

# Maternal and Foetal Outcomes in Emergency Versus Elective Caesarean Section

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**Abstract:** Background: Caesarean section is preferred as an emergency or elective procedure with entirely different entities according to measures taken, facilities and skilled staff and the risk of surgical complications is greater with emergency compared with elective caesarean section. Methods: Present study is a prospective study, with 300 patients to evaluate maternal and foetal outcomes in elective versus emergency caesarean section at our tertiary center. Results: Incidence of caesarean section was 23.5%. Of these, 225 (75%) patients underwent emergency caesarean section while 75 (25%) patients had elective caesarean section. The present study found Intra operative complications in 36 (12%) patients. Out of these 29 (80.5%) were operated as emergency cases and 7 (19.5%) as elective caesareans. Among the complications postpartum haemorrhage was most common problem in 19 patients. Conclusion: The elective caesarean section shows less maternal and perinatal complications as compared to emergency caesarean sections. Increasing incidence of emergency caesarean section can be reduced by encouraging all pregnant females to visit antenatal clinics.

**Keywords:** Caesarean section, indication, Postoperative maternal complications, Foetal outcome, Maternal outcome

## 1. Introduction

Caesarean Section surgeries have long been performed as lifesaving procedures for the mother and foetus. An elective C-section is a planned procedure performed in advance, before the onset of labour, while an emergency C-section is an urgent surgery performed during labour or before delivery due to unforeseen complications and is one of the most performed surgical procedures all over the world. The possibility of an unplanned or emergency C-section can be a common source of concern. While elective C-sections are planned under controlled circumstances, emergency C-sections are performed urgently when labour is underway or before delivery due to a sudden immediate medical issue like foetal distress or a failure to progress in labour, maternal complications, such as severe bleeding or pre-eclampsia followed by life-threatening emergencies for either the mother or baby. Factors contributing to caesarean section was advanced maternal age, increase in the rate of conception through artificial reproductive techniques, reduced parity, patient's choice for elective caesarean section. This is also leading to patients presenting with increase in number of pregnancies with previous caesarean sections further increasing the rate of maternal and foetal complications, reduced parity, breech presentation, extensive use of electronic foetal monitoring associated with it.<sup>1</sup>

In a previous study by Darnal N et al<sup>2</sup> reported rate of caesarean section was 30.7% and emergency caesarean section was (74.4%) and elective caesarean section was (25.6%) and the most common indication for emergency Caesarean section was Foetal Distress and for elective

Caesarean section was previous caesarean with refusal to vaginal delivery after caesarean section.

In a very recent study Sunitha C et al<sup>3</sup> reported 446 were emergency and 515 were elective caesarean section with an operative complication of (11.8%) mainly in the emergency group. Most of these published articles estimated the predictors of the two c-section procedures (i.e., emergency and elective) separately based on the timing of the c-section decision which solely brings forward the role of various factors that may be associated differently with emergency and elective c-section deliveries. Hence the present prospective aimed to assess the maternal and foetal outcomes in elective versus emergency caesarean section at our tertiary care centre.

## 2. Method

It was tertiary care hospital based descriptive cross-sectional study carried out at Rajiv Gandhi Medical College and Chhatrapati Shivaji Maharaj Hospital from August to October 2025. There were 300 patients enrolled in the study 75 in elective and 225 in emergency caesareans selected randomly. Ethical approval was obtained from the Institutional Review Board and informed consent was taken from the patients and patients' guardians. Data were collected daily from the Operation Theater.

### 3. Results

#### Incidence of caesarean section

During the study period, 1278 patients were admitted in the maternity ward and 300 patients underwent caesarean section. The incidence of caesarean section was 23.5%. Of these, 225 (75%) patients underwent emergency caesarean section while 75 (25%) patients had elective caesarean section.

**Table 1:** Incidence of caesarean section

Incidence of caesarean section	N	%
Emergency	225	75
Elective	75	25
Total	300	100

#### Age group

30 (10%) patients were in the age group of 18-20 years while 234 (78%) and 36 (12%) patients were in the age group of 21-30 years and 31-40 years respectively.

