

# Low Amniotic Fluid Index as a Predictor of Perinatal Outcome in Low Risk Pregnancies at Term

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## ABSTRACT

**Objective:** To find out if low amniotic fluid index has any clinical significance on perinatal outcome in low risk pregnancies at term.

**Method:** A case controlled prospective study was done. Fifty consecutive women with term pregnancy and low amniotic fluid index (AFI) of  $\leq 5$ cm attending the labour room having no high risk factors were matched with equal number of controls admitted immediately after the indexed cases with normal AFI. In both the groups the inclusion and exclusion criteria were matched except the AFI. Outcome measures were CTG changes, mode of delivery, presence of meconium, apgar score at 5 minutes, need for admission to neonatal unit (NNU) and perinatal mortality.

**Results:** There was no significant difference in the incidence of CTG changes, caesarean section rate, meconium staining, apgar score at 5 minutes between women with AFI  $\leq 5$ cm and women with AFI  $\geq 5$ cm in this study. There was no admission to NNU and no perinatal mortality.

**Conclusion:** There is no effect of reduced AFI on maternal or perinatal outcome in pregnant women with low risk pregnancies at term.

**Key words:** Amniotic fluid index, perinatal outcome, low risk pregnancy.

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## INTRODUCTION

Amniotic fluid index, a semi-quantitative ultrasound measure used to denote the volume of amniotic fluid, was first described in 1987 by Phelan et al<sup>1</sup>. Many studies have shown an increased risk of intrapartum fetal distress in pregnant women with oligohydramnios, as identified by ultrasound examination<sup>2,3,4,5</sup>. The exact pathophysiologic mechanism of oligohydramnios has not been defined, but one likely explanation is the risk of umbilical cord compression during uterine contractions. The purpose of this study was to assess low amniotic fluid as a predictor of perinatal outcome in low risk pregnancies at term.

## MATERIAL AND METHODS

This case controlled prospective study was conducted in Gynae unit III, Services Institute of Medical Sciences/SIMS, Lahore from January to December 2009. Pregnant women were divided into two groups. First fifty consecutive pregnant women with AFI of  $\leq 5$ cm with low risk pregnancies at term were included in group A and next fifty women with AFI  $\geq 5$ cm and  $\leq 20$ cm were included in group B. Inclusion criteria were women with singleton, term, non-anomalous pregnancies with intact membranes. Previous perinatal loss, recurrent missed abortions, evidence of IUGR, previous caesarean section, post-term pregnancies, medical disorders which can have bearing on fetomaternal outcome like diabetes, hypertension and cardiac disease were excluded

from this study. An admission CTG was done in all cases in this study. Both groups were matched for age, parity, gestational age, non-anomalous conceptus and intact membranes.

The outcome measures were CTG changes, mode of delivery, presence of meconium, apgar score at 5 minutes, need for admission to neonatal unit and perinatal mortality.

Statistical analysis was done on SPSS version 11. Student t test was applied on quantitative and chi square/ Fisher exact test on qualitative variables. Descriptive statistics were calculated.

## RESULTS

During the study period there were 50 women with AFI  $\leq 5$ cm and 50 women with AFI  $\geq 5$ cm. Both were matched for the inclusion and exclusion criteria.

In this study there was no significant difference in the fetal heart rate abnormalities between the two groups. Although variable decelerations were more common in women with AFI  $\leq 5$ cm (group A) but this was not statistically significant.

As shown in table II, there was no significant difference in the caesarean section rate between the two groups. Similarly, there was no significant difference in the incidence of instrumental vaginal delivery between the two groups.

There were 6 women with meconium stained liquor in group A and 5 women with meconium stained liquor in group B and this result was not statistically significant. There was no baby with apgar

score  $\leq 7$  in either group. There was no admission to NNU and no perinatal mortality in both the groups.

Table I. Cardiotocographic changes

CTG changes	Group A AFI $\leq$ 5cm(50)	Group B AFI $\geq$ 5cm(50)
Reactive	40	43
Non-reactive	1	3
Persistent fetal tachycardia	1	0
Fetal bradycardia	4	3
Variable deceleration	4	1

P value:  $\geq 0.05$

Table II. Mode of delivery

Mode of delivery	Group A	Group B
Normal vaginal delivery	35	36
Caesarean section	12	10
Instrumental vaginal delivery	3	4

P value:  $\geq 0.05$

Table III. Presence of meconium

Meconium	Group A	Group B
Present	6	5
Absent	44	45

P value:  $\geq 0.05$

Table IV. Apgar score at 5 minutes

Apgar score at 5 min	Group A	Group B
$\leq 7$	0	0
$\geq 7$	50	50

P value:  $\geq 0.05$

## DISCUSSION

Reduced amniotic fluid carries an increased risk of intrapartum complications in high risk pregnancies<sup>6</sup>. However the picture in low risk pregnancies is unclear as conflicting views are expressed in various studies<sup>7,8</sup>. In this study, after excluding the high risk cases, we did not find any significant difference in women with low AFI at term.

Variable deceleration is known to be the result of cord compression in labour. In this study there was an increased risk of variable decelerations in women with low AFI but this was not statistically significant. There was no significant difference regarding cardiotocographic changes between the two groups. In this study there was no significant difference in the caesarean section rate between the two groups. These results were consistent with the trials conducted by Desai et al<sup>9</sup> and Ghosh et al<sup>7</sup>. But these results were not consistent with the results of Umber A<sup>10</sup> and Jandial et al<sup>11</sup> which showed significantly increased incidence of non reassuring fetal heart rate, decelerations and caesarean sections in women with low AFI.

Meconium staining is an indicator of fetal distress and has its own complications in the newborn. In this study there was no significant

difference in the incidence of meconium staining in the two groups. There was no baby with apgar score  $\leq 7$  at 5 minutes, no admission to NNU and no perinatal mortality in either group. These results were consistent with certain studies<sup>9,7,10,12</sup> but not consistent with certain trials<sup>11</sup>.

## CONCLUSION

These results indicate that there is no significant difference regarding CTG changes, mode of delivery, meconium staining and perinatal outcome in low risk women with normal and reduced AFI at term. This can be the basis of avoidance of unnecessary inductions for low AFI in low risk women at term. However there are very few trials on low risk women with reduced AFI and larger trials are needed in this regard.

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