

# Feto-maternal outcome assessment of caesarean section during second stage of labor in a tertiary care facility

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## Abstract

**Aim:** To assess the maternal and fetal outcome of caesarean section in second stage of labour.

**Methods:** This prospective observational study was carried out in the department of Obstetrics and Gynecology at VIMS, Dahanu for the period of 2 years. Total 400 patients were included into the study. All caesarean sections performed at full cervical dilatation over the time period of Two years at a VIMS hospital Dahanu.

**Results:** During the Two years period, a total of 24600 women delivered by caesarean section, 16800 emergency and 7800 elective cases. Of these 400 (2.38%) were at full cervical dilatation, >37 weeks gestation with a singleton fetus in cephalic presentation. Among the 400 patient's majority of them were in the age group of 20-30 years (72.5%). about 75.5% of the patients were primigravidae and only the remaining 24.5% were multigravida. The commonest indications for doing caesarean section in the second stage of labour were cephalo pelvic disproportion, fetal distress and obstructed labour. Incidence of PPH is 48 out of 400 cases (12%). Post-operative wound infection was seen in 23(5.75%) and Post-operative fever was seen in 70(17.5%) out of 400 cases. There were no cases of maternal deaths reported. The mean operative time was 52.9 min .The mean length of hospital stays was 6.6 days. Mean weight of the babies of the second stage caesarean section was 3.2 kg. 20 (5%) babies were admitted to the Neonatal Intensive Care Unit and 53 (13.25%) to neonatal nursery for management of respiratory distress, sepsis, jaundice and observation. 46 (11.5%) babies had Neonatal jaundice and there were 3 neonatal deaths reported.

**Conclusion:** Cesarean sections done in second stage of labor are associated with several intra-operative maternal complications and neonatal morbidity.

**Keywords:** Caesarean complications, emergency caesarean section, maternal morbidity, neonatal morbidity, second stage of labor

## Introduction

Cesarean Section is the most commonly performed abdominal operation in women all over the world <sup>[1]</sup>. Recent data suggest that cesarean delivery in labour is associated with increased maternal morbidity compared with cesarean delivery with no labour. One fourth of the primary cesarean section is reported to be performed in the second stage of labour and is more complicated compared to the ones performed in the first stage. The second stage of

labour is defined as the time elapsed from full dilatation of the cervix to expulsion of the fetus. More importantly, the extension of time given to the second stage of labour has been shown to increase the overall rate of vaginal births without adversely affecting neonatal morbidity. However, maternal morbidities are increased and include operative vaginal delivery, anal sphincter tears, postpartum hemorrhage and emergency cesarean sections (C/S) [2]. Neonatal mortality and morbidity due to hypoxia and fetal trauma remains to be one of the major issues regarding the cesarean section performed in the second stage of labour. 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 [3]. Cesarean section at full cervical dilatation with an impacted fetal head can be technically difficult and is associated with increased trauma to the lower uterine segment and adjacent structures as well as increased hemorrhage and infection [4]. Although the morbidity of cesarean in the second stage of labor has been reported in comparison with operative vaginal delivery, the morbidity in comparison with cesarean delivery in the first stage of labor is less well known. Although second stage C/S may be necessary, many of them could be avoided by the attendance of skilled senior care provider and implementation of proper instrumental delivery. In second stage C/S, delivery of the fetus will be difficult due to deeply impacted head in the pelvis, particularly when instrumental delivery is attempted and failed [5]. Second stage caesarean section is associated with increased maternal as well as fetal complications as it is technically difficult to perform because of the deeply impacted fetal head in the pelvis and the presence of thinned out edematous lower segment [6].

## Material and methods

This prospective observational study was carried out in the department of Obstetrics and Gynecology at VIMS Dahanu for the period of 2 years, after taking the approval of the protocol review committee and institutional ethics committee. After taking informed consent detailed history was taken from the patient or the relatives if the patient was not in good condition.

Total 400 patients were included into the study. All caesarean sections performed at full cervical dilatation over the time period of two year at a government hospital. Caesarean section cases were identified through data log of the operating theatre. Record of labor and operation reports, were reviewed for all CS cases over the study period. Women with a singleton fetus in cephalic presentation at term ( $\geq 37$  weeks) who underwent CS at full dilatation were included in the study while the multigravida with comorbid conditions like diabetes and preeclampsia were excluded from the study. Indications, instrumentation before caesarean section, intra operative Complications like haemorrhage, uterine incision extension, atonic post-partum haemorrhage (PPH), postoperative complications like febrile illness, wound infection and neonatal morbidity and mortality were evaluated.

## Results

During the two year period, a total of 24600 women delivered by caesarean section, 16800 emergency and 7800 elective cases. Of these 400(2.38%) were at full cervical dilatation,  $>37$  weeks gestation with a singleton fetus in cephalic presentation.

Among the 400 patient's majority of them were in the age group of 20-30 years (72.5%). about 75.5% of the patients were primigravidae and only the remaining 24.5% were multigravida. 80% of patients from BPL socioeconomic class and 20% only from APL socioeconomic class. Majority were booked patients, only 1% was unbooked from remote

areas near the district. The commonest indications for doing caesarean section in the second stage of labour were cephalo pelvic disproportion, fetal distress and obstructed labour.

