



ROBSON CLASSIFICATION-HARBINGER ON THE PATH OF REDUCING CAESAREAN SECTION RATE.

Obstetrics & Gynaecology

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ABSTRACT

Background: In the past two decades, with the improvement in infrastructures and facilities in health sector the caesarean birth rates have increased worldwide unquestionably. This rise in caesarean births have opened up new set of complications with increased morbidity and mortality to young women. Robson classification system has been proposed by WHO to audit and monitor caesarean sections globally. Objective of our study was to analyse our caesarean section rates using Robson classification for better comparisons and to design better solutions to lessen the problem of rising caesarean rates. **Methodology:** This study is a retrospective, hospital medical records-based study of all caesarean sections performed in a period of 4 years from January 2019 to December 2022 conducted at Sri Venkat Sai medical college, Department of Obstetrics and Gynaecology, Mahabubnagar. **Results:** Caesarean section rate in our institute was 48.6% and the leading contributions were from group 5, 2, 1 and 10 of Robson classification (TGCS) and contribution of each of these groups were 44.6%, 21.1%, 16.8%, and 6.2% respectively. **Conclusion:** Robson classification is easy instrument to drive the work of auditing caesarean sections to reach ultimate goal of lower caesarean section rates. Group 5 of TGCS is a major contributor to caesarean deliveries, this unwelcome benefaction can be lowered by reducing primary caesarean sections. Judicious measures for individual groups of TGCS at each institution can be put together to achieve lower abdominal deliveries and thus, TGCS is the harbinger enroute to ideal lower caesarean section rates.

KEYWORDS

Robson classification, Ten Group Classification System, audit, Caesarean Section Rate.

INTRODUCTION

Parturition is considered second birth for mothers. Safety of both mother and baby is utmost important outcomes of parturition in labour rooms across the world. History suggests that caesarean was done initially to save baby when mother had died, or was done for religious belief to bury baby separately from mother. Later in 19th century with advancement in medical profession, caesarean section has evolved to save both mother and baby.

In the course of time, caesarean has become much safer and easily accessible. It is lifesaving surgery when vaginal delivery is not possible, but because of various reasons unindicated caesarean delivery rates are overtaking vaginal delivery rates and presents with serious risk to women's health¹. Procedure which was devised to save lives has grown now into modern era self-created global problem. Caesarean rates across the world have doubled in 15yrs from 12.1% in year 2000 to 21.1% in 2015². In India it has reached 21.5% according to NFHS-5(national family health survey)³.

In 1985, World Health Organization (WHO) suggested that caesarean rates should not be more than 10–15%⁴ so to achieve appropriate rates we need to have standardised way of collecting data for comparisons and to find ways of interventions to combat it.

The Ten Group Classification System (TGCS) was first published in 2001 by Robson et al⁵ and was described as starting point for discussion on safety, quality of care and perinatal audit. In 2011 the World Health Organization conducted a systematic review that identified 27 different systems to classify caesarean deliveries. This review concluded that the 10-Groups classification in particular were in the best position to fulfill current international and local needs⁶. Thus, WHO in 2015 and then International Federation of Gynecology and Obstetrics (FIGO) endorsed TGCS as global standard for assessing and comparing caesarean section rates^{7,8}.

A standardised objective device in the form of Robson classification or Ten Group Classification System (TGCS) is available which will help in improving analysing caesarean section data at individual institutes. This implementation will help in comparing data at international level thus paving the way for comparing and improving quality of care to pregnant women.

MATERIALS AND METHODS

The present study is a retrospective, cross sectional, hospital medical

records-based study of all caesarean sections performed in a period of 4 years from January 2019 to December 2022 conducted at Sri Venkat Sai medical college, Department of Obstetrics and Gynaecology, Mahabubnagar, Telangana, India.

Inclusion And Exclusion Criteria

Pregnant women who delivered by caesarean section at Sri Venkat Sai medical college hospital from January 2019 to December 2022 were included in the study. Normal vaginal deliveries, instrumental vaginal deliveries, intra uterine deaths, still births were excluded from the study.

The data was retrieved retrospectively from hospital medical records regarding demographic, obstetric information and proforma was filled. The data collected was classified and analysed using Robson classification (Table 1). Ethical committee approval for the study was obtained.

