

Original Research Article

A comparative study of socio demographic profile, clinical profile and maternal outcome of caesarian section done in second stage of labour with elective caesarean section

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ABSTRACT

Background: Today caesarean section is one of the most commonly performed surgical procedures. But caesarean section is associated with a great deal of maternal and fetal morbidity and mortality. In general unplanned or emergency caesarean section has increased risk than elective caesarean section. Objectives of the study were to compare the socio demographic and clinical profile of antenatal women undergoing caesarian section in second stage of labour with elective caesarian section and to compare the maternal outcomes (morbidity and mortality) when caesarian section is done in second stage of labour with elective caesarean section.

Methods: This was a comparative study done at a tertiary care centre in south Kerala for a period of 18 months which compared two groups. Group 1 which included pregnant women who required emergency caesarean section during second stage of labour and group 2 including pregnant women who required elective caesarean. Demographic and clinical profile collected. Sample size was 145 each from both groups with total of 290.

Results: Intra operative complications (31% versus 17.9%), febrile morbidity (15% versus 10%), urinary retention (2.1% versus nil) PPH (2.8% versus 0.7%), post op infections (19.3% versus 9.7%), Blood transfusions (13% versus 0.4%) were significantly more with emergency caesarean sections done in second stage of labour. However increased maternal risks associated with unplanned caesarean sections do not in general justify, elective caesarean to avoid the risks of emergency surgery.

Conclusions: It is concluded that postoperative morbidity are more with emergency caesarean done at full cervical dilatation. The commonest one being febrile morbidity and then urinary retention.

Keywords: Caesarean section, Elective caesarean section, Labour, Maternal outcome, Post-operative morbidity, Second stage

INTRODUCTION

Today caesarean section is one of the most commonly performed surgical procedures. But caesarean section is associated with a great deal of maternal and fetal morbidity and mortality.¹ In general unplanned or emergency caesarean section has increased risk than

elective caesarean section. Before the availability of wide spectrum antibiotics, blood transfusion facilities and good anesthetic techniques caesarean was used only to save the life of mother and was met with a mortality of 50-75%.² Now with the advent of antibiotics, blood transfusion and modern anaesthetic techniques, the morbidity and mortality has been considerably reduced.

The complications associated with caesarean section may be an anesthetic, surgical or as a consequence of preexisting medical or obstetric condition related to pregnancy. The overall intra operative complication rate has been reported as 12-15% rate being significantly greater with emergency compared to elective caesarean sections.³

Increases in the rate of primary caesarean delivery are known to be a consequence of changes in maternal characteristics and obstetric practice, such as increases in maternal age, weight, weight gain during pregnancy, labour induction rates and associated with use of epidural anesthesia, consistent with risk factors identified for caesarean delivery in both first and second stages of labour.⁴ The availability of adequate blood, strict use of aseptic techniques during labour and good surgical practice at caesarean section with the seniority of personnel matching the risk involved are obvious ways in which morbidity and mortality can be kept to a minimum.

METHODS

This is a comparative study conducted in dept. of obstetrics and gynecology, in a tertiary care centre at South Kerala, India during a period of 18 months from (1st September 2007 to 1st March 2009). Total number of deliveries during the year 2008 was 10,930 of which elective caesarean contributed to 21%. 78% were emergency caesarean section of which emergency caesarean at full cervical dilatation was 4.2%.

But detailed analysis of caesarean sections both elective and emergency section in second stage of labour with regard to morbidity and mortality were not available. In this background, the study was planned comparing the two groups with group 1 including pregnant women who required emergency caesarean section during second stage of labour and group 2 including pregnant women who required elective caesarean section. The second group was selected in such a way as to include each elective caesarean conducted in our institution subsequent to an emergency section done in second stage of labour during study period. Based on a semi structured questionnaire after informed consent detailed information regarding demographic and social profile, clinical profile, post-operative morbidity, mortality and infections, and day of discharge were collected.

