



RESEARCH ARTICLE

MATERNAL AND PERINATAL OUTCOME OF CAESAREAN SECTION IN SECOND STAGE OF LABOUR AND ELECTIVE CAESAREAN SECTION – A COMPARATIVE STUDY

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Abstract:

Objectives – To compare maternal and perinatal outcome of caesarean section done in second stage of labour with elective caesarean and identify common postoperative morbidity. This was a comparative study done at Sree Avittom Thirunal Hospital, Trivandrum, Kerala for a period of 18 months from 1-9-2007 to 1-3-2009 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. Maternal and perinatal outcome assessed with following parameters. Intraoperative complications (31% vs 17.9%), febrile morbidity (15% vs 10%), urinary retention (2.1% vs nil), PPH (2.8% vs 0.7%), postop infections (19.3% vs 9.7%), Blood transfusion (13% vs 0.4%), Neonatal Apgar score at 5mts (18.5% vs 2.8%) IBN admission (20% vs 11%) neonatal complications (47.6% vs 13.8%) were significantly more with emergency caesarean sections done in second stage of labour. However the increased maternal risks associated with unplanned caesarian sections do not in general justify elective caesarean to avoid the risks of emergency surgery.

Key words Elective caesarean section, caesarean section in second stage of labour, Maternal outcome, perinatal outcome, postoperative morbidity.

INTRODUCTION

Today caesarean section is one of the most commonly performed surgical procedure. 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. By definition, caesarean section is the delivery of an infant alive or dead through an abdominal incision after the period of viability. This definition does not include removal of the fetus from the abdominal cavity in the case of rupture of uterus or in case of abdominal pregnancy.

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



commonest indications for caesarean sections are presumed fetal compromise (22%), failure to progress in labour (20%), repeat caesarean (14%) malpresentation (11%). The complications associated with caesarean section may be anaesthetic, 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.

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.

MATERIALS AND METHODS

This is a comparative study conducted in dept. of obstetrics and gynecology, Sree Avittom Thirunal Hospital, Medical College, Trivandrum during a period of 18 months from (1-9-2007 to 1-3-2009). Total number of deliveries during the year 2008 in SAT Hospital was 10,930 of which elective caesarean contributed to 21%, 78% were emergency caesarean section of which emergency caesarean at full cervical dilatation (2nd stage) 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. 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 2nd stage of labour during study period.

Based on a semi structured questionnaire after informed consent, detailed information regarding demographic and socio economic profile clinical profile, postoperative morbidity, mortality and infections, perinatal morbidity and mortality based on apgar scores at 5 mts, IBN admissions, birth weight and day of discharge were collected.

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

$$N = \frac{2(Z\alpha - Z1-\beta)^2 \times pq}{d^2}$$

Where $Z\alpha$ = type 1 error = 1.96

$Z1-\beta$ = 0.842 and d = 14.

Data were analysed by Chi-square test and students + test.

RESULTS

Total of 145 cases of caesarian section done during second stage of labour and 145 cases of elective caesarian section were analysed. Age was found to be a significant factor. Mean age of women who underwent caesarian in group I was 24.6 compared to 27.4 in group 2. Socioeconomic status, educational status and previous history of abortions / MTP had no statistical significance. Among maternal diseases gestational diabetes and pregnancy induced hypertension were nearly equal among both the groups. 89% of the emergency caesarian sections done in second stage of labour necessitated labour induction or acceleration or both.



Previous C.S with 1⁰ CPD (84%) was the major indication for caesarean section in group 2 and malpresentation (11%) being second, where as 1⁰ CPD failed trial (51.7%) and malposition (30.2%) were major indications in group 1.

