

## **A Study on Maternal and Fetal Outcome in Emergency Primary Cesarean Section**

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### **I. Introduction**

On The basis of history and practical value , cesarean section continues to be one of the most important surgeries performed in the speciality obstetrics and Gynaecology in the interest of both mother and baby. Casarean section is defined as the delivery as the delivery of the fetus after the period of viability through an incision on an intact uterus .It excludes the removal of fetus in cases of rupture uterus and abdominal pregnancy. Life saving value of cesarean section to both mother and fetus has increased over the decades. Nowadays , cesarean section is done for multivarious indications viz., fetal distress, cephalopelvic disproportion and others in others in order to reduce the perinatal mortality and morbidity and maternal morbidity. Improvement in surgical and anaesthetic techniques, development of safe blood transfusion and discovery of effective antibiotics have made cesarean section , a safe operation today. The art of surgery may be necessary to perform a difficult cesarean section, but to decide whether it is necessary and to choose the ideal moment to deliver the child is surely the art of obstetrics.

### **II. Aim Of The Study**

1. To study the incidence and indications of emergency primary cesarean section.
2. To study the maternal morbidity and mortality following cesarean section.
3. To study the perinatal morbidity and mortality following cesarean section.

### **III. Materials And Methods**

A prospective study of incidence, indications, maternal and fetal outcome of one thousand cases of emergency primary cesarean section during the period of 2001 – 2002. Out of 4000 emergency primary cesarean section done during the two years 2001 and 2002, every 4<sup>th</sup> case had been studied contributing to one thousand cases of emergency primary cesarean section. All cases of repeat and elective cesarean delivery were excluded from the study. All the patients were followed till discharge.

### **IV. Results**

In our hospital out of 12793 deliveries in the year 2001, 3300 patients underwent cesarean section contributing to the incidence of 25.8% of which 1299 had repeat cesarean section and 2001 had primary cesarean section. Out of 12562 deliveries in 2002, 3060 had cesarean section contributing to the incidence of 24.4%. Of which 1300 had repeat cesarean section and 2360 had primary cesarean section. Among 6360 cesarean sections done during the two year period (2001-2002) the total number of primary cesarean sections done were 4361 contributing to the incidence of 68.6%.

**Incidence Of Primary Cesarean Section In Govt.Rsrm Hospital**

S.No	Vital Statistics	2001	2002	Total
1.	Total no. of deliveries	12793	12562	25355
2.	Total no. of LSCS	3300	3060	6360
3.	Incidence	25.8%	24.4%	25.4%
4.	Total no. of primary cesarean section	2001	2360	4361
5.	Total no. of repeat cesarean section	1299	1300	2599
6.	Incidence of primary cesarean section	60.6%	77.1%	68.6%

### **Incidence of Emergency Primary Cesarean Section**

Sl.No	Timing of cesarean Section	No.	%
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1.	Elective	361	8.3
2.	Emergency	4000	91.7
	<b>Total</b>	<b>4361</b>	<b>100.0</b>

Among the total number of primary cesarean section of 4361, 8.3% (361) had elective procedure and 91.7% (4000) had emergency procedure. Out of 4000 emergency primary cesarean sections done during the two years 2001 and 2002, every 4<sup>th</sup> case had been studied contributing to one thousand cases of emergency primary cesarean section.

#### Age Distribution (1000 Cases)

S.No	Age Group (Yrs)	Govt. RSRM Hospital	
		No.	%
1.	<20	261	26.1
2.	21 – 25	616	61.6
3.	26 – 30	118	11.8
4.	>30	5	0.5

Among 1000 women who had emergency primary cesarean section, 26.1% were in < 20 years. 61.6% were in 21-25 years, 11.8% in 26-30 years and 0.5% were in above 30 years age group.

#### Geographical Distribution

S.No	Location	No.	%
1.	Rural	210	21
2.	Urban	790	79

Majority (79%) were from urban area.

#### Socio Economic Status

S.No	Socio Economic Class	Govt. RSRM Hospital	
		N	%
1.	High (I, II, III)	45	4.5%
2.	Low (IV, V)	95	95.5%

95.5% belong to low socio economic status as our hospital is an urban slum referral institution.