Table 1: Robson Classification

Group	Description
1.	Nulliparous, single cephalic, ≥ 37 weeks, in spontaneous labour
2.	Nulliparous, single cephalic, ≥ 37 weeks, induced or CS before labour
3.	Multiparous (excluding previous CS), single cephalic, ≥ 37 weeks, in spontaneous labour
4.	Multiparous (excluding previous CS), single cephalic, > 37 weeks, induced or CS before labour
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, < 37 weeks (including previous CS).

Statistical Analysis

Data collected was entered in Microsoft Excel sheet, and statistical analysis was done using SPSS software, version 23 (IBM Corp., Armonk, NY, USA). Categorical variables were described as numbers and percentages (%). The size of each subgroup of Robson TGCS, CS rate, indications of CS and the contribution of each group toward overall CS were calculated.

RESULTS

Total number of deliveries in our institute in the study period were 2956 out of which normal Vaginal Deliveries (NVD) were 51.3% (1517) and lower Segmental Caesarean Sections (LSCS) were 48.7% (1439). Elective caesarean sections were 54.8% (790) and emergency caesarean sections were 45.2% (649). Our institute being rural tertiary referral centre had majority high risk cases accounting for 70% (1015) and low risk cases which accounted for 30% (424).

Table 2: Caesarean Section Rate: Risk Stratification:

SI NO	Type Of Delivery	Number	Percentage	Risk group	Number	Percentage
1	Normal vaginal Delivery	1517	51.3	High Risk	1015	70
2	Lower Segmental Caesarean Section	1439	48.7	Low Risk	424	30
	Total	2956	100%	Total	1439	100%

Year wise distribution of caesarean section rates have been detailed in Table 3. CSR have been increasing over these four years from 45.8% in 2019 to 57.5% in 2022.

Table 3: Year Wise Caesarean Section Rates

YEAR	TOTAL DELIVERIES	NVD	LSCS	CSR
2019	1105	598	507	45.8%
2020	685	363	322	47%
2021	690	354	336	48.6%
2022	476	202	274	57.55

Multi parous women were 58.3% (838) and nulliparous women were 41.7% (601). Elective caesarean sections were more common in multipara about 66.3% (555) whereas nulliparous women had more emergency caesarean sections about 60.8% (366). Out of 683 mothers who underwent repeat LSCS, 64.3% (439) had birth spacing less than 18 months and women who had birth spacing more than 18 months were 35.7% (244). Details of various characteristics are described in table 4.

Table 4: Parity With Elective And Emergency LSCS

SI No	Parity	Number	%	Elective LSCS	Percentage	Emergency LSCS	Percentage
1	Multi Para	838	58.30 %	555	66.3%	283	33.7%
2	Nulli Para	601	41.70 %	235	39.2%	366	60.8%

Analysis Of Caesarean Sections By Using Robson Ten Group Classification System:

The leading contributions for caesarean sections in our institute were from group 5, 2, 1 and 10 of Robson classification (TGCS) and contribution of each of these groups were 44.6%, 21.1%, 16.8%, and 6.2% respectively. These four groups together constituted about 88.7% of total caesarean sections done. The highest contribution was from group 5 about 44.6% which were the repeat caesarean sections. The primary caesarean sections were 37.9% which were contributions from group 2 and 1 together. In group 2 the further classification includes group 2a and 2b. 2a is caesareans done in nulliparous women after labour induction which contributed 3.47% to overall caesarean section rate and 16.3% to group 2 caesarean section rates. Whereas group 2b which is caesareans done in nulliparous women before onset of labour and it contributed to 17.72% to overall caesarean section rate and 83.6% to group 2 caesarean section rates. Various indications for caesarean sections were CPD 11.04% (159), maternal demand 9.45% (136), foetal distress 7.92% (113), preterm 6.2%, transverse/ oblique lie 0.4%, multiple pregnancy 2%, breech presentation 2.5%. Details of the Robson classification (TGCS) and their respective contributions are summarised in table 5.

