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Original Research Article

Is emergency cesarean section more risky than elective cesarean section in women with previous cesarean section?

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ABSTRACT

Background: Cesarean section is one of the most performed surgical procedures all over the world, but unfortunately cesarean sections are associated with a great deal of maternal morbidity and mortality. In the past the rate of cesarean section has increased for many avoidable and unavoidable indications both in developed and developing countries. The objective of this study was to compare maternal morbidity and mortality in elective repeat cesarean section (El-RCS) and emergency repeat cesarean section Em-RCS.

Methods: Prospective data was recorded on management practices, associated complications and morbidity and mortality on 15664 consecutive cases of previous cesarean section reporting at 30 medical colleges/teaching hospitals for delivery.

Results: Of the 15664 women with a previous cesarean section, 5399 (34.5%) women underwent elective repeat cesarean section, 7752 (49.5%) women who underwent emergency repeat cesarean section and 2513 (16.0%) had successful trial of labor (S-TOL). There was failed trial of labor (F-TOL) in 1522 cases and requiring an emergency cesarean section for delivery of baby. Therefore, total no. of 7752 women had an emergency cesarean section. The overall maternal morbidity was 22.5%, 20.7% in Em-RCS and El-RCS respectively. Blood loss was more than 1000ml in 7.2% of Em-RCS where as in El-RCS it was 8.8%, blood transfusion was 7.5% in Em-RCS where as it was 6.5% in El-RCS, dehiscence of scar in Em-RCS was 4.7% as compared to 2.2% in El-RCS, uterine rupture was 1.2% in Em-RCS as compared to 0.7% in El-RCS found statistically significant. Post-operative complication was 5.9% cases in Em-RCS where as in El-RCS was 5.8% (p=0.79 non-significant). Maternal mortality was reported in 12 (0.2%) cases of Em-RCS as compared to 5 (0.1%) cases in El-RCS (p=0.37) which was not statistically significant.

Conclusions: Maternal morbidity was found more in emergency repeat cesarean section than in elective repeat cesarean section. Complications and referral of women who are likely to undergo cesarean section should be diagnosed at an early stage so that the maternal morbidity and mortality can be prevented.

Keywords: Emergency repeat cesarean section, Elective repeat cesarean section, Maternal, Morbidity, Mortality

INTRODUCTION

A cesarean section is a surgical procedure in which incisions are made through woman's abdomen and uterus to deliver her baby after 20 weeks of gestational age. Caesarean section is a lifesaving procedure done where vaginal delivery is considered dangerous to either the

baby or mother. When the access to obstetric care is growing, there has been a concern over rising rates of cesarean section in the world.¹ Over the past 30 years the rate of cesarean section has increased from 5% to more than 20% the reason being, avoidance of mid-forceps and vaginal breech deliveries, use of foetal monitoring during labor and the belief that cesarean section will reduce

perinatal mortality.² This rate of cesarean section has been increasing and continue in future. Cesarean section can be done as an elective as well as emergency procedure.

Elective cesarean section is a term used when the procedure is done at a pre-arranged time during pregnancy to ensure the best quality of obstetrics, anesthesia, neonatal resuscitation and nursing services.

The procedure is termed as emergency caesarean section when it is performed due to unforeseen or acute obstetric emergencies.³

It has been seen that morbidity and mortality are associated more with emergency procedures than elective procedures.^{4,5}

With this background the study was conducted to study maternal morbidity and mortality in elective and emergency caesarean sections at tertiary care teaching hospitals in India.

METHODS

The Indian Council of Medical Research (ICMR) has a network of Human Reproduction Research Centre (HRRC) located in the department of obstetrics and gynecology of 30 medical colleges/teaching hospitals in various parts of the country.

Prospective data was recorded through proforma on management practices, associated complications and mortality for a period of 8 months in 2005-2006 on 15664 consecutive cases of previous cesarean section reporting at 30 medical colleges/teaching hospitals for delivery.

Information on the patient's characteristics including age, parity, booked, referred, past obstetric medical and surgical history, history of present pregnancy and complication was collected.

The mode of delivery was recorded as VBAC (vaginal birth after caesarean), elective cesarean section or emergency cesarean section. Maternal complications developed during or after the labor was noted e.g. uterine rupture, blood transfusion, hysterectomy scar tenderness, scar dehiscence etc.

The women were followed up from admission to discharge from the hospital. The data collected were coded and fed into the computer using Epi-Info.

Statistical analysis was performed using SPSS V 19.0 for windows and various descriptive statistics were used to calculate frequencies, percentages, means and standard deviation. Chi square test were used for the comparison.

RESULTS

Of the 15664 women with a previous cesarean section, 5399 (34.5%) women underwent elective repeat cesarean section, 6230 (39.8%) women underwent emergency repeat cesarean section, 2513 (16.0%) had successful trial of labor (S-TOL).