#### Incidence Of Parity

S.No	Parity	Govt. RSRM Hospital	
		N	%
1.	Primi	746	74.6
2.	Multi	254	25.4

The incidence in primipara is twice that of multipara in our study.

#### Risk Group Out Of 1000 Cases

S.No	Risk Group	No.	%
1.	Low	812	81.2
2.	High	153	15.3

In this study, out of 1000 patients, majority (81.2%) were in the low risk group.

#### Antenatal Registration

S.No	AN Registration	No.	%
1.	Booked	562	56.2
2.	Un Booked	338	33.8

Almost two – thirds of mothers were booked out of 1000 patients.

#### Indications For Emergency Primary Cesarean Section

S.No	Indications	Total (1000 Cases)	
		No.	%
1.	Cephalopelvic Disproportion	291	29.1
2.	Fetal distress	281	28.1
3.	Failed induction	243	24.3
4.	Malpresentation	63	6.3
5.	Others	266	26.6

Major indication for which emergency primary cesarean section had been done was CPD (29.1%) and next was fetal distress (28.1%).

**Indications – Comparison With Various Studies**

S.No	Indications	Jipmer, Pandy 1988 (n=250)	IOG, Chennai 1992 (n=1000)	Vanivilas, Bangalore 1998 (n=1000)	SRMC, Chennai 2000 (n=704)	RSRM 2001-02 (n=1000)
1.	CPD	34.2	29.1	30.1	28.5	28.1
2.	Fetal Distress	30.4	33.5	28.3	30.3	29.1
3.	Malpresentation	14.5	12.6	14.7	8.8	6.3
4.	Others	24.6	24.7	26.1	26.1	26.6

Various indications for which emergency primary cesarean section done in various institutions compared with our study as shown in the table.

**Type Of Anaesthesia**

S.No	Type of Anaesthesia	No.	%
1.	Spinal	933	93.3
2.	General	59	5.9
3.	Epidural	6	0.6
4.	Local	-	-

In 93% of patients emergency cesarean was done under spinal anaesthesia.

**Maternal Mortality**

Cause of Death	No.	%
Pulmonary Embolism	1	0.1

Out of 1000 cases, we had only one maternal death due to pulmonary embolism.

**V. Maternal Morbidity**

**Intra-Operative Complications**

S.No	Complications	No.	%
I	<b>Haemorrhage</b>	16	1.6
a.	Uterine atony	15	1.5
b.	Extension of uterine incision and broad ligament hematoma	1	0.1
c.	Adherent placenta	-	-
II	<b>Injury to viscera</b>	1	0.1
a.	Bladder	1	0.1
b.	Ureter	-	-
c.	Bowel	-	-
III	<b>Anaesthetic complications</b>	1	0.1

The commonest cause for haemorrhage was atonic PPH (1.6%) and only one patient had bladder injury.

**Post – Operative Complications (Out Of 1000 Cases)**

S.No	Complications	No.	%
1	Wound Sepsis	49	4.9
2	Wound gaping	6	0.6
3	Burst abdomen	1	0.1
4	Respiratory tract infections	16	1.6
5	Urinary tract infections	11	1.1
6	Paralytic ileus	1	0.1
7	Thromboembolic manifestation	1	0.1

Wound infection was the commonest complication encountered. Out of 122, gaping of the wound was seen in 6 cases and 1 had burst abdomen. Paralytic ileus occurred in 1 patient. She was handled outside and referred from Ponneri GH with MRO since 18 hours. 1 had thromboembolic manifestation and died.

**Perinatal Morbidity**

S.No	Morbidity	No.	%
1.	Sepsis	64	6.4
2.	Birth asphyxia	56	5.6

3.	Respiratory distress syndrome (RDS)	19	1.9
4.	Icterus	5	0.5

Sepsis was the commonest cause. Most of the mothers had prolonged labour with PROM for more than 24 hours and were referred from rural areas. 144 babies were admitted in neonatology unit.

