International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Joshi A et al. Int J Reprod Contracept Obstet Gynecol. 2022 Jan;11(1):39-43
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20214854

Original Research Article

Puerperal complications in elective versus emergency caesarean deliveries

Ashka Joshi*, Maulesh Modi, Ami Shah, Kanupriya Singh, Haresh Doshi

Department of Obstetrics and Gynecology, GCS Medical College and Research Centre, Ahmedabad, Gujarat, India

Received: 15 November 2021
Revised: 24 November 2021
Accepted: 25 November 2021

***Correspondence:**
Dr. Ashka Joshi,
E-mail: ashkajoshi133@gmail.com

ABSTRACT

Background: The aim of current study was to compare puerperal complications in elective vs emergency caesarean section. Though similar complications occur in elective and emergency caesarean sections, this study aims to find out which complications are more common in either of them.
Methods: A prospective case comparative study was conducted at GCS Medical College and Hospital, Department of Obstetrics and Gynecology, Ahmedabad from 01 December 2020 to 01 June 2021.
Results: The emergency caesarean section (CS) rates (36) were more common in the age group of 21-25 years than the elective CS (32). Emergency CS was most common in primipara women (69). The most common risk factor is previous known history of hypothyroidism and most common indication is known history of previous lower segment caesarean section (LSCS). 10 patients in elective CS and 8 patients in emergency CS had previous LSCS. Body mass index (BMI) of 26 patients in elective CS was ranging between 24.9-29.9 kg/m^2 when compared to 28 patients with similar BMI in emergency CS. Overweight patients underwent more emergency CS when compared to elective CS. Most common intra-operative complication was adhesions between rectus sheath and muscle and second most common was dense adhesion. Most common post op complication was breast engorgement and mastitis.
Conclusions: There is a significant difference between the number of patients in elective and emergency CS group when common indications are seen ($p<0.05$). Similarly, statistically significant is observed between the 2 groups when post-operative complications are observed ($p<0.05$).

Keywords: Caesarean section, Elective, Emergency, Complications

INTRODUCTION

Caesarean section (C-section or CS) is termination of pregnancy through an incision on the abdominal and uterine wall. Surgery performed to improve parturition outcomes may itself involve certain adverse outcomes like wound infection, puerperal sepsis, hemorrhage, blood transfusion, anesthesia, trauma, repeat CS in subsequent pregnancy and dense adhesions. In line with the global trends, the CS rates in India have increased from 8.5% in 2005-2006 to 17.2% in 2015-2016.[1] In 1985, the World Health Organization (WHO) stated: there is no justification for any region to have caesarean section rates higher than 10-15%.[2] Maternal morbidity and mortality are on the rise following CS when compared to vaginal delivery.[3] Emergency CS is performed commonly for fetal distress, prolonged obstructed labour, severe pre-eclampsia and previous caesarean on labour. Changing risk profiles among increasingly older primiparas are considered as a reason for rising CS rates.[4-6] An increase in maternal request also plays a part in rising trends in elective CS.[7] The current study aims at establishing a comparison of puerperal complications in elective vs emergency caesarean deliveries, so that crucial

information of prevalence and complications can be helpful for policy makers and care providers to develop rational guidelines for good clinical practice.

Thus, the objectives of this study are: comparative study designed to extract information regarding prevalence of complications in elective and emergency CS; to analyze possible risk factors for complications after elective and emergency procedures; and to address the maternal and fetal morbidity aspects to help develop rational guidelines for good clinical practice in future.

METHODS

A prospective case comparative study was conducted at GCS Medical College and Hospital, Department of Obstetrics and Gynecology, Ahmedabad from 01 December 2020 to 01 June 2021. Ethical requirements of informed consent and confidentiality were ensured.

A total of 200 women were recruited for this study admitted through outpatient department (OPD) or emergency for elective or emergency caesarean section with consent. Women coming for follow up in OPD after caesarean section were also included in the study. Preterm deliveries, vaginal birth after cesarean delivery (VBAC) trial patients and ruptured uterus cases were excluded.

Data regarding socio demographic factors like age, parity, weight, socio-economic status, literacy were collected. Obstetric examination was carried out and antenatal complications like gestational diabetes mellitus, pregnancy induced hypertension, anemia, heart disease, seizure disorder, human-immunodeficiency virus (HIV), hepatitis B surface antigen (HbsAg), and syphilis were noted.

Detailed information regarding indication of CS, type, size of fetus, duration of labour, ultrasonography findings, duration of surgery, associated maternal conditions were attained. Any intraoperative complications like bladder injury were noted. Post-operative patients were assessed for wound infection, wound gaping, uterine tract infection (UTI), post-operative fever, spinal headache, respiratory infections, postpartum hemorrhage, thromboembolism, abdominal distension, and gastrointestinal (GI) obstruction.

