



Original Article

Outcome of Primigravida with Unengaged versus Engaged Foetal Head at Term or at Onset of Labour in a Tertiary Care Hospital

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ABSTRACT

The unengagement of the foetal head in primigravida has long been considered a possible sign of cephalopelvic disproportion. Unengagement at the onset of labour is a predictor of an increased chance of caesarean section. This prospective study was carried out to observe the progress of labour, necessity of medical and surgical induction and foetal outcome in primigravida women with an unengaged versus engaged foetal head among the patients admitted to the labour room at the department of Obstetrics and Gynaecology of Jalalabad Ragib-Rabeya Medical College Hospital, Sylhet from January 2018 to December 2018. A total of 140 patients were enrolled in this study, divided into groups A and B. Seventy primigravida with an unengaged foetal head were considered as group A and 70 with an engaged foetal head at the onset of labour were considered as group B. The majority of unengaged patients 18 (25.7%) were found in deflexed heads, followed by 13 (18.6%) in cephalo-pelvic disproportion, 4 (5.7%) in loops of cord around the neck, 2 (2.9%) in prelabour rupture of membranes and 31 (44.3%) in no cause of unengagement. Almost half (48.6%) of patients had spontaneous vaginal delivery in the unengaged and 50 (71.4%) in the engaged group. Twenty nine (41.4%) patients were found in spontaneous labour in the unengaged group and 53 (75.7%) in the engaged group. Post partum haemorrhage (PPH), perineal tears, cervical tears, wound infection, foetal distress, puerperal sepsis, and hospital stay were not statistically significant ($p > 0.05$) between the two groups. The primigravida with an unengaged head at term should be regarded with suspicion and the same woman in labour should be regarded with apprehension.

Keywords: Primigravida, Engaged foetal head, Unengaged foetal head.

[Jalalabad Med J 2020; 17(2): 41-46]

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INTRODUCTION

Primigravida are a potential group at risk for unengaged foetal head. Engagement is the first step in the mechanism of labour of a primigravida. Those with an unengaged head at the onset of labour are considered to be at high risk and potential candidates for an operative delivery¹. Engagement of the head is

the most important event in labour which decides obstetric and neonatal outcome. Primigravida is considered an important obstetric risk factor. Similarly, an unengaged head at term should be regarded as a high-risk case². An unengaged head in primigravida has been considered a possible sign of cephalo-pelvic disproportion (CPD). It is associated with a higher risk of cervical dystocia, which has led to an increased rate of caesarean section (CS) with its financial implications and future restriction of family size³. Unengagement at the onset of the active phase of labour is a predictor of increased risk of caesarean section. The latent phase is prolonged and the duration of the first stage increased from 12 to 14 hours due to improper adaptation of the foetal head, high station and misdirection of uterine expulsive forces⁴.

The foetal head is said to be engaged when its widest diameter fits into the pelvic inlet. It has been a traditional concept in obstetrics that engagement of the foetal head occurs at 38 weeks gestation in primigravida⁵. This traditional concept is not correlated with clinical practice. In the majority, engagement occurs between 38-42 weeks or even during the first stage of labour. The incidence is very variable in different studies⁶. There are many studies documenting the maternal and foetal outcomes of primigravida with an unengaged head, but very few such studies are available in our country. The present study was undertaken to demonstrate and compare the progress of labour and foetal outcome between the engaged and unengaged foetal heads.

MATERIAL AND METHODS

This prospective study was carried out at the department of Obstetrics and Gynaecology of Jalalabad Ragib-Rabeya Medical College Hospital in Sylhet from January 2018 to December 2018 among patients attending for antenatal care (ANC) and admitted to the labour room. A total of 140 patients were enrolled in this study, divided into groups A and B. Seventy primigravida with an unengaged foetal head were considered as group A and 70 with an engaged foetal head at the onset of labour were considered as group B. Patients were selected according to inclusion and exclusion criteria. Patients with primigravida, term gestation, live singleton pregnancy and vertex presentation were included in this study. Women with multigravida and primigravida with non-vertex presentation and all high-risk cases with medical problems like anaemia (moderate and severe), heart disease, pregnancy induced hypertension (PIH), and diabetes mellitus (DM) were excluded from this study.

