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Prediction of Cesarean delivery in Term Nulliparous Women after Induction of Labor at a Tertiary care teaching Hospital of North India

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Abstract

Aim: To identify independent predictors of cesarean section in a term nulliparous women.

Methods: A cohort study included of 300 nulliparous patients presenting in labour at term with singleton vertex fetuses who were followed till delivery either vaginally (n = 198) or by cesarean section (n = 102). Multiple logistic regression was used to identify independent demographic and clinical predictors for cesarean delivery.

Results: Increased maternal weight, advanced gestational age, social pressure, change in cervical dilatation & cervical effacement after two hours of admission, finally change in fetal head station after two hours of admission remained independently significant.

Conclusions: The use of demographic and clinical criteria early during labour in nulliparous women with vertex presentation may reduce the potential morbidity associated with prolonged labour or second stage cesarean delivery.

Keywords: Term, Nulliparous women, Cesarean section; Vertex presentation

Introduction

The rapid increase in cesarean birth rates without clear evidence of concomitant decreases in maternal or neonatal morbidity or mortality raises significant concern that cesarean delivery is overused. Approximately one-third of births in the United States are via cesarean section (CS). The rate of cesarean section has increased dramatically since the 1990s, reaching a peak of 32.9% in 2009. The primary cesarean section rate has increased from 14.5% in 1996 to 23.4% in 2007 and become a major driver in the total cesarean section rate [1].The cesarean section rise is most prominent in women with previous sections and in nulliparous women with a term cephalic in spontaneous labour.[2] The proportion of inductions of labour decreases in favor of elective cesarean section, while the ongoing inductions of labour more often end in non elective cesarean section. As the rate of cesarean section continues to rise in, it is important to analyze the reasons for this trend and to unravel the underlying motives to perform cesarean section [3]. Management of early labour in the particular subgroup of nulliparous women at term, with singleton fetuses in vertex presentation, may have a significant impact on the total cesarean section rate [4].

The aim of this study was to identify predictors that place a term nulliparous patient with vertex presentation in labour at risk for cesarean section.

Methods

This was a prospective cohort study carried out at the labour room of Department of Obstetrics and Gynecology,SKIMS,Soura in the period between July 2017 and December 2018 .

An informed consent was obtained from all participants prior to commencing the study. The study was conducted on 300 pregnant nulliparous women at 37 weeks and beyond, in labour with single fetus in vertex presentation, reactive non-stress test and normal umbilical arterial Doppler indices. Labour was defined as the persistence of at least two symptomatic uterine contractions within a 10-minute period in the presence of cervical dilation between 1 and 3 cm and cervical effacement of at least 50%.

A detailed history including age, parity, and period of gestation were noted and details of clinical examination were also recorded.

Exclusion Criteria

Women with non-vertex presentation, preterm labour, multiple pregnancy, intrauterine fetal death, fetal macrosomia, fetal congenital malformations, polyhydramnios, severe anemia, severe hypertension, uncontrolled diabetes mellitus, coagulopathy and any contraindication for the vaginal delivery were excluded from the study.

Eligible women accepting to participate in the study were examined regularly every 1-2 hours after admission to evaluate the degree of cervical dilatation and progress of labour. Vital signs were also monitored. Artificial rupture of membranes (AROM) was performed for women with intact membranes when their cervical dilatation reached 4 cm and intravenous oxytocin infusion was started if there are inadequate uterine contractions. Continuous electronic fetal monitoring was used during delivery and the modified WHO partograph was used for follow up for the progress of labour.

The patients were divided into two groups according to the mode of delivery, normal vaginal delivery group (n = 198) and cesarean section group (n = 102). The decision for cesarean section in our study population was based on clinical basis as failure to progress andabnormal fetal heart rate (FHR) tracing.

Statistical analysis

Data were collected, tabulated, statistically analyzed by computer using SPSS version 20. Descriptive statistics and Analytic statistics was used.

Results

A total of 300 patients were studied during the study period.

Table 1: Maternal characteristics

	Vaginal delivery group (n=198)	Cesarean delivery group (n=102)	P-value
Age in years (Mean ± SD)	21.52 ± 4.21	23.79 ± 4.20	< 0.05
Duration of marriage in months (Mean ± SD)	14.43 ± 8.45	14.82 ± 6.96	> 0.05
Weight in Kg (Mean ± SD)	72.07 ± 7.61	75.52 ± 8.12	< 0.05
Height in cm (Mean ± SD)	162.79 ± 5.0	161.82 ± 4.81	< 0.05
Gestational age in weeks (Mean ± SD)	38.78 ± 0.85	39.34 ± 1.30	< 0.05
Hemoglobin concentration in gm% (Mean ± SD)	10.7 ± 0.88	10.87 ± 0.98	> 0.05

Table 2: Labour criteria at admission

	Vaginal delivery group (n=198)	Cesarean delivery group (n=102)	P-value
Meconium stained amniotic fluid (n/%)	28	54	< 0.001
Rupture of membranes (n/%)	104	44	< 0.05
Head station ≥ 0 station (n/%)	176	18	< 0.001
Cervical dilatation in cm (Mean ± SD)	5.61 ± 1.60	4.30 ± 1.23	< 0.001
Cervical effacement in % (Mean ± SD)	77.96 ±11.34	63.06 ±14.08	< 0.001
Estimated fetal weight by U/S in Kg (Mean ± SD)	3.04 ± 0.19	3.34 ± 0.46	< 0.001
Pyscosocial	12	34	< 0.001

Table 3: Changes in cervical dilatation & effacement and fetal head station after two hours.

