

## Indication & Outcome of Second Stage Caesarean Section; A Longitudinal Study

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### Abstract

**Background:** Caesarean section is one of the common surgical interventions to save lives of the mothers and/or the newborns. However there is an alarming rise in caesarean section leading to increased adverse outcomes for both the mother and fetus when compared with vaginal delivery. Within this increasing caesarean section rate, there is a concerning increase in the rate of second stage caesarean section. Due to a limited literature regarding this topic in the Indian scenario, the present study was done to assess the predisposing factors, indications of second stage caesarean section and its fetomaternal outcome. **Material and Methods:** In Present descriptive longitudinal study 211 patient's undergone caesarean sections at full cervical dilatation were included as per inclusion and exclusion criteria. A pilot study was done for validation, practicality and applicability of questionnaire. **Results:** In present study most cases were in the age group of 26 to 30 years (38.38%). The most common indication for emergency second stage caesarean section was non-progression of labour followed by obstructed labour. Atopic PPH, hematuria was the commonest intraoperative complications while pyrexia, prolong catheterization was the predominant post-operative complications NICU admission needed for 16.11% babies due to birth asphyxia and respiratory distress. **Conclusions:** Caesarean section in the 2nd stage of labor is associated with maternal and neonatal morbidity and mortality. These factors needs to be anticipated to reduce mortality and morbidity associated with it. A proper judgment is required by a skilled obstetrician to take a decision for caesarean section at full cervical dilatation.

**Keywords:** Caesarean section, Second stage of labor, Neonatal, Maternal, Complication.

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## INTRODUCTION

Pregnancy and parturition are events of considerable importance in the life cycle of women. Pregnant women may deliver their children via normal spontaneous vaginal delivery or through cesarean section. Parturition or giving birth is physiological; however, it poses a significant risk to the life and well-being of both mother and child [1]. Caesarean sections have become increasingly common in both developed and developing countries for a variety of reasons [2, 3]. As with any surgical procedure, caesarean sections are associated with short and long-term risks that may

persist for years after the current delivery and affect the woman, her baby, and future pregnancies.

The second stage of labor is a period from full cervical dilatation (10 cm) until the delivery of the fetus [4]. The incidence of caesarean section has increased tremendously over the recent year [5]. Caesarean deliveries done in second stage of labour account for one-fourth of all primary caesarean sections [6]. Caesarean sections done at full cervical dilatation with impacted foetal heads are technically difficult and they are associated with an increased incidence of maternal and foetal morbidities [7].

Due to a limited literature regarding this topic in the Indian scenario, the present study was done to assess the indications of second stage caesarean section and its fetomaternal outcome.

## MATERIAL AND METHOD

The present descriptive longitudinal study was carried out to study indication and outcome of second stage caesarean section. The study was carried out for a period of 2 years i.e. from April 2020 to March 2022. The study was done in accordance with the ethical standards framed out in the Helsinki Declaration. Study was carried out at Saidham Hospital affiliated to Dr. Mane Medical Foundation and Research Center (DMMFARC). In present study primi or multigravida with singleton pregnancy, with or without history of previous LSCS etc. were included while mother having co-morbid conditions, not willing to participate were excluded. The sample size for this study was calculated using the statistical formula. By considering 27% cephalo-pelvic disproportion (CPD) as indication for second stage caesarean section from previous study [8] using following formula sample size was calculated.

$$n = \frac{z^2 p (1 - p)}{d^2}$$

Where,

n = Estimate of minimum sample size

z = Value of  $\alpha$  at 95% confidence level which is 1.96

p = 27% CPD

d = Absolute precision set 6%

Using these values, the sample size worked out to be 211.