Indication for C.S

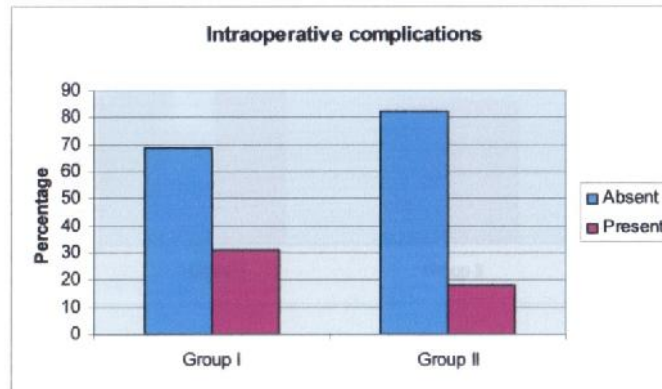
Indication for CS	Group I		Group II	
	N	%	N	%
I ⁰ CPD failed trial	75	51.7	0	0
Fetal distress	5	3.4	0	0
MSAF	4	2.8	0	0
Maternal fever	2	1.4	0	0
Mal position	44	30.3	0	0
Failed instrumental delivery	4	2.8	0	0
Abruption 2 nd of twin	4	2.8	0	0
Obstructed labour	1	0.7	0	0
Deep transverse arrest	2	1.4	0	0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

Intra operative complications

Intra operative findings	Group I		Group II	
	N	%	N	%
Absent	100	69.0	119	82.1
Present	45	31.0	26	17.9

Excessive bleeding was 15% in group 1 compared to 0.7% in group 2. Extension of uterine incision (6.2%) were more in group 1, whereas adhesions (12%) were more in group2 which could be due to previous caesarian sections.

Intra operative findings	Group I		Group II	
	N	%	N	%
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



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

$\chi^2 = 22.909$; $df = 1$; $p = 0.000$

Incision delivery interval was > 5 minutes in 77.8% of group 1 and 51% in group 2. The longer incision delivery interval can be due to delivering out deeply engaged head through abdominal incision in the full dilatation caesarian group.

Postoperative complications

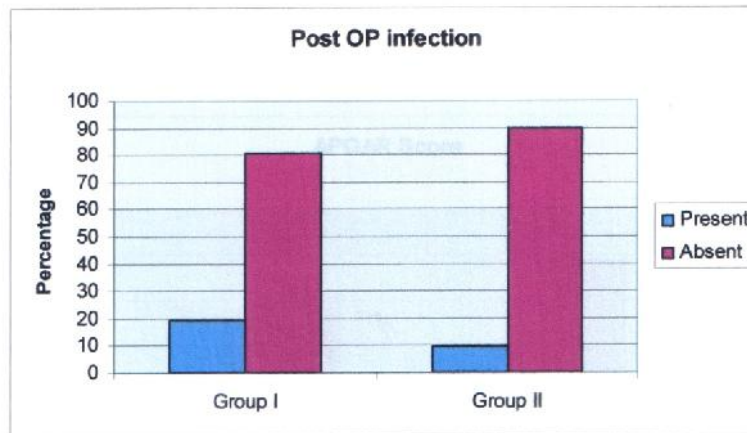
Post operative complications & complaints	Group I		Group II	
	N	%	N	%
Urinary retention	3	2.1	0	0
Fever	22	15.2	15	10.3
PPH	4	2.8	1	0.7
Abdominal distension	3	2.1	2	1.4
Fever after 24 hrs	26	17.9	16	11.0
Nil	87	60.0	111	76.6

Febrile morbidity was higher in group 1 (33%). 5.5% in group 1 required post op blood transfusion compared to 2% in group 2 which was statistically significant. Mean day of ambulation was same in both groups.

Post op infections

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

$\chi^2 = 5.695$; $df = 1$; $p = 0.017$

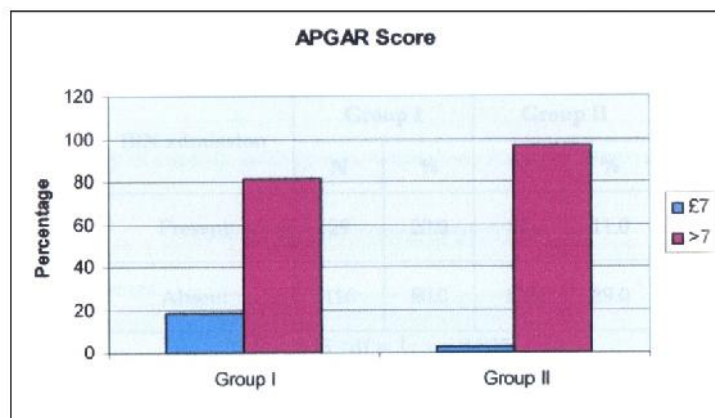


11.7% in group I and 7.6% in group 2 had Post op urinary tract infections.

