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Original Research Article

Labour outcome in primigravida with unengaged head: a observational study

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ABSTRACT

Background: Physiologically, labour is different in primigravida. It raises the apprehension of physicians. In the last two decades, the rising cesarean section rate is attributed to many factors, amongst which primigravida with the unengaged head is one of the significant cause. Objective were to study the labour outcome in a primigravida with unengaged head at term gestation in labour
Methods: An institution based prospective study was conducted among 120 subjects. Primigravida with unengaged head at term gestation at the onset of labour were included. Pregnancy with pathological conditions of the fetus and maternal co-morbid condition were excluded. Intrapartum monitoring was done, and the partograph was plotted.
Results: Amongst the study population, 49.2% (59) cases delivered by vaginal delivery. 58 (48.3%) cases were delivered by cesarean section.Non-progress of labour indicated cesarean delivery in most of the cases. In 34.4%of cases, non progress of labour was the indication for cesarean section. Duration of the first stage of labour ranges from 5-26 hours.
Conclusions: Primigravida with unengaged head at early labour is not a direct indication for cesarean section. Intrapartum monitoring and the art of instrumental delivery can result in successful vaginal delivery.

Keywords: Primigravida, Unengaged head, Partograph, Labour, Caesrean section

INTRODUCTION

Bipedalism is associated with a long-curved birth canal with three alternating planes in the pelvis.[1] Labour is an important event with a unique experience exclusively in a women's life.[2]

It is characterized by the onset of regular uterine contractions followed by progressive cervical dilatation, effacement and descent of presenting part. Engagement of head is 1st step in mechanism of labour.[3]

Weeks and Flynn showed that in 50% of primigravidae, engagement occurred between the 38th and 42nd week. The modal interval between engagement and delivery was less than seven days and in 80% of the cases, the interval was less than 14 days.[4]

According to Munroker, the head normally engages in a primigravida by 36th week, and failure to engage by that stage is presumptive evidence of cephalon-pelvic disproportion.[5] It has been a traditional concept in obstetrics. The engagement before the onset of labour increases the chance of safe vaginal delivery, and non-engagement before the onset of labour due to underlying cause decreases the likelihood of vaginal delivery.[6]

The rising caesarean section rate has been under critical review in the last two decades. One of the main reasons for this escalation is the LSCS of primigravida with an unengaged head at term.[7,8] Literature review on this subject shows variable results regarding mode of delivery in unengaged and engaged fetal head groups. At onset of labour, those with unengaged heads are considered at high risk, potential candidates for operative delivery.[1]

With the above background, the present study was conducted to observe the labour outcome in a primigravida with an unengaged head at the onset of labour.

METHODS

This study was carried out at the Himalayan institute of medical sciences, Uttarakhand, from October 2019 to February 2021. A total of one hundred and twenty parturient were enrolled for this prospective observational study. The sampling technique was non-probability, purposive convenience sampling. Written informed consent was taken from all the participants, and prior approval of the institutional ethical committee was obtained.

Inclusion criteria

Primigravida with unengaged head at term, viable foetus, Singleton pregnancy, vertex presentation, no obvious cephalopelvic disproportion were included for the study.

Exclusion criteria

Parturient with multiple gestations, non-viable foetus, IUGR (intrauterine growth restriction), period of gestation <38 weeks or >42 weeks, with placenta previa, diagnosed congenital foetal malformations, previous uterine surgery, any skeletal deformity in the mother or foetal distress at time of admission were excluded from the study.

Parturient with medical complications like diabetes mellitus, severe hypertension, severe anaemia, heart disease or any other obstetrical complications were also excluded from the study.

Detailed medical and obstetric history was obtained from all the participants. General physical, systemic and targeted obstetric abdominal examination was done. Crichton's fifths and pelvic grip rule were used to assess head engagement. A palpable head of 5/5 to 3/5 above the pelvic brim was confirmed as unengaged head. The vaginal examination was done for pelvic assessment and bishop's score. All routine and necessary investigations were conducted.

Labour events were recorded in partograph, and all medical and surgical interventions were documented. Maternal complications were watched for and recorded. The total duration of each stage of labour was noted. Non-progression of labour (NPOL) was defined as failure to progress in active phase of labour for two hours or more. The third stage of labour was actively managed as per institutional protocols. All participants were monitored till the time of discharge from the hospital.

Data entered in MS excel sheet. SPSS v23 was used for data analysis. Group comparisons for continuously distributed data were made using the independent sample 't test when comparing two groups. If data were found to be non-normally distributed, appropriate non-parametric tests in the form of the Wilcoxon test were used. Chi-squared test was used for group comparisons for categorical data.