**Perinatal Mortality – Cause Of Death**

S.No	Cause of Death	No.	%
1.	Sepsis	4	36.4
2.	Birth asphyxia	4	36.4
3.	Respiratory distress syndrome (RDS)	2	18.2
4.	Icterus	1	9.0

Out of 11 perinatal deaths, sepsis and birth asphyxia were the leading cause contributing to 36.4%

**Perinatal mortality in govt. Rsrn hospital for the year 2001-2002**

S.No.	Vital Statistics	2001	2002
1.	Total no. of deliveries	12793	12562
2.	Total no. of Perinatal deaths	613	54.6
3.	Perinatal mortality rate (%)	4.8	4.4
4.	Total no.of emergency primary cesarean section	2001	2360
5.	Total no. of Perinatal death in emergency primary cesarean section	5	6
6.	Perinatal mortality rate in emergency primary cesarean section	0.5%	0.6%

In our hospital out of 25,355 deliveries (from January 2001 to December 2002) our general perinatal mortality rate is 4.6% (ie., 1159 deaths out of 25,355 deliveries). In my study out of 1000 emergency primary cesarean sections done there were 11 deaths contributing to perinatal mortality rate of 1.1%.

## VI. Discussion

A Prospective study on incidence, indications, maternal and fetal morbidity and mortality of a 1000 cases of primary emergency cesarean section during the 2 years period from January 2001 to December 2002 at Government RSRM lying-in hospital, Stanley Medical College, Chennai. Out of 4000 primary cesarean sections done as emergency procedure during the study period, every fourth had been studies contributing to one thousand cases.

### Incidence

Out of 25,355 deliveries during the two years (2001 - 2002) 6360 LSCS were done resulting in incidence of 25.1% whereas in JIPMER, Pondicherry, 1988, Raksha Arora et al., study showed their incidence of cesarean section as 27.6% and Sri Ramachandra Medical College and Research Institute (SRMC) and Deemed University, a private institution, Chennai showed an incidence of 31.4% both being quiet high. Incidence of LSCS is less (25.1%) at our hospital when compared to other centres. Incidence of primary cesarean section among total cesarean in our study is 68.6%.

### Indications

Regarding indications for which one thousand primary emergency cesarean section had been done, cephalopelvic disproportion (29.1%) was the most common indication followed by fetal distress (28.1%), malpresentations (6.3%) and others (26.6%). In my study, out of 1000, primary emergency cesarean sections, 29.1% had CPD, in JIPMER, Pondicherry, 39.2%, 29.1% in IOG, Chennai, 26.7% in Vanivilas Hospital, Bangalore and 28.5% in SRMC Chennai. Fetal distress was 28.1% in my study whereas it was 30.4% in JIPMER, 33.5% in IOG, 38.3% in Vanivilas Hospital and 30.0% in SRMC. These results are comparable with our study. Malpresentation mainly breech was 14.5% in JIPMER, 12.6% in IOG, 14.7% in Vanivilas Hospital, 8.8% in SRMC and 6.3% in RSRM Hospital. In our hospital, we give trial for vaginal delivery in breech presentation. Others (26.6%) comprising of failed induction with prolonged pregnancy (13.2%) or PROM (11.1%), Eclampsia / severe PIH (0.7%) multiple pregnancy (0.7%) gestational diabetes mellitus (0.1%), hypothyroidism (0.1%) etc., which also is comparable with other studies such as JIPMER (24.5%), IOG (24.7%), Vanivilas Hospital (26.1%), SRMC (24.6%) (Table - XVI).

### Maternal Morbidity

The most common intraoperative complication in our study was haemorrhage in 16 cases (1.6%) out of 1000 emergency LSCS, 16 patients had atonic PPH and one had extension of uterine incision and broad

ligament haematoma, in whom bilateral internal iliac artery ligation done. In JIPMER, Pondicherry, Anuradh Kumar et al., study done in 250 patients in 1988, 5 had atonic PPH and 6 had extension of uterine incision. In Yanivilas Hospital, Bangalore Medical College, a Government Institution at Bangalore, study done in 1000 patients in 1998, 6 had atonic PPH and 28 had extension of uterine incision and broad ligament hematoma. In SRMC, a private medical college in Chennai, study done in 704 cases in 2000, 18 had atonic PPH and 15 had extension of uterine incision and broad ligament hematoma.