Also, data on postoperative hospital stay, days of oral route, ambulation, duration of suture removal were recorded.

The data was analyzed using statistical package for the social sciences (SPSS) for windows version 21.0.

Statistical analysis

Student's t-test for independent samples was used for analysis of continuous variables. P value of <0.05 was considered as statistically significant. All the analyses were carried out using SPSS version 21.0.

RESULTS

A total of 100 patients were included in the emergency group and 100 in the elective group.

Highest number of cases were in the age group of 21-25, with more number in emergency cases. There is a mean value of 16.66 cases in each group. More number of elective cases were found as age increases (Table 1).

Table 1: Age wise distribution of elective and emergency cases.

Age group	Elective CS	Emergency CS	Total
18-20	12	17	29
21-25	32	36	68
26-30	20	17	37
31-35	21	21	42
36-40	10	8	18
40+	5	1	6
Mean±SD	16.66±8.22	16.66±10.90	
Total	100	100	200

As compared to booked cases (43.41%), un-booked cases (61.97%) had increased chance of emergency CS (Table 2).

Table 2: Booked and un-booked cases of elective and emergency cases.

Parameters	Elective CS	Emergency CS	Total
Booked	73	56	129
Un-booked	27	44	71
Total	100	100	200

Highest percentage of elective CS was in seen in age group of 18.5-24.9 body mass index (BMI) and highest percentage of emergency CS was seen in 24.9-29.9 BMI (Table 3).

Table 3: Distribution of BMI of elective and emergency cases.

BMI	Elective CS	Emergency CS	Total
<18.5	12	13	25
18.5-24.9	35	32	67
24.9-29.9	26	28	54
30-40	16	15	31
>40	11	12	23
Total	100	100	200

Highest CS were seen in primipara women (140). Emergency CS were higher in both multipara and grand-multipara (Table 4).

The t value is 0.08733. The p value is 0.465496. As we have taken the results with p<0.05 as statistically insignificant, here the result is not significant at p>0.05. Thus, risk factors in two groups do not differ significantly (Table 5).

Table 4: Parity wise distribution of elective and emergency cases.

Parity	Elective CS	Emergency CS	Total
Primipara	74	69	140
Multipara	17	21	38
Grand-multipara	9	10	19
Total	100	100	200

Table 5: Risk factors in elective and emergency cases.

Risk factors	Elective CS	Emergency CS	Total
No	44	42	86
Yes	56	58	114
k/c/o hypothyroidism	14	9	23
Rh-ve	7	5	12
Severe CPD	3	6	9
IUGR	1	1	2
PIH	9	7	16
Obstructed labour	0	14	14
Antepartum haemorrhage	0	3	3
Placenta previa	0	0	0
Twin gestation	4	2	6
Bronchial asthma	3	3	6
Elderly primi	5	1	6
Breech	9	3	12
Transverse lie	1	1	2
Left sided hemiparesis	0	0	0
Maternal fever	0	0	0
PROM	0	3	3

Highest number of emergency CS was done for obstructed labour, while most common indication for elective CS was previous CS (Table 6).

A graph showing indications of elective and emergency CS is given in Figure 1.

The t value is 0.26714. The p value is 0.396198. As we have taken the result with p value <0.05 as significant, the result is not significant at p<0.05. Thus there is no significance in intraoperative complications in elective and emergency CS cases (Table 7).

The t value is -2.67497. The p value is 0.007725. The result is significant at p<0.05, thus the overall incidence of complications is significantly higher in emergency CS group (Figure 2).

Table 6: Indications for elective and emergency caesarean cases.

Indications	Elective CS	Emergency CS	Total
Previous LSCS	30	9	39
Previous 2 LSCS	18	7	25
Previous 3 LSCS	12	3	15
Contracted pelvis	5	7	12
Foetal distress	0	9	9
Failed induction	0	13	13
IUGR	16	3	19
Obstructed labour	0	28	28
Abruptio placenta	0	5	5
Severe oligohydramnios	15	7	22
Cord presentation	1	3	4
Cord prolapse	0	1	1
PPROM	3	5	8
Total	100	100	200

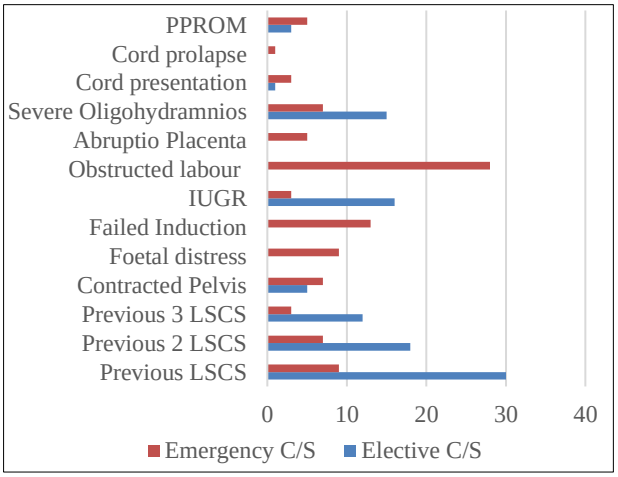

Figure 1: Indications of CS.