A pilot study was done for validation, practicality and applicability of questionnaire. It was carried out using predesigned questionnaire. According to answers obtained and difficulties faced during pilot study, rectification was done and questionnaire modified accordingly. Predesigned and pretested questionnaire was used for data collection. Study questionnaire consists of three parts Part 1: Includes socio-demographic variables Part 2: Obstetrics and Gynaecology History Part 3 (A): Caesarean section Part 3 (B) Fetomaternal outcome. Data tools were checked for their completeness and data entry and coding was done in Microsoft Excel. The raw data was compiled, classified and presented in a tabulated and graphical manner to bring out important details.

## RESULTS

In present study 211 cases of second stage caesarean section were studied. The age distribution of patients showed in table 01. Most cases were in the age group of 26 to 30 years (81, 38.38%). Majority of the cases were between 40 to 42 weeks of gestation (141, 66.82%), 25.59% (54) were between 37 to 39 weeks and 4.73% (10) and 2.84% (06 cases) were of preterm and post term respectively.

**Table 1: Age distribution of the patients (N=211)**

Sr. No	Age groups (Yrs.)	Frequency (%)
1.	18 Yrs. to 20 Yrs.	39 (18.48%)
2.	21 Yrs. to 25 Yrs.	64 (30.33%)
3.	26 Yrs. to 30 Yrs.	81 (38.38%)
4.	31 Yrs. to 35 Yrs.	21 (9.95%)
5.	≥ 36 Yrs.	06 (2.84%)
	<b>Total</b>	<b>211 (100%)</b>

Out of 211 cases 79.62% (168) cases were booked and 20.37% (43) were un-booked. In present study 31.27% (66) and 68.72% (145) females were multigravida and primigravida respectively. Among multigravida patients 74.24% (49) had history of

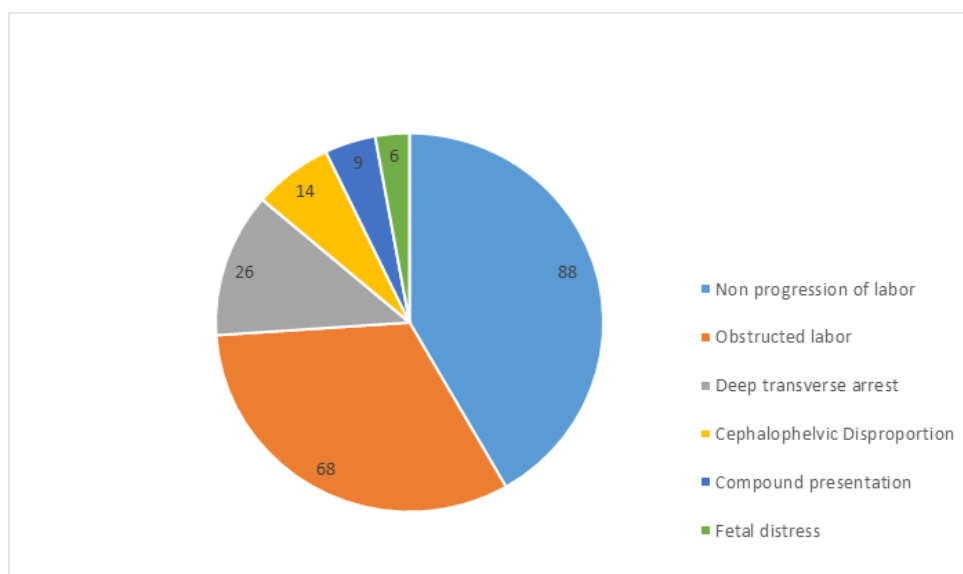
unassisted vaginal delivery, 3.03% (02) had history of assisted instrumental deliveries, while 13.63% (09) and 09.9% (06) had past history of LSCS and history of unassisted vaginal delivery with LSCS respectively

**Table 2: Primary Indication of Second Stage Caesarian Section (N=211)**

Sr. No	Indication	Frequency (%)
1.	Non progression of labor	88 (41.70%)
2.	Obstructed labor	68 (32.22%)
3.	Deep transverse arrest	26 (12.32%)
4.	Cephalopelvic Disproportion	14 (6.63%)
5.	Compound presentation	09 (4.26%)
6.	Fetal distress	06 (2.84%)
	<b>Total</b>	<b>211 (100%)</b>