Neonatal outcome

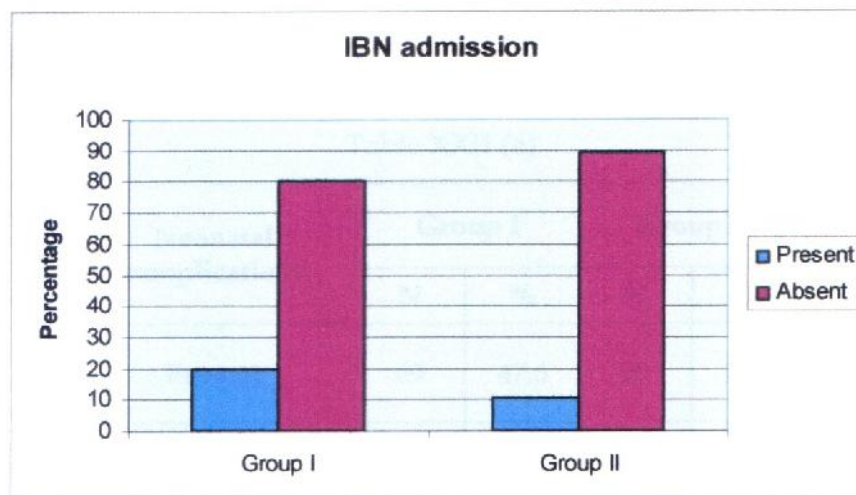
APGAR Score	Group I		Group II	
	N	%	N	%
≤ 7	25	18.5	4	2.8
≥ 7	110	81.5	141	97.2

$\chi^2 = 18.702$; $df = 1$; $p = 0.000$



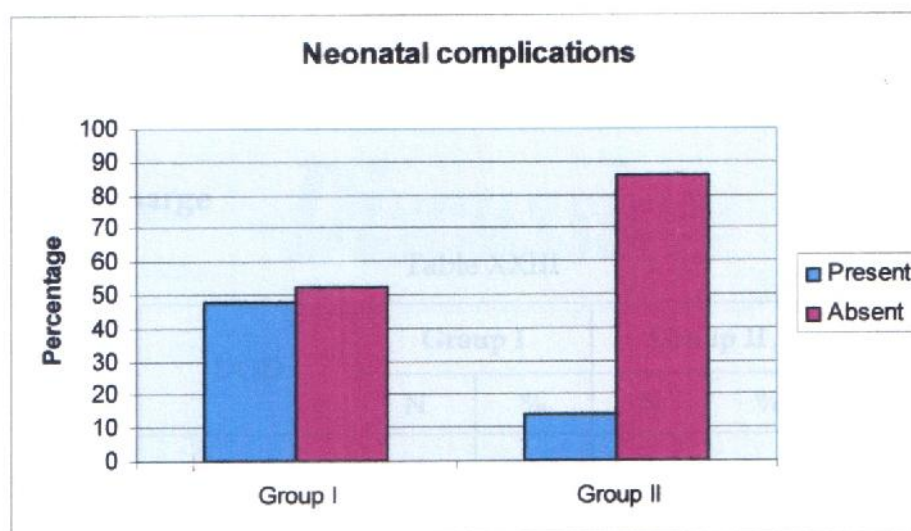
Apgar scores at 5 mts was < 7 for 18% of group compared to only 2% of group 1, and was statistically significant incidence of IBN admission in group 1 was 20% compared to 11% in group 2.

