International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Bhatt NV et al. Int J Reprod Contracept Obstet Gynecol. 2025 Nov;14(11):3852-3856
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20253529

Original Research Article

Cesarean section delivery at a tertiary care center

Miti V. Bhatt*, Arti J. Patel, Sonal M. Solanki

Department of Obstetrics and Gynecology, Dr. M. K. Shah Medical College and Research Center, Ahmedabad, Gujarat, India

Received: 01 August 2025
Revised: 06 October 2025
Accepted: 07 October 2025

***Correspondence:**
Dr. Miti V. Bhatt,
E-mail: mitibhatt1998@gmail.com

ABSTRACT

Background: With the better surgical techniques, better anesthesia and with use of prophylactic antibiotics, cesarean sections are now considered a relatively common and safe operative procedures. Cesarean section is carried out with an incision on anterior abdominal wall and delivery of fetus by laparotomy. There may be an unambiguous association between cesarean delivery and fetomaternal morbidity and mortality. Rising trend in cesarean section deliveries need to be analysed and its effect on fetomaternal outcome at tertiary care centers.
Methods: This retrospective study was carried out with the aim to study the trends in cesarean section deliveries over the period extending from March 2022 to March 2024 has included all cesarean section delivery cases fulfilling the inclusion and exclusion criteria. The data were collected from the medical record department (MRD) and was kept confidential, and privacy of the patients were maintained, and data was analysed as per predefined proforma.
Results: The cesarean section rate was 49.11% out of 2596 deliveries, out of which most common indication being previous CS (37.89%) followed by fetal distress (18.24%). Majority of cases belonged to Robson group 5 followed by group 2. Emergency CS 61.72%, some neonatal complications were seen in which major cause was respiratory distress (9.88%). No fetomaternal mortality occurred during the study period.
Conclusions: Although with advent technology and medical advancement cesarean section is being a much safer and better operative procedure but its impact on future pregnancies and morbidity related to it should be kept in mind. The audit regarding the rate, indications and complications related to cesareans section should be analysed in all health care facilities.

Keywords: Cesarean section rates, Fetal distress, Maternal and neonatal complications, PIH, Previous CS, Robson classification

INTRODUCTION

One of the most frequent operative obstetric procedures is a "cesarean section delivery."[1] The introduction of contemporary anesthesia, the availability of makeshift surgical methods, and the use of prophylactic antibiotics have made cesarean sections comparatively safe and common operative procedure. The WHO recommends that cesarean section rates should not exceed 15%.[2] Over the past few decades, the rate has been rising steadily.[1] This increasing trend of cesarean sections has been attributed to several medical, social, ethical, economic, and medico-legal considerations in addition to various obstetric indications.[3] The morbidity and mortality of mothers, newborns, and infants may have definite impact by cesarean sections deliveries. The expense of cesarean sections could lead to families incurring exorbitant medical bills and placing more strain on healthcare systems.[4]

The present study was an effort to determine the prevalence of cesarean section and evaluate the pattern in form of various sociodemographic parameters, indication and other obstetric determinants at tertiary care center.

Aims and objectives

To study the prevalence of cesarean section delivery at our tertiary care centre. To study the indications of the cesarean section delivery. To determine the pattern of cesarean section delivery with respect to various sociodemographic parameters and other obstetric determinants at tertiary care center.

METHODS

Study type

It was a retrospective observational study

Study place

The study took place at Dr M. K. Shah medical college and Research center, Smt. SMS Multispecialty Hospital, Ahmedabad.

Study period

This study was carried out for a period of 2 years from March 2022 to March 2024.

Inclusion criteria

All women who underwent cesarean section delivery after 28 weeks of gestation.

Exclusion criteria

All women who underwent normal vaginal delivery and vaginal birth after cesarean section.

The data were collected from the medical record department (MRD) and was kept confidential, and privacy of the patients were maintained, and data was analyzed as per predefined proforma and using Microsoft excel the data was compiled and compared to various other similar studies.

Ethical approval

The ethics committee approval was obtained before the start of the study.

RESULTS

During the study period of two years, total number of deliveries were 2596, out of which number of cesarean sections were 1275 (49.11%). Our center being a tertiary care center with provision of free antenatal and neonatal care, the rate of cesarean section is higher. The percentage of patients who underwent cesarean section were higher in booked patients, belonging to lower socioeconomic status and with 2-4 parity. The rate of emergency CS was 61.72% and higher percentage of cases belonged to primary CS.

Table 1: Maternal variables.

Maternal variables		% of cases
Booking status	Booked	66.99
	Unbooked	33.01
Socioeconomic status	Lower	53.58
	Upper	46.42
Parity	Primi	34.20
	2 to 4	62.06
	More than 4	03.74

Table 2: Pattern of CS delivery.

Variables	% cases
Primary CS	52.90
Secondary CS	47.10
Elective CS	38.28
Emergency CS	61.72

Table 3: Indications for CS in present study.