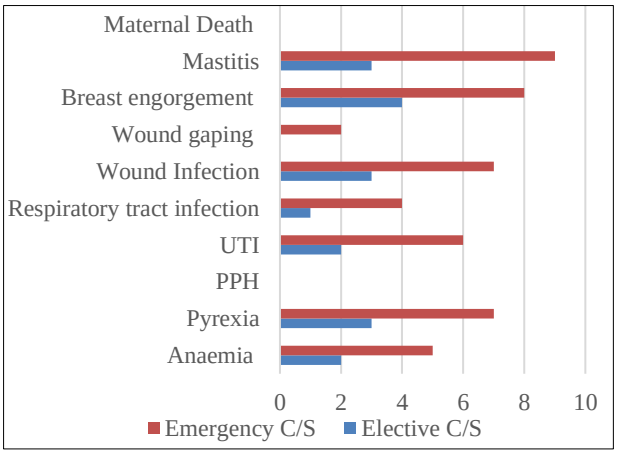

Figure 2: Post-operative complications.

Table 7: Intraoperative complications in elective versus emergency caesarean section.

Intra-operative complications	Elective CS	Emergency CS	Total
Uterine angle extended with bleeding	1	2	3
PPH	0	2	2
Dense adhesion	11	11	22
High insertion of bladder	8	6	14
Retroplacental clot	0	1	1
Injury to ascending branch of uterine artery	0	2	2
Scar dehiscence	0	0	0
Adherent bladder to LUS	5	4	9
Adhesion between rectus sheath and muscle	13	15	28
Incision extended vertically in LUS up to cervix	0	1	1
Total	38	44	82

Table 8: Post-operative comparison of elective versus emergency caesarean section.

Post-operative complications	Elective CS	Emergency CS	Total
Yes	18	48	66
No	82	52	134
Anaemia	2	5	7
Pyrexia	3	7	10
PPH	0	0	0
UTI	2	6	8
Respiratory tract infection	1	4	5
Wound infection	3	7	10
Wound gaping	0	2	2
Breast engorgement	4	8	12
Mastitis	3	9	12
Maternal death	0	0	0

DISCUSSION

CS is a commonly used lifesaving procedure for delivery of fetus which proves to be life-saving for both mother and baby. Despite being a major procedure, its incidence has been increasing day by day. The estimate of CS rates in India is 7.1% in the year 1998 and 16.7% in the year 2006.[8] Now the WHO recommends that caesarean section should be done only when it is needed.[2] Nowadays, the caesarean is opted for even trivial cases. Also, the issue of maternal and fetal morbidity after caesarean section is still prevalent.

Age at the time of caesarean section

A study conducted by Ecker and co-workers at women hospital, observed caesarean delivery rates increased with advancing maternal age.[3] In present study, CS is most prevalent in age group 21-26 while least prevalent in age group of 40+. Since there are less chances of conception with increasing age, thus less chances of deliveries, the incidence of CS decreased with age in our study. Emergency caesarean (36/68) was more common in age group 21-25 compared to elective CS (32/68). Same was observed in age group of 18-20. As the age of the woman increased, prevalence of elective CS increased compared to emergency CS.

Booked/un-booked cases

Un-booked cases had more emergency CS (44/71) compared to elective CS (27/71). It is probably due to poor antenatal care due to which there was development of complications.

Body mass index

In our study emergency CS (28/54) was seen highest in the BMI of 24.9-29.9 while elective CS (35/67) was seen highest in the BMI of 18.5-24.9. Overweight and obese patients had higher incidence of emergency CS. Obesity is a well-established risk factor for requiring a CS. Many associated factors such as maternal age, gestational diabetes, preeclampsia and macrosomia play important roles in this association as true confounding variables.[4] Overweight and obese pregnant women are also at increased risk for instrumental deliveries like forceps, vacuum extraction.[5]

Parity

Highest CS were seen in primipara women. Emergency CS were higher in both multipara and grand-multipara.

