Original Article

Analysis of Cesarean Sections

Analysis of Cesarean Sections

Carried out at Liaquat Memorial Hospital

Kohat using Robsons Ten Group Classification

Beenish Samreen Hamid¹, Mussarat Jabeen¹, Hina Zuhra¹, Momina Nair Khattak², Fareeha¹ and Lubna Hassan³

ABSTRACT

Objective: To accomplish an analysis of cesarean sections carried out in Liaquat Memorial Hospital (LMH) Kohat and assess its rate using 10 Groups Robson classification system.

Study Design: Descriptive cross sectional study

Place and Duration of Study: This study was conducted at the Obstetrics/Gynae department of Liaquat Memorial Hospital (LMH) Kohat from the duration of January, 2019 to December, 2019 for a period of one year.

Materials and Methods: All patients attending the Obstetrics/Gynae department for delivery were enrolled in the study after taking verbal consent. A predesigned questionnaire including questions for data collection on maternal characteristics (i.e. age, gravidity, parity, previous history of c-section) pregnancy-related information (i.e. gestational age, fetal presentation, number of fetus and onset of labor) were used. The outcome of each patient either caesarian or normal delivery according to Robson's classification, cases of ruptured uterus, maternal mortality and still birth were also noted. Data was entered and analyzed using SPSS version 16.

Results: A total 2041 (19.83%) caesarian sections out of a total 10292 deliveries were carried out in the study center over this period. The highest caesarian sections (CS) 899 (44%), 243 (11.9%) and 201 (9.8%) were observed in Robson's classification R5 (multiparous women with at least one previous CS). The trend analysis of all cesarean cases showed that out of 2041 cesarean section cases, previous cesarean 670(32.83%), failure to progress 317 (15.53%) and fetal distress 210 (10.29%) were the predominant indications.

Conclusion: The rate of cesarean section (CS) was slightly higher in LHM hospital Kohat (19.89%) than the WHO recommended average cesarean rate of 15%.

Key Words: Robson classification, audit, cesarean section (CS), observational, labor, pregnancy, morbidity, fetal distress, induced labor

Citation of article: Hamid BS, Jabeen M, Zuhra H, Khattak MN, Fareeha, Hassan L. Analysis of Cesarean Sections Carried out at Liaquat Memorial Hospital Kohat using Robsons Ten Group Classification. Med Forum 2022;33(2):118-122.

INTRODUCTION

The escalating rate of cesarean sections across the globe during last few decades presented deep concerns to the health policy makers. The rate of cesarean section was just 5% in 1940 and increased up to 15% in 1970 and even beyond 30% in some areas¹. The World health organization (WHO) and US healthy initiatives 2000 guideline shows that

1. Department of Obstetrics and Gynae, KIMS / Liaquat Memorial Hospital (LMH) Kohat.

Correspondence: Dr. Beenish Samreen Hamid, Assistant Professor of Obs/Gynae KIMS, Kohat.

Contact No: 0317-9662233

Email: dr_beenishhamid@yahoo.com

Received: September, 2021 Accepted: November, 2021 Printed: February, 2022 cesarean sections should not be greater than 15% of the total births². Cesarean section is an important component of the emergency obstetric care and performed mostly to save the lives of mother and fetus only when they are required for medically indicated reasons.³ Caesarean section (CS) rates have increased to unprecedented level worldwide without enough evidence indicating substantial maternal and perinatal benefits. It has been reported that rates higher than 9-16% are not associated with decreases in maternal and neonatal mortality^{4,5}. There is growing concern over the higher incidence of long-term complications following one or more CS such as placenta accreta, retained placenta, and uterine rupture with possible need for peripartum hysterectomy^{6–8}. It can also cause significant and sometimes permanent complications, disability or death particularly in settings that lack the facilities and capacity to properly conduct safe surgery and treat surgical complications. Every effort should be made to provide caesarean sections to women in need, rather than striving to achieve specific rates. At the heart of the challenges in defining the optimal caesarean section rate there is also lack of a reliable and

^{2.} Department of Pathology Kabir Medical College, Ghandara University, Peshawar.

^{3.} Chairperson Advisory and Technical Committee KP-HCC

119

internationally accepted classification system to produce standardized data. Among the existing systems used to classify caesarean sections, the 10-group classification (also known as the 'Robson classification') has become widely used in many countries. The WHO, in its statement of April 10, 2015, proposed that the Robson classification of C-sections be used as a global standard to assess, monitor and compare cesarean rates over time at the same hospital or among different hospitals in the same region or country 11.

