



## CORRELATION OF BORDERLINE OLIGOHYDRAMNIOS WITH PERINATAL OUTCOME IN POST DATES PREGNANCY.

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### ABSTRACT

**Objective(s):** This study is aimed to evaluate the predictive value of amniotic fluid index (AFI) (8) for adverse perinatal outcome in terms of cesarean section, meconium staining, Apgar scores, and birth weights in Post dates pregnancies induced for labor.

**Method(s):** This was a hospital based cross sectional study done on 160 antenatal women at B.P.Koirala institute of medical sciences from 2015 to 2016 the with gestational age more than 40 weeks. The women's history, clinical examination recorded, and AFI were measured, induction of labor was done with vaginal misoprostol tablets and the perinatal outcome was compared between two groups, i.e., AFI 8 and >8.

**Result(s):** The rate meconium staining of liquor, Apgar score at 1 and 5 min <7 and need for admission in neonatal intensive care unit between the two groups was higher in patients with borderline oligohydramnios. ( $p=0.009, 0.001, 0.001$ ) There was no significant difference in mode of delivery, duration of labor and mean birth weight. ( $p=0.161, 0.334, 0.187$ , respectively).

**Conclusion:** Borderline Oligohydramnios has a significant correlation with meconium staining, low Apgar scores, and neonatal ICU admissions in Post dates pregnancies.

**KEYWORDS :** Amniotic Fluid Index, Induction Of Labour, Post Dates Pregnancy, Meconium Staining.

### INTRODUCTION

Modern obstetrics is concerned with the health and well-being of both the mother and the unborn child. Recognition of a fetus at risk for death or damage in utero, quantifying the risk, balancing the fetal risk against the risk of neonatal complications from immaturity, and determining the optimal time and mode of intervention are the cornerstones of modern perinatal medicine(1).

The timely onset of labor and delivery is an important determinant of perinatal outcome. Both preterm and postterm births are associated with higher rates of perinatal morbidity and mortality than pregnancies delivering at term(2). The adjectives postterm, prolonged postdates and postmature are often used interchangeably to describe pregnancies that have exceeded the duration considered to be upper limit of normal.(3) Post dates pregnancy is one that exceeds after 40 weeks of gestation. Fetal and neonatal mortality rates increase sharply after 40 weeks. (4). Amniotic fluid provides a protective milieu for the growing fetus, cushioning it against mechanical and biological injury(5,6) and amniotic fluid volume assessment is recommended to be a part of postterm pregnancy management protocol.(7) Links have been found between decreased amniotic fluid volume and stillbirths, fetal anomaly, abnormal FHR tracings in labor, increase in cesarean section for fetal distress, and possibly fetal acidosis (5) Borderline or marginal oligohydramnios has been defined by different cutoffs by various authors. Phelan et al(8) defined borderline AFI between 5.1 to 8 cm In the present study, amniotic fluid volume assessment was done sonographically by the four-quadrant technique as described by Phelan et al. to determine if borderline low AFI of 8 cm or less is a predictor of adverse perinatal outcome in terms of meconium staining, cesarean section for fetal distress, birth weight, low Apgar scores.

### MATERIALS AND METHODS

This was a hospital based cross sectional study carried out at the B.P.KOIRALA institute of health sciences, Dharan, Nepal. The study participants included 160 antenatal women admitted with diagnosis of Post dates pregnancy who were planned for induction of labor within a duration of 12 months from 2015 to 2016. Inclusion criteria were women with a singleton pregnancy, cephalic presentation, intact membranes, gestational age more than or equal to 40 weeks. Women with prelabor rupture of membranes, active stage of labor, malpresentations, intrauterine growth restriction, hypertension complicating pregnancy, gestational diabetes, obstetric cholestasis, previous cesarean section, previous uterine surgery and multiple pregnancy were excluded from the study. On admission, a detailed history was taken, and a clinical exam was performed and gestational age was determined as determined from first day of last menstrual period and or confirmed by first trimester ultrasound measurements. Amniotic fluid index was determined using the Phelan's technique just prior to induction of labor. Patients were induced according to hospital protocol keeping 25 microgram of misoprostol tablet per vaginally at posterior fornix, total 3 doses were kept and inability to achieve active

phase of labor after three doses was considered failed induction. Fetal monitoring was done using cardiotocography and intermittent auscultation. Women were divided into two groups based on their AFI: Group 1—AFI 8 Group 2—AFI > 8. A note was made of meconium staining of amniotic fluid, the ultimate mode of delivery, duration of labour, birth weight, Apgar score at 1 and 5 min, and neonatal ICU admissions. Analysis was done using SPSS software 11. the statistical tests used were chi square test and independent T test.