	Vaginal delivery group (n=198)	Cesarean delivery group (n=102)	P-value
Cervical dilatation after 2hours (Mean ± SD)	6.92± 1.54	5.07 ± 1.38	< 0.001
Cervical effacement after 2 hours (Mean ± SD)	87.52± 10.57	66.92 ±13.84	< 0.05
Head station ≥ 0 station (n/%)	186	64	< 0.001

Table 4: Labour dynamics.

	Vaginal delivery group (n=198)	Cesarean delivery group (n=102)	P-value
Augmentation by Oxytocin (n/%)	86.1%	75%	> 0.05
Analgesia during labour -None -Epidural -IM Pethidine	86.1% 2.7% 11.2%	86.1% 1.3% 12.5%	> 0.05
Neonatal weight in kg (Mean ± SD)	3.06 ± 0.19	3.40 ± 0.45	< 0.001

Table 5: Predictors of cesarean section by univariate and multivariate analysis.

	β-coefficient	P-value	Odd's ratio
Maternal weight	-0.02	< 0.05	0.98
Gestational age	0.84	< 0.05	2.3
Pyschosocial stress	-0.57	< 0.05	0.6
Change in cervical dilatation after 2 h	-0.14	< 0.05	0.84
Change in cervical effacement after 2 h	1.5	< 0.001	0.7
Change in fetal head station after 2 h	1.5	< 0.001	4.6

Discussion

Our study included 300 term nulliparous women with vertex presentation, out of which 198 parturient delivered vaginally and 102 delivered by emergency CS. This high CS rate observed in our study was in accordance with most parts of the world. Delivery in a tertiary or teaching hospital with an obstetrics and gynecology residency as in our hospital, was associated with an increased risk of cesarean delivery as found in previous studies [2].

The overall CS rate in a term, nulliparous women in New Zealand from 2006 to 2009 was 31.2% (elective 7.8% and emergency 23.4%) [5].

The indications of cesarean section in our series were labour dystocia in 72.2% of patients and non-reassuring fetal heart rate (FHR) tracing in 7.8% which is consistent with previous studies [6,7].

In our study, multiple logistic regression showed that predictors of CS were increased maternal weight, gestational age, social stress, change in cervical dilatation & cervical effacement after two hours of admission and finally change in fetal head station after two hours of admission. Other demographic and clinical data was insignificant after univariate analysis including maternal age, hemoglobin concentration, meconium stained amniotic fluid, rupture of membranes, estimated fetal weight, use of oxytocin and obstetric analgesia.

In a previous prospective observational cohort study of 4341 consecutive nulliparous women with a single cephalic presentation, and spontaneous onset of labor between 37 and 42 weeks' gestation. The incidence of cesarean delivery rose significantly with an increase in body mass index (BMI). Women in labor with a BMI > 35 had a 3.8 times greater chance of a cesarean delivery than women with a BMI < 25 after adjustment for other variables [8].

Summary

Under the conditions of our study, increased maternal weight, advanced gestational age, social pressure, change in cervical dilatation & cervical effacement after two hours of admission and finally change in fetal head station after two hours of admission were strong predictors of CS in nulliparous women presented in labour.

References

1. Elsayed Elshamy and Said Saleh. "Predictors of Cesarean Section in Term Nulliparous Women Presented in Labour at Tertiary Hospital: *A Cohort Study*". *EC Gynaecology* 3.5 (2016): 368-375.

2. Caughey AB., *et al*. "Safe prevention of the primary cesarean delivery". *American Journal of Obstetrics and Gynecology* 210.3 (2014): 179-93.

3. Boyle A and Reddy UM. "Epidemiology of cesarean delivery: the scope of the problem". *Seminars in perinatology* 36.5 (2012): 308-314.

4. Delbaere I., *et al*. "Limiting the caesarean section rate in low risk pregnancies is key to lowering the trend of increased abdominal deliveries: an observational study". *BMC Pregnancy Childbirth* 12:3 (2012).

5. Anderson NH., *et al*. "Ethnicity and risk of caesarean section in a term, nulliparous New Zealand obstetric cohort". *Australian and New Zealand Journal of Obstetrics and Gynaecology* 53.3 (2013): 258-264.

6. Coonrod DV., *et al*. "Nulliparous term singleton vertex cesarean delivery rates: institutional and individual level predictors". *American Journal of Obstetrics and Gynecology* 198.6 (2008): 694.e1-694.e11.

7. Chauhan SP., et al. "Indications for caesarean sections at ≥34 weeks among nulliparous women and differential composite maternal and neonatal morbidity". *British Journal of Obstetrics and Gynaecology* 121.11 (2014) :1395-402.

8. Bergholt T, *et al*. "Maternal body mass index in the first trimester and risk of cesarean delivery in nulliparous women in spontaneous labor". *American Journal of Obstetrics and Gynecology* 196.2 (2007): 163.e1-163.e5.