After taking informed consent and reassuring patients regarding expertise and confidentiality, those with an unengaged foetal head were placed in group A and those with an engaged foetal head in group B. A detailed history was taken regarding parity, duration of pregnancy and history of labour pains. An examination was done, including a general examination (Height and weight), an abdominal examination for fundal height, lie, presentation, engagement, amount of liquor, estimated foetal weight, palpable uterine contractions, and foetal heart rate. A Pelvic examination was done for pelvic assessment and bishop score. Ultrasonography was done to confirm the above mentioned findings. Data was collected by a predesigned questionnaire. Patients above 40 weeks and not in labour were induced using prostaglandins. The duration of the latent phase of labour was measured and patients with inadequate uterine contractions were augmented with oxytocin. The course of labour in all the patients was recorded on partograph. All the patients were studied in detail with reference to the course of labour, intervention required, mode of delivery and foeto-maternal outcome. Data was transferred and analysed by the statistical package for social sciences (SPSS) version 23.

RESULTS

In group A, the majority (25.7%) patients were found in a deflexed head followed by 13 (18.6%) in cephalopelvic disproportion, 4 (5.7%) in loops of cord around the neck, 2 (2.9%) in prelabour rupture of membranes and 31 (44.3%) in no cause of non-engagement (Table-I). In group A, 48.6% of patients had a spontaneous vaginal delivery, but 71.4% in group B. The difference was statistically significant ($p < 0.05$) between the two groups (Table-II). In indications of lower segment caesarean section (LSCS), half (50%) of patients were found to have non-progress of labour in group-A and 5 (45.5%) in group-B. The difference was not statistically significant ($p > 0.05$) between the two groups (Table=III). The majority (64.3%) of patients were found to have duration of labour > 12 hours in group-A and 20 (28.6%) in group-B. The difference was statistically significant ($p < 0.05$) between the two groups (Table=IV). 29 (41.4%) of patients were found in spontaneous labour in group A and 53 (75.7%) in group B. The majority 49 (70%) of patients required augmentation with oxytocin in group-A and 24 (34.3%) in group-B. The difference was statistically significant ($p < 0.05$) between the two groups (Table=V). PPH, perineal tears, cervical tears, wound infection, foetal distress, puerperal sepsis, and hospital stay were not

statistically significant ($p>0.05$) between the two groups (Table=VI). APGAR score at 5 minutes, admission to NICU, meconium aspiration, neonatal

intubation, and birth weight were not statistically significant ($p>0.05$) between the two groups (Table=VII & VIII).

Table-I: Etiological factors of unengaged head in group A (n=70).

Etiological Factors	Number of Patients	Percentage
Deflexed head	18	25.7
Cephalo-pelvic disproportion	13	18.6
Loops of cord around neck	4	5.7
Pre-labour rupture of membranes	2	2.9
Hydrocephalus	1	1.4
Polyhydramnios	1	1.4
No aetiological factor	31	44.3

Table-II: Mode of delivery of the study patients (n=140).

Mode of Delivery	Group A (n=70)		Group B (n=70)		p value
	Number	Percentage	Number	Percentage	
Spontaneous vaginal delivery	34	48.6	50	71.4	0.016 ^s
Instrumental	12	17.1	9	12.9	
LSCS	24	34.3	11	15.7	

s= significant, P value reached from chi square test

Table-III: Indications of LSCS of the study patients (n=35).

Indications of LSCS	Group A (n=24)		Group B (n=11)		p value
	Number	Percentage	Number	Percentage	
Non progress of labour	12	50.0	5	45.5	0.678 ^{ns}
Foetal distress	9	37.5	6	54.5	
Failure of induction	3	12.5	0	0.0	

ns= non significant, P value reached from chi square test

Table-IV: Duration of labour of the study patients (n=140).