**Table 1-maternal Demographic And Obstetric Characteristics**

	AFI 8 (n = 29)	AFI > 8 (n = 131)	p value
Maternal age (mean)	23.97	24.2	0.189
Nulliparity	22(75.86%)	106 (80.9 %)	0.538
Gestational age >40weeks	26 (89.6%)	111(80.9 %)	0.494
Gestational age >42 weeks	3(10.3 %)	20 (19.08%)	

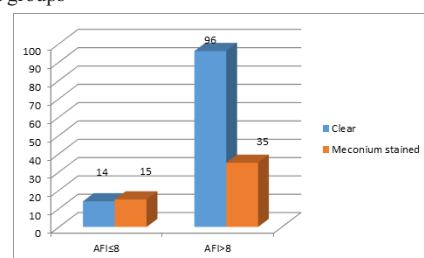
**Table 2-obstetric And Perinatal Outcome**

	AFI 8 (n = 29)	AFI > 8 (n = 131)	p value
Meconium-stained liquor	15 (51.72%)	35(26.71%)	0.009
Total cesarean delivery	17(58.62 %)	58 (44.25 %)	0.161
Mean Birth weight (kg)	3.14	3.27	0.187
Apgar score 1 min <7	8 (17.24)	7(5.34 %)	0.001
Apgar score 5 min <7	5(17.25%)	3(2.29 %)	0.001

### Results

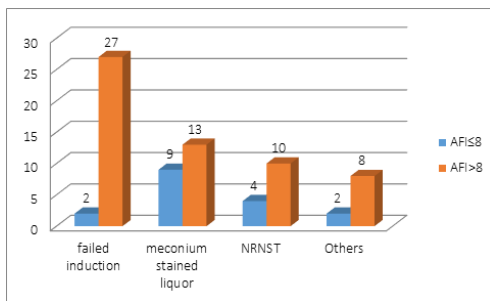
Out of the 160 women, the mean maternal age was 23.9 in Group 1 and 24.2 in Group 2, out of which, 22 (75.86%) women were nulliparous in Group 1 and 106(80.9%) in Group 2.

Out of 29 women in group 1, 26(89.65%) were Post dates (>40 week-≤42 wks) and 3 (10.34%) were postterm (≥42 week). In group 2, 111(80.90%) were Post dates (>40 week) and 20 (19.08%) were postterm (≥42 week). Obstetric and perinatal outcome were studied in both the groups



### FIGURE 1- Liquor character

15(51.72%) women in Group 1 and 35(26.71%) women in Group 2 had meconium-stained liquor. The difference was statistically significant ( $p=0.009$ ).



### FIGURE 2 - Indication for Caesarean section

Cesarean section was performed in 17(58.62 %) women in Group 1 as compared to 58(44.27 %) in Group 2 ( $p=0.047$ ). Cesarean section for fetal distress in terms of meconium stained liquor and pathological cardiotocography was higher in women with borderline oligohydramnios as compared to women with AFI > 8 ( $p=0.035$ ).

The mean Birth weight in group 1 was found to be 3.14 0.51kg as compared to 3.27 0.47kg in Group 2. ( $p=0.187$ ).

In Group 1, the Apgar score at 1 min was <7 in 8 neonates(17.24%) as compared to 7 (5.34%) in Group 2 ( $p=<0.001$ ). An Apgar score <7 at 5 min was noted in 5(17.25%) woman in Group 1 and 3(2.29%) women in Group 2 ( $p=0.001$ ).