IBN admission



Neonatal complications

Neonatal complications	Group I		Group II	
	N	%	N	%
Present	69	47.6	20	13.8
Absent	76	52.4	125	86.2



Neonatal complications following caesarian section at full cervical dilatation was significantly higher (47.6%) compared to 13.8% in elective group. Necrotizing enterocolitis, Respiratory distress syndrome, infections and perinatal depressions were significantly higher in emergency group.



DISCUSSION

A caesarean section is a major operation under any circumstances and the mortality and morbidity figures emphasize this. An analysis of post operative morbidity by DEAN ⁽²⁾ has revealed that 30% of elective caesarean groups and 70% of emergency caesarean had morbid post operative course.

According to RCOG audit figures ⁽³⁾ 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. In a study by Allen and O'connell ⁽⁴⁾ (1997-2002), women undergoing caesarean delivery at full cervical dilatation were more likely to have complications of intra operative trauma and Perinatal asphyxia. ($P < 0.05$). 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%). Infants with perinatal asphyxia as studied by Apgar scores < 7 at 5 minutes were 18.5% in group 1 and 2.8% in group 2. ($P = 0.000$).

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 & 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, this amniotic fluid is allowed to spill in peritoneal cavity, contaminating it, thus increasing post operative morbidity. These factors do not act in elective caesarean section.

CEBEKLU & BUCHMANN CS ⁽⁵⁾ in 2006 showed caesarean section in second stage of labour took significantly longer time and was associated with more frequent post operative pyrexia and neonatal IBN admissions. Several authors have reported rising rates of caesarean delivery for the second twin after the first twin was delivered vaginally. The commonest reasons for this include non vertex presentation of second twin, fetal distress, placental abruption and cord prolapse. In the present study 4 caesarians in group 1 were done for abruption of second twin. Currently studies show that about 10% of second twins are delivered by caesarean section after the first has been delivered vaginally.

In a study by BERGHOLT ⁽⁶⁾ et al done during 1995-1996 showed uterocervical laceration and blood loss of more than one litre were the most frequent intra operative complications in second stage caesarean section. 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 fetal head in advanced labour when lower segment is thin and fetal head is deeply engaged, other reason is uterine atony due to prolonged labour.

Majority of babies in this study belonged to > 3.5 kg birth weight group that is 17.2% in elective group. This shows birth weight > 3.5 kg is a risk factor. This is in accordance with the study by Feinstein and sheinera et al ⁽⁷⁾ between 1988-1999 which showed major risk factors for arrest of descent during second stage of labour were nulliparity, fetal macrosomia, epidural analgesia, hydramnios, hypertensive disorder and GDM. These risk factors should be carefully evaluated during pregnancy to actively manage high risk pregnancies.

20% of babies delivered by emergency caesarean at full dilatation required IBN admission compared to only 11% in elective group which was statistically significance. In order to reduce



fetal morbidity we have to attain optimum control of medical diseases in pregnancy, treat maternal infections have good electronic fetal monitoring in labour and early detection of abnormalities during labour progress.

The neonatal complications in the present study were significantly high in 47.6% of emergency group and 13.8% in elective group. The still birth rate in present study was 3.4% .Similar study by SHAHLA BALOCH etal ⁽⁸⁾ on frequency of second stage intervention and its outcome in 2005 studied still birth rate of 5.8% in full dilatation caesarian section.

SUMMARY & CONCLUSION

Post operative morbidity are more with emergency caesarean done at full cervical dilatation. The commonest one being febrile morbidity and then urinary retention.

Postoperative infections are also more in caesareans done in 2nd stage of labour, commonest being urinary tract infection. Premature rupture of membranes and prolonged labour which occurs in emergency group may increase the post operative morbidity in them.

The maternal and fetal morbidity for Group 1 is significantly higher than that of Group 2.

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

Suggestions

Maternal morbidity can be reduced by

- a) Timely reference
- b) Proper treatment of antepartum infections.
- c) Proper asepsis during surgery
- d) Experienced operator should be present at all surgeries where complications are predicted.

Neonatal complications can be reduced by:-

- a) Proper intrapartum fetal monitoring & early detection of fetal distress.
- b) Prompt treatment of maternal infections & medical illnesses

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