In my study one patient had bladder injury which is comparable with SRMC, Chennai and Vanivilas Hospital, Bangalore with bladder injury in two patients and in JIPMER, Pondicherry one patient had bladder injury. Anaesthetic complication occurred in 3 patients in Vanivilas Hospital, Bangalore, in one patient in JIPMER, Pondicherry, SRMC, Chennai and in our hospital study. The commonest post-operative morbidity, in our study was wound infection seen in 122 patients, out of 1000 (12.2%). Out of 122, 6 had wound gaping for which secondary resuturing was done and 1 had burst abdomen for which mass abdominal closure was done. In JIPMER, Pondicherry out of 250 patients studied, 10 had wound infection (4%) of which 3 had wound gaping and 1 had burst abdomen. In Yanivilas Hospital, Bangalore out of 1000 patients, 42 had wound infection (4.2%) of which 6 had wound gaping. In SRMC, Chennai, wound infection occurred in 47 patients (6.7%) out of 704 cases of which 14 had wound gaping and 1 had burst abdomen. These results are comparable with our study results. Urinary tract infection was found in 20 patients out of 250 (9.5%) in JIPMER, Pondicherry, in 94 patients out of 1000 (9.4%) in Vanivilas Hospital, Bangalore, in 27 patients out of 704 (3.8%) in SRMC, Chennai. In our study 1000 patients (1.1%) which is less compared to other centres.

Respiratory tract infection was 0.4% in JIPMER, Pondicherry out of 250 patients, 4.5% in Vanivilas Hospital out of 1000 patients 6.5% in SRMC, Chennai out of 704 cases and in our hospital study it was 1.6% out of 1000 patients. Endometritis occurred in 7%, 2.1%, 0.2% and 0.4% in JIPMER, Vanivilas Hospital, SRMC and RSRM respectively. Thrombophlebitis occurred in 1.4%, 0.2%, 4.5% and 0.6% in JIPMER, Vanivilas Hospital, SRMC and our study respectively. And these post-operative complications were less in our study when compared to other centres. Paralytic ileus and puerperal psychosis occurred in only one patient out of 1000 got operated in our study which is comparable to other centres.

Skilled operative techniques, advanced anesthetic facilities meticulous aseptic precautions, efficient postoperative care with good antibiotics, round the clock blood transfusion facilities, health education on hygiene and nutrition to the patient especially in the post-operative ward all contributed to comparably less maternal morbidity during and after surgery in patients who underwent emergency cesarean section in our institution.

### **Maternal Mortality**

In our centre, there was only one maternal death due to pulmonary embolism out of 1000 cases contributing to maternal mortality rate of 0.1% In United Kingdom, as per National sentinel cesarean section audit report, RCOG clinical effectiveness support unit, 2001, thromboembolism was the major cause of maternal death. In USA, as per Creighton et al., pulmonary embolism was the major cause of maternal mortality following cesarean section. In Korle Bee Hospital at Ghana a developing country like India, maternal mortality rate due to cesarean section is 1%. In Vanivilas Hospital, a Government teaching institution attached to Bangalore Medical College, Bangalore there was a maternal death due to severe anemia and congestive cardiac failure, out of 1000 cases cesarean section cases. (0.1%). In SRMC, Chennai, private medical college hospital there were four maternal deaths out of 704 cases of cesarean section cases, one due to septicemia, one due to pulmonary embolism and two due to disseminated intravascular coagulation (5.7%). In JIPMER at Pondicherry, there was no maternal death out of 250 cases of cesarean cases. In our study, had one maternal death out of 1000 cases due to pulmonary embolism (0.1%).