MATERIALS AND METHODS

A formal approval for the study was taken from institutional ethical review board (IERB). All patients attending the Obstetrics/Gynae department for delivery were enrolled in the study after taking verbal consent. A predesigned questionnaire regarding clinical history of patients were filled and post-delivery outcome either caesarian or normal delivery of each patient was noted^{10, 11}. The women were categorized into 10 groups based on their basic obstetric characteristics parity, gestational age, and number of fetuses, fetal presentation, previous cesarean and mode of onset of labor. Data was entered and analyzed using SPSS version 16. Descriptive statistical analysis using frequency and proportion were used in the study.

RESULTS

The total number of women who delivered in two obstetric units of LMH was 10292. Around 2041 C-Sections were carried out with an overall C Section rate of 19.83% for the specific time period. The analysis of our data showed that the most representative group in our population was Robson's Group 3 at 58.86% followed by Group 1 (20.85%) and Group 5 (9.40%). Groups 9 and 10 were minimal in our statistical data at 0.51% and 1.43% respectively (Table 1). Highest contribution to the total section rates was by Group 5(44.05%) followed by Group 1(11.9%) and G3 at 9.85%. These three groups utterly contributed to 65% of the total Cesareans Then came group 4 and 10. When all five groups were summed up they contributed to 78% of the C section rate. The least contribution was by Group 9 (Table 1). Primary CS rate contributed to 33.96% to the overall C section rate which is done in (Groups 1, 2, 3, 4), while in other studies primary CS rate approached 50%. The CS rate in Robson group 1 (nulliparous women with singleton pregnancy in spontaneous labour was 11.32%, which is slightly higher than Robson's recommended guidelines of rate under 10%. The CS rate in group 2 (nulliparous women with singleton pregnancy, who had induced labour or pre-labour CS) was 55.98 %, much higher than Robson's guideline (CS rate between 20 and 35). While assessing indications of CS in Robson group 1(primi with spontaneous labour) and Robson group 2 (primi with induced labour), 35%, and 7 % CS were performed due to failed progress of labor and 24% and 12 % following non-reassuring cardiotocogram (CTG) in two groups respectively. Noticeably this proportion of relative indications of C section can be lowered by appropriate use of partogram, implementation of new WHO recommended labour guide, ample use of oxytocin and reducing the interobserver difference in interpretation of CTG by arranging teaching workshops for the obstetric staff. The CS rate in Robsons group 3 (multiparous women without previous CS, with singleton pregnancy in spontaneous labour) had a CS rate of 3.32% which is within the range of Robsons recommendation (3%-5%) while the CS rate in Robsons group 4 (multiparous women without a previous CS, with singleton pregnancy, who had induced labour or pre-labour CS) was 50% much higher than the Robsons recommendation of 15%. The main indications of C-section in Robsons group3 were failure to progress (34%), fetal distress (19%) and obstructed labour (16%) while in Robsons group 4 about 23% of CS were done due to antepartum hemorrhage, 16% fetal distress, 6% obstructed labour, 3% failure to progress. The CS rate in group 5 (multiparous women with at least one previous CS) in our study was 92.97%, which is higher than the Robson recommendation (50%-60%). In our study, only few women were offered TOLAC (trial of labour after C-section) because there is shortage of staff on floor one to one monitoring was not possible.

Table No.1: Robson 10 group of classification system

Group	Description
R1	Nulliparous, single, cephalic,>37wks in
	spontaneous labour
R2	Nulliparous, single, cephalic, induced or
	CS before labour
R3	Multiparous (excluding previous CS), single cephalic >37wks in spontaneous labour
R4	Multiparous (excluding previous CS), single cephalic >37wks induced or CS before labour
R5	Previous CS, single cephalic >37 weeks
R6	All nulliparous breeches
R7	All multiparous breeches (including previous CS)
R8	All Multiple pregnancies (including previous CS)
R9	All abnormal lies (including previous CS)
R10	All preterm < = 36 weeks(including previous CS)

Table No.2: Frequency of total deliveries, Cesarean section rate and contribution made by each group of Robson Classification

