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Research article

Comparison of obstetric outcome between first and second stage cesarean sections in rural tertiary hospital

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ABSTRACT

Aim: To determine maternal and neonatal outcome associated with cesarean section done in women at term in second stage of labour, and to compare them with outcomes of first stage cesarean section. **Materials and Methods:** A retrospective cohort study, comparing two groups; Group I: 50 women, who underwent cesarean section in second stage of labour and Group II: 50 women, who had cesarean section in first stage of labour. The study was done at R.L Jalappa Hospital and Research centre attached to Sri Devraj Urs Medical College, Kolar, between January 2010 to June 2011. Data was collected from parturition register and from medical records of the patient. **Results:** Out of 3039 deliveries, 4.1% of cesareans were performed in second stage. Group I patients had higher maternal and perinatal morbidity like increased blood loss (14%), uterine incision extension (8%), atonic PPH (8%), prolonged bladder catheterization (38%), wound infection (16%) and postpartum fever (12%) while only complication in first stage sections was atonic PPH(2%). There were more NICU admissions in Group I (48% vs 6%) than in Group II. There were 10 perinatal deaths in Group I and none in Group II. Mean birth weight of babies was more in Group I (2.96 kg vs 2.72kg) ($P<0.05$). **Conclusion:** Second stage cesareans are associated with significant intra-operative and neonatal morbidity. Higher birth weight is a risk factor for cesarean section in second stage of labour.

Key words: First stage caesarean sections, Maternal morbidity, Neonatal morbidity, Second stage caesarean section.

1. INTRODUCTION

Decision making surrounding cesarean section in the second stage of labour is one of the greatest challenges in current obstetric practice.

The rates of cesarean sections have risen steadily in the past two decades and may be associated with a disproportionate rise in second stage of cesarean section due to a decline in the use of instrumental deliveries [1]. Cesarean section at full cervical dilatation with an impacted foetal head can be technically difficult and is associated with increased trauma to the lower uterine segment and adjacent structures, as well as increased haemorrhage and infection [2]. When compared with cesarean deliveries in the first stage of labour, cesarean deliveries in the second stage have been associated with longer surgery time, increased postoperative fever [3], maternal intraoperative trauma [4] and composite maternal morbidity [5].

This study was carried out to determine the maternal and neonatal outcome associated with cesarean section in the second stage of labour and compare it with outcome in women undergoing cesarean delivery in first stage of labour.

2. MATERIALS AND METHODS

This was a retrospective cohort study, of all cesarean sections performed between the months of January 2010 to June 2011, done in Department of Obstetrics and Gynaecology at R.L Jalappa Hospital and Research centre attached to Sri Devraj Urs Medical College, Tamaka, Kolar. This study compared cesarean sections done in the second stage of labour (Cases, Group I) with cesarean sections in the first stage of labour (Controls, Group II).

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During this study period, there were 3039 deliveries, including 1284 cesarean sections. Of 1205 emergency cesarean sections, 50 were performed in second stage of labour.

Inclusion criteria for the study, was singleton live pregnancy of 37 weeks or more gestation. Women with previous cesarean section were excluded.

Information was collected in structured format and included demographic data, relevant obstetric data, indications for cesarean section and intrapartum complications associated with cesarean section. Any complications in the mother and the baby that developed post operatively were also noted.

Maternal morbidity outcome variables included need for blood transfusions, obstetric hysterectomy, intra operative trauma [laceration of the uterine artery, laceration of bladder or extension of uterine incision etc], post partum haemorrhage, puerperal fever, wound infection, wound dehiscence. Neonatal morbidity variables included 5 minute APGAR score <7, sepsis, asphyxia, neonatal trauma, and need for NICU admissions.

Statistical analysis was performed on Epi-info software. Differences in the outcome, frequencies between the cases and controls were analysed using mean and rate and P values of less than 0.05 were accepted as indicating statistical significance.