	% of cases
Previous cesarean section	37.89
Fetal distress	18.24
Failed induction	10.68
Refusal of vaginal birth	03.56
Malpresentation	01.04
PIH	04.12
Breech	09.49
BOH	02.73
IUGR/oligo	03.91
CPD	02.62
Multifetal gestation	05.72

The significant difference in cesarean section rates in emergency might be due to referral of complicated pregnancies from surrounding health care centers. The major indication for cesarean section was previous cesarean section (37.89%) followed by fetal distress (18.24%) and failed medical induction (10.68%).

Robson classification group 5 (36.6%) contributed to largest number in the study population. The second larger group was RC-2 (22.51%). The smallest group was RC-9 (1.33%), includes pregnancies with transverse or oblique lie. This can be due to the fact that the incidence of transverse and oblique lie is lower. Postoperatively, most of the patients did not face any complication (92.62%). Amongst the complications, postoperative fever (UTI) was higher (4.16%). Also wound infection (2.04%) was seen which responded to antibiotics and some underwent wound gap resuturing. The cause for wound infection can be due to patient factor like co-morbidities (diabetes, hypertension or some other immunocompromised conditions) or patient hygiene is not maintained. During this study period no maternal mortality occurred.

Table 4: Robsons classification (RC).

Groups	N	%
Nulliparous, singleton, cephalic, ≥37 weeks, spontaneous labour	082	06.43
Nulliparous, singleton, cephalic, ≥37 weeks, induced labour or cesarean section before labour	287	22.51
Multiparous without previous cesarean section, singleton, cephalic, ≥37 weeks, spontaneous labour	037	02.90
Multiparous without previous cesarean section, singleton, cephalic, ≥37 weeks, induced labour or cesarean section before labour	100	07.84
Multiparous with prior cesarean section, singleton, cephalic, ≥37 weeks	467	36.60
All nulliparous breech	057	04.47
All multiparous breech (including previous cesarean section)	064	05.02
All multiple pregnancies (including previous cesarean section)	073	05.72
All pregnancies with transverse or oblique lie (including those previous section)	017	01.33
Singleton, cephalic, ≤36 weeks (including previous cesarean section)	091	07.14

Table 5: Maternal complications.

Complications	Number of cases	% of cases
No complications	1181	92.62
Postoperative fever, urinary infection	0053	04.16
Postpartum hemorrhage	0015	01.17
Wound infection	0026	02.04

Table 6: Neonatal outcomes.

Neonatal outcomes			Case	% of cases
Apgar score	1 minute	<7	0038	02.98
		>7	1237	97.01
	5 minutes	<7	0019	01.49
		>7	1256	98.51
Resuscitation required		Yes	0024	01.88
		No	1251	98.11
Fetal complications		Respiratory distress syndrome	0126	09.88
		Transient tachypnea of newborn	0097	07.61
		Sepsis	0022	01.73
		Apnea	0062	04.87
Mortality		-	-	-

In our present study majority of neonatal had good outcome and prognosis. APGAR score of >7 in 98.51% of cases. There was no neonatal mortality during the study period. This can be attributed to the fact that cesarean section taken for fetal distress resulted in resuscitation, respiratory distress syndrome and transient tachypnea of newborn is associated more with cesarean section than vaginal delivery.

DISCUSSION

The analysis of various maternal demographics indicates that majority cases that underwent cesarean section deliveries were booked patients (66.99%) while in Kose et al had 67.21% and that in Das et al was 70.03%.[10,11] This shows the awareness regarding the antenatal care and more mothers opting for the antenatal visits and better government initiatives in improving the antenatal care. As our institute is a tertiary care center and availability of free antenatal, postnatal and neonatal care majority of patients coming to our hospital belonged to lower socioeconomic class (53.58%) while in Das et al was 31.01% and that in Neetu et al was 44.67%.[7,11]

In the present study, majority of cases had previous CS with certain maternal co-morbidities where scarred uterus was the determining factor for CS. The rate of previous cesarean section deliveries in our study was (37.89%) and the in Kose et al, Das et al and Gupta et al was 35.77%, 27.33% and 36.52%.[10,11,13] Second common was fetal distress or non-assuring CTG tracing which was 18.24%. With advent use of better electronic fetal monitoring leading to early and timely diagnosis and therefore improving the maternal and neonatal outcome.[10,11,13] The other group of bad obstetric history (2.73%) and

malpresentation (1.04%) more likely underwent cesarean section deliveries on maternal request or obstetrician preference for preventing neonatal jeopardy. In patients with PIH (4.12%) it is in favor of maternal and neonatal outcome to opt for cesarean section deliveries due to complications of PIH like eclampsia, IUFD, poor Apgar score and increased need for neonatal resuscitation. and that in Kose et al was 7.18% and while in Gupta et al was 3.54%.[11,13]

Most of the cases in present study belonged to Robson classification group 5 (36.6%) while the similar data is seen in Janani et al (31%) and Sinha et al (35.67%).[8,9] Second most common indication leading to cesarean section deliveries was fetal distress. The increase in CS rates may be linked to the widespread use of cardiotocography for low-risk women upon admission in the labour ward.[7] According to National Institute for Health and Care Excellence (NICE) guidelines up to 90% of CS and surgical procedures can be avoided by using fetal scalp blood sample and blood gas analysis as an alternate method to rule for acidosis and fetal compromise.[7] According to a 2011 WHO statement, induction of labour should only be performed when there is a clear medical indication, and the anticipated advantages outweigh any potential risks.[8] Multiple pregnancies are becoming more common because of increased IVF and other assisted reproductive techniques, and because these pregnancies are precious, they are delivered through elective cesarean section by preference.[7]

There was no maternal and neonatal mortality during the study period.

