

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20205777>

Original Research Article

Obstetric outcome in primigravida with unengaged versus engaged fetal head at term

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Received: 24 October 2020

Accepted: 04 December 2020

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ABSTRACT

Background: Labour although a physiological process can present challenges to clinician and patient. Primigravida and nulliparae are obstetric high-risk group, especially the very young and the elderly, where pregnancy and labour must be supervised. The study was done to compare the maternal and fetal outcome in primigravida with unengaged and engaged head at term.

Methods: A prospective study was done for a period of 18 months from June 2018 to December 2019 in Department of Obstetrics and Gynaecology Adichunchanagiri Institute of Medical Sciences and Research Center. 100 women with unengaged head at term (group A) and 100 women with engaged head at term (group B) as controls were selected. All the relevant data was filled in the partogram. Following observations were made, station of fetal head at the onset of labour, course of labour, duration of labour, any medical or surgical interventions or caesarean delivery. Data was analysed by SPSS 20.0 software and p value < 0.05 was taken as statistically significant.

Results: in group A 49% and 63% in group B had vaginal delivery. 17% of group A and 14% of group B had instrumental vaginal delivery. Caesarean delivery was 34% in group A and 23% in group B. The mean total duration of labour was 13.53 hours in group A and 9.73 hours in group B. P value was 0.000.

Conclusions: Duration of labour was more in group A than group B. Proper supervision and timely intervention in cases with an unengaged head can have vaginal delivery.

Keywords: Primigravida, Unengaged head, Primary caesarean delivery

INTRODUCTION

Labour is an important event with unique experience in a woman's life. It is characterised by uterine contractions that affect the dilatation of cervix and force the fetus through birth canal.¹ Labour although a physiological process can present challenges to clinician and patient.² Normal labour in primigravida is significantly different than multigravida, as physiologically uterus is less efficient and contractions may be irregular or hypotonic causing delay in the first stage of labour.³ Primigravida is a dark untired horse', the potential for future childbearing is determined by outcome of first labour. Hence if the

first pregnancy results in normal healthy child, patient is better prepared for subsequent pregnancies.⁴ Primigravida and nulliparae are obstetric high risk group especially, the very young and the elderly, where pregnancy and labour must be supervised.⁵

Fetal head is said to be engaged when it's biparietal diameter, the greatest transverse diameter in occiput presentation, passes through pelvic inlet. Unengagement of fetal head in primigravida has long been considered as cephalo-pelvic disproportion.^{4,6} The traditional concept that engagement of head occurs by 38 weeks in primigravida, is not validated in clinical practice. In

majority of primigravida, the engagement occurs between 38-42 weeks or even during the first stage of labour.^{4,5,7-9}

Unengagement of head in primigravida is associated with high risk of obstructed labour. Non engagement of head at the onset of active labour is a predictor of the risk of caesarean delivery. Surgical intervention is very high. Latent phase is prolonged and duration of the first phase is increased. The problems of prolonged labour are that, mother is exposed to high risk of infection, ketosis and obstructed labour, while the fetus faces the danger of asphyxia and infection.⁶ Dystocia or difficult labour is diagnosed in 37% of primigravida. Abnormal labour nearly affects 20% of parturients and is the most common indication for primary caesarean delivery.³ Nulliparous women typically enter labour with engaged head and obtain positive station (leading part below ischial spines) by the onset of active labour. The high station of head influences the course of labour in certain well defined ways. It has been observed that proportionate prolongation in the latent phase of labour in patients with high station. The duration of different phases of labour are longer in women with unengaged head than with engaged head. However, a substantial proportion of them deliver vaginally with no increase in maternal and fetal morbidity and mortality.²

Objectives were to compare the maternal and fetal outcome in primigravida with unengaged and engaged head at term.

METHODS

A prospective study was done for a period of 18 months from June 2018 to December 2019 in the Department of Obstetrics and Gynaecology of Adichunchanagiri Institute of Medical Sciences and Research Center. Total 200 primigravida admitted to the labour ward were included in the study. 100 women with unengaged fetal head at term (group A) and 100 women with engaged head at term (group B) as controls were selected. Written consent was taken from the patients. Ethical committee permission was taken.

Inclusion criteria

Primigravida with single live fetus with vertex presentation between 37-42 weeks of gestation, with intact membranes and no cephalo-pelvic disproportion and cervix less than 3 cm dilatation.