In present study, (Table 2) the most common indication for emergency second stage caesarean section was non-progression of labour (41.70%)

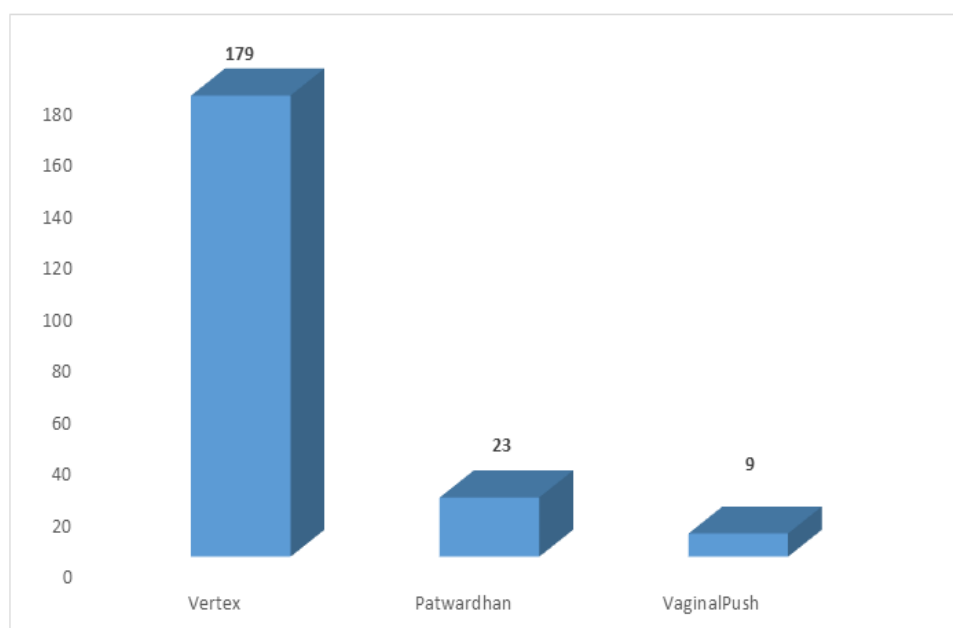
followed by obstructed labour (32.22%). Least common indication was found to be fetal distress (02.84%) (Graph 1).



**Graph 1: Indication of IIInd Stage Caesarean**

In this study the cases were divided into; three delay model" to know the accurate cause of delay to access quality of obstetrics care. Of the total patients 78.67% (166) cases did not have delay while 21.32% (45) had delay due to one of the three causes of delay. The most common delay was from the health care side (27) followed by delay in decision making (11) and

transportation (07). Some cases were having multiple delays. Graph 2 depicted the technique of delivery of deeply engaged head. Vertex or cephalic technique (84.83% 179) used most commonly in present study and flowed by Patwardhan (10.90%, 23) and 09 (04.26%) by vaginal push methods.



**Graph 2: Technique of extraction**

Commonest Intraoperative and postoperative complications seen in patients are given in Table 3. In present overall rate of complication was 78%. Atopic PPH (34.59%), hematuria (43.12%), extension of uterine incision (16.58%) were the commonest

intraoperative complications while prolong catheterization (43.12%), prolong hospital stay (41.70%) and pyrexia (47.86%) were the predominant post-operative complications. Some patients had more than one complication.

**Table 3: Complication (Intra-operative and Post-operative)**

Sr. No	Complication	Frequency (%)
1.	Atonic PPH	73 (34.59%)
2.	Hematuria	91 (43.12%)
3.	Uterine incision extension	39 (18.48%)
4.	Uterine artery ligation	35 (16.58%)
5.	Prolong catheterization	91 (43.12%)
6.	Prolong hospital stay	88 (41.70%)
7.	Pyrexia	101 (47.86%)

Majority of the babies were healthy, cried immediately after birth and required no NICU admission. In the present study 16.11% (34) babies required NICU admission due to birth asphyxia (08) and respiratory distress (26); Out of these 02 newborns died. There was no maternal death in the present study.