The study was conducted at tertiary care centre with majority of patients belonged to lower socioeconomic status and data can vary depending upon the target population and health care centre. This was a time bound study of 2-year duration. But the study highlights the need for regular audits regarding the rate of cesarean section and its indications

CONCLUSION

The present study of cesarean section deliveries at tertiary care centre revealed a rising trend in c-section rates, often surpassing the WHO-recommended threshold of 10-15%. While some cases are medically justified due to obstetric complications, a significant proportion of procedures may be driven by non-medical factors such as maternal request, medico-legal concerns, and institutional practices. This trend underscores the need for continuous clinical audits, strict adherence to evidence-based guidelines, and patient education to promote safe and necessary obstetric care. In high-risk pregnancies due to improved cesarean section safety through improved anaesthesia, surgical techniques, blood product availability, and the use of advanced antibiotics, cesarean section is preferred. Rising trend of CS affecting the maternal and fetal well-being is definitely a factor of concern but along the side long term effects of CS delivery on future pregnancies should always be kept in mind and genuine audit of CS to be advocated for in health care facilities.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Leveno KJ, Bloom SL, Spong CY, Dashe JS, Hoffman BL, Casey BM, et al. Williams Obstetrics. 26th edn. New York: McGraw-Hill Education; 2014.
2. Bablad A. Cesarean section in primiparous women: a retrospective study. J South Asian Feder Obstet Gynecol. 2021;13(1):15-7.
3. Jain M, Patel A. Across sectional study of rate, indications and complications of primary cesarean section. Int J Reprod Contracept Obstet Gynecol. 2016;5(6):1814-9.
4. Patnaik M, Das B. Retrospective observational study of cesarean section cases in a tertiary care hospital in Odisha. Indian J Obstet Gynecol Res. 2017;4(2):112-5.
5. Singh N, Pradeep Y, Jauhari S. Indications and determinants of cesarean section: Across-sectional study. Int J Appl Basic Med Res. 2020;10(4):280-5.
6. Roy N, Mishra PK, Mishra VK, Chattu VK, Varandani S, Batham SK. Changing scenario of C-section delivery in India: Understanding the maternal health concern and its associated predictors. J Fam Med Prim Care. 2021;10(11):4182-8
7. Punatar DP, Pattani DB. Analysis of cesarean section rates based on ROBSON Classification System ni a Tertiary Care Hospital in West Coast of Gujarat, India. Int J Innov Res Med Sci. 2023;8(04):160-4.
8. Janani L, Christina S, Akoijam BS, Nameirakpam D, Laiphrakpam RS. Analysis of cesarean section rates and its indications using Robson's classification at a tertiary care hospital, Manipur. Indian J Public Health. 2022;66(4):434-8.
9. Sinha M, Dua T. Assessing cesarean section trends in tertiary care using Robson's ten group classification. Int J Reprod Contracept Obstet Gynecol. 2022;11(6):1703-8.
10. Kose V, Sadhvi K. Study of cesarean section at tertiary care centre: a retrospective study. Int J Reprod Contracept Obstet Gynecol. 2020;9(5):2138-43.
11. Das RK, Subudhi KT, Mohanty RK. The rate and indication of cesarean section in a tertiary care teaching hospital eastern India. Int J Contemp Pediatr. 2018;5(5):1733-9.
12. Riyami NMA, Shereiqi SSA, Pillai SA. Comparative analysis of maternal and neonatal outcomes between elective and emergency cesarean section at a single tertiary hospital: a retrospective COHORT study. Int J Reprod Contracept Obstet Gynecol 2023;12(9):2611-7.

13. Gupta M, Garg V. The rate and indications of cesarean section in a tertiary care hospital at Jaipur, India. Int J Reprod Contracept Obstet Gynecol. 2017;6(5):1786-92.
14. Patel BS, Patel AB, Patel AJ, Banker DA, Patel MB. Maternal and neonatal outcome in elective versus emergency cesarean section in a tertiary healthcare centre in Ahmedabad, western India. Br J Med Health Sci. 2020;2(5):231-40.
15. Yadav S, Kaur S, Yadav SS, Thakur B. Analysis of cesarean rate, indications and complications: review from medical college Ambala, Haryana, India. Int J Reprod Contracept Obstet Gynecol. 2016;5(10):3326-9.

Cite this article as: Bhatt NV, Patel AJ, Solanki SM. Caesarean section delivery at a tertiary care center. Int J Reprod Contracept Obstet Gynecol 2025;14:3852-6.