Exclusion criteria

Primigravida with skeletal deformity, multiple gestation, intrauterine growth restriction, antepartum hemorrhage, previous uterine surgeries, associated medical complications were excluded.

Detailed history regarding maternal age, period of gestation, investigation reports, USG reports were

collected. General physical and obstetric examination was done.

Criteria for engagement of fetal head, as per Crichton's method 2/5th of the head should be palpable per abdomen or only one pole of the head should be palpable by 2nd pelvic grip. On per vaginal examination, lowermost portion of head must be at or below the level of ischial spines. In case of unengaged head the position of head at -1, -2, -3 or free floating or mobile head was noted at the time of admission.

All the relevant data was filled in the partogram. Admission time was taken as zero hour and dilatation of cervix at the time of admission was plotted on the dilatation curve along with number of fifths palpable per abdomen.

Following observations were made, station of fetal head at the onset of labour, course of labour, duration of labour, any medical interventions (use of prostaglandins), surgical interventions (assisted vaginal delivery or caesarean delivery), mode of delivery, maternal and fetal condition were noted. The parameters were compared between both the groups. Data was analysed by SPSS 20.0 software and p-value < 0.05 was taken as statistically significant.

RESULTS

Total 62% of group A and 56% of group B women were in the age group of 21-25 years. Regarding the gestational age only 20% were >40 weeks. 28% of group A and 32% of group B were in the gestation period of 37-39 weeks. And 39-40 weeks gestation was in 52% of group A and 46% of group B women. Regarding station of head in group A women, 63% had free floating head, 29% at -2, -3 station and 8% of women at -1 station. All the patients in group B had vertex at 0 station.

Table 1: Percent of mode of delivery in both groups.

Mode of delivery	Group A	Group B	P value
Vaginal delivery	49%	63%	0.189
Assisted delivery	17%	14%	
Caesarean delivery	34%	23%	
Total	100%	100%	

There was no cervical dilatation in 1 case each in both the groups. 1 cm dilatation was seen in 36% in group A and 22% in group B, 2 cm dilatation was seen in 47% in group A and 44% in group B and 3 cm in 16% in group A and 33% in group B.

Spontaneous onset of labour was observed in 40% in group A and 63% in group B. Induction of labour with PGE2 gel was used for 53% in group A and 37% in group B. The mean total duration of labour was 13.53 hours in

group A and 9.73 hours in group B (p-value.0.000 highly). First stage of labour was 12.98±3.72 hours in group A and 8.91±2.92 hours in group B (p value.0.000). There was not much difference in duration of second and third stage of labour in both groups. Mode of delivery was not statistically significant in both groups.

Table 2: Indications for caesarean delivery in both groups.

Indications for caesarean delivery	Group A	Group B	P-value
Fetal distress	44.1%	56.5%	0.587
Failure to progress	44.1%	21.7%	
2 nd stage arrest	4%	5%	
Total	34%	23%	

Table 3: APGAR score at 1 minute and 5 minutes in both groups.

APGAR score	Group A	Group B	P value
At 1 minute	6.98±0.14	6.98±0.20	1.0
At 5 minutes	9±0.0	8.99±0.10	0.319
	100	100	

Regarding maternal complications postpartum hemorrhage was observed in 4% in group A and 3% in group B. There were no other complications. There was no other maternal morbidity. There was no neonatal

mortality. NICU admissions were 7 in group A and 3 in group B. Perinatal morbidity was nil.

DISCUSSION

The study was conducted to know the maternal outcome and fetal outcome among 200 primigravida admitted at term to labour ward. 100 women with unengaged head (group A) and 100 women with engaged head (group B) were included in the study. The results were compared with the studies reported in the literature. Regarding the maternal age, unengaged head in women >30 years is an added risk factor. Adita et al reported a comparative study of 110 women with unengaged head (group A) and 110 women with engaged head (group B).⁴ There were 15 cases in group A and 9 cases in group B with age more than 30 years. In the present study there was only 1 case each in both groups. A comparative study reported by Shahida et al, 100 cases with unengaged head (group B) and 100 cases with engaged head (group A) and all women were below 30 years of age.³ Regarding the mode of delivery in our study, 66% in group A and 74% in group B had vaginal delivery. The incidence of caesarean delivery was 34% in group A and 23% in group B. The present study is compared with studies reported by following authors. Mahendra et al, Shivamurthy et al and Iqbal et al reported a comparative study of 100 women with unengaged head (group A) and 100 women with engaged head (group B).^{1,2,6}