### **Perinatal Morbidity And Mortality**

Cesarean section avoids risks of labour and vaginal delivery including intrapartum deaths, hypoxia and birth trauma. Successful labour and vaginal delivery confer advantages over babies delivered by cesarean section in forms of respiratory function. In Government RSRM lying-in hospital, Chennai out of 1000 babies born by emergency primary cesarean section, 64 had sepsis, 56 had birth asphyxia, 10 had respiratory distress and 5 had icterus. In SRMC, a private medical and research institute at Chennai, 38 out of 704 had sepsis (5.4%) whereas in our hospital 64 out of 1000 had sepsis (6.4%) of which four of them died. In SRMC, Chennai, out of 704, 34 had birth asphyxia (4.8%). In our hospital, 56 had birth asphyxia (5.6%) and four died. We get more cases of delayed referrals from the nearby rural and slum areas. Respiratory distress syndrome (RDS) occurred in 9 out of 704 (1.3%) at SRMC, Chennai, whereas at RSRM Hospital, Chennai, 10 had RDS out of 1000 (1%) of which 2 babies died. Injury to soft parts occurred in 3 babies out of 704 (0.4%) at SRMC, Chennai, but in our

study out of 1000 cases we did not have any. Smith JF et al., had found in their study fetal laceration injury at cesarean delivery as 6% in breech presentation and 1.4% in vertex presentation (Obstetrics and Gynecology, 1997, P.No. 344-346).

In our centre, our overall perinatal mortality rate is 4.6% and in emergency primary cesarean section, the perinatal mortality is 1.1%.

### **Summary**

A prospective study on incidence, indications, maternal and fetal outcome in 1000 mothers who had primary emergency cesarean section was conducted at Govt. RSRM lying-in hospital attached to Govt. Stanley Medical College, Chennai during the period of 2001-2002.

1. The total number of deliveries during the study period was 25,355. Out of which 6361 patients had LSCS contributing to the incidence of 25.1%
2. Out of 6361 LSCS, the total number of primary cesarean sections done were 4361 contributing to the incidence of 68.6%.
3. Among the 4361 primary cesarean sections 361 had elective procedure (8.3%) and 4000 had emergency procedure (91.7%).
4. Out of 1000 mothers who had emergency primary cesarean section, majority (87.7%) were in young age of less than 25 years.
5. 80% of mothers were from urban area in our study out of 1000 patients.
6. Majority (95.5%) belong to low socio economic status.
7. The incidence of emergency primary cesarean section was thrice that of multipara.
8. In our study, out of 1000 patients 81% were in the low risk group.
9. Almost two-thirds of mothers were booked.
10. The most common indication for which primary emergency cesarean section had been done was cephalopelvic disproportion (29.1%) and the second most common indication was fetal distress (28.1%).
11. Various indications such as CAD, fetal distress, malpresentation etc., for which primary cesarean section was done in various private and government institutions (viz, Sri Ramachandra Medical College and Research Institute and Deemed University, Chennai, Vanivilas Maternity Hospital, Bangalore Medical College, Bangalore, JIPMER, Pondicherry) were comparable with our study.
12. The commonest intra – operative complication was due to atonic PPH (1.6%) and one patient had bladder injury.
13. Wound infection was the commonest post-operative complication encountered (12.2%). Out of 122, wound gaping was seen in 6 and 1 had burst abdomen.
14. Out of 1000 cases, there was only one maternal death due to pulmonary embolism contributory to maternal mortality rate of 0.1%, Our result was comparable with other studies.
15. Sepsis was the commonest cause of perinatal morbidity.
16. Sepsis and RDS were the commonest cause of perinatal mortality.
17. The overall perinatal mortality rate in our centre was 4.6%. in our study comprising of 1000 cases of primary cesarean section done as emergency procedure perinatal mortality rate was 1.1%.

The only remedy to reduce the morbidity is by reducing the cesarean section rates.

### **VII. Conclusion**

Safe vaginal delivery is no doubt the best for every woman. However there is a rising trend in cesarean deliveries globally. The advancement of modern technologies such as continuous electronic fetal monitoring, external cardiotocodynamometry, ultrasound and fetal Doppler as well as effective clinical acumen of the obstetrician has helped us to identify the high risk cases. Improvement in surgical and anaesthetic techniques, discovery of efficient antibiotics and round the clock blood transfusion facilities have made cesarean section a safe operation today. To sum up, with sound scientific knowledge and good clinical acumen keeping in mind the best outcome for mother and baby, individualization of the patient care while deciding for LSCS especially emergency primary cesarean section plays a vital role in reducing the incidence and maternal and perinatal morbidity as well as mortality.

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