Statistical tool

Sample size was 145 each from both groups with total of 290. Sample size was fixed as per the difference of two group values of 14 with type 1 error (5%) and power 80% with formula.

$$n = \frac{2 (ZL - Z_{1-\beta})^2 \times pq}{d^2}$$

Where ZL – type 1 error = 1.96.

Z_(1-β)=0.842 and d=14

Data were analysed by Chi – square test and students t test.

RESULTS

Total of 145 cases of caesarean section done during second stage of labour and 145 cases of elective caesarean section were analysed. In this study mean age of women who underwent emergency caesarean section during second stage of labour was 24.6 compared to 27.4 in elective group. The mean age of patients undergoing elective caesarean section was high compared to emergency caesarean section done during second stage of labour, which was statistically significant. It is observed that income class does not have any influence over the findings.

Table 1: Distribution according to age.

Age of mother (years)	Group I		Group II	
	N	%	N	%
≤ 20	20	13.8	4	2.8
21-25	72	49.7	50	34.5
26-30	40	27.6	68	46.9
31-35	12	8.3	15	10.3
36-40	1	0.7	6	4.1
>40	0	0.0	2	1.4
Category	Mean	SD	t	p
Group I	24.63	3.859	5.781	0.00
Group II	27.43	4.366		

On this study

It is clear that educational status has no influence over the outcome in this study. Majority of elective caesareans (97.2%) were done for cases which were booked in Hospital. At the same time emergency caesarean section of booked cases constituted only 83.4% and the remaining cases (16.6%) were booked outside. The association between the type of case and the type of caesarean was tested statistically and was found highly significant.

Table 2: Distribution according to income.

Income	Group I		Group II	
	N	%	N	%
Upper	16	11.0	20	13.8
Middle	28	19.3	15	10.3
Lower	101	69.7	110	75.9

x² = 4.759; df = 2; p= 0.093

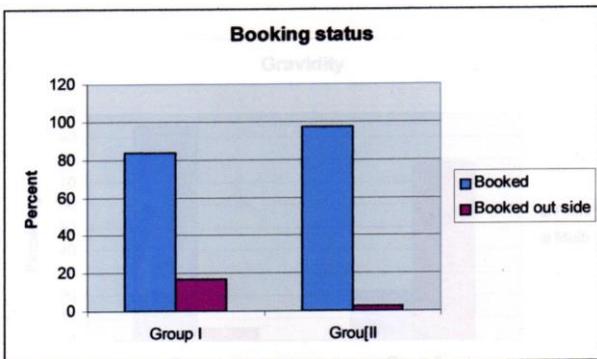
In this study result shows more primi (94.5%) underwent caesarean section at full dilatation compared to elective

caesarean (21%). The increased percentage of elective caesarean in multi para (78.6%) could be due to the rising primary caesarean section rates. The difference is statistically significant. It is inferred that there is no significant difference between the groups with respect to history of abortion/mtp.

Table 3: Distribution according to educational status.

Education	Group I		Group II	
	N	%	N	%
Below high school	47	32.4	54	37.2
High School and above	98	67.6	91	62.8

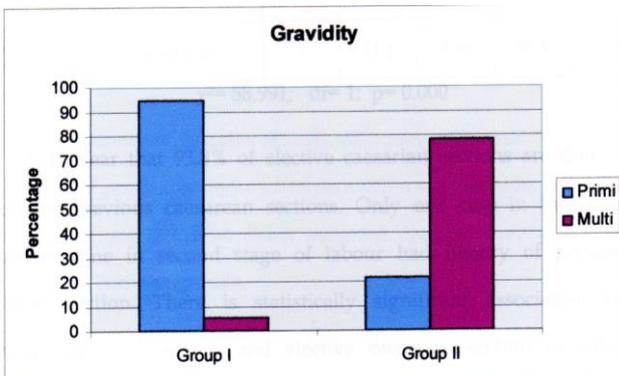
$\chi^2 = 0.744$; $df = 1$; $p = 0.388$



$\chi^2 = 15.812$; $DF = 1$; $P = 0.000$

Figure 1: Distribution according to booking status.

