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Original Article

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Obstetric Outcome in Primigravida with Unengaged Head at Term

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ABSTRACT

Background: A significant proportion of primigravidae presented with unengaged head at term and at the onset of labour. Though a substantial proportion of them deliver vaginally. The present study has been carried out to find out the relationship of fetal head palpable per abdomen with head station by per vaginal examination with the outcome of labour, nature of delivery and maternal and fetal well-being in primigravidae at term with or without onset of labour.

Methods: The study done at Vijayanagar Institute of Medical Sciences, Ballari between january 2020 and December 2020. Eighty full term primigravidae having cephalic presentation in early first stage of labour with intact membranes at different station of vertex were included in the study. The cases having major degree CPD and other Obstetric and medical complications of pregnancy were excluded.

Results: Among 80 cases, 55% (44) of cases delivered vaginally, 45% (36) had underwent caesarean section. This was statistically significant ($p<0.01$). Increase in average duration of first and second stages, total duration of labour, and incidence of instrumental and caesarean rates were higher with higher fetal station. There was a greater need for active medical and surgical intervention and there was no significant maternal and neonatal morbidity and mortality.

Conclusion: Primigravida with unengaged head at term gestation with or without onset of labour makes obstetrician apprehensive and suspicious about achieving vaginal delivery. But that should not be the sole indication for LSCS. Labour appeared to be dysfunctional in only small proportion of the patients with unengaged head. It is concluded that vaginal delivery is possible with watchful expectancy, proper monitoring and maintenance of partogram and timely intervention. Thus the operative interference can be reduced to the maximum extent and the art of labour and delivery can be preserved for the future obstetricians.

Key Words: *Primigravidae; Term pregnancy; Unengaged head*

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INTRODUCTION

Primigravidae, experiencing their first pregnancies, represent a group at particular risk during labour, as recognized by Ian Donald's description of a first pregnancy as akin to a "dark and untrained horse" with the potential for childbearing determined by labour's outcome [1]. The process of labour involves the onset of regular uterine contractions, progressive cervical dilation, effacement, and the descent of the presenting part [2].

A crucial aspect of this process in primigravida is the engagement, or the descent of the greatest diameter of the fetal head through the brim of the pelvis [3]. An unengaged head at term may increase the risk of operative delivery, contributing to a rising trend in Lower Segment Caesarean Sections (LSCS) [4]. A prevailing concept in obstetrics is that fetal head engagement usually occurs before 38 weeks in primigravidae, and non-engagement before labour onset could decrease the chance of vaginal delivery [5, 6].

However, unengaged head at term is not an automatic indication for LSCS [7]. Labour can often progress with watchful expectancy, oxytocin augmentation, artificial rupture of membranes (ARM), and the use of instrumental interventions [8]. Engagement also helps determine maternal pelvic capacity, although factors such as high pelvic inclination, common in certain populations, can delay this event until the onset of labour [9].

Contrary to the traditional belief that fetal head engagement occurs by 38 weeks in primigravida, many cases can experience this event between 38-42 weeks or even during the first labour stage [10, 11]. The presence of an unengaged head is often considered a sign of possible cephalopelvic disproportion (CPD), raising the risk of cervical dystocia, prolonging labour, and increasing caesarean section rates [12-14]. Such circumstances expose women and their fetuses to increased risks, including infection, ketosis, asphyxia, and sepsis [15, 16].

The unengaged fetal head in primigravidae at term is a concern, prompting investigation for potential causes and potentially leading to doubts about the likelihood of vaginal delivery [17, 18]. This study aimed to assess the outcomes and implications of unengaged head at term in primigravidae, specifically its impact on the mode of delivery and fetal outcome.

OBJECTIVEOFSTUDY

Fetal and Maternal outcome in Primigravida with unengaged head at term gestation in VIMS Ballari

MATERIALS AND METHODS

Setting: Department of Obstetrics and Gynecology, Vijayanagar Institute of Medical Sciences, Ballari.
Population: Primigravida women with unengaged heads admitted to the Obstetrics and Gynecology department.
Duration: One year, from 1st January 2020 to 31st December 2020.
Design: A descriptive observational study.