Table 5: Robson Classification (TGCS)

Robson Ten Group	Description	Caesarean section Rate	Percentage
Group 1	Nulliparous, singleton, cephalic, ≥ 37 weeks, spontaneous labour	242	16.8%
Group 2	Nulliparous, singleton, cephalic, ≥ 37 weeks, induced labour or caesarean section before labour	305	21.1%

Group 2a	Labor induced	50	16.3%
Group 2b	Prelabour CS	254	83.2%
Group 3	Multiparous without previous caesarean section, singleton, cephalic, ≥ 37 weeks, spontaneous labour	38	2.6%
Group 4	Multiparous without previous caesarean section, singleton, cephalic, ≥ 37 weeks, induced labour or caesarean section before labour	48	3.3%
Group 4a	Labor induced	7	17.5%
Group 4b	Prelabour CS	40	85.1%
Group 5	Multiparous with prior caesarean section, singleton, cephalic, ≥ 37 weeks	642	44.6%
Group 5a	Spontaneous labour	162	25.2%
Group 5b	Labor induced	0	0
Group 5c	Prelabour CS	480	74.7%
Group 6	All nulliparous breeches	21	1.4%
Group 7	All multiparous breeches (including previous caesarean section)	17	1.1%
Group 8	All multiple pregnancies (including previous caesarean section)	30	2.0%
Group 8a	Spontaneous labour	13	43.3%
Group 8b	Labor induced	0	0
Group 8c	Prelabour CS	17	56.6%
Group 9	All pregnancies with transverse or oblique lie (including those previous caesarean section)	7	0.4%
Group 10	Singleton, cephalic, ≤ 36 weeks (including previous caesarean section)	90	6.2%

DISCUSSION

The rising caesarean section rates have been now recognised as a global problem and numerous strategies have been endeavoured to tackle this burgeoning worry. Robson classification has been proposed by WHO which is simple, clinically relevant, robust, replicable, verifiable classification system⁷. This classification helps for auditing, analysing caesarean section rates at individual institutes and also aids to compare data internationally. Our study is the beginning of implementation of TGCS in our institute with the expectation of identifying cause of high rates and to find measures to curb it.

Our study is a four-year retrospective study of analysing caesarean section rate using Robson classification from 2019 to 2022. It has been increasing in our institute from 45.8% in 2019 to 57.5% in 2022. The overall rate was 48.7%, it is higher in our study as ours is a rural tertiary care centre, increased number of high-risk cases are received. Caesarean rates have been rising in India both in rural and urban population with increase in institutional deliveries. According to National Family Health Survey report of 2019- 21 (NFHS-5) caesarean rates in private health facilities is 49.3% in urban and 46% in rural population and overall rate of 47.4%³. These rates are way higher than WHO recommended rate of 10-15%. Thus, there is need for TGCS tool to analyse our caesarean pattern. Across continents caesarean rates have wide variations but rates have been steadily increasing, in USA according to vital statistics rapid release provisional data for 2022 caesarean rate is 32.2%⁹. In Latin American countries it ranged from 24.8% to 75%¹⁰, European countries it is from 16.1% to 56.9%¹¹. Asian countries like Nepal have 25% to 66.8%¹², Sri Lanka has 30%¹³ and Australian rates range from 11.8% to 47.4%¹⁴.

On further analysing our data using Robson classification, we found group 5 of TGCS to contribute maximum about 44.6% to our higher caesarean rate, next contributors were group 2(21.1%), group 1(16.8%), and group 10(6.2%) in decreasing order. Similar pattern of distribution in TGCS were obtained by other Indian studies, the reason probably could be as we are all dealing with same social and obstetric issues¹⁵⁻¹⁷. In neighbouring countries like Sri Lanka Senanayake et al¹³ reported increased contribution from TGCS group 5(29.6%), 2(23.4%), 1(11.1%) and in Nepal¹², group 1(24.2%) was major contributor to overall caesarean rate. In Greek population major contribution is reported from group 2(34.6%), 5(30.7%), 10(11.7%)¹⁸

and in Australian study most contribution was reported by group 5(36.4%), 2(23.4%), 1(11.1%)¹⁴. Ethiopian study reported rates more in group 5(33%), 3(27.5%), 1(17.1%)¹⁹. There is lot of difference in the pattern of contributions from various groups of TGCS to overall caesarean rate across the world. These differences could be because of differences in socio demographic variables, institution protocols, differing risk groups, diverse quality of care in obstetrics in different parts of world.