It is clear that 93.8% of elective caesarean sections are done for the history of previous caesarean sections. Only one case in the emergency caesarean done in second stage of labour had history of previous one caesarean section. There is statistically significant association between previous caesarean section and elective caesarean section in subsequent pregnancy.



$\chi^2 = 158.979$; $df = 1$; $p = 0.000$

Figure 2: Distribution according to gravidity.

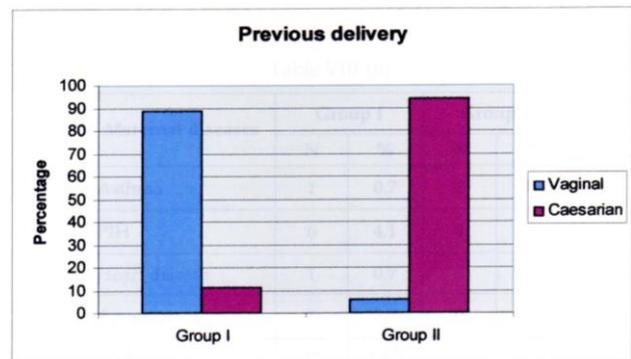
The incidence of gestational diabetes was nearly equal in both groups. The number of pregnancy induced hypertension was more in group I (4.1%) compared to group 2 (2.8%). Other maternal diseases were almost

equality represented in both the groups. The results are not statistically significant. In the present study 89% of the emergency caesarean done in second stage of labour necessitated induction/augmentation but none of the cases in the elective group had history of induction or acceleration. Out of 129 cases that underwent induction or augmentation in group I, 26 had cerviprime instillation done, 10 had oxytocin induction alone and 7 had ARM induction alone and the remaining had either 2 or all 3 methods combined together.

Table 4: Distribution according to H/O abortions.

H/o abortions	Group I		Group II	
	N	%	N	%
Present	8	5.5	11	7.6
Absent	137	94.5	134	92.4

$\chi^2 = 0.5.7$; $df = 1$; $p = 0.476$



$\chi^2 = 58.991$; $DF = 1$; $P = 0.000$

Figure 3: Distribution according to nature of previous deliveries.

None of the cases included in the elective caesarean group had intrapartum complications since they were not getting into labour.

Table 5: Distribution according to maternal diseases.

Maternal disease	Group I		Group II	
	N	%	N	%
Present	26	17.9	21	14.5
Absent	119	82.1	124	85.5

$\chi^2 = 0.635$; $df = 1$; $p = 0.426$

Maternal disease	Group I		Group II	
	N	%	N	%
Asthma	1	0.7	2	1.4
PIH	6	4.1	4	2.8
Heart disease	1	0.7	0	0.0
Anaemia	1	0.4	0	.0
GDM	17	11.7	15	10.3
Nil	119	82.1	124	85.5

But 37.9% of second stage caesarean cases had intrapartum complications with majority (17%) having

premature rupture of membrane. Out of these 8% developed maternal fever. About 4 cases had meconium staining of amniotic fluid; 1 developed cord prolapse and 4 cases of twins presented with abruption of second twin. Previous caesarean section with 10 cephalo pelvic disproportion was the major indication for caesarean section in elective group (84%).

Table 6: History of induction/ Augmentation.

H/o induction	Group I		Group II	
	N	%	N	%
Present	129	89.0	2	1.4
Absent	16	11.0	143	98.6
$\chi^2 = 224.562; df = 1; p = 0.000$				
H/o induction	Group I		Group II	
	N	%	N	%
Cerviprime	26	17.9	0	0
Oxytocin	10	6.9	0	0
ARM	7	4.8	0	0
Cerviprime, Oxytocin	19	13.1	2	1.4
Oxytocin, ARM	11	7.6	0	0
Cerviprime, Oxytocin, ARM	56	38.6	0	2.8
No induction	16	11.0	143	95.9

In the elective group the second commonest indication was breech presentation (11%). Remaining indications were previous CS (2.8%), elderly primi (1.4%) and placenta previa (0.7%).

Table 7: Distribution according to intrapartum complications.