Sample Size and Sampling

Sample Size Calculation: The formula n= (〖Z1〗 ^2 {P(1-P))/d^2 was employed, drawing upon the work of Patrikar S. from Textbook of Community Medicine. The sample size was determined considering the prevalence of spontaneous delivery in primigravida women with unengaged heads (47%). This calculation resulted in a minimum sample size of 80.
Sampling Technique: Simple random sampling.

Eligibility Criteria

Inclusion Criteria: Primigravida women with unengaged heads, term gestation (37-41 weeks), live singleton pregnancy, cephalic presentation.

Exclusion Criteria: Contracted pelvis/major degree cephalopelvic disproportion, oligohydramnios, polyhydramnios, high-risk pregnancies (such as pre-eclampsia, gestational diabetes mellitus, severe anemia, heart disease, and other medical disorders), placenta previa, tumors obstructing the passage, previous uterine surgery (e.g., myomectomy), and anomalous fetus.

Variables

Key variables studied include age, gestational weeks, etiology, mode of delivery, and others.

Data Collection Methods

After obtaining informed consent from eligible patients, detailed histories were recorded. General, systemic, and abdominal examinations were performed, including per abdominal examinations to confirm gestation period, lie, presentation, and head engagement (via Second Pawlik's grip and Chrichton's fifth's formula). Pelvic adequacy and potential cephalopelvic disproportion were assessed through the Muller Munro Kerr Maneuver. Ultrasound was performed for all patients to measure fetal biometric parameters, estimate fetal weight, amniotic fluid index, placental location, and maturity.

Statistical Analysis

Data was collected and recorded in a structured proforma, then entered into an MS Excel sheet and analyzed using SPSS 24.0 (IBM, USA). Qualitative data was presented as proportions, while quantitative data was expressed as means and standard deviations. Associations between qualitative variables were assessed using Chi square/Fischer's exact test, while comparisons of mean and SD between two groups were done using unpaired t-test. A p-value of <0.05 was considered statistically significant, and a p-value <0.001 was considered highly significant.

RESULTS

Table 1: Distribution according to age group

Age (years)	No of cases	Percentage
18 -20	35	43.75
21 -25	36	45.00
26 -30	7	08.75
31 -35	2	02.50
Total	80	100.00

We included total 80 Primigravida with unengaged head. Of these, majority were from 21-25 years age group i.e.36 (45%) followed by 35 (43.75%) from18-20years, 7(8.75%) from 26-30 years and 2 (2.5%) from 31-35years age group.

Table 2: Distribution according to Period of gestation

Period of gestation	Noofcases	Percentage
37–37 weeks 6 days	5	06.25
38–38 weeks 6 days	13	16.25
39-39 weeks 6 days	22	27.50
40-40 weeks 6 days	40	50.00
Total	80	100.00

Majority of the ANCswere from 40- 40 weeks 6days gestation i.e.40 (50%) followed by 22 (27.5%) from 39 -39 weeks 6days gestation, 13(16.25%) from 38 – 38 weeks 6days and 6.25% from37-37 weeks 6 days gestation in our study.

Table 3: Distribution according to number of fifths palpable

No of fifths palpable	No of cases	Percentage
$3/5^{th}$	43	53.75
$4/5^{th}$	28	35.00
$5/5^{th}$	9	11.25
Total	80	100.00

Among 80 cases included, In 43 cases, $3/5^{th}$ palpable head noted i.e.53.75% followed by in 28 cases i.e. 35%, $4/5^{th}$ palpable head noted and in 9 (11.25%) cases $5/5^{th}$ palpable head noted.

Table 4: Distribution according to Modified Bishops score

Modified Bishops score	No of cases	Percentage
<6	59	73.75
>6	21	26.25
Total	80	100

In majority of the cases in our study, modified Bishops score was<6 i.e.59 (73.75%) and in remaining cases it was >6 i.e. 21(23.25%).

