

Outcome of Primigravida with Unengaged Fetal Head at Term or Onset of Labour

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ABSTRACT

Objective: To investigate the duration and course of labour, the need for intervention and feto-maternal outcome in a primigravida with an unengaged fetal head at term in labour.

Study Design: Prospective longitudinal study.

Place and Duration of Study: Department of Obstetrics and Gynaecology, Pak Emirates Military Hospital, Rawalpindi Pakistan, from Jun 2018 to Oct 2019.

Methodology: This study was carried out on 150 term primigravida women with an unengaged head in labour. Informed consent, detailed history and examination were made along with ultra-sonographic and pelvic assessment.

Results: Deflexed head was a frequent cause 49(32.67%), cephalopelvic disproportion 24(16%), and loop of cord around the neck 8(5.34%), however, no cause was found 54(36%) women with unengaged fetal head. Ninety-three patients (62%) continued with spontaneous labour, while the rest had to be induced. Vaginal deliveries were 100(66.67%), while 50(33.34%) were delivered via Lower Segment Caesarean Section. Out of the 57 patients who received induction of labour, 25(43.86%) had vaginal deliveries, while 32(56.14%) underwent Lower Segment Caesarean Section. Five (3.34%) went into a postpartum haemorrhage. Grade 3 perineal tears were seen in 3(2%) patients, and one had a wound infection. APGAR score at ten minutes was between 7 and at ten minutes in 115(76.67%) neonates.

Conclusion: In primigravida at the onset of labour with an unengaged fetal head at term gestation, vaginal delivery is possible with watchful expectancy and appropriate intervention. However, there is a need to ensure that all inductions are strongly indicated.

Keywords: Labour, Primigravida, Unengaged fetal head.

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INTRODUCTION

In obstetrics, it is generally understood that engagement before the onset of labour increases the success rate of safe vaginal delivery in primigravidae.¹ In contrast, non-engagement at the onset of labour leads to slow progress and prolonged labour, thereby increasing the risk of caesarean section.²

When engagement occurs, confirmatory evidence is that the pelvic inlet is adequate for the foetal head. However, many primigravidae presents with unengaged heads at the onset of labour.^{3,4} As a result, nulliparous with unengaged fetal head at the onset of labour are viewed with some apprehension since this may indicate any abnormality, particularly inadequate feto-pelvic relationships.⁵ It has been reported that the incidence of Lower Segment Caesarean Section (LSCS) in women commencing labour with unengaged heads is six to eight times more compared to women with the deeply engaged head before the onset of labour.^{6,7} Increasing rates of elective LSCS for an unengaged

fetal head in labour are under critical review. A caesarean section can be avoided with careful monitoring and timely intervention, and a normal delivery is possible even after a previous caesarean section.^{8,9}

Present study was conducted to determine the pregnancy outcomes in a primigravida with an unengaged fetal head at term. The aim was to determine the etiological factors in a primigravida with an unengaged head at the onset of labour, the relation and effect of the fetal head station on the duration of labour, time and need of active intervention and feto-maternal complications.

METHODOLOGY

This prospective longitudinal study was conducted at the Department of Obstetrics and Gynaecology, Pak Emirates Military Hospital, Rawalpindi Pakistan, from June 2018 to October 2019. All patients signed an informed consent and the Ethical Committee (IRB-4841). A non-probability convenience sampling technique was used to select 150 primigravidae with unengaged fetal heads at term, and the sample size was calculated through the WHO calculator.¹⁰

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Inclusion Criteria: Pregnant women (37 to 41 gestational weeks) with singleton pregnancies and cephalic presentation, with unruptured membranes, normal cardiotocography (CTG) tracing having a free-floating head or 3/5th or more of the head above pelvic brim on examination were included in the study.

Exclusion Criteria: Pregnant women with medical disorders like hypertension, diabetes mellitus, thyroid, cardiac, hepatic or renal disorder were excluded from our study.