There was failed trial of labor (F-TOL) in 1522 cases and requiring an emergency cesarean section for delivery of baby. Therefore, a total number of 7752 (49.5%) women had an Em-RCS.

Mean age of women who had emergency repeat cesarean section was 25.9±3.9 years. The value for those who had elective repeat cesarean section was 26.5.9±4.0 years.

Majority of the cesarean sections in both the groups (Emergency and Elective) were done in the age group <30 years with 82% in the Em-RCS group and 77.1% in the EI-RCS group.

The parity was two in 77.4% of women in Em-RCS and 75.1% of women in EI-RCS. More number of women was booked in EI-RCS (90.4%) as compared to Em-RCS (87.8) (Table-1).

The overall any maternal morbidity of the women was found 1744 (22.5%) among Em-RCS as compared to EI-RCS 1117 (20.7). This difference in any morbidity was statistical significant (P=0.01). Blood loss was more than 1000ml in 476 (8.8%) of EI-RCS where as in Em-RCS it was 558 (7.2%) (OR: 0.8, CI: 0.70-0.90, p=0.00 highly statistical significant).

Blood transfusion was 6.5% vs 7.5% in EI-RCS and Em-RCS respectively (OR: 1.15, CI: 1.00-1.33, p=0.04, not significant). Dehiscence of scar in EI-RCS was 119 (2.2%) as compared to 367 (4.7%) in EM-RCS (OR: 2.2, CI: 1.77-2.74, p=0.00 highly significant).

Post-operative/delivery complication was 313 (5.8%) cases in EI-RCS where as in Em-RCS was 458 (5.9%) (OR: 0.98, CI: 0.84-1.14, p=0.79, not significant). Uterine rupture was 37 (0.7%) in EI-RCS where as in Em-RCS was 90 (1.2%) (OR: 1.7 CI: 1.14-2.56, p=0.006 statistical significant (Table-2).

Maternal mortality was reported in 5 (0.1%) cases of EI-RCS as compared to 12 (0.2%) cases in Em-RCS (p=0.37) which was not statistically significant.

The average duration of hospital stay for EI-RCS was 10.6±5.0 days as compared to Em-RCS 10.3±3.5.

The rates of admission to a neonatal intensive care unit was 11.2% vs 15.8%, p=0.00 statistical significant in EI-RCS and Em-RCS respectively.

Table 1: Characteristics of pregnant women undergoing emergency repeat cesarean section elective repeat cesarean section.

Characteristics	Emergency repeat cesarean section (N=7752)	Elective repeat cesarean section (N=5399)	p-value
Booking status			
Booked	6804 (87.8)	4883 (90.4)	0.00
Unbooked	948 (12.2)	516 (9.6)	
Referral status			
Referred	685 (12.7)	1474 (19.0)	0.00
Non-referred	4714 (87.3)	6278 (81.0)	
Place of residence			
Rural	3204 (41.3)	2443 (45.2)	0.00
Urban slum	1252 (16.2)	582 (10.8)	
Urban	3296 (42.5)	2374 (44.0)	
Maternal age (Years)			
≤19	67 (0.9)	40 (0.7)	0.00
20-24	3097 (40.0)	1747 (32.4)	
25-29	3183 (41.1)	2377 (44.0)	
30-34	1111 (14.3)	962 (17.8)	
≥35	294 (3.8)	273 (5.1)	
Mean±Sd	25.9±3.9	26.5±4.0	
Parity			
2	6001 (77.4)	4055 (75.1)	0.00
3	1420 (18.3)	1121 (20.8)	
4	260 (3.4)	162 (3.0)	
5	45 (0.6)	40 (0.7)	
>5	26 (0.3)	21 (0.4)	
Period of Gestation (weeks)			
<37 weeks	1453 (19.3)	841 (15.8)	0.00
≥37 weeks	6091 (80.7)	4480 (84.2)	
Not known	208	78	
Infant's birth weight			
<2500	1199 (19.2)	732 (13.6)	0.00
2500-2999	2567 (41.2)	2125 (39.4)	
3000-3499	1819 (29.2)	1809 (33.5)	
3500-3999	543 (8.7)	490 (9.1)	
≥4000	59 (0.9)	67 (1.3)	
Not known	43	176	

Table 2. Morbidity in pregnant women undergoing emergency repeat cesarean section elective repeat cesarean section.