## DISCUSSION

In the present study, indication and foeto-maternal outcome of 2nd stage caesarean section deliveries conducted at tertiary care hospital were studied. In this longitudinal study total 211 cases of second stage caesarean section were included as per inclusion and exclusion criteria. In this study most cases were in the age group of 26 to 30 years (38.38%). Majority of the cases were between 40 to 42 weeks of gestation (141, 66.82%), 25.59% (54) were between 37 to 39 weeks and 4.73% (10) and 2.84% (06 cases) were of preterm and post term respectively. In study conducted by Nandan T *et al.*, (2020) [9] among the 200 patient's majority of them were in the age group of 20-30 years (73.5%) and about 77.5% of the patients were primigravidae and only the remaining 22.5% were multigravida. In Babre VM *et al.*, (2017) [10] study out of 61 sample size primigravida was 45 (74%) and multigravida was 16 (26%). Gupta K *et al.*, (2019) [8] study reported that out of 100 cesarean sections, most of the cases were in the age group of 21-30 years (46%), and 64% were booked and 81% were Primigravida.

In present study out of 211 patients 78.67% (166) cases did not have delay while 21.32% (45) had delay due to one of the three causes of delay. The most common delay was from the health care side (27) followed by delay in decision making (11) and transportation (07). Some cases were having multiple delays. The most common indication for emergency second stage caesarean section was non-progression of labour (41.70%) followed by obstructed labour (32.22%). Least common indication was found to be fetal distress (02.84%). In Nandan T *et al.*, (2020) [9] study the commonest indications for doing caesarean section in the second stage of labor were cephalic pelvic disproportion, fetal distress and obstructed labor. Babre VM *et al.*, (2017) [10] reported that fetal distress due to non-descent of head due to cephalopelvic disproportion (CPD) and deep transverse arrest were the most common indication of second stage of C-section.

Deeply engaged head was most commonly deliver by cephalic method (84.83%) in this study. Similar finding reported in Gupta K *et al.*, (2019) [8] study. In her study most commonly, baby was delivered either by vertex (44%) followed by Patwardhan method (31%). In the present study hematuria and atonic PPH were the most prevalent intra-operative complications while pyrexia and prolonged catheterization were the most common postoperative complications. A study by Gupta K *et al.*, (2019) [8] found atonic PPH in 35% of patients and prolonged hospital stay in 49% of cases. Khaniya B *et al.*, (2020) [4] reported prolong catheterization in 38.88% cases while postoperative fever and prolong hospitalization in 27.77% and 13.88% cases respectively.

In this study majority of the babies were healthy, cried immediately after birth and required no NICU admission. In the present study 16.11% (34) babies' required NICU admission due to birth asphyxia (08) and respiratory distress (26); Out of these 02 newborns died. There was no maternal death in the present study. Khaniya B *et al.*, (2020) [4] reported 5.54% NICU admission and 2.77% still birth. Khurshid N *et al.*, (2021) [11] reported 01 maternal death in his study. In study conducted by Gupta K *et al.*, (2019) [8] 44% of the babies needed nursery admission. There were no cases of maternal deaths reported by Nandan T *et al.*, (2020) [9] study, while 5.5% babies were admitted to the Neonatal Intensive Care Unit, 2 neonatal deaths reported by this study.

## CONCLUSIONS

Caesarean section in the 2nd stage of labor is associated with maternal and neonatal morbidity and mortality. These factors needs to be anticipated to reduce mortality and morbidity associated with it. A proper judgment is required by a skilled obstetrician to take a decision for caesarean section at full cervical dilatation.

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