

A Review of Caesarean Sections Using the Ten-group Classification System (Robson Classification) in the Korle-Bu Teaching Hospital (KBTH), Accra, Ghana

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Abstract

Objectives: To determine the relative contributions of each of the 10 groups to overall caesarean section rate and identify modifiable groups for intervention to reduce caesarean section rates.

Methods: Retrospective record review of the Robson Ten-Group Classification System (RTGCS) for caesarean sections from the statistical department of the Obstetrics and Gynaecology department.

Results: The overall caesarean section rate is 46.9%. The contribution to the overall caesarean section rate in descending order is as follows: Group 5 (previous CS, single, cephalic, >37 weeks), group 2 (nulliparous, single cephalic, >37 weeks, induced or CS before labor), group 4 (multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labor), group 10 (all single cephalic, <36 weeks (including previous CS), group 3 (Multiparous (excluding previous CS), single cephalic, >37 weeks in spontaneous labor), group 7 (All multiparous breeches (including previous CS)), group 1 (Nulliparous, single cephalic, >37 weeks in spontaneous labor), group 6 (All nulliparous breeches), group 8 (All multiple pregnancies (including previous CS)), and group 9 (All abnormal lies (including previous CS).

Conclusion: Groups 2, 4 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 to improve the number of successful inductions of labour. This will decrease primary caesarean section rates, and decrease the numbers for trial of labour after caesarean section (TOLAC). TOLAC should be offered as per protocols and not left to individual obstetrician discretion.

Keywords: Caesarean section rate; group; Robson; contribution

Introduction

It is a well acknowledged fact that the caesarean section rates have continued to increase worldwide [1,2] and the rate of increase is highest in low income countries [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 [6] but also in economic terms [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 [14] 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 (Table 1).

Korle-Bu Teaching Hospital is the main tertiary referral center conducting approximately 10,000 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 decade the rate has persisted between 40-50%.

Number	Group
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)

Table 1: Robson's 10-Group Classification [15].

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 apply the original RTGCS to caesarean sections in KBTH, in order to determine the rates in the different groups and the contribution of each group to the over rate. This would then enable the development of appropriate auditing and targeted interventions to reduce caesarean section rates appropriately.

Methods

This is a retrospective record review of the RTGCS for caesarean sections from the statistical unit of the Obstetrics department of KBTH. The statistical department at the beginning of the year used the system to enter the caesarean section data and was able to compile a table for the analysis.

Results

The total number of deliveries over the period was 9215 out of which 4331 were caesarean deliveries, giving an overall caesarean section rate of 46.9% (Table 2).

The contribution to the overall caesarean section rate in descending order is as follows:

Group 5 (previous CS, single, cephalic, >37 weeks), group 2 (nulliparous, single cephalic, >37 weeks, induced or CS before labor), group 4 (multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labor), group 10 (all single cephalic, <36 weeks (including previous CS)), group 3 (Multiparous (excluding previous CS), single cephalic, >37 weeks in spontaneous labor), group 7 (All multiparous breeches (including previous CS)), group 1 (Nulliparous, single cephalic, >37 weeks in spontaneous labor), group 6 (All nulliparous breeches) and 8 (All multiple pregnancies (including previous CS)), and group 9 (All abnormal lies (including previous CS)) (Tables 3 and 4).

Classification group	Number of caesarean sections (A)	Number of deliveries (B)	Rate of each group(A/B *100)	Relative size in each group(B/total number of deliveries *100)	Contribution of each group overall C/S rate(A/total number of deliveries *100)
1	115	981	11.7	10.6	1.2
2	494	659	75.0	7.2	5.4
3	186	2050	9.1	22.2	2.0
4	524	811	64.6	8.8	5.7
5	1034	1271	81.4	13.8	11.2
6	74	107	69.2	1.2	0.8
7	162	236	68.6	2.6	1.8
8	68	164	41.5	1.8	0.7

9	48	48	100	0.5	0.5
10	424	1182	35.9	12.8	4.6
11	1202	1706	70.5	18.5	13.0
Total	4331	9215		100	46.9

Table 2: Rate of caesarean section by Robson classification groups for the year 2015.

Rank	Classification group	Contribution of each group overall C/S rate(A/total number of deliveries *100)
1	5	11.2
2	4	5.7
3	2	5.4
4	10	4.6
5	3	2.0
6	7	1.8
7	1	1.2
8	6	0.8
9	8	0.7
10	9	0.5

Table 3: Ranking of Group contributions to overall caesarean section rate

Rank	Percentage	Classification group
1	100	9
2	81.4	5
3	75.0	2
4	69.2	6
5	68.6	7
6	64.6	4
7	41.5	8
8	35.9	10
9	11.7	1
10	9.1	3

Table 4: Ranking Robson class according to rates in each group

Discussion

The caesarean section rates across the globe have been increasing though rates have varied from center to center. In caesarean section rate in KBTH of 46.9% 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, etc. KBTH being a biggest referral center could be partly responsible for this disparity.