RESULTS

The participants were aged between 18-36 years. The mean age was 25.34±3.34 years, and the median age was 25 years. A majority (53.3%) of the participants were between 18 to 25 years of age. The mean height was 151.89±7.39 cm, and the median height was 152 cm. The mean weight was 72.03±10.19 kg, and the median was 73 kgs (Table 1).

Table 1: Demographic data showing the distribution of age, height, and weight of the study subjects.

Basic clinical details	Mean ± SD, median (IQR), min-max, frequency (%)
Age (years)	25.34±3.34, 25 (23-27.25), 18-36
Age group (years)	
18-25	64 (53.3)
26-30	50 (41.7)
>30	6 (5)
Height (cm)	151.89±7.39, 152 (147-157), 122-168
Weight (kg)	72.03±10.19, 73 (64.75-80), 49-90

The mean period of gestation (POG) was 39.03±0.96 weeks and ranged from 37-40 weeks. In the majority (58.3%) of the parturient, the period of gestation was 39 to 40 weeks (Table 2). The mean duration of the first stage of labour was 13.17±4.84 hours, and it ranged from 5-26 hours (Table 3). The mean duration of the second stage of labour was 81.90±34.96 minutes, and it ranged from 26-150 minutes (Table 4). The mean duration of the third stage of labour was 8.76±3.61 minutes, and it ranged from 1-20 minutes (Table 5).

Table 2: Periods of gestation of the study subjects.

POG (Weeks)	
Mean (SD)	39.03 (0.96)
Median (IQR)	39.29 (38.29-40)
Range	37-40

Table 3: Duration of first stage of labour in hours.

Duration of first stage of labour (Hours)	
Mean (SD)	13.17 (4.84)
Median (IQR)	12 (10-16)
Range	5-26

Table 4: Duration of second stage of labour in minutes.

Duration of second stage of labour (Minutes)	
Mean (SD)	81.90 (34.96)
Median (IQR)	90 (60-113.75)
Range	26-150

Table 5: Distribution of the participants in terms of duration of third stage of labour in minutes.

Duration of third stage of labour (Minutes)	
Mean (SD)	8.76 (3.61)
Median (IQR)	10 (5-10)
Range	1-20

Out of hundred and twenty parturient, 59 (49.2%) delivered vaginally without any assistance; 2 (1.7%) delivered by Forceps assisted vaginal delivery; 1 (0.8%) delivered by vacuum-assisted vaginal delivery and 58 (48.3%) delivered by lower segment caesarean section (Table 6). Sixty-one (50.8 %) patients underwent caesarian section or instrumental delivery. The most common cause for the caesarian section was non-progress of labour (34.4%) followed by fetal distress (23%). Ten patients (16.4%) underwent intervention due to cephalopelvic Disproportion. The second stage arrest of descent for more than one hour occurred in five patients. Meconium-stained liquor and induction failure were indications for the caesarean section in two patients each (Table 7).

Table 6: Distribution of the parturient in terms of outcome of labour, (n=120).

Outcome of labour	N	Percentage (%)	95% CI
Vaginal delivery	59	49.2	40-58.4
Forceps assisted vaginal delivery	2	1.7	0.3-6.5
Ventouse assisted vaginal delivery	1	0.8	0-5.2
LSCS	58	48.3	39.2-57.6

LSCS-Lower segment caesarean section

Table 7: Distribution of the participants in terms of indication for intervention, (n=61).

Indication for intervention	N	Percentage (%)	95% CI
NPOL	21	34.4	23-47.8
Foetal distress	14	23	13.5-35.8
CPD	10	16.4	8.6-28.5
CDMR	6	9.8	4.1-20.9
Second stage arrest	5	8.2	3.1-18.8
Failure of induction	2	3.3	0.6-12.4
MSL	2	3.3	0.6-12.4
Maternal exhaustion	1	1.6	0.1-10

NPOL-Non-progression of labour, CPD-Cephalopelvic disproportion, CDMR-Caesarian delivery on maternal request, MSL-Meconium-stained liquor

DISCUSSION

The participants in our study were aged between 18-36 years with a mean age of 25.34 years. The height ranges from 122-168 cm, with a mean height of 151.89 cm. All the study subjects weighed between 49-90kgwith the mean weight of 72.03 kg. The study subjects had the period of gestation between 37-40 weeks. In 58.30% of the subject's period of gestation were 39 to 40 weeks. The rising cesarean section rate is contributed by many causes, amongst which primigravida in labour, nulliparous, fewer children, advanced maternal age, use of electronic fetal monitoring in labour, declining rate of instrumental deliveries, IVF pregnancy, and last but not the least is litigation issues.[9]