Table 4: Comparison of age distribution with other studies.^{3,4}

Age (years)	Adita et al		Shahida et al		Present study	
	Gr A	Gr B	Gr B	Gr A	Gr A	Gr B
<20	24	32	24	21	23	33
21-25	52	56	53	48	62	56
26-30	19	13	23	31	14	10
>30	15	09	-	-	01	01
Total	110	110	100	100	100	100

Table 5: Comparison of mode of delivery with other studies.^{1-4,6}

Authors	Groups	N	Vaginal delivery	Instrumental delivery	Caesarean delivery	P value
Adita et al	Gr A	110	67	-	43	0.21
	Gr B	110	89	-	21	
Mahendra et al	Gr A	100	53	10	37	0.046
	Gr B	100	70	7	23	
Iqbal et al	Gr A	100	47	15	38	--
	Gr B	100	73	12	15	
Shahida et al (Gr B unengaged)	Gr B	100	42	19	39	--
	Gr A	100	65	16	19	
Shivamurthy et al	Gr A	101	69	14	18	0.05
	Gr B	099	87	6	6	
Present study	Gr A	100	49	17	34	0.189
	Gr B	100	63	14	23	

Table 6: Comparing the indications for caesarean delivery.^{1,4}

Indications	Adita et al		Mahandra et al		Present study	
	Gr A	Gr B	Gr A	Gr B	Gr A	Gr B
Fetal distress	9	11	14	12	15	13
Non progress of labour	24	6	18	9	15	5
DTA	10	4	-	-	-	-
Failure of induction	-	-	5	2	-	-
2nd stage arrest	-	-	-	-	4	5
	43	21			34	23

Table 7: Comparison of maternal complications.^{1,4,6,11}

Maternal complications	Adita et al		Shahida et al		Mahandra et al		Iqbal et al		Present study	
	Gr A	Gr B	Gr A N=262	Gr B N=1178	Gr A	Gr B	Gr A	Gr B	Gr A	Gr B
Cervical tear	18	9	4 (1.53%)	12 (1.02%)	3	5	3	0	-	-
PPH	11	4	7 (2.67%)	17 (1.44%)	11	7	18	10	4	3
Puerperial sepsis	-	-	3 (1.15%)	11 (0.93%)	-	-	-	-	-	-
Wound infection	-	-	8 (3.05%)	81 (6.88%)	3	2	5	2	-	-
Perineal tear	-	-	-	-	7	4	2	0	-	-
Total	29	13	22	121	24	18	28	12	4	3

Incidence of caesarean delivery was less in all these studies in cases with engaged head compared to unengaged head. Present study is comparable with Mahendra et al and Iqbal et al.^{1,6} Chaudhary et al reported a comparative study of 150 women with unengaged head (group A), 150 women with engaged head (group B).⁶ The incidence of caesarean delivery was 16.89% in group A and 5.33% in group B. The indication for caesarean delivery in 48% cases was due to failure to progress (p value 0.000). The common indications for caesarean delivery in group A in our study were fetal distress and non-progress of labour, whereas in group B fetal distress was a common indication. According to Aditi et al and Mahendra et al non progress of labour was common indication in group A.^{1,4,6}

According to Siama et al total duration of labour in 34% of group A and 74% of group B was <12 hours.⁶ Remaining 66% in group A and 26% in group B took >12 hours. In the present study total duration of labour was 13.53 hours in group A and 9.73 hours in group B (p 0.000). According to Mahendra et al duration of 1st stage was 14.21 hours in group A and 12.5 hours in group B.¹

CONCLUSION

From the present study it can be concluded that unengaged head in primigravida at term calls for constant vigilance throughout the labour by using tools such as partogram and timely medical intervention. The duration of labour is increased significantly with unengaged head. However, unengaged head should not be the sole indication for caesarean delivery. With proper counselling a good number of them can have vaginal

delivery. Watchful expectancy and timely proper intervention can reduce primary caesarean delivery rate and associated maternal morbidity.

ACKNOWLEDGMENTS

Authors would like to thank the HOD of department of OBG and faculty members who helped them to collect the data and publish the article.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Sirisha VS, Chiniwar MA, Menasinkai SB. Obstetric outcome in primigravida with unengaged versus engaged fetal head at term. *Int J Reprod Contracept Obstet Gynecol* 2021;10:251-5.