Intrapartum complications	Group I		Group II	
	N	%	N	%
Present	55	37.9	0	0
Absent	90	62.1	145	100
$\chi^2 = 67.87; df = 1; p = 0.000$				
PROM	25	17.2	0	0
Maternal fever	12	8.3	0	0
Others	18	12.4	0	0
Nil	90	62.1	145	100.0

As far as the emergency second stage caesarean group was concerned, the most importing indication was 10 CPD failed trial (51.7%), malposition especially occipito posterior position (30.2%), fetal distress (3.4%) failed instrumental delivery and abruption of second twin (2.8%) each. Regarding other indications no significant difference was noted between the 2 groups.

Excessive bleeding was present more in group 1 (15%) compared to elective group (0.7%). Extension of uterine incision (6.2%) was also more in group 1 whereas adhesions were more in elective group (12.4%) which could be due to previous caesarean section. Other complications like pulled up bladder, ballooned lower

segment, bladder injury were also more in emergency caesarian group. There is statistically significant relation of emergency caesarean section done in second stage of labour with high intra-operative complications.

Table 8: Indications for CS.

Indication for Cs	Group I		Group II	
	N	%	N	%
I0 CPD failed trial	75	51.7	0	
Fetal distress	5	3.4	0	
MSAF	4	2.8	0	
Maternal fever	2	1.4	0	
Mal position	44	30.3	0	
Failed instrumental delivery	4	2.8	0	
Abruption 2 nd of twin	4	2.8	0	
Obstructed labour	1	0.7	0	
Deep transverse arrest	2	1.4	0	
Cord prolapsed	1	0.7	0	
Breech	2	1.4	16	11.0
Oblique lie	1	0.7	0	0.0
I0 CPD previous CS	0	0	122	84.1
Elderly Primi	0	0	2	1.4
Previous 2 CS	0	0	4	2.8
Placenta Previa	0	0	1	0.7

As compared to 31% in group 1 with intra operative complications only 17% in group 2 had intra operative complications. This result was found to be statistically significant.

Table 9: Intraoperative findings and distribution according to intraoperative complications.

Intra operative findings	Group I		Group II	
	N	%	N	%
Absent	100	69.0	119	82.1
Present	45	31.0	26	17.9
$\chi^2 = 6.733; df = 1; p = 0.009$				
Excessive bleeding	22	15.2	1	0.7
Haematoma	1	0.7	2	1.4
Extension of incision	9	6.2	0	0
Adhesion	0	0	18	12.4
Bladder injuries	1	0.7	0	0
Others	12	8.3	5	3.4
Nothing special	100	69.0	119	82.1

The incision delivery interval was >5 minutes in 77.8% of group 1, whereas it was only 51% in group 2. The longer incision delivery interval can be due to difficulties in delivering out deeply engaged head through abdominal incision in the full dilatation caesarean group.

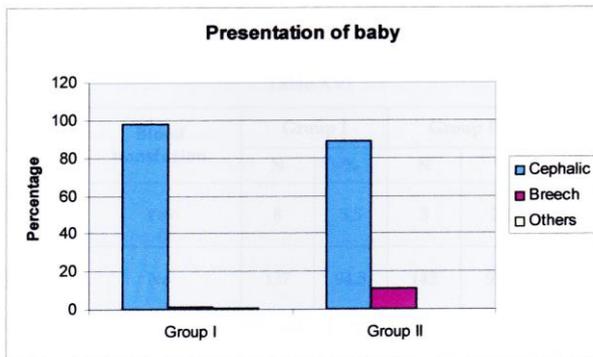
The above results were statistically significant. Majority of babies in emergency group presented as cephalic (97.9%) whereas only 2 cases of group I were presented as breech. The remaining 16 breech cases were done

elective caesarian section. This could be due to correct booking and antenatal checkups. The results were found to be statistically significant.

Table 10: Distribution according to incision delivery interval.