From the Robson classification, groups 2, 4 and 5 contributed nearly half (47.5%) of the overall caesarean section rate. In other studies group 1 replaces group 4 [16-18]. 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.

There is clear evidence from this finding that unsuccessful inductions of labour is the biggest contribution to the high caesarean section rate, elective caesarean sections for both groups 2 and 4 would have clear indications to avoid vaginal delivery. Therefore a critical review of induction protocols would have to be considered and probably modified or adhered to as much as possible.

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. 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. 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 ECV 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.

Group 11 which represents unclassified group for various reasons including missing data and hysterectomies contributes a high percentage (13%) to the overall caesarean section rates, this implies the enormous challenge of data collection and cleaning that low resource centers still face. That notwithstanding, excluding group 11 from the analysis did not change the trends and ranking of the groups in their contribution to the overall caesarean section rates, making the forgone discussion still appropriate and valid.

Conclusion

From this Robson classification of caesarean sections in KBTH, groups 2, 4 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. This will decrease primary caesarean section rates, decrease number of previous caesarean sections and obviously decrease the numbers for TOLAC. TOLAC should be offered as per protocols and not left only to individual obstetrician discretion.

References

1. Betrán AP, Meriardi M, Lauer JA, Bing-shun W, Thomas J, et al. (2007) Rates of caesarean section: analysis of global and regional and national estimates. *Paediatr Perinat Epidemiol* 21: 98-114.
2. Robson M, Hartigan L, Murphy M (2013) Methods of achieving and maintaining an appropriate caesarean section rate. *Best Pract Res Clin Obstet Gynaecol* 27: 297-308.
3. Tapia V, Betran AP, Gonzales GF (2016) Caesarean Section in Peru: Analysis of Trends Using the Robson Classification System. *PLoS ONE* 11: e0148138.
4. Gonzales GF, Tapia VL, Fort AL, Betran AP (2013) Pregnancy outcomes associated with Caesarean deliveries in Peruvian public health facilities. *Int J Womens Health* 5: 637-645.
5. Torloni MR, Betran AP, Souza JP, Widmer M, Allen T, et al. (2011) Classifications for cesarean section: a systematic review. *PLoS One* 6: e14566.
6. Boutsikou T, Malamitsi-Puchner A (2011) Caesarean section: impact on mother and child. *Acta Paediatr* 100: 1518-1522.
7. Grytten J, Monkerud L, Hagen TP, Sørensen R, Eskild A, et al. (2011) 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* 11: 267.
8. Gibbons L, Belizan JM, Lauer JA, Betran AP, Meriardi M, et al. (2012) Inequities in the use of cesarean section deliveries in the world. *Am J Obstet Gynecol* 206: 331.e1-331.e19.
9. Ecker JL, Frigoletto FD (2007) Cesarean delivery and the risk-benefit calculus. *N Engl J Med* 356: 885-888.
10. Fuglenes D, Øian P, Kristiansen IS (2009) Obstetricians' choice of cesarean delivery in ambiguous cases: is it influenced by risk attitude or fear of complaints and litigation? *Am J Obstet Gynecol* 200: e1-e8.
11. WHO (1985) Appropriate technology for birth. *Lancet* 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 (2001) Can we reduce the caesarean section rate? *Best Pract Res Clin Obstet Gynaecol* 15: 179-194.
14. Farine D, Shepherd D (2012) Classification of Caesarean Sections in Canada: The Modified Robson Criteria. *J Obstet Gynaecol Can* 34: 976-979.
15. Robson MS (2001) Classification of caesarean sections. *Fetal Mat Med Rev* 12: 23-39.
16. Brennan DJ, Robson MS, Murphy M, O'Herlihy C (2009) Comparative analysis of international cesarean delivery rates using 10-group classification identifies significant variation in spontaneous labor. *Am J Obstet Gynecol* 201: 308.e1-308.e8.
17. Brennan DJ, Murphy M, Robson MS, O'Herlihy C (2011) The singleton, cephalic, nulliparous woman after 36 weeks of gestation: contribution to overall cesarean delivery rates. *Obstet Gynecol* 117: 273-279.
18. Stivanello E, Rucci P, Carretta E, Pieri G, Seghieri C, et al. (2011) Risk adjustment for inter-hospital comparison of caesarean delivery rates in low-risk deliveries. *PLoS One* 6: e28060.