**Table 2:** According to Age group

Age (years)	Emergency		Elective		Total	
	N	%	N	%	N	%
18-20	18	8	12	16	30	10
21-30	187	83.1	47	62.7	234	78
31-40	20	8.9	16	21.3	36	12
Total	225	100	75	100	300	100

#### Incidence of operation under spinal anaesthesia

252 (84%) patients were operated under spinal anaesthesia; out of them 181 (71.8%) patients underwent emergency caesarean and 71 (28.2%) patients had elective caesarean. The commonest group delivered by caesarean section was Para 1 and 2 (255 patients; 85%).

#### Commonest indication for caesarean section

The commonest indication for caesarean section was repeat caesarean (n=77; 25.7%). Out of them 49 (63.6%) were operated under emergency circumstances and 28 (36.4%) were elective caesarean. Foetal distress was found to be cause in 53 (17.7%) patients, non-progress of labour in 44 (14.7%), malpresentation in 34 (11.3%), Preeclampsia in 26 (8.7%), antepartum haemorrhage in 20 (6.7%), Cephalopelvic disproportion in 17 (5.7%), Eclampsia in 13 (5.3%) and obstructed labour in 11 (4.3%) patients.

**Table 3:** Indication for caesarean section

Indications	Emergency		Elective		Total	
	N	%	N	%	N	%
Repeat caesarean	49	63.6	28	36.4	77	25.7
Foetal distress	53	100	0	-	53	17.7
Non-progress of labour	30	68.8	14	31.2	44	14.7
Malpresentation	22	64.7	12	35.3	34	11.3
Pre-eclampsia	16	61.5	10	38.5	26	8.7
Antepartum haemorrhage	14	70	6	30	20	6.7
Cephalopelvic disproportion	12	76.5	5	23.5	17	5.7
Eclampsia	16	100	0	-	16	5.3
Obstructed labour	13	100	0	-	13	4.3

Pfannenstiell incision was given in 212 (70.7%) patients, out of these 160 (75.5%) patients were in emergency group and 52 (24.5%) patients were in elective group. 65 (73.9%)

patients in emergency group and 23 (26.1%) patients in elective group received midline incision.

The present study showed Intra operative complications were seen in 36 (12%) patients. Out of these 29 (80.5%) were operated as emergency cases and 7 (19.5%) were operated as elective caesarean. Among the complications postpartum haemorrhage was most common problem in 19 patients.

**Table 4:** Intra operative maternal complications

Intra operative maternal complications	Emergency	Elective	Total
Post-partum haemorrhage	15	4	19
Extension of uterine incision	12	2	14
Bladder injury	1	1	2
Caesarean hysterectomy	1	0	1
Total	29	7	36

#### Postoperative maternal complications

Wound infection was most common postoperative complication that was seen in 41 (13.7%) patients. Out of these 38 (92.7%) cases were in emergency group. Other complications were fever (7.3%), urinary tract infection 6%, spinal headache (1.3%) and DIC (0.7%). There was 1 maternal death.

**Table 5:** Postoperative maternal complications

Postoperative maternal complications	Emergency	Elective	Total
Wound infection	38	3	41
Fever	15	7	22
Urinary tract infection	14	4	18
Spinal headache	3	1	4
DIC	1	1	2
Maternal death	1	0	1
Total	72	16	88

#### Foetal complications

The most common foetal complication was respiratory distress that was seen in 17 (5.7%) patients. Other foetal complications were meconium aspiration 3 (1%) and sepsis 1 (0.3%). There were 9 (3%) perinatal deaths. Out of 300 babies, 292 (97.3%) were born alive, of these 218 (74.6%) were of emergency group and 74 (25.4%) were in elective group. 1 baby in emergency group was still birth and 2 dead babies were delivered by emergency caesarean section. There were 5 early neonatal deaths.

**Table 6:** Foetal Complication

Foetal complication	Emergency	Elective	Total
Respiratory distress	14	3	17
Meconium aspiration	2	1	3
Sepsis	1	0	1
Perinatal death	8	1	9
Foetal outcome	Emergency	Elective	Total
Born alive	218	74	292
Fresh stillbirth	1	0	1
Macerated dead baby	2	0	2
Early neonatal death	4	1	5