Common indications for CS

According to most textbooks previous caesarean section is the commonest indication for CS.[6] In the present study most, eleven patients with previous CS had elective LSCS and eight patients with previous CS has emergency LSCS. A study was done to see for the most frequent indication for the elective and emergency CS. It was noted that most frequent indication for the elective CS were previous CS, breech presentation, cephalopelvic disproportion and/or pregnancy after *in vitro* fertilization/embryo transfer (IVF/ET). While the most frequent indication for the emergency caesarean section was preeclampsia, vaginal

bleeding/ abruption placentae, breech presentation and secondary inertia of the uterus.[7] Another study was done by Khan and co-worker, in which 82.07% of cases, caesarean section was performed as an emergency procedure and in 17.92% of cases the operation was performed as an elective procedure. Elective repeat CS were usually performed for cephalopelvic disproportion.[8] The most common indication for emergency CS in our study was obstructed labor.

Risk factors in CS

Most common risk factor for CS in the study is known history of hypothyroidism. Most common risk factor for emergency CS is obstructed labour. Here as the value of $p>0.05$, the risk factors of elective and emergency groups do not differ significantly.

Intra-operative complication

82 out of 200 women developed intra-operative complications. Most common Intra -operative complication was adhesion between rectus sheath and muscle both in elective CS (13/28) and in emergency CS (15/28).

Post-operative complication

66 out of 200 women developed post-operative complications. Most common post-operative complications were breast engorgement, wound infection and mastitis, both in elective CS (4/12) and in emergency CS (8/12).

The limitations encountered during this study were minimal, such as language barriers and lost to follow up.

CONCLUSION

CS is a major surgical procedure and both elective and emergency cesarean have certain maternal and fetal complications, however the rates of complications in emergency CS are higher as compared to elective CS. Proper planning and policy making can help obstetricians to avoid certain complications.

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

REFERENCES

1. Sheet IF. NFHS-4 (National Family Health Survey-4). Int Inst Popul Stud. 2017;10:1350281.
2. World Health Organization. Appropriate technology for birth. Lancet. 1985;2:436-7.
3. Adashek JA, Peaceman AM, Lopez-Zeno JA, Minogue JP, Socol ML. Factors contributing to the increased cesarean birth rate in older parturient women. Am J Obstet Gynecol. 1993;169(4):936-40.
4. Franz MB, Husslein PW. Obstetrical management of the older gravida. Women's Heal. 2010;6(3):463-8.
5. Briand V, Dumont A, Abrahamowicz M, Traore M, Watier L, Fournier P. Individual and institutional determinants of caesarean section in referral hospitals in Senegal and Mali: A cross-sectional epidemiological survey. BMC Pregnancy Childbirth. 2012;12.
6. Guihard P, Blondel B. Trends in risk factors for caesarean sections in France between 1981 and 1995: lessons for reducing the rates in the future. BJOG. 2001;108(1):48-55.
7. Villar J, Carroli G, Zavaleta N, Donner A, Wojdyla D, Faundes A, et al. Maternal and neonatal individual risks and benefits associated with caesarean delivery: multicentre prospective study. BMJ. 2007;335:1025.
8. Renuka PA, Suguna V. Comparative study of maternal and foetal outcomes in patients undergoing elective or emergency Caesarean section. J Med Sci Clin Res. 2016;4(12):15059-69.
9. Gayathry D, Guthi VR, Bele S, Vivekannada A. A study of maternal morbidity associated with caesarean delivery in tertiary care hospital. Int J Community Med Public Heal. 2017;4(5):1542.
10. Ecker JL, Chen KT, Cohen AP, Riley LE, Lieberman ES. Increased risk of cesarean delivery with advancing maternal age: Indications and associated factors in nulliparous women. Am J Obstet Gynecol. 2001;185(4):883-7.
11. Castro LC, Avina RL. Maternal obesity and pregnancy outcomes [Internet]. Vol. 14, Current Opinion in Obstetrics and Gynecology. Curr Opin Obstet Gynecol. 2002;601-6.
12. Morken N-H, Klungsøyr K, Magnus P, Skjærven R. Pre-pregnant body mass index, gestational weight gain and the risk of operative delivery. Acta Obstet Gynecol Scand. 2013;92(7):809-15.
13. Frequency and indications of cesarean section in a tertiary care hospital. Available at: https://www.pjms.com.pk/issues/octdec109/article/article17.html. Accessed on 01 July 2021.
14. Onah HE, Ibeziako N, Umezulike AC, Effetie ER, Ogbuokiri CM. Decision - delivery interval and perinatal outcome in emergency caesarean sections. J Obstet Gynaecol (Lahore). 2005;25(4):342-6.
15. Khan FA, Khan M, Ali A, Chohan U. Estimation of blood loss during Caesarean section: an audit. J Pak Med Assoc. 2006;56(12):572-5.

Cite this article as: Joshi A, Modi M, Shah A, Singh K, Doshi H. Puerperal complications in elective versus emergency caesarean deliveries. Int J Reprod Contracept Obstet Gynecol 2022;11:39-43.