Incision delivery	Group I		Group II	
	N	%	N	%
<5 mts	32	22.2	71	49.0
>5 mts	113	77.8	74	51.0
$x^2 = 22.909$; $df = 1$; $p = 0.000$				

Post-operative pain was present for all the patients in either group. Regarding other post-operative complications, febrile morbidity was higher in the group I (33%) i.e. the second stage caesarean group than in elective group (21%) presence of urinary retention and postpartum haemorrhage were also more in group 1.



$x^2 = 12.513$; $df = 2$; $p = 0.002$

Figure 4: Distribution according to presentation of baby.

Table 11: Distribution according to postoperative complications.

Post-operative complications & complaints	Group I		Group II	
	N	%	N	%
Urinary retention	3	2.1	0	0
Fever	22	15.2	15	10.3
PPH	4	2.8	1	0.7
Abdominal distension	3	2.1	2	1.4
Fever after 24 hrs	26	17.9	16	11.0
Nil	87	60.0	111	76.6

About 5.5% in group 1 i.e. emergency caesarean group required blood transfusion within the initial 4 post-operative days. Out of 8 who received blood transfusion, 4 received due to 10 post partum haemorrhage, 4 received blood transfusions due to clinical and lab evidence of pallor on second or third postoperative day. Only 2% of elective group received blood transfusion. The results were statistically significant. It can be seen that mean day of ambulation is almost similar in both groups. It is

obvious that chances of post op infection are high in emergency group compared to elective group. Incidence of UTI was more in emergency group. One case in the emergency group had evacuation of rectus sheath haematoma and resuturing of wound.

Table 12: Distribution according to blood transfusion.

Blood transfusion	Group I		Group II	
	N	%	N	%
Yes	8	5.5	3	2.1
No	137	94.5	142	97.9

$x^2 = 5.695$; $df = 1$; $p = 0.017$

Table 13: Distribution according to day of ambulation.

Day of Ambulation	Group I		Group II	
	N	%	N	%
2	128	88.9	141	97.2
3	14	9.0	4	2.8
4	2	1.4	0	0
5	1	0.7	0	0
Category	Mean	SD	t	p
Group I	2.15	0.487	2.769	0.006
Group II	2.03	0.164		

Table 14: Distribution according to postop infection.

Post OP infection	Group I		Group II	
	N	%	N	%
Present	28	19.3	14	9.7
Absent	117	80.7	131	90
$x^2 = 5.46$; $df = 1$; $p = 0.019$				
UTI	17	11.7	11	7.6
Respiratory tract infection	4	2.8	3	2.1
Wound infection	1	0.7	0	0
Others	6	4.1	0	0
Nil	117	80.7	131	90.3

Table 15: Date of discharge.

DOD	Group I		Group II	
	N	%	N	%
<7 days	114	78.6	122	84.1
>7 days	31	21.4	23	15.9

$x^2 = 1.456$; $df = 1$; $p = 0.228$

DISCUSSION

A caesarean section is a major operation under any circumstances and the mortality and morbidity figures emphasize this. Morbidity and mortality are associated more with emergency caesarean section than with elective caesarean.

An analysis of post-operative morbidity by Dean has revealed that 30% of elective caesarean groups and 70% of emergency caesarean group had morbid post-operative course.² According to RCOG audit figures about 35% of caesarean section for singleton pregnancies are done because of failure of progress in labour of which a quarter occur at full cervical dilatation. Study by Nielson and Hokegard (1984) revealed that risk factors for complication at caesarean section include³

- Excessive speed
- Lack of experience
- Gestational age <32 weeks
- Low station of vertex
- PROM

In a study by Allen and O'connell women undergoing caesarean delivery at full dilatation were more likely to have complications of intra operative trauma and prenatal asphyxia ($P < 0.05$).⁴ In the present study also intra operative trauma as excessive bleeding, uterine tears and bladder injuries were more in emergency cs than in elective group (22% vs 0.7%). Majority of patients enrolled in the study belong to <30 yrs in either group. Mean age was 24.6 yrs in emergency CS done at second stage of labour and 27.4 yrs in elective group. This was statistically significant.