Table 5: Distribution according to number of fifths of head palpable and method of induction

		3/5th		4/5th		$5/5^{th}$		Total
		No	%	No	%	No	%	
Methodofinduction	Cerviprime	0	0.0	0	0.0	2	25.0	2
	Foleys	13	31.7	6	19.4	2	25.0	21
	Foleyswithmisoprostol	2	4.9	0	0.0	1	12.5	3
	Spontaneous	26	63.4	25	80.6	3	37.5	54
Total		41	100.0	31	100.0	8	100.0	80

Chisquaretest-2.39, p-0.35(>0.05), Notsignificant

Out of 41 women with $3/5^{th}$ head palpable, 26 i.e. 63.4% underwent spontaneous labour and 13(31.7%) cases foleys method of induction required. Out of 31 women with $4/5^{th}$ head palpable, 25 i.e. 80.6% underwent spontaneous labour and for 6(19.4%) cases foleys method of induction required. Out of 8 women with $5/5^{th}$ head palpable, 3 i.e. 37.5% had spontaneous progression labour and 2(25%) cases required foleys method and cerviprime each.

Table 6: Distribution according to presence of cord around neck

Cord around neck	No of cases	Percentage
Nil	65	81.25
1 loop	12	15.00
2 loops	3	03.75
Total	80	100.00

In 80 cases included in the study, Single loop of cord around neck was seen in 12 cases i.e.15% and double loop of cord around neck was seen in3 cases i.e.3.75%

Table 7: Distribution according to mode of delivery and number of fifth palpable

		FTND/FTVD		EMLSCS		Total	p
		No	%	No	%		
Numberoffifthspalpable	$3/5^{th}$	25	58.1	18	41.9	43	0.021
	$4/5^{th}$	14	50.0	14	50.0	28	1.00
	$5/5^{th}$	5	55.6	4	44.4	9	0.08
	Total	44	55.0	36	45.0	80	

Out of 43 cases with $3/5^{th}$ head palpable per abdomen, 25 i.e. 58.1% were delivered vaginally as compared to 18(41.9%) cases have undergone EMLSCS where the difference in the proportion was found to be statistically significant ($p<0.05$) Out of 28 cases with $4/5^{th}$ head palpable, 14 i.e.50% had vaginal delivery as compared to 14(50%) with EMLSCS where the difference in the proportion was found to be statistically not significant ($p>0.05$) Out of 9 cases with $5/5^{th}$ head palpable, 5 i.e.55.6% had vaginal delivery as compared to 4(44.4%) cases with EMLSCS where the difference in the proportion was found to be statistically not significant ($p>0.05$)

Table 8: Distribution according to mode of delivery

Mode of delivery	No of cases	Percentage
FTND	22	27.5
FTVD	22	27.5
EMLSCS	36	45
Total	80	100

Among 80 cases included in our study, 44(55%) cases were delivered vaginally and 36(45%) cases had EMLSCS.

Table 9: Distribution according to indication for LSCS

Indication	No of cases	Percentage
Arrestofdescent	4	11.1
MinordegreeCPD	6	16.7
Non-ReassuringFHR	8	22.2
Meconium-stainedliquor	18	50.0
Total	36	100.0

Out of 36 cases who underwent LSCS, almost half of them had meconium-stained liquor i.e.18(50%) followed by 8 cases with non-reassuring FHR i.e. 22.2%, 6 cases with minor degree CPD i.e. 16.7%and 4 cases i.e. 11.1% with arrest of descent.

Table 10: Distribution according to birth weight

Birth weight	frequency	Percent
2-2.5kg	3	3.75
2.5-3.5kg	74	92.50
>3.5kg	3	3.75
Total	80	100.00

Out of 80 new-borns, majority had birth weight between 2.5-3.5kg i.e.74 (92.5%) and remaining 3 i.e. 3.75% each were between 2-2.5kg and above3.5 kg in our study.

Table 11: Distribution according to APGAR at 5 minutes

Apgar @5 mins	Frequency	Percent
<7	13	16.2
>7	67	83.8
Total	80	100

Out of 80 new-borns, majority had APGAR score>7 i.e.67 (83.8%) and remaining had<7 i.e.13 (16.2%).

Table12: Distribution according to NICU admissions

NICU	No of babies	Percent
No	70	88.8
Yes	10	11.2
Total	80	100

NICU admission was required in 10 neonates i.e. 11.2%. So the incidence of NICU admission in our study was 11.2%.

Table 13: Distribution according to indication for NICU admission

Outcome	No of cases	Percentage
Birthasphyxia	3	30
Respiratorydistresssyndrome	1	10
Meconium-stainedliquor	6	60
Total	10	100

Out of 10 NICU admissions, majority had indication of meconium -stained liquor i.e.6 (60%) followed by 3(30%) had birth asphyxia and one case (10%) admitted with respiratory distress syndrome.