7 (24%)out of 29 babies in Group 1, were admitted to the neonatal intensive care unit (NICU). However, in Group 2, 5 (3.82%) babies were admitted to the NICU. Thus, in Group 1, there was significant correlation to NICU admission. ( $p=<0.001$ )

### DISCUSSION

In the present study, meconium-stained liquor was present in 15(51.72 %) of the patients in Group 1 and 35(26.71%) in Group 2, hence the character of liquor was significantly associated with amniotic fluid index of the patients( $p$  value=0.009) i.e. higher incidence of meconium stained liquor in oligohydramnios patients (AFI≤8). Similar result was demonstrated in study by Chauhan et al., i.e. when amniotic fluid index was <5 cm, the incidence of meconium staining increased. Similarly, Study done by Haifa A. Alchalabi et al. on patients admitted for induction of labor at 37–42 weeks of gestation demonstrated similar results i.e. incidence of meconium staining of the amniotic fluid was significantly higher in the group with oligohydramnios (AFI ≤5).

The cesarean section rate was higher in Group 1 with AFI ≤ 8 i.e., 58.6 % as compared to 44.2 % for Group 2, and the difference was not statistically significant ( $p=0.161$ ). Similar result was demonstrated in a study by Garmel et al.1997 ; i.e. when compared outcomes of 65 women with isolated oligohydramnios (amniotic fluid index <8 cm) at 17-37 weeks with a control group of women with a normal amniotic fluid index ,the rate of caesarean delivery in isolated oligohydramnios (AFI<8) was similar to that observed in the control group. But in contrast to this, study by Haifa A. Alchalabiet al.,2006 done on patients admitted for induction of labor at 37–42 weeks gestation, demonstrated that induction of labor at term in patients with oligohydramnios is associated with an increased risk of caesarean delivery.

In the present study,in group 1, 8 (17.24%) neonates had 1 minute Apgar less than 7 whereas in group 2, 7(5.34%) patients had 1 minute Apgar less than 7. Hence, 1 minute Apgar of neonate was significantly associated with amniotic fluid index of the patients( $p$  value<0.001) i.e. higher incidence of low 1 minute Apgar score in oligohydramnios group. Also, in group 1,5 (17.25%) neonates had 5 minute Apgar less than 7 while in group 2,3 (2.29%) neonates had 5 minute Apgar less than 7. therefore 5 minute Apgar of neonate was significantly associated with amniotic fluid index of the patients (p value<0.001) i.e. higher incidence of low 5 minutes Apgar score in oligohydramnios (AFI≤8). Similar results were demonstrated in a prospective double blind cohort study by Morris JM et al., 2003 it was

reported that an AFI <5 cm was significantly associated low Apgar scores. Similarly, in a cross-sectional study carried out by Asgharnia M et al., 2013 also it was reported that the borderline AFI group had higher rate of neonatal complications such as Apgar score of less than 7.

In the current study, 7 (24%) neonates in group 1 and 5 (3.82%) neonates required admission in neonatal intensive care unit. The need for admission of the neonate was significantly associated ( $p$  value<0.001) with amniotic fluid index of the patients i.e. higher incidence of need for admission of baby in oligohydramnios (AFI≤8). Similar results were demonstrated in a study by Garmel et al.,1997 which compared outcomes of 65 women with isolated oligohydramnios (amniotic fluid index <8 cm) with a control group of women with a normal amniotic fluid index showing higher incidence of Neonatal Intensive Care Unit admission of neonates at birth (18.5%).

The mean birth weight for babies delivered among the oligohydramnios group was 3.14±0.51 kg and that for AFI>8 was 3.27±0.47kg. Birth weight was not significantly associated with AFI ( $p$ -value=0.187).In contrast to this, a systematic review and meta-analysis by Morris RK et al.,where Forty-three studies (244 493 fetuses) were included demonstrated a strong association between oligohydramnios and birth weight <10th centile, and perinatal mortality

### CONCLUSION

In this study antepartum oligohydramnios of AFI ≤8 cm was seen to be significantly associated with adverse perinatal outcome in terms of meconium staining, 1 min and 5-min Apgar score less than 7 and the need for admission of neonates in intensive care unit. However there was no significant difference between the mode of delivery, duration of labour, birth weight of the baby in both the groups. To conclude that oligohydramnios as evidenced by a reduced AFI is associated with adverse perinatal outcome whether defined by meconium stained liquor or low Apgar score at 1 and 5 minutes or need for admission in NICU/nursery/pediatrics ward in babies and AFI can be considered as a useful technique in fetal surveillance ≥ 40 weeks gestation.

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