Original Research Article

A Cross Sectional Study of Feto-Maternal Outcome for Second Stage Cesarean Delivery

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Abstract

Background: Caesarean delivery at full dilation of cervix is associated with increased technical difficulty and feto-maternal complications.Objectives: To know the short term maternal and foetal outcome in second stage caesarean deliveries. **Material & Methods:** This is a descriptive, prospective cross-sectional study done at Vani Vilas hospital attached to Bangalore medical college and research institute from Jan 2022 to Dec 2022. Intra operative and immediate post operative complications were collected from case record, mother and new-born were followed during hospital stay till discharge. Data entered in MS excel sheet and analysed using SPSS version 20.0. Descriptive statistics of the explanatory and outcome variables were calculated by mean, standard deviation for quantitative variables, frequency and proportions for qualitative variables. **Results:** Sample size was 98 women in one year. Mean Age of the sample population is 25.71±3.26 years, 67.3% are primi gravid women. Common methods of extraction included Vertex and Patwardhan method. Extension of hysterotomy incision seen in 20.4%. PPH seen in 16% of women. About 16% of new-borns required NICU admission. One still birth and two neonatal deaths were noted. **Conclusions:** Second stage caesarean delivery carries increased morbidity both to mother and child. Skill and expertise are required to reduce the complications during second stage caesarean sections.

Keywords: Second stage, caesarean delivery, PPH, Hysterotomy extension, neonatal deaths

Introduction

With decreasing instrumental deliveries, there has been substantial increase in the second stage caesarean sections. As per Royal college of obstetricians, 35% caesarean sections are done for singleton pregnancies and about a quarter of them are done in the second stage.[1] Full dilatation caesarean deliveries are increasing over decades from 0.5% in 1976 to 2.1% in 2006.[2] About 8000 second stage sections were done in United Kingdom in 2014 alone.[3] Many factors contribute to increased second stage sections including lack of training for instrumental deliveries, litigation fears, malposition, epidural analgesia, increasing birth weight, oxytocin abuse and lack of senior obstetrician during odd hours.[4,5]

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Second stage caesareans are not without morbidity. Short term complications like difficult extraction, hysterotomy extension, lower segment tear, post-partum haemorrhage, sepsis, visceral injuries (bladder, ureter) and neonatal complications like stillbirth, hypoxic ischaemic encephalopathy, intensive care admissions are higher among full dilatation caesareans. [6-9] The long-term morbidity of prolonged second stage are also being studied, including effect on pelvic floor defects, urinary and anal incontinence. [10,11]

Material and Methods

This is a prospective, observational study with cross sectional design. Objective of the study is to know the short term maternal and neonatal complications during the second stage caesarean deliveries and also to collect data in the immediate post operative hospital stay. Institutional ethical committee clearance was obtained (No: BMCRI/PS/107/2022-23).

Study population - included 98 primi and muti parous women with term gestation and singleton, cephalic presentation taken up for caesarean in view of second stage arrest. Multiple pregnancy and non-cephalic presentations were excluded.

Data was collected from case record regarding the indication, method of extraction, blood loss, post-partum haemorrhage (more than 1000ml), hysterotomy incision extension, broad ligament haematoma, need for blood transfusion. Neonatal outcome data in terms of birth weight, APGAR scores, need for resuscitation / intensive care, stillbirth or neonatal deaths was also collected. Postoperative complications like prolonged catheterization (> 24 hours), post

operative wound infection (purulent discharge, redness, wound dehiscence), puerperal sepsis (fever with infective lochia, uterine/pelvic tenderness) were noted down.

Statistical analysis - Data was entered in the excel spread sheet. Descriptive statistics of the explanatory and outcome variables were calculated by mean, standard deviation for quantitative variables, frequency and proportions for qualitative variables.

Results

Ninety-eight women fulfilling inclusion and exclusion criteria were included with consent. Women aged 18 to 36 years were included in this study. Majority of women belonged to 26-30 years, mean age being 25.71±3.26 years. Out of 98 women, 66 were primi and 32 were multiparous women.

Causes for second stage caesarean delivery as reported by attending obstetrician are depicted in the following table no.1. Arrest of descent is the main cause contributing to 60.3% of cases.

Table 1: Causes for Second stage caesarean delivery

Causes	Frequency	Percentage
Secondary arrest of descent	59	60.3
Deep transverse arrest	10	10.2
Persistent occipito-posterior	12	12.2
Cord around neck	11	11.2
Macrosomia (more than 4 kg)	06	06.1
Total	98	100

In 65% of cases, operating surgeon reported difficulty in extraction. Table 2 shows different methods of extraction. Vertex extraction was the commonest method employed followed by Patwardhan technique. Push method where assistant lifts the head from vaginal fingers was not used in our hospital.