3. RESULTS

During the study period, there were 3039 deliveries, with an overall cesarean delivery rate of 42.2% .Of these, 39.6% were emergency cesarean deliveries. There were 50 second stage cesarean sections. The rate of second stage cesarean section was 4.1%. Obstructed labour and deep transverse arrest were the most common indications for the cesarean section in the second stage [78% and 22% respectively], fetal distress and cephalo pelvic dispropotion were the most common indications in the first stage cesarean sections [18% and 16% respectively].

Table 1 shows the demographic data of the mother in both the groups. Most of the women undergoing cesarean sections were primigravida [74%], belonging to age group of 21 to 30 years [61%].

Table 2 shows the birth weight and NICU admissions in the neonates in both the groups. There was statistically significant difference in birth weight and neonatal death between the first stage and second stage caesarean section.

Table 3 shows the maternal outcome among women undergoing cesarean section in the second stage of labour with first stage of labour. The maternal morbidity was more in women undergoing second stage cesarean section. Morbidity included extension of uterine incision in 4[8%] cases, post partum haemorrhage in 4[8%] cases, post partum fever in 8[16%] cases, wound infection in 6[12%] cases, wound dehiscence requiring secondary suturing in 4[8%] cases, prolonged bladder catherisation in 19[38%] cases, need for blood transfusion in 7[14%] cases, paralytic ileus in 1[1%] case, broad ligament hematoma in 1[1%] case. There were 4 cases of postpartum haemorrhage in Group I, 1 case was controlled by medical management using oxytocics, two cases were controlled by B-Lynch sutures and B/L uterine artery and ovarian artery ligation was done in fourth case. In Group II there was one patient with postpartum haemorrhage [1%]. There were no cases of extension of uterine incision, post partum fever, wound infection, secondary suturing, prolonged catheterisations or blood transfusion in Group II. There was statistically significant difference in post partum fever, prolonged catheterisation, blood transfusion between second stage and first stage cesarean sections.

Table 1

Socio demographic profile in mother undergoing cesarean section in second stage and first stage of labour

Variable	Second stage (Group I)	First stage (Group II)	P value
Age(years)			
Under 20	20(40%)	17(34%)	0.53
21-30	29(58%)	32(64%)	0.53
30-40	1(2%)	1(2%)	NS
Parity			
Primigravida	36(72%)	38(76%)	0.648
Para 1	6(12%)	8(16%)	0.56
Para 2-4	3(6%)	1(2%)	NS

Table 2

Birth weight and NICU admission in neonates undergoing cesarean section in second stage and first stage of labour

Variable	Second stage (Group I)	First stage (Group II)	P value
Birth weight	2.96kg	2.70kg	P<0.05
Length of stay in NICU	5.29(2-11) days	2.66(2-3) days	
Death	10	0	P<0.001

Table 3

Comparison of maternal outcome among women undergoing cesarean section in second stage of labour with first stage of cesarean section

Maternal morbidity	Second stage (Group I)	First stage (Group II)	P value
Extension of uterine incision	4(8%)	0	NS
PPH	4(8%)	1(2%)	NS
Medical management	1(2%)	0	
B-Lynch	2(4%)	0	
B/L uterine/ovarian artery ligation	1(2%)	1(2%)	
Post partum fever	8(16%)	0	P<0.002
Wound infection	6(12%)	0	P<0.05
Secondary suturing	4(8%)	0	NS
Prolonged bladder catherisation	19(38%)	0	P<0.001
Paralytic ileus	1(2%)	0	0.5
Broad ligament haematoma	1(2%)	0	0.5
Blood transfusion	7(14%)	0	P<0.006

Neonatal outcome among the two groups is shown in Table 4. There were 10 perinatal deaths [20%] and 24 neonatal admissions [48%] in Group I, while there were no deaths in Group II and 3[6%] neonatal admissions in Group II. There was statistically significant difference in APGAR

score <7 at 5 minutes, meconium aspiration, NICU admissions, need for resuscitation, hypoxic ischemic encephalopathy between second stage cesareans compared with first stage cesarean sections.

There were 24(48%) neonatal admissions in Group I while there were 3(6%) in Group II as shown in Table 5. Early neonatal deaths and still birth rate were higher in cesarean section done in second stage of labour.