In present study 41.7% of women were primigravidae and 58.3% were multigravidae. TGCS group 5 was the major contributor to our high rate of caesareans, thus reflects higher multigravidae in study group. Various reasons for increased caesarean sections in multiparous with prior caesarean section, singleton, cephalic, ≥ 37 weeks, were because of larger number of these women were not candidates for VBAC. Short inter pregnancy interval is a significant problem as many do not accept any mode of contraception and will come to hospital only when they are pregnant. 64.3% of women in group 5 had interpregnancy interval of less than 18 months, 35.7% of women had more than 18 months of interpregnancy interval. American College of Obstetricians and Gynaecologists (ACOG) guideline does advise women to avoid interdelivery interval of less than 18 months as there is threefold increase in uterine rupture during trial of labour. Lack of education and low socio-economic status are reasons for not accepting contraception and post-natal care. Vaginal birth after caesarean section (VBAC) is not preferred mode of delivery in our population for the following reasons. As with smaller size of family's women do not want to have any labour pains, do not want to accept any risk of dehiscence or rupture of uterus or NICU admission, false belief that caesarean delivery is most safe. In today's world of fast paced life people lack forbearance for normal delivery, they do not want to wait for spontaneous labour, induced and longer labours. Counselling during antenatal care using VBAC checklist not only to pregnant women but also to the family members will go a long way in making an informed consented shared decision for mode of delivery. Advantages of VBAC like reduced maternal morbidity has to be communicated to public not only by caring doctors but also by government through mass media, social media which will upraise public awareness.

Next group contributing significantly is nulliparous women undergoing caesarean section before onset of labour or after induction of labour, grouped 2 in TGCS. Present study has 21.1% rate in group 2. Further major contribution is from Group 1 in TGCS which is nulliparous, singleton, cephalic, ≥ 37 weeks, in spontaneous labour contributed 16.8%. These groups together constitute of about 37.9% which is the primary caesarean sections and reducing these rates will instinctively reduce rate in group 5 and in turn reduce in general caesarean section rate. Major impact on overall rate will be by reducing primary sections, this is possible by auditing each individual indication. In our study major indications for primary caesareans were cephalo pelvic disproportion constituting 11.04%, second common indication is recent rise of maternal request about 9.45%, foetal distress of about 7.92%, and failed induction of labour about 5%. Lastly, group 10 of TGCS which is singleton, cephalic, ≤ 36 weeks (including previous caesarean section) contributed about 6.2%, majority of these preterm deliveries were high risk pregnancy requiring early delivery.

The alteration in duration, methods, dose, schedule for induction of labour, no uniformity in interpretation of CTG, meconium-stained amniotic fluid in latent phase of labour, maternal demand, lack of invasive intrapartum monitoring tools are key reasons for higher caesarean deliveries in group 2,1,10 in TGCS.

Since there is substantial heterogeneity in contribution of subgroups of TGCS to higher caesarean rates across institutions to countries, remedies also have to be individualised after proper analysis of their institute data. Remedial measures to reduce caesarean deliveries would be following WHO protocols for induction of labour, adherence to guidelines in interpreting CTG, frequent training and revisiting CTG interpretation workshops, to have more means of intrapartum monitoring apart from CTG, obstetricians have to apprise themselves with newer guidelines in management of labour with stress on change in perception of duration of latent and active phases of labour. Eventually following strictly labour care guide, proper selection of cases for induction of labour, increasing VBAC rates and external cephalic version for breech presentation, sincere trial of labour for twins should steadily reduce caesarean section rates.

Strength Of Study

This study is the beginning of auditing of our data which will help us to use it prospectively to lower our caesarean deliveries. This will lead to creating evidence for improvement in rates using audits, thus creating environment of evidence-based medicine practice among next generation clinicians.

Limitations Of Study

Ours is a retrospective study using medical records which can lead to information bias.

Robson's TGCS does not provide information regarding high risk factors during pregnancy which can affect indication for abdominal delivery which can impact the results of study.

CONCLUSION

- Robson TGCS is easy instrument to drive the work of auditing caesarean sections enroute to ultimate goal of lower caesarean section rates.
- As endorsed by WHO and various state governments in India, TGCS has to be strictly implemented from smaller private hospitals to tertiary centres.
- Group 5 of TGCS is a major contributor to caesarean deliveries, this unwelcome benefaction can be lowered by reducing primary caesarean sections.
- Obstetricians and institutions have to follow quality labour room protocols.
- Public awareness regarding benefits of vaginal deliveries, especially VBAC should be increased by government initiatives using multimedia, social media platforms.
- Judicious measures for individual groups of TGCS at each institution can be put together to achieve lower caesarean delivery rates and thus Robson TGCS is the harbinger enroute to ideal lower caesarean section rates.

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