Table 2: Type of extraction during caesarean section

Type of Extraction	Frequency	Percent
Vertex	53	54.1
Patwardhan's technique	43	43.8
Reverse Breech	02	2.1
Push method	00	00
Total	98	100

Intra operative complications are shown in Table no.3. Hysterotomy angle extension and PPH (Postpartum haemorrhage) were the common complications. No cases of bladder or ureter injury among these cases. Three women required packed cell blood transfusion (one unit).

Table 3: Intra operative events

Intra OP Complication	Number	Percentage
Hysterotomy angle extension / Lower segment tear	21	21.4
PPH (more than 1000ml)	16	16.3
Bilateral uterine artery ligation	02	2.1
Blood transfusion	03	3.06

Foetal / neonatal outcome is depicted in table 4. Eleven babies had low APGAR at 5 minute and required resuscitation beyond simple stimulation techniques like positive pressure ventilation. One baby was stillborn and two neonatal deaths were seen in this study. Cause of neonatal deaths was due to meconium aspiration syndrome. There were no cases of neonatal injuries or trauma.

Table 4: Foetal/neonatal outcome

Foetal Outcome	Frequency	Percent
APGAR less than 3 at 5 minutes	11	11.2
NICU admission	16	16.32
Meconium aspiration	07	7.2
Stillbirth	01	1.02
Neonatal deaths	02	2.04

Post operative complications included Prolonged catheterisation (more than 24 and up to 72 hours) in three women. Surgical site infection seen in 13 women, out of which, 7 women required resuturing. No cases of puerperal sepsis were seen in this study.

Discussion

Safety of caesarean delivery has increased over the decades, but increased complications are seen in the 2nd stage caesarean deliveries Vs 1st stage caesarean deliveries. [12] Total deliveries in our centre for the study period was 15,783 and caesarean deliveries were 6536. Second stage caesareans contributed for 1.5%.

Mean age group in our study is 25.71±3.26 years and 66% were primi gravida women. Second stage caesarean deliveries are generally more in primigravida than in multiparous women, probably due to undiagnosed CPD (Cephalo-pelvic disproportion) and rigid perineum. Nisha malik et al reported second stage caesarean rate of 68.6% in primi.[7] Study by Anusha reflected a figure of 74% in primi Vs 26% in Multi.[6] Many factors contribute to second stage arrest including non-descent of fetal head, undiagnosed CPD, fetal distress and cord around neck. Common cause for second stage stage arrest in this study are arrest of descent (60.3%), persistent occipito-posterior (12.2%) and cord around neck (11.2%) followed by deep transverse arrest (10.2%). CPD as a cause was not written as indication by operating surgeon in our study. Macrosomia as a cause was documented in 6.1% of cases when the birth weight was more than or equal to 4 kg. The common indications for second stage sections reported by Prachi Dahiya et al included arrest of descent in 28.8% and fetal distress in 9.4%. [8] Khaniya reported arrest of descent in

93% of cases. [13] Difficulty in extraction and hysterotomy angle extensions are considered to be important complications in second stage caesarean deliveries. Techniques like Patwardhan method and reverse breech extraction are associated with less hysterotomy extension or lower segment tears. [14,15] The common methods employed in this study are direct vertex extraction (54.1%) by inserting hand between head and pelvis followed by Patwardhan technique (43.8) where shoulders are delivered first followed by trunk, breech and head in that order. As per surgeon experience uterine incision is placed slightly higher in lower segment compared to routine ceasarean deliveries. Techniques of extraction vary considerable among various studies depending on fetal station, surgeon experience and comfort with specific technique. If shoulders are at the level of incision Patwardhan technique is preferred. Nisha malik et al reported Patwardhan technique in 61.2% and Prachi dahiya et al reported in 26.4% of cases. [7,8] we do not use fetal pillow or C snorkel device in our center, due to non-availability. [16]

Hysterotomy extension, and lower segment tear are dependent on the method of extraction. Hysterotomy extension seen in 21.4% and PPH in 16.3%, which is higher compared to other studies Dahiya et al (16% and 9.4%), Malik et al (6.6% and 4.7%), [8,7] may be attributable for vertex as the preferred method of extraction. Anusha et al reported PPH rate of 74% in her study on second stage cesarean deliveries. 16.3% of babies required admission to NICU. Neonatal complications included one still birth and two neonatal deaths in our study, attributed for meconium aspiration syndrome. Increase in meconium-stained liquor is common in second stage cesarean deliveries due to birth asphyxia. Dahiya et al,[8] reported Meconium aspiration in 14.1% and birth asphyxia in 16% of cases and one still birth. Malik et al, [7] reported NICU admissions in 27.6%.

Complications like hysterotomy extension, lower segment tear and traumatic PPH management requires skill and expertise. Patwardhan technique extraction also needs skill and judgement. It is important to train residents and junior faculty in these techniques as senior obstetrician may not be available in odd hours.

Conclusion

Increased maternal and fetal complications are seen in second stage cesarean deliveries. Complications may be minimised by skill-based training of residents and faculty.

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