## 4. Discussion

### Incidence of caesarean section

During the study period, 1278 patients were admitted in the maternity ward and 300 patients underwent caesarean section. There is an increasing trend around the world for caesarean section and the present study showed incidence of caesarean section was 23.5%. Of these, 225 (75%) patients underwent emergency caesarean section while 75 (25%) patients had elective caesarean section. 30 (10%) patients were in the age group of 18-20 years while majority of the patients 234 (78%) were in the age group of 21-30 years respectively followed by 36 (12%) patients in the age group of 31-40 years respectively at our tertiary care centre due to complicated cases and lower economic status in most of the cases. Agrawal S et al<sup>4</sup> observed incidence of caesarean section 24.04% with 75.5% emergency caesarean section and 24.5% were elective caesarean section. Sunitha C et al<sup>3</sup> comparative study reported incidence of caesarean section comes out to be 37.34% with 446(46.4%) emergency and 515 (53.5%) elective surgery. MacCarthy FP et al<sup>5</sup> and Sunitha C et al<sup>3</sup> study reported caesarean section rate of 28.3% and 37.34% which was higher compared to the present study and Agrawal S et al<sup>4</sup>.

### Incidence of operation under spinal anaesthesia

The present study observed 252 (84%) patients were operated under spinal anaesthesia, out of them 181 (71.8%) patients underwent emergency caesarean and 71 (28.2%) patients had elective caesarean. Sunitha C et al<sup>3</sup> comparative study showed 961 caesarean cases, spinal anaesthesia was given in 912(95%) patients and General anaesthesia in 49(5.0%) patients and total patients receiving general anaesthesia of which 46 underwent emergency caesarean and 3 had elective caesarean section. Agrawal S et al<sup>4</sup> reported 83% patients were operated under spinal anaesthesia, out of them 1272 (71.10%) underwent emergency caesarean and 517 (28.89%) had elective caesarean. The commonest group delivered by caesarean section was Para 1 and 2 (255 patients; 85%). Agrawal S et al<sup>4</sup> showed commonest group were in caesarean section was para 1 and 2 (80%).

### Commonest indication for caesarean section

The present study showed commonest indication for caesarean section was repeat caesarean (n=77; 25.7%). Out of them 49 (63.6%) were operated under emergency circumstances and 28 (36.4%) were elective caesarean. Foetal distress was found to be cause in 53 (17.7%) patients, non-progress of labour in 44 (14.7%), malpresentation in 34 (11.3%), Preeclampsia in 26 (8.7%), antepartum haemorrhage in 20 (6.7%), Cephalopelvic disproportion in 17 (5.7%), Eclampsia in 13 (5.3%) and obstructed labour in 11 (4.3%) patients. Sunitha C et al<sup>3</sup> 39.0%, Agrawal S et al<sup>4</sup> 25.88% and Khowaja BM et al<sup>6</sup> 81% study found most common indication for caesarean section was repeat lower segment caesarean section (LSCS) of which 375(39.0%) were post LSCS pregnancies. Darnal N et al<sup>2</sup> descriptive cross-sectional study reported most common indication for emergency Caesarean section was foetal Distress and for elective Caesarean section was previous caesarean with refused vaginal delivery after caesarean section. Khowaja BM et al<sup>6</sup> retrospective study observed previous CS (81% vs 32.6%) and previous live births (87.9% vs 45.1%) were more common in the (EICS) elective caesarean section group as

compared to (EmCS) Emergency caesarean section. Agrawal S et al<sup>4</sup> study reported 358 (64.15%) operated under emergency circumstances and 200 (35.18%) were elective caesarean. Foetal distress was found to be cause in 388 (17.9%) patients, non-progress of labour in 324(15.20%), malpresentation in 247 (11.45%), antepartum haemorrhage in 142 (6.58%) and obstructed labour in 84 (3.89%) patients. Sunitha C et al<sup>3</sup> showed foetal distress in 83 cases (8.63%) non-progress of labour 76 cases (7.90%), malpresentations in 94 cases (9.78%), placenta praevia and antepartum haemorrhage in 53 cases (5.51%), CPD or contracted pelvis in 87(9.05%), severe FGR in 91 cases (9.46%), severe pre-eclampsia in 85 cases (8.84%) and twins with discordance in 17 cases (1.76%) were other Indications for caesarean section. Benzouina S et al<sup>7</sup> comparative cross-sectional prospective study observed elective versus emergency caesarean was statistically associated with gestational diabetes mellitus and gestational hypertension. Of mothers who received adequate prenatal care (67.18%), 67.59% underwent emergency caesarean section versus 92.75% among mothers who received insufficient prenatal care and there was a statistically significant relationship between emergency caesarean section versus elective caesarean regarding insufficient prenatal care. Referred mothers accounted for 15.70% of emergency caesarean sections versus 2.11% of elective caesarean sections and the difference was statistically significant