DISCUSSION

Demographics

A total of 80 primigravida women with an unengaged head were included in this study. The age distribution was as follows: 45% (36) between 21-25 years, 43.8% (35) between 18-20 years, 8.8% (7) between 26-30 years, and 2.5% (2) between 31-35 years. When considering gestational age, half of the antenatal care (ANC) women were within the gestational period of 40-40 weeks 6 days.

These findings resonate with studies conducted by Aashita Shrivastava et al [19] and Unnisa S et al [20]. These authors reported similar age and gestational age distributions among their study populations.

Head Station

The distribution of head palpability in our study revealed 51.25% (41) with a 3/5th palpable head, 35% (28) with a 4/5th palpable head, and 11.3% (9) with a 5/5th palpable head.

This distribution mirrors the findings of Aashita Shrivastava et al [19] and Unnisa S et al [20], who also reported similar distributions of head palpability.

Causes of Unengaged Head

In our study, 15% (12) of cases had a single loop of cord around the neck, and 3.8% (3) had a double loop of cord around the neck.

These findings are akin to those of Unnisa S et al [20] and Mahajan N et al [21]. Both studies identified deflexed head, cephalopelvic disproportion (CPD), and loops of cord around the neck as the main factors contributing to an unengaged head.

Head Station and Mode of Delivery

Most women with a 3/5th palpable head (63.4%) underwent spontaneous labor, and 31.7% required induction using the Foley's method. For women with a $4/5^{th}$ palpable head, 80.6% underwent spontaneous labor, while 19.4% required induction.

Our results corroborate the findings of several previous studies, including those conducted by Ambwani et al [22], Farhana Shaik [23], Neha Mahajan [21], and N Khurshid and F Sadiq [24]. These authors also reported a significant correlation between the degree of head palpability and the mode of delivery.

Method of Induction

In our study, induction was mostly performed using Foley's catheter (80.7%), followed by Foley's with misoprostol (11.6%), and cervi prime (7.7%). Unnisa S et al [20] and Mahajan N et al [21] reported similar methods of labor induction in their studies.

Indications for LSCS

Among the 36 women who underwent LSCS in our study, 50% (18) had meconium-stained liquor, 22.2% (8) had non-reassuring FHR, 16.6% (6) had minor degree CPD, and 11.1% (4) had arrest of descent. These results parallel those of Unnisa S et al [20], who also found similar indications for LSCS.

APGAR Score

The majority of newborns in our study, 83.75% (67), had an APGAR score greater than 7, with the remaining 16.2% (13) scoring less than 7. Similar APGAR score distributions were reported Aashita Shrivastava et al [19] and Unnisa S et al [20].

NICU Admission and Indications

In our study, 11.3% (10) of neonates required NICU admission. Among them, 60% (6) were due to meconium-stained liquor, 30% (3) to birth asphyxia, and 10% (1) to respiratory distress syndrome (RDS).

These findings coincide with those of Aashita Shrivastava et al [19] and Unnisa S et al [20], who also reported a similar incidence of NICU admissions and corresponding indications.

Overall, our study findings align with previous literature, reinforcing the relevance and applicability of our results to the broader population of primigravida women with unengaged head.

CONCLUSION

The presence of an unengaged head in primigravida women who spontaneously go into labor does not necessarily warrant a Cesarean Section (LSCS). In fact, we observed a high frequency of active medical and surgical interventions in the context of a floating head at the onset of labor in primigravida women. An approach of watchful expectancy combined with timely intervention promotes successful vaginal delivery and minimizes both maternal and fetal morbidity, particularly in cases where no significant etiological factor can be identified.

Therefore, it is not imperative for primigravida women with an unengaged head at term at the onset of labor to undergo an LSCS. By maintaining vigilant observation and utilizing appropriate interventions such as induction, amniotomy (ARM), oxytocin augmentation, and instrumental assistance like forceps & ventouse, vaginal delivery can be safely achieved with minimal maternal and fetal morbidity.

This study has some limitations to consider. Inter-observer variation may occur in the abdominal examination following the rule of fifths by Leopold's maneuvers to ascertain the number of fifths of the head that are palpable. This variability could potentially impact the consistency of our findings.

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