Duration of Labour (In hours)	Group A (n=70)		Group B (n=70)		p value
	Number	Percentage	Number	Percentage	
≤12	25	35.7	50	71.4	0.001 ^s
>12	45	64.3	20	28.6	

s= significant, P value reached from chi square test

Table-V: Onset of labour and augmentation with prostaglandins and oxytocin of the study patients (n=140).

Use of Prostaglandins and Oxytocin	Group A (n=70)		Group B (n=70)		p value
	Number	Percentage	Number	Percentage	
Onset of labour					
Spontaneous onset	29	41.4	53	75.7	0.001s
Induction with prostaglandin	41	58.6	17	24.3	
Augmentation with oxytocin					
Required	49	70.0	24	34.3	0.001s
Not required	21	30.0	46	65.7	

s= significant, P value reached from chi square test

Table-VI: Maternal complications of the study patients (n=67).

Maternal Complications	Group A (n=40)		Group B (n=27)		p value
	Number	Percentage	Number	Percentage	
PPH	12	30	8	29.6	0.334 ^{ns}
Perineal tears	2	5	1	3.8	0.500 ^{ns}
Cervical tear	1	2.5	0	0.0	0.500 ^{ns}
Wound infection	4	10	2	7.4	0.340 ^{ns}
Foetal distress	10	25	8	29.6	0.614 ^{ns}
Puerperal sepsis	1	2.5	2	7.4	0.500 ^{ns}
Hospital stay (>2 days)	10	25	6	22.2	0.287 ^{ns}

ns= not significant, P value reached from chi square test

Table-VII: APGAR score of the study population at 5 minutes (n=140)

APGAR score at 5 minutes	Group A (n=70)		Group B (n=70)		p value
	Number	Percentage	Number	Percentage	
≤7	5	7.1	4	5.7	0.500 ^{ns}
>7	65	92.9	66	94.3	

ns= not significant, P value reached from chi square test

Table-VIII: Foetal outcome of the study patients (n=140)

Foetal Outcome	Group A (n=70)		Group B (n=70)		p value
	Number	Percentage	Number	Percentage	
Healthy newborn	59	84.2	63	90	0.44 ^{ns}
Admission to NICU	6	8.6	4	5.7	0.511 ^{ns}
Meconium aspiration	3	4.3	2	2.9	0.500 ^{ns}
Neonatal intubation	2	2.9	1	1.4	0.500 ^{ns}
Early neonatal death	0	0.0	0	0.0	-
Birth weight (kg)	2.84±0.41		2.76±0.44		0.268 ^{ns}

ns= not significant, P value reached from chi square test

DISCUSSION

In the present study observed in group A, the majority (25.7%) of patients were found in a deflexed head, followed by 13 (18.6%) in cephalopelvic disproportion, 4 (5.7%) in loops of cord around the neck, 2 (2.9%) in prelabour rupture of membranes and 31 (44.3%) in no cause of unengagement. Iqbal and Sumaira reported the most common apparent aetiological factor in group-A was deflexed head, present in 25% followed by CPD in 20% and no cause of unengagement was found in 46% of women⁵.

The current study showed almost half (48.6%) of patients had spontaneous vaginal delivery in group-A and 50 (71.4%) in group-B. The difference was statistically significant ($p < 0.05$) between the two groups. Iqbal and Sumaira reported vaginal delivery occurred in 62% of women with an unengaged head and 85% of women with an engaged head⁵. The single most important predictor for vaginal delivery in women with an unengaged head was the natural onset of labour, and this was seen in our study, where 41.4% of women with an unengaged head who presented with a spontaneous onset of labour had a vaginal delivery. Bhadra and Sonawane reported 53 (53%) patients had spontaneous vaginal delivery in the unengaged group and 70 (70%) in the engaged group. The difference was statistically significant ($p < 0.05$) between the two groups⁷.