Patients who fell in our criteria were admitted to the labour room, and a full record was requested from every patient, including the personal, demographic, obstetric and gynaecological history. Surgical and medical history was also taken to eliminate any systemic disease. A detailed general physical and systemic examination was done. A thorough abdominal examination was conducted to assess symphysis fundal height, presenting part and palpable fetal head. A vaginal examination was carried out to note position, consistency, effacement, dilatation (in cm), station, membranes status, and pelvic adequacy. Fetal biometric parameters estimated fetal weight, amniotic fluid index and placental location were examined in all patients via obstetrical ultrasound.

Patients who did not spontaneously go into labour were induced according to the predefined criteria for induction of labour according to bishop scores as set by the hospital/unit protocols. Augmentation was done with oxytocin, where uterine contractions were ineffective (to produce cervical dilatation and descent of the head). The dose of oxytocin was titrated, and the infusion rate was adjusted to have 3-4 contractions in 10 minutes. Partograph was used to assess the labour progress, and CTG was used to monitor the fetal heart. Meanwhile, the outcome of the labour was also measured. The first and second stage of labour duration was noted for those who delivered vaginally, while LSCS indications were also reported. Fetal weight and APGAR score at 1 and 5 minutes were also penned down.

Statistical Package for Social Sciences (SPSS) version 21.0 was used for the data analysis. Quantitative variables were summarized as Mean±SD and qualitative variables were summarized as frequency and percentages.

RESULTS

We studied 150 women at the gestational age of 37 to 41 weeks. Common causes of the unengaged

head were shown in Table-I. Regarding the onset of labour, it started spontaneously or was induced using a Prostaglandin tablet or intra-cervical Foley catheter, as shown in Table-II. Out of the 91 patients who delivered vaginally, intervention with forceps was unavoidable in 6 women, and three patients had to undergo vacuum delivery (Table-III).

Table-I: Distribution of Cases according to Aetiology (n=150)

Apparent Aetiology	Number of cases (%)
No cause found	54(36.00%)
Deflexed head	49(32.66%)
Cephalopelvic disproportion	24(16.00%)
Loops of cord around neck	8(5.34%)
Polyhydromnios	6(4.00%)
Placenta previa	4(2.66%)
Macrosomia	5(3.34%)

Table-II: Onset of Labour (n=150)

Onset of Labour	Number of Cases (%)
Spontaneous labour	93(62.00%)
Induction with prostaglandins	38(25.34%)
Induction with intra-cervical Foley	19(12.66%)

Table-III: Mode of Delivery (n=150)

Mode of Delivery	Number of cases (%)
Normal vaginal delivery	91(60.66%)
Assisted vaginal delivery	9(6.00%)
Lower Segment Caesarean Section	50(33.34%)

The different indications for LSCS were the arrest of labour in 33(66%), fetal distress in 12(24%) and deep, transverse arrest in 5(10%) patients.

Among 93 women with unengaged heads presenting with spontaneous onset of labour, 72(77.42%) women had normal vaginal deliveries (NVD), 18 (19.35%) had LSCS, and 3(3.23%) women had assisted vaginal delivery. In 63(42%) primigravida, the duration of labour was more than 12 hours. Out of the 57 patients who received induction of labour, 25(43.86%) had vaginal deliveries, of which 4 needed forceps and 2 required vacuum assistance. On the other hand, 32(56.14%) underwent LSCS (Table-IV).

Table-IV: Outcome of Induction of Labour about Gestational Age (n=112)

Gestational Age	Number of Inductions (n=57)	Number of Lower segment Caesarean section (n=30)	Number of Vaginal Deliveries (n=25)
Less than 41 weeks	35(61.40%)	24(68.57%)	11(31.43%)
At 41 weeks	22(38.60%)	08(36.36%)	14(63.64%)

With regards to uncalled maternal outcome during labour and delivery, 5(3.34%) women had

atonic postpartum haemorrhage (PPH), 3(2%) patients suffered from grade 3 perineal tear of varying extensions, 2(1.34%) of the patients had cervical tears, and 1(0.67%) patient had wound infection. In addition, PPH was noted in mothers who had undergone interventions such as induction of labour (7%) or active stage caesarean section (6%). The neonatal assessment chart was shown in Table-V.