	Emergency repeat cesarean section (N=7752)	Elective repeat cesarean section (N=5399)	Odds ratio (95% CI)	p-value
Any morbidity	1744 (22.5)	1117 (20.7)	0.90 (0.82-0.98)	0.01
Anaesthetic complication	71 (0.9)	46 (0.9)	1.08 (0.73-1.59)	0.71
Complication during surgery	330 (4.3)	145 (2.7)	1.61 (1.31-1.98)	0.00
Dehiscence of the scar	367 (4.7)	119 (2.2)	2.2 (1.77-2.74)	0.00
Uterine rupture	90 (1.2)	37 (0.7)	1.7 (1.14-2.56)	0.006
Blood loss >1000 ml	568 (7.3)	487 (9.0)	0.8 (0.70-0.90)	0.00
Broad ligament hematoma	25 (0.3)	13 (0.2)	1.34 (0.65-2.76)	0.39
Blood transfusion	578 (7.5)	353 (6.5)	1.15 (1.00-1.33)	0.04
Hysterectomy	29 (0.4)	10 (0.2)	1.60 (1.09-2.36)	0.01
Post-operative complication	458 (5.9)	313 (5.8)	0.98 (0.84-1.14)	0.79

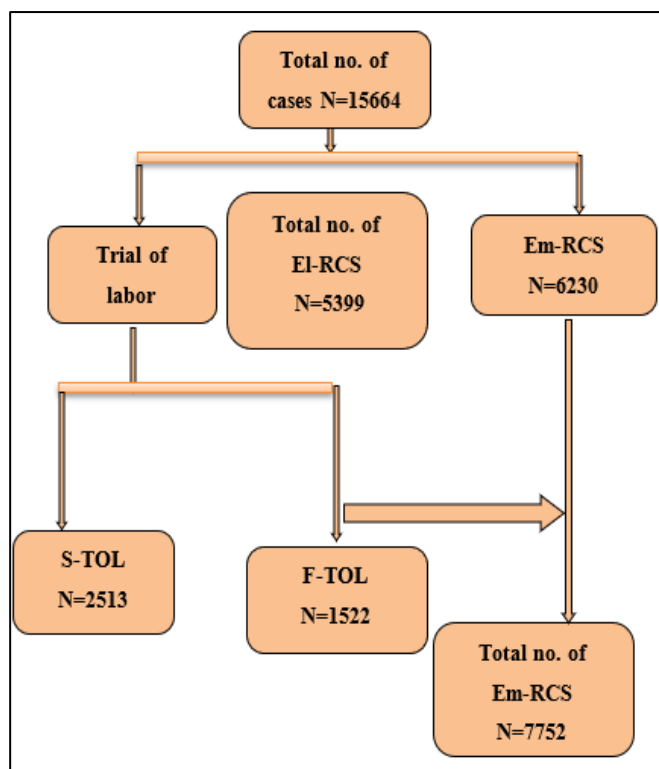


Figure 1: Diagrammatic representation of the selection of the study population.

DISCUSSION

Over the past decade there has been a gradual increase in the rate of cesarean section even in the developing countries causing considerable professional concern.

A total of 155863 deliveries took place in this study duration, out of which 43824 were the number of cesarean section and 15664 were the number of previous cesarean section the rate of cesarean section was 28.1% in this study out of which the Em-RCS rate was 7752/15664 (49.5%) and El-RCS rate was 5399/15664 (34.5%).

The high rate is because of the reason that these hospitals are a tertiary care which makes it a referral for various high-risk pregnancies.

Most of the cesarian sections were done in the age group of 20-29 years (81% and 76% in Em-RCS and El-RCS respectively) comparable to the study of Asifa Ghazi et al., and DA Vaughan et al., Anaesthetic complication seen in both the groups same which contributed to 0.9%.^{6,7}

The difference was not statistically significant which was comparable to Suja Daniel et al.⁸ The main morbidity were complication during surgery, dehiscence of the scar, uterine rupture, blood transfusion and hysterectomy which were statistically significant. In present study the average duration of hospital stay for El-RCS was

10.6±5.0 days as compared to Em-RCS 10.3±3.5 which was statistically non-significant. and Al Nuiam et al., reported that 36.5% of emergency group stayed for more than 7 days and 39.8% of elective cases and duration of hospital stay for more than 7 days in emergency caesarean section was in 44.4% and for elective caesarean section 65.6% with $p < 0.001$.^{9,10}

In the present study, the rates of admission to a neonatal intensive care unit was 15.8% versus 11.2%, $p = 0.00$ statistical significant in Em-RCS and El-RCS respectively. In a study of Daniel S et al in which NICU stay was required in 39.4% of emergency cesarean sections as compared to 10.5% of elective cesarean.¹¹

Emergency cesarean section was associated with significantly more maternal morbidity and mortality and neonatal outcome as compared to elective cesarean section. More research is needed to understand the health effects of cesarean section on immediate and future outcome.

CONCLUSION

Maternal morbidity was found more in emergency repeat cesarean section than in elective repeat cesarean section. Complications and referral of women who are likely to undergo cesarean section should be diagnosed at an early stage so that the maternal morbidity and mortality can be prevented.

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