Indications of LSCS, 50% of patients were found to have non-progress of labour in group A and 5 (45.5%) in group B. The difference was not statistically significant ($p > 0.05$) between the two groups. Bhadra and Sonawane observed in patients going for LSCS, 18 (48.64%) in the unengaged group as compared to 9 (39.13%) in the engaged group had no progress in labour⁷.

In this study, the majority (64.3%) of patients were found to have a duration of labour >12 hours in group A and 20 (28.6%) in group B. The difference was statistically significant ($p < 0.05$) between the two groups. Iqbal and Sumaira in a study found that, the duration of labour was more than 12 hours for 66% of women with unengaged heads versus 34% of women with engaged heads, which is similar to our findings. These results were also consistent with the study conducted by Ambwani et al. and Shivamurthy et al., which showed that the mean duration of the active phase and the duration of the second stage were shorter in the engaged group as compared to the unengaged group^{6,8}.

Twenty nine (41.4%) patients were found in spontaneous labour in group-A and 53 (75.7%) in group-B. The majority (70%) of patients required augmentation with oxytocin in group-A and 24 (34.3%) in group-B. The difference was statistically significant ($p < 0.05$) between the two groups. Iqbal and Sumaira found that only 41% of women with an unengaged head presented in spontaneous labour (Versus 78% with an engaged head) and the rest were induced with prostaglandins for postdates⁵. Bhadra and Sonawane reported that 73 (73%) patients in the unengaged group required augmentation with oxytocin as compared to 36 (36%) in the engaged group⁷. A study conducted by Shaikh et al. found that, 74 (74%) of patients with unengaged heads required augmentation of labour⁹.

The current study showed PPH, perineal tears, cervical tears, wound infection, foetal distress, puerperal sepsis, and hospital stay were not statistically significant ($p > 0.05$) between the two groups. Iqbal and Sumaira showed that maternal morbidity was higher in women with unengaged heads, but there was no significant difference in maternal mortality⁵. Bhadra and Sonawane found that, in the unengaged group, 11 (11%) patients had post-partum haemorrhage, 7 (7%) patients had perineal tear, 3 (3%) patients had cervical tear, 3 (3%) patients had wound infection and 1 (1%) patient had post-partum psychosis, whereas in the engaged group, 7 (7%), 4 (4%), 5 (5%), and 2 (2%) had the same complications respectively⁷. Shaikh et al. also found similar results in the unengaged head group with PPH occurring in 10% of women, perineal tear in 2% and wound infection in 7%⁹.

In this study, APGAR score at 5 minutes, admission to the neonatal intensive care unit, meconium aspiration, neonatal intubation, and birth weight were not statistically significant ($p > 0.05$) between the two groups. Iqbal and Sumaira observed that foetal outcome was higher in women with an unengaged head, but there was no significant difference between the two groups⁵. Bhadra and Sonawane reported that the mean APGAR score at 1 minute was 6.171.882 and at 5 minute was 8.371.256⁷.

The mean birth weight in the unengaged group was 2.84 kg as compared to 2.76 kg in the engaged group. The unengaged group's mean birth weight was 2.77 kg, which was larger than the engaged group's 2.06 kg, according to Dayal and Dayal². In total, 15.8% of newborns were admitted to the neonatal ward in the engaged group and 8.6% of them were admitted to the NICU. The findings were comparable to those of Mahajan et al., who found that 9.33% of neonates were

admitted to the NICU¹⁰.

CONCLUSION

The incidence of active medical and surgical intervention in primigravida with unengaged foetal head at term or onset of labour is quite high. In addition, the total duration of labour is longer in these women. If the attitude of watchful expectancy and timely intervention is used in these cases, especially in cases where no aetiological factor is found most of these will deliver vaginally with minimal maternal and foetal morbidity.

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