Robson	A	В	С	D	E	F
classification	Total	Total	Total	Rate of c-	Relative size in each	Contribution of each
	deliveries	Cesarean	veginal	sections in each	group (A/Total	group to overall CS rate
	in a year	sections in	deliveries	group (B/A) x	obstetrical	(B/Total obstet-rical
	(n)	a year (n)		100 %	population)×100%	population)×100%
Group 1 Nulli	parous, single	e, cephalic,>37v	wks in sponta	neous labour		
	2146	243	1903	11.32	20.85	11.91
Group 2 Nulli	parous, single	e, cephalic, indu	iced or CS be	efore labour		
	184	103	81	55.98	1.79	5.05
Group 3 Multi	iparous exclu	iding previous (CS),single cer	ohalic >37wks in spe	ontaneous labour	
	6058	201	5857	3.32	58.86	9.85
Group 4 Multi	iparous (exclu	iding previous	CS), single ce	phalic >37wks indu	ced or CS before labour	
	292	146	146	50.00	2.84	7.15
Group 5 Previ	ous CS, singl	e cephalic >37	wks			
	967	899	68	92.97	9.40	44.05
Group 6 All n	ulliparous bre	eches				
	112	81	31	72.32	1.09	3.97
Group 7 All m	nultiparous br	eeches (includi	ng previous C	CS)		
	155	122	33	78.71	1.51	5.98
Group 8 All M	Iultiple pregn	ancies (includi	ng previous C	S)		
	177	62	115	35.03	1.72	3.04
Group 9 All al	bnormal lies (including previ	ious CS)			
	52	52	0	100.00	0.51	2.55
Group 10 All	preterm < = 3	36 weeks(include	ding previous	CS)	•	
-	147	132	15	89.80	1.43	6.47
Total	10292	2041	8251	19.83	100.00	100.00

Table No.3: Frequency of serious outcomes during deliveries in a year

No	Month	PNM/S	Still Birth		ual dysphoric	Raptured Uterus					
		n	%	disord	ler (MD) %	n %					
1.	January	25	10.72	0	0.00	1					
2.	February	0	0.00	0	0.00	1	3.13				
3.	March	0	0.00	0	0.00	2	6.25				
4.	April	29	29 12.46 1		33.33	4	12.5				
5.	May	44	18.88	0	0.00	1	3.13				
6.	June	10	4.29	0	0.00	1	3.13				
7.	July	20	8.58	0	0.00	1	3.13				
8.	August	33	14.16	0	0.00	0	0.00				
9.	September	24	10.30	1	33.33	0	0.00				
10	October	18	7.73	0	0.00	9	28.13				
11	November	0	0.00	0	0.00	3	9.38				
12	December	30	12.88	1	33.33	9	28.13				
	Total	233	100.00	3	100.00	32	100.00				

Table No.4: Frequency distribution of cesarean sections (CS) on the basis of clinical presentation

Clinical presentation	R1 n %		IX2		R3 n %		R4 n %		R5 n %		R6 n %		R7 n %		R8 n %		R9 n %		R10 n %		To n	otal %
Obstructed labour	50	20.58	3	2.91	34	16.92	9	6.16	27	3	7	8.64	9	7.38	7	11.29	1	1.92	1	0.76	148	7.25
Failure to progress	86	35.39	7	6.8	69	34.33	5	3.42	84	9.34	20	24.69	30	24.59	4	6.45	0	0	12	9.09	317	15.53
Fetal distress	60	24.69	13	12.62	40	19.9	24	16.44	36	4	7	8.64	6	4.92	8	12.9	0	0	16	12.12	210	10.29
Pre eclampsia	3	1.23	9	8.74	4	1.99	10	6.85	20	2.22	0	0	3	2.46	2	3.23	0	0	5	3.79	56	2.74
Previos cesarean	0	0	0	0	0	0	0	0	597	66.41	2	2.47	16	13.11	10	16.13	1	1.92	44	33.33	670	32.83
Prom	12	4.94	2	1.94	8	3.98	9	6.16	14	1.56	4	4.94	11	9.02	3	4.84	2	3.85	6	4.55	71	3.48
Breach	1	0.41	0	0	0	0	3	2.05	2	0.22	34	41.98	27	22.13	10	16.13	3	5.77	2	1.52	82	4.02
Failed induction	6	2.47	15	14.56	4	1.99	13	8.9	4	0.44	0	0	1	0.82	0	0	2	3.85	3	2.27	48	2.35
Antepartum haemorrhage	3	1.23	4	3.88	17	8.46	35	23.97	6	0.67	1	1.23	3	2.46	1	1.61	0	0	26	19.7	96	4.70