Table-V: Neonatal Outcome (n=150)

Neonatal Outcome		Number of cases (%)
APGAR score at 5 min	7-10	115 (76.67%)
	4-6	33 (22%)
	3 and less	2 (1.34%)
Neonatal Intensive Care Unit (NICU) admission		11 (7.34%)
Meconium aspiration		5 (3.34%)
Neonatal intubation		3 (2%)
Early neonatal death		1 (0.67%)

DISCUSSION

In our study, spontaneous labour occurred in 62% of women, while induction of labour was required in 38% of the patients. The spontaneous onset of labour was more than the incidence observed in a study conducted by Mahajan *et al.* in which 44.67% of women presented with spontaneous labour and the rest were induced with prostaglandin or intra-cervical Foley catheter.⁷ These findings were similar to a study conducted by Sheikh *et al.* in Nawabshah Pakistan, where the most common cause of unengaged head at term was also fetal head deflexion in 28% of the cases, and no cause could be identified in 45% of the cases.⁸

In our study, 66.67% of the women delivered vaginally, and 33.34% delivered via Lower Segment Caesarean Section (LSCS). Similar findings were noted in a study carried out in Services Hospital Lahore, which showed results with an incidence of 62% and 38% for normal vaginal delivery (NVD) and LSCS, respectively, in primigravidae with unengaged heads at term. In comparison, the incidence of vaginal delivery and LSCS in primigravidae with the engaged head was 85% and 15%, respectively.^{9,10} A similar study also found an incidence of the unengaged head in primigravida around 31%, of which 82.9% had a vaginal delivery and 17.1% had LSCS. This rate was four times higher than among controls of 4.2% ($p < 0.001$). Also, none of the women delivered vaginally had a persistently unengaged head at 7 cm cervical dilatation.¹¹ This study results were even more convincing in knowing the incidence of NVD and LSCS in our setup.

In our study, most patients who were artificially induced for labour ended up with a caesarean section (56.14%) compared to the caesarean section in spontaneous labour (19.35%). A study by Thorsell *et al.* showed that out of the women who were induced, 42% of primigravidae were delivered through LSCS. Compared to spontaneous onset, this showed a more than three-fold increase in risk for nulliparous women.¹² A comparable study in Tanzania showed that induction of labour is associated with an increased risk for LSCS among nulliparous and multiparous women compared to spontaneous onset of delivery.¹³ Those who had spontaneous onset of labour had a higher chance of successful vaginal delivery as compared to those requiring induction of labour, i.e., 75% versus 25%.¹⁴⁻¹⁷

In our study, the mode of delivery of primigravidae was also noted to be affected by the timing of induction. Out of 57, 35(61.40%) inductions (prostaglandins/intra-cervical Foley) were done at a gestational age of fewer than 41 weeks, whereas 22(38.60%) were done at 41 weeks. Twenty-four (68.57%) of inductions done before 41 weeks landed in caesarean section, whereas most patients induced at 41 weeks delivered vaginally (63.64%). Similar results are shown in an Australian study where primigravida who did not meet the criteria for a post-date induction had a 60% chance of a LSCS in comparison with a 40% chance of a vaginal delivery (35% NVD and 5% instrumental).¹⁸

Regarding maternal and neonatal outcomes, 5(3.34%) mothers underwent postpartum haemorrhage in which three patients had more than 12 hours of labour. This finding is consistent with the fact that an unengaged fetal head leads to prolonging labour insinuating poor maternal outcome, as shown in a studies by Janakiraman *et al.* and Goyal *et al.* where unengaged primigravida group had a higher number of complication (35.8%) when compared to engaged primigravida (13.4%).^{19,20}

CONCLUSION

Most primigravidas in spontaneous labour with unengaged fetal heads ended up in vaginal deliveries. Induction of labour should be discouraged in low-risk primigravida who does not meet the post-dates criteria as its association with an increased caesarean section rate was noted. Hospitals providing induction of labour need to maintain a commitment to ensure that all inductions are strongly indicated, thereby reducing the number of interventions within the process of normal labour.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

MH: Conception, Study design, drafting the manuscript, approval of the final version to be published.

SB & AC: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

MG & MA: Critical review, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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