A study by Rhoades et al said that the first stage of labour is significantly longer, especially in nulliparous patients.[10] Bhadra et al observed the comparison of duration of labour between the unengaged and engaged head. The duration of the latent phase was 10.40 hours in the ungagged head compared to the engaged head, where it was 8.51 hours. In active labour, the duration was 5.48hours in the unengaged head as compared to 4.13 hours in the engaged head group.[2] A study by Pahwa et al observed that the mean duration of labour was more in free-floating head and-3 stations than-2 or-1 stations.[11] We observed the first stage of labour has a mean duration of 13.17 hours and ranges from 5-to 26 hours. In a study conducted by Chaudhary duration of the first stage of labour was 11.04 +2.04 hours which is similar to our study.[12] In a study conducted by Sudhir et al the duration of first stage of labour was 12.06 +0.50 hours which was also similar to the present study.[13]

We observed the second stage of labour as a mean of 81.90 minutes, with a range of 26-150 minutes, extending for a maximum of 180 minutes. Sudhir et al also reported a similar duration of the second stage as 50-110 minutes.[13] We found the duration of the third stage as 8.76 minutes, and it ranges from 1-20 minutes. Active management of third stage of labour was followed for each study subject.

In the present study, 51.7% of subjects delivered vaginally, whereas 48.3% were delivered by cesarean section. Out of those delivering vaginally, 1.7% delivered by forceps assisted vaginal delivery, whereas 0.8% delivered by vacuum-assisted vaginal delivery. Bhadra et al found that 53% of patients in unengaged head group delivered vaginally, whereas 37% delivered by cesarean section, 10% of patients delivered by instrumental delivery.[2] Pahwa et al observed that 56% women delivered vaginally, 8% by forceps assisted vaginal delivery and 36% by normal vaginal delivery. At time of admission, 21% had free-floating heads. Their findings similar to our study.[11]

In the study conducted by Iqbal et al vaginal delivery occurred in 62% of women with unengaged heads and 85% of women with engaged head. Cesarean section was done in 38% of women with unengaged head, i.e., more than double the cesarean section rate in the engaged head. None of the women whose head remained unengaged till 7 cm delivered vaginally.[14] Kaur et al observed that 42.1% of patients delivered by vaginal delivery, 15.1% delivered by instrumental delivery and 42.1% delivered by cesarean section.[15] These findings are similar to our study. Fielder conducted a similar study where he observed that 50% underwent vaginal delivery, 4% underwent instrumental delivery, and 46% underwent cesarean section.[16] But in a study conducted by Dayal et al 85% of primigravida with unengaged heads were delivered vaginally.[17] Similarly, a study conducted in the study by Joshi et al out of 124 patients with the high fetal station, 67.74% patients had vaginal delivery, while in 32.26% of patients, lower segment cesarean section was performed.[18]

In our study, 34.4% of patients underwent cesarean section due to non-progress of labour. Other indications were fetal distress (23.0%), cephalon-pelvic disproportion (16.4%), cesarean delivery on maternal request (9.8%), second stage arrest (8.2%), failure of induction (3.3%), meconium-stained liquor (3.3%) and maternal exhaustion in 1.6%. ACOG 2016 also reported non-progression of labour and fetal distress as two main causes for indications for cesarean delivery. More than 85% of cesarean sections are performed for four main reasons-prior cesarean delivery, dystocia, foetal jeopardy, abnormal fetal presentation.[19]

In a study conducted by Sonawane et al 48.64% of subjects in the unengaged group underwent cesarean section due to non-progress of labour which is similar to our study.[2] Chaudhary et al observed that the most common indication for cesarean section was the failure to progress (in 48%). Other causes were fetal distress (24%), deep, transverse arrest (8%) and 20% other causes.[12] Iqbal et al showed that the incidence of LSCS was 38% in the unengaged group, which is similar to our study.[14] Mahajan et al reported that 59.33% of patients delivered by normal vaginal delivery, 4.66% by instrumental delivery and 36% by LSCS, similar to our study.[20]

The limitation was the sample size; a multicentric study from the same region with a larger sample size will give more representative findings.

CONCLUSION

Primigravida with an unengaged head in labour is not an indication for immediate cesarean delivery. The use of partograph and the dying art of instrumental delivery has led to successful vaginal delivery without undue prolongation of stages of labour. Reducing primary cesarean delivery can be primary prevention for the complications associated with the caesarian delivery.

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