Agrawal S et al<sup>4</sup> observed Pfannenstiel incision in 1510 (70%) patient, out of these 1132 (75%) patient were in emergency group and 378 (25%) patients were in elective group. 482 cases belonging to emergency group and 164 cases belonging to elective group received midline incision mainly given due to presence of previous midline scar. The present study observed Pfannenstiel incision was given in 212 (70.7%) patients, out of these 160 (75.5%) patients were in emergency group and 52 (24.5%) patients were in elective group. 65 (73.9%) patients in emergency group and 23 (26.1%) patients in elective group received midline incision.

The present study showed Intra operative complications were seen in 36 (12%) patients. Out of these 29 (80.5%) were operated as emergency cases and 7 (19.5%) were operated as elective caesarean. Among the complications postpartum haemorrhage was most common problem in 19 patients. Similar to the present study Agrawal S et al<sup>4</sup> observed Intra operative complications were seen 11.08% of which 82% were operated as emergency cases and 17.99% as elective caesarean and the most common complications was postpartum haemorrhage in 135 out of 239 cases with 108 cases in emergency group.

### Postoperative maternal complications

Agrawal S et al<sup>4</sup> study found most common postoperative complication was wound infection in 298 cases of which 281 cases in emergency group followed by urinary tract infection, spinal headache. Caesarean hysterectomy was performed in 5 patients due to massive hemorrhage and uterine atony with 3 maternal deaths. Darnal N et al<sup>2</sup> descriptive cross-sectional study found post-operative maternal outcome in terms was wound infection, (post-partum hemorrhage, urinary tract infection need for blood transfusion, fever and need for maternal intensive care unit admission which was

significantly higher in emergency Caesarean section than in elective Caesarean section.

The present study is similar to the study done by Agrawal S et al<sup>4</sup> which observed wound infection was most common postoperative complication that was seen in 41 (13.7%) patients. Out of these 38 (92.7%) cases were in emergency group. Other complications were fever (7.3%), urinary tract infection 6%), spinal headache (1.3%) and DIC (0.7%). There was 1 maternal death.

### Foetal complications

The most common foetal complication was respiratory distress that was seen in 17 (5.7%) patients. Other foetal complications were meconium aspiration 3 (1%) and sepsis 1 (0.3%). There were 9 (3%) perinatal deaths. Out of 300 babies, 292 (97.3%) were born alive, of these 218 (74.6%) were of emergency group and 74 (25.4%) were in elective group. 1 baby in emergency group was still birth and 2 dead babies were delivered by emergency caesarean section. There were 5 early neonatal deaths. Agrawal S et al<sup>4</sup> study showed conditions associated with poor foetal outcome was prolonged obstructed labour, hypertensive disorders of pregnancy and cephalopelvic disproportion and observed 97.40% were born alive, of these 73.05% were of emergency group and 24.44% were in elective group. 2 babies in emergency group and 1 baby in elective group was still birth with 51 dead babies by emergency caesarean section. Perinatal mortality was 4.50% in emergency group and 0.56% in elective group. Darnal N et al<sup>2</sup> descriptive cross-sectional study reported foetal outcome as birth asphyxia, meconium-stained liquor and need for Neonatal ICU admission were significantly higher in emergency Caesarean section than in elective Caesarean section.

Benzouina S et al<sup>7</sup> comparative cross-sectional prospective study reported 99.15% were born alive. Perinatal mortality was 10.2 per 1000 births, with 5 fresh stillbirths and 1 case of early neonatal mortality due to birth asphyxia and all in emergency caesarean group.

## 5. Conclusions

High incidence of emergency caesarean section emerges due to insufficient prenatal care and poor referral system. Factors contributing to the indications for emergency caesarean section are foetal distress, cephalopelvic disproportion, failure to induce labour, non-progress of labour, and previous caesarean delivery may decrease foetal morbidity and mortality which can be avoided.

Early recognition and referral of mothers to tertiary care centers undergoing caesarean section may reduce the incidence of emergency caesarean sections and decreases foetal complications.

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