Both elective and emergency caesarean group were identical with respect to socio economic status. So socio economic status does not have any possible influence over the findings. The higher level of literacy status attained by Kerala people have been reflected in the present study. The number of illiterates was hardly flew. Both the groups were identical with respect to the level of education. Majority of elective caesarean section was decided upon mainly for those women who had previous one or more caesarean sections.

Among maternal diseases even though gestational diabetes and pregnancy included hypertension were slightly higher in second stage emergency caesarean group, the difference was not significant statistically other maternal diseases were also equally represented in both the groups. 89% of emergency caesarean cases necessitated induction or acceleration or both. 37% of emergency cases had intrapartum complications. The important complications were premature rupture of membranes maternal fever and prolonged labour.

Recent data from Nova scotia suggest that caesarean delivery in labour is associated with increased maternal morbidity compared with caesarean delivery with no labour. Harris and Brain studied the bacterial content of uterus at the time of caesarean section and found that bacterial invasion increases after several hours of rupture of membranes. Thus when the patient gets into labour, the endometrial cavity becomes contaminated and while doing caesarean section, the amniotic fluid is allowed to spill in peritoneal cavity, contaminating it thus increasing

the post-operative morbidity. These factors do not act in elective caesarian section.

Regarding the intra operative complications, it is seen that excessive bleeding was more in emergency group (15%) compared to elective group (0.7%) uterine tears and extension of incision were also more in emergency group compared to elective group. There was one case of bladder injury which required supra public catheter for 14 days and continuous bladder drainage for 21 days. Presence of intra peritoneal adhesions was more in elective group as they had history of previous caesarean sections. Hysterectomy was done for uncontrolled PPH in one case as the uterine tear extended posteriorly with colporrhexis.

Pain was present in almost all cases in both groups. Regarding other post-operative morbidity, fever and associated morbidity was significantly higher in group 1. Urinary retention was more common in the emergency group. This is in accordance with study by Cebekulu L et al which showed caesarean section in second stage of labour took significantly longer time and was associated with more frequent post-operative pyrexia and neonatal IBN admission.⁵

The incision delivery interval was significantly more than 5 minutes in 77.8% of emergency section in second stage of labour compared to only 51% of elective group. Several authors have reported rising rates of caesarean delivery for the second twin after the first twin has delivered vaginally. In the present study 4 caesareans in group 1 were done for abruption of second twin currently studies show about 10% of second twins are delivered by caesarean section after the first has been delivered vaginally. In the present study 8% required blood transfusion among emergency group whereas only 2% in elective group whereas only 2% in elective group required same. In a study by Bergholt T et al done showed uterocervical laceration and blood loss of more than one litre were the most frequent intra operative complications in second stage caesarean section.⁶ This was mainly due to major haemorrhage, uterine atony, uterine incision extension and uterine angle tears.

The commonest reason for haemorrhage during caesarean section is extension of uterine incision during delivery of foetal head in advanced labour when lower segment is thin and fetal head is deeply engaged, other reason is uterine atony due to prolonged labour. Feinstein U et al et al also reported haemorrhage and need for blood transfusion more common with caesarean section than with operative vaginal delivery.

Regarding day of ambulation, the two groups showed no significant difference. In the present study it was found that postoperative infections were higher in emergency group (19.3% in group 1 vs 9.7% in group 2). Urinary tract infection respiratory tract infection and wound infection were the common ones. There was no

significant relation between date of discharge and type of caesarean.

CONCLUSION

It is concluded that postoperative morbidity are more with emergency caesarean done at full cervical dilatation. The commonest one being febrile morbidity and then urinary retention. Post-operative infections are also too high in caesareans done in second stage of labour. Commonest being urinary tract infection. Premature rupture of membranes and prolonged labour which occurs in the emergency group may increase the post-operative morbidity in them.

The increased maternal risks associated with unplanned caesarian operations do not in general justify elective caesarian to avoid the risks of emergency surgery.

Suggestions

Maternal morbidity can be reduced by

- Timely reference
- Proper treatment of antepartim and intrapartum infections.
- Proper asepsis during surgery
- Experienced operator should be present at all operations where complications are predicted.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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