**Table 1:** Maternal demographic features

Age	N=400	%
Below 20 years	11	2.75
20-30 years	290	72.5
30-40 years	60	15
Above 40 years	39	9.75
<b>Socio economic status</b>		
APL	80	20
BPL	320	80
<b>Parity</b>		
Primi	302	75.5
Multi	98	24.5
<b>Gestational age</b>		
37-38 weeks	165	41.25
38 weeks 1 day-39 weeks	176	44
39weeks 1 day-40 weeks	48	12
≥40 weeks	11	2.75

**Table 2:** Maternal complication

Maternal Complications	Number	Percentage
Atonic PPH	48	12 %
Uterine incision extension	55	13.75%
Postoperative fever	70	17.5%
Wound infection requiring resuturing	23	5.75%
Maternal death	nil	
bowel or bladder injury	Nil	
Blood transfusion required	10	2.5
Blood stained urine	70	17.5

Incidence of PPH is 48 out of 400 cases (12%). There were no cases of bowel or bladder injury reported. Post-operative wound infection was seen in 23(5.75%) and Post-operative fever was seen in 70(17.5%) out of 400 cases. There were no cases of maternal deaths reported. The mean operative time was 52.9 min. The mean length of hospital stays was 6.6 days. Mean weight of the babies of the second stage caesarean section was 3.2 kg. 20(5%) babies were admitted to the Neonatal Intensive Care Unit and 53 (13.25%) to neonatal nursery for management of respiratory distress, sepsis, jaundice and observation.46(11.5%) babies had Neonatal jaundice and There were 3 neonatal deaths reported.

**Table 3:** Fetal and new born complication

Perinatal complications	Number	%
Meconium stained liquor	135	33.75%
Admission to nursery	53	13.25%
NICU admission	20	5.0%
Neonatal jaundice	46	11.5%
Cephalohematoma	2	1.3%
Apgar score <7 at 5 min	43	10.75%
neonatal deaths	3	0.75
stillbirth	2	0.50
Respiratory distress	131	32.75

## Discussion

The international literature <sup>[7, 8]</sup> suggests that within a rising CS rate, there is an increasing trend to perform CS at full cervical dilatation. The strong medico-legal mind set in current obstetrics and concerns over neonatal and maternal morbidity associated with difficult or failed instrumental delivery may contribute to this trend <sup>[2]</sup>. Over the 2-year study period, the overall CS rate was higher than international rates <sup>[7, 8]</sup>. This higher rate of CS might be because VIMS hospital, Dahanu is a referral centre where high-risk patients from surrounding districts are referred, mostly for operative deliveries. However, our rates of CS at full cervical dilatation are lower than other published cohorts <sup>[8]</sup>. The lower rate may be explained by more women not reaching full dilatation due to an arrest in the first stage of labor or unsuccessful induction of labor. Caesarean section in the second stage of labor is a technically difficult operation with distortion of pelvic anatomy and the fetal head that is often deeply impacted in the maternal pelvis. Women delivered by CS at full dilation have a higher risk of obstetric haemorrhage, bladder injury, extended uterine tear leading to broad ligament hematoma, infection and longer hospital stay <sup>[6]</sup>. A retrospective study from Canada has shown that women delivered by Caesarean sections at full dilatation of the cervix were 2.6 times likely to have intraoperative traumatic complications <sup>[6]</sup>. In our study uterine incision extension was seen in 13.75%, which is slightly higher compared to the other studies <sup>[9, 10]</sup>. This might be due to the fact that the most common indication of second stage in our study was cephalopelvic disproportion with major caput and moulding formation making the delivery of the fetal head challenging. The most common maternal operative complications seen in our study was blood stained urine in 70(17.5%), febrile illness in 67(16.75%) and wound infection in seven 23(5.75%) cases. Atonic postpartum haemorrhage was seen in 48(12%) cases, which is near to in the previous studies <sup>[9, 10]</sup>. The use of prophylactic uterotonic in second stage Caesarean could have contributed to this decreased number. One woman returned to the operating room for management of postpartum haemorrhage. The rest of the PPH cases were managed with uterotonic drugs and uterovaginal packing. 10 (2.5%) of these women required blood transfusion. Controversies regarding the fetal outcome in the cases of caesarean sections in second stage of labor are seen throughout literature. Adverse prognostic impact on fetal outcome was noted in the studies conducted by Sucak <sup>[11]</sup> and Asicioglu *et al.* <sup>[12]</sup> However this was contradicted by other studies <sup>[13, 14]</sup>. The most common fetal complication was meconium stained amniotic fluid, seen in 135(33.75%) cases which is comparable to other studies <sup>[15]</sup>. This might be due to intra-operative fetal hypoxia caused by strong uterine contraction, deeply impacted fetal head and longer duration of second stage labor. Neonatal Intensive Care Unit admission rate of 20(5.0%) and nursery admission rate of 53(13.25%) seen in our study is consistent with published literature <sup>[16]</sup>. This was mostly due to newborns requiring septic screening and intravenous antibiotics. Fresh still birth and perinatal deaths were recorded 23 (4.9%) and 7 (1.5%), respectively in a study <sup>[17]</sup>. While we had only 2 fresh stillbirth and 3 early neonatal death. Similarly, the same study <sup>[17]</sup> reported 37 (6.6%) cases with Apgar score less than five at five minutes while only 43 (10.75%) of our babies had an Apgar score of complications. It can be avoided by careful judgement for cephalopelvic disproportion, attendance of skilled health care provider during labor and deliveries and implementation of effective instrumental delivery leading to a better fetomaternal outcome. The focus should be on ensuring normal progression of labor, proper use of the partogram, pain relief measures, oxytocin augmentation and the promotion of effective pushing techniques.

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