(aph)																						
Oblque/ transverse lie	0	0	1	0.97	1	0.5	0	0	6	0.67	0	0	3	2.46	2	3.23	37	71.15	0	0	50	2.45
Hand prolapse	1	0.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5.77	1	0.76	5	0.24
Cephalopelvic disproportion (cpd)	3	1.23	15	14.56	1	0.5	4	2.74	9	1	0	0	0	0	3	4.84	1	1.92	0	0	36	1.76
Others	2	0.82	5	4.85	7	3.48	8	5.48	3	0.33	1	1.23	2	1.64	2	3.23	0	0	3	2.27	33	1.62
Intra uterine growth restriction (iugr)	2	0.82	0	0	1	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0.15
Oligohydromnios	8	3.29	11	10.68	12	5.97	15	10.27	17	1.89	3	3.7	6	4.92	2	3.23	0	0	6	4.55	80	3.92
Preciuos preg/boh	4	1.65	9	8.74	1	0.5	7	4.79	1	0.11	1	1.23	4	3.28	5	8.06	1	1.92	3	2.27	36	1.76
Scar tenderness	0	0	2	1.94	0	0	0	0	66	7.34	0	0	0	0	0	0	0	0	4	3.03	72	3.53
Cord prolapse	2	0.82	1	0.97	2	1	2	1.37	0	0	1	1.23	0	0	0	0	0	0	0	0	8	0.39
Multiple birth	0	0	1	0.97	0	0	0	0	0	0	0	0	0	0	1	1.61	0	0	0	0	2	0.10
Post date	0	0	4	3.88	0	0	2	1.37	7	0.78	0	0	1	0.82	0	0	0	0	0	0	14	0.69
Brow presentation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1.92	0	0	1	0.05
Retained second twins	0	0	1	0.97	0	0	0	0	0	0	0	0	0	0	2	3.23	0	0	0	0	3	0.15
Total	243	100	103	100	201	100	146	100	899	100	81	100	122	100	62	100	52	100	132	100	2041	100

DISCUSSION

This study was designed to assess and analyze the high influx of cesarean reporting in the study center using Robson 10 group classification system. The Robson 10 Group classification system was used to assess the patients attending LMH Kohat in order to determine each Robson classification group contribution in the high rate of cesarean sections carried out in this unit. The study showed 19.83% cesarean rate in the study unit, which is slightly higher than the standard WHO protocol that cesarean sections must not be greater than 15% 12. The study unit majorly attending patients of rural areas, and the rate of cesarean sections are even more in urban population as described in a study conducted in Canada from the duration 199-200313. Other studies also presenting the same pattern of increased cesarean rate during the last few years. A study carried out in Farid Abad India in 2018 showed that out of 531 deliveries 286 (53.86%) were cesarean in a six month period1. A study conducted in Pakistan institute of Medical science (PIMS) Islamabad in 2017 presented 33.3% cesarean rate which is significantly high than present study with similar causes described in present study¹⁴. The difference in CS rate is because the PIMS is a huge referral center with huge catchment and patient's influx. Robson's classification 5, 3 and 1 were with highest rate of cesarean in present study also justified in other studies by T kazmi et al, 201215 and MP Hehir et al 2018 ¹⁶ where these three groups are the main contributing factors in total cesarean. It has been determined that the induced labour and previous cesarean are the causes of increased cesarean. Induction of labour increased the chance of cesarean sections 17. The present study showed that rate of cesarean in group R1 is less 11.32% as compared to group R2 (55.98%) due to the main cause of induction. Previous cesarean, fetal distress and failure to progress were the major factors behind cesarean sections in most of the Robson classes in present study. These clinical factors are also being highlighted in other studies as causative factors of cesarean^{1,18}. The finding results of this study are in consistence with other studies mentioned in references.

