.0002*

Discussion

Cesarean rate in 2006 was found to be 26.2%. By targeting the groups 1, 2, 3 and 5 and by making efforts to reduce the cesarean rate in these groups wherever possible, we succeeded in reducing the rate to 20.7% in 2007.

Various measures were adopted in these groups to lower the cesarean rate. In group 1, additional efforts were focused on fetal distress and dystocia (majority of the cesarean were performed for these indications in this group). We started monitoring FHR without CTG and made partogram compulsory for all women (though it was used, some doctors were unenthusiastic for its use). Use of ventouse in favor of forceps advocated by proper case selection also helped in reducing cesarean deliveries.

Dabbas [4] in their study concluded that CTG has low specificity and is associated with increased cesarean deliveries. Foley [5] found that the active management of spontaneous first labor remains an effective protocol for the promotion of vaginal delivery.

Same policies were adopted in group 3 to lower the cesarean rate

By proper case selection to a particular inducing agent we tried to decrease the cesarean rate in group 2. In a study by Singh [6], it was found that though induction –

delivery interval was shortest with PGE_1 tablet but the induction failure rate was 30%. PGE_2 gel showed the best result with only 7% induction failure rate.

VBAC was promoted in group 5. VBAC was encouraged (with a well defined protocol). Policy to wait for spontaneous labor (until 42 weeks) was adopted. Induction was preferred in face of ripe cervix and preferring amniotomy over oxytocin.

Gonen[7] concluded from their study that with a well defined protocol, a trial of labor after C-section seems to be as safe for the mother and infant as planned cesarean delivery.

Larger group 1 and 2 are likely to result in a larger group 5 in the future, so unnecessary C-sections in these groups should be avoided.

Conclusion

Cesarean section deliveries may have serious implications for the health of the women undergoing them. The risk of postpartum death is 3.6 times higher after cesarean than after vaginal delivery [8]. Higher neonatal mortality rate (1.77 per 1000 live births) is associated with cesarean delivery versus 0.62 per 1000 live births delivered vaginally [9]. Therefore the performance of C-section is justified only when the obstetric risks outweigh the risks of the procedure itself. The Robson TGCS demonstrates the need to focus on the case of women in group 1, 2, 3 and 5 particularly if the section rate needs to be reduced. This TGCS system could be a framework for auditing and analyzing different C-section rates and their reasons.

We have used it in our institution (a teaching hospital) and it has helped us tremendously to audit and compare our own records.

If TGCS is used uniformly in our country, we can compare our own rates with international cesarean rates. This will also help in not only identifying the priority areas for the changes in clinical practice but also reducing the cesarean rate.

References

1. Kambo I, Bedi N, Dhillon BS, et al. A critical appraisal of cesarean section rates at teaching hospitals in India. Int J Gynaecol Obstet 2002;79:151-8.

2. Sreevidya S, Sathiyasekaran BW. High cesarean rates in Madras (India): a population – based cross sectional study. BJOG 2003;110:106-11.

3. McCarthy FP, Rigg L, Cady L et al. A new way of looking at Caesarean section births. Aust NZJ Obstet Gynaecol 2007;47:316-20.

4. Dabbas M, Al-Sumadi A. Cesarean section rate: much room for reduction. Clin Exp Obstet Gynecol 2007;34:146-8.

5. Foley ME, Alarab M, Daly L et al. The continuing effectiveness of active management of first labor, despite a doubling in overall nulliparous cesarean delivery. Am J Obstet Gynecol 2004;191:891-5.

6. Singh A, Das S. A comparative study of efficacy of cervical priming agents. Obstet Gynecol Today 2005;9:519-21.

7. Gonen R, Tamir A, Degani S et al. Variables associated with successful vaginal birth after one cesarean section: a proposed vaginal birth after cesarean section score. Am J Perinatol 2004;21:447-53.

8. Deneux-Tharaux C, Carmona E, Bouvier-Colle MH et al. Postpartum maternal mortality and Cesarean delivery. Obstet Gynecol 2006;108:541-8.

9. MacDorman MF, Declercq E, Menacker F et al. Infant and neonatal mortality for primary cesarean and vaginal births to women with "no indicated risk" United States, 1998-2001 birth cohorts. Birth 2006;33:175-82.