Table 4

Comparison of neonatal outcome among women undergoing cesarean section at second stage of labour with first stage of labour

Neonatal morbidity	Second stage (Group I)	First stage (Group II)	P value
APGAR Score <7 at 5 minutes	11(22%)	0	P<0.001
Meconium aspiration syndrome	8(16%)	2(4%)	P<0.045
NICU admissions	24(48%)	3(6%)	P<0.001
Resuscitation with bag and mask	18(36%)	0	P<0.001
Birth asphyxia	11(22%)	0	P<0.001
Transient tachypnoea of new born	1(2%)	0	0.5
Hypoxic ischemic encephalopathy			
Grade I	5(10%)	0	P<0.028
Grade II	2(4%)	0	0.24
Grade III	3(6%)	0	0.1
Sepsis	1(2%)	0	0.5

Table 5

Neonatal outcome

Stage of cesarean section	Number of cases in NICU	Alive	Still born	Early neonatal death
Second stage (Group I)	24(48%)	17(34%)	3(6%)	7(14%)
First stage (Group II)	3(6%)	3(6%)	0	0

4. DISCUSSION

Recent data from Nova Scotia suggests that cesarean delivery in labour is associated with increased maternal morbidity compared with cesarean delivery with no labour [6]. The second stage interventions are associated with increased maternal and neonatal morbidity and mortality. Our hospital is a major referral hospital and majority of patients were unbooked and were referred late from different hospitals after getting failed trial of labour or being mismanaged in labour.

In our study, second stage cesareans were more in primigravida, more common among the age group of 21-30 years. In the study by Shahla Baloch and collegues, primigravida and para 5 and above, both needed more frequent second stage intervention, and most of the women who need second stage intervention were between 21-30 years [7].

The frequency of second stage intervention in the form of instrumental vaginal delivery and cesarean section was found high in primigravidas [7]. This could be due to high rate of mismanagement and cephalo pelvic disproportion, rigid perineum, and lack of experience of previous labour in this group of women [7]. Increase in the rate of primary cesarean section is known to be a consequence of changes in maternal characteristics and obstetric practice, such as increase in maternal age, weight, weight gain during pregnancy, labour induction rates and associated with use of epidural anaesthesia [8].

Estimated blood loss, blood stained urine, post partum fever, post partum haemorrhage were greater in the second stage cesarean section group. In our study, there were 4 cases of postpartum haemorrhage, 19 cases of prolonged bladder catheterisation, 7 cases of blood transfusion. In study by Moodley and collegues, there were 3 cases of postpartum haemorrhage, 8 cases of prolonged catheterisation, 7 cases of blood transfusion [9].

Cebekulu and Buchmann from Johannesburg, South Africa, reporting on 39 cases and 39 controls, found that second stage cesarean section were associated with more post operative fever, a significantly greater number of neonatal complications and a significantly greater operative time [8]. They reported that in one-third of women in their study, the foetal head was deeply impacted in the pelvis [5]. The deeply impacted fetal head was found in 34% of cases in our study and these babies were delivered by Patwardhan's method.

Neonatal morbidity was significant in our study, with almost half of the infants requiring NICU admissions. Intraoperative foetal hypoxia was therefore the most common and serious complication associated with second stage cesarean sections. The higher fetal morbidity could be because of prolonged labour and manipulation by different birth attendants before coming to our hospital. Sheiner E et al have demonstrated lower Apgar scores with cesarean in first stage of labour [10], while Murphy DJ and collegues, demonstrated higher risks of fetal trauma with cesarean section in labour [11]. Garretta K *et al* [12], in their study found no difference in Apgar score of new born delivered with cesarean section in second stage. In our study, there is significant difference in the birth weight among second stage cesarean section (2.96kg) with that of first stage cesarean section (2.70kg) while study done by Victoria MA *et al* [13] showed no difference among birth weight in both the groups.

5. CONCLUSIONS

Second stage cesarean sections are associated with significant intraoperative and neonatal morbidity. Higher birth weight of 2.9kg or more is a risk factor for cesarean section in second stage of labour. Labour monitoring with partogram and early referral of high risk women, will reduce the incidence of second stage cesarean sections.

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