CONCLUSION

The overall cesarean sections rate in LHM hospital Kohat was moderately high than the WHO recommended average rate of 15%. As our hospital is the referral center in the Southern District of KPK and receives numerous patients in critical condition from other hospitals which are not well equipped to provide EMOC services. In such situations emergency Csection is done to prevent maternal and fetal morbidity and mortality. To generate C-section rate of our hospital truly illustrative of the population catered we have to add all the live births of other hospitals from where we do receive referrals. The highest cesareans were in Robson classification group R5, R3 and R1. Previous cesarean, failure to progress, induced labor and fetal distress has been reported as the main indications of cesarean section. Although the rate of cesarean sections have increased than assumed level, it can be minimized by using standardized institutional protocols of IOL, reducing primary section rates, discouraging undue inductions, adequate counseling and encouraging for VBAC, changing the protocols for dystocia and non-reassuring fetal status, training and encouraging obstetricians to perform versions and breech vaginal deliveries and adopting monitoring system to manage the non-serious cases in normal deliveries. More studies using this classification could further help obstetricians and hospitals formulate strategies to reduce their section rates till they reach the proposed WHO recommendations.

Author's Contribution:

Concept & Design of Study:

Drafting:

Beenish Samreen Hamid Mussarat Jabeen, Hina

Zuhra

Data Analysis:

Momina Nair Khattak, Fareeha, Lubna Hassan

Revisiting Critically:

Beenish Samreen Hamid, Mussarat Jabeen

Final Approval of version: Beer

Beenish Samreen Hamid

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

- 1. Kant A and Mendiratta S. Classification of cesarean section through Robson criteria: an emerging concept to audit the increasing cesarean section rate. Int J Reprod Contracept Obstet Gynaecol 2018;7:4674-77.
- Yaya S, Uthman OA, Amouzou A, Bishwajit G. Disparities in caesarean section prevalence and determinants across sub-Saharan Africa countries. Global Health Res Policy 2018; 3: 19.
- 3. Bailey P, Lobis S, Maine D, Fortney JA. Monitoring emergency obstetric care: a handbook. World Health Organization, 2009.
- Liu S, Liston RM, Joseph K, Heaman M, Sauve R, Kramer MS. Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term. CMAJ 2007;176: 455-60.
- Joseph K, Young DC, Dodds L, et al. Changes in maternal characteristics and obstetric practice and recent increases in primary cesarean delivery. Obstet Gynecol 2003;102:791-800.
- Connection C. Cesarean section best evidence: C-section (last updated 2009). Accessed July 2012;26.
- 7. Hamilton BE, Martin JA, Ventura SJ. Births: Preliminary data for 2008. National vital statistics reports 2010;59:1-19.

- 8. Robson MS. Can we reduce the caesarean section rate? Best Practice Research Clinical Obstetrics Gynaecol 2001;15:179-94.
- 9. Torloni MR, Betran AP, Souza JP, et al. Classifications for cesarean section: a systematic review. PloS one 2011;6: e14566.
- 10. Betran AP, Vindevoghel N, Souza JP, Gülmezoglu AM and Torloni MR. A systematic review of the Robson classification for caesarean section: what works, doesn't work and how to improve it. PloS One 2014;9:e97769.
- 11. WHO. Robson Classification: Implementation Manual 2017.
- 12. WHO. WHO Statement on Caesarean Section Rates 2015.
- 13. Lisonkova S, Sheps SB, Janssen PA, Lee SK, Dahlgren L, MacNab YC. Birth outcomes among older mothers in rural versus urban areas: a residence-based approach. J Rural Health 2011; 27: 211-9.
- Gilani S, Mazhar SB, Zafar M, Mazhar T. The modified Robson criteria for Caesarean Section audit at Mother and Child Health Center Pakistan Institute of Medical Sciences Islamabad. JPMA J Pak Med Association 2020;70: 299-303.
- 15. Kazmi T, Sarva Saiseema V, Khan S. Analysis of Cesarean section rate-according to Robson's 10-group classification. Oman Med J 2012; 27: 415.
- 16. Hehir MP, Ananth CV, Siddiq Z, Flood K, Friedman AM, D'Alton ME. Cesarean delivery in the United States 2005 through 2014: a population-based analysis using the Robson 10-Group Classification System. Am J Obstet Gynecol 2018; 219: 105. e1-. e11.
- 17. McDonagh MS, Osterweil P, Guise JM. The benefits and risks of inducing labour in patients with prior caesarean delivery: a systematic review. BJOG: An Int J Obstet Gynaecol 2005;112: 1007-15.
- 18. Mylonas I, Friese K. Indications for and risks of elective cesarean section. Deutsches Ärzteblatt Int 2015;112:489.