



PERINATAL OUTCOME IN TERM UNCOMPLICATED PREGNANCIES WITH BORDERLINE AMNIOTIC FLUID INDEX

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ABSTRACT

INTRODUCTION: Antenatal test is done to evaluate the fetus health and to know the adverse outcomes during the course of pregnancy. Amniotic fluid is the indicator of normal placental function and is the most important component of fetal well being. Amniotic fluid index (AFI) is the most common practical method of measurement of amniotic fluid. This has been integral component of fetal assessment during antenatal period. Normal Amniotic fluid index is between 5-24cm and value > 24cm is polyhydramnios and the value less than 5cm is oligohydramnios. Different ranges have been suggested for the definition of borderline AFI, the majority of studies have used the range between 5 and 8 cm. In a meta analysis by Magam EF et al, incidence of borderline oligohydramnios in term pregnancy varied from 6% to 44% overall incidence being 12%. It is well established that oligohydramnios is associated with increased pregnancy related complications, congenital anomalies and perinatal morbidity and mortality. In this study we will assess perinatal outcomes in borderline AFI. **METHODS:** This observational study was carried in 235 women with term singleton pregnancy admitted in hospital attached to BMCRI Bangalore during time period of June 2018 to July 2019. Among these 141 cases belong to normal AFI group and 94 cases in borderline AFI group. The essential information of patients studied was gathered and recorded in detailed Performa. These groups were compared on pregnancy outcomes such as cesarean section for non reassuring fetal heart rate, meconium stained amniotic fluid, 5-min apgar score <7, low birth weight, umbilical cord blood pH and NICU admission. **SUMMARY OF RESULTS:** Out of 235 cases Cesarean section rate in normal AFI group was less (40.6%) compared to Borderline AFI group (60.9%). Cesarean section for non-reassuring fetal heart rate in women of borderline AFI was significantly higher (43.6%) in borderline AFI group and 28% in normal AFI group. And frequency of 5-min Apgar score <7 did not have significant differences between normal and borderline AFI groups (6.2% vs. 9.6%; respectively, p=0.14). And mean umbilical artery pH in pregnancies with borderline AFI was low compared to women with normal AFI group (7.21 vs. 7.28 respectively). However no significant difference in meconium staining and NICU admission in both groups. **CONCLUSION:** Findings indicated that there are statistical differences between adverse outcomes in borderline and normal AFI groups. Based on these facts pregnancies with borderline AFI should be observed carefully by frequent fetal assessment, intra partum monitoring and neonatal care.

KEYWORDS : AFI, Apgar score, NICU admission.

AIMS AND OBJECTIVES

To determine adverse perinatal outcome in uncomplicated term pregnancy with borderline amniotic fluid index (AFI).

MATERIALS AND METHOD

Study Design: This is a retrospective observational study
Place Of Study: Department of obstetrics and gynecology in at Bangalore Medical College and Research Institute
Study Time: June 2018 to Jul 2019.
Source Of Data: Pregnant women of 37-40 weeks of gestational age with borderline and normal AFI who delivered in Hospital attached to BMCRI, within one week after measuring AFI fulfilling inclusion criteria.

Inclusion Criteria

1. Single live intrauterine gestation with vertex presentation
2. 37 completed weeks of gestation
3. Borderline or normal AFI
4. Intact amniotic membrane
5. Delivery during a week after AFI measurement

Exclusion Criteria

1. Gestational age less than 37 weeks and more than 40 weeks.
2. AFI less than 5 and more than 24cm.
3. Fetal anomalies 4. Maternal medical disease.

METHODOLOGY

Data was extracted from their medical records and was inserted into the checklist. Frequency of adverse perinatal outcomes such as Cesarean section due to non-reassuring fetal heart rate, meconium staining, birth weight, Apgar score at birth and 5 min Apgar score, umbilical artery pH and NICU admission were compared within groups.

STATISTICAL ANALYSIS

Qualitative variables were presented with number and percentages and quantitative variables were presented with mean and standard deviation. Study data were analyzed with independent samples t-test for quantitative and chi-square test for qualitative variables. Statistical

level of confidence was 95% and all p<0.05 were assumed as significant results.

RESULTS

Total of 235 women were studied in this study. Of these 141 were in normal AFI group and 94 women were in borderline AFI group.

Maternal Age And Gestational Age At Delivery

	NORMAL AFI(141 CASES)	BORDERLINE AFI(94 CASES)	P-VALUE
MATERNAL AGE AT DELIVERY (Years)	26.6±5.2	25.9±5.2	0.53
GESTATIONAL AGE AT DELIVERY	38weeks 6day	37week 5day	<0.001

There was no significant differences between maternal age in normal and borderline AFI group (26.6±5.2 vs. 25.9±5.2, respectively, p=0.53).

Mean of gestational age at delivery in women with borderline AFI (37 wk and 5 days) was significantly lower than women with normal AFI (38 wk and 6 days) (p<0.001)

Comparison Of Mode Of Delivery Between Two Groups

	NORMAL AFI (141 CASES)	BORDERLINE AFI (94 CASES)	TOTAL CASES	P-VALUE
VAGINAL	84(59.4%)	37(39.75%)	121	
Cesarean section	57(40.6%)	57(60.9%)	114	0.02

Rate of Cesarean section among pregnant women with borderline AFI was significantly higher than pregnant women with normal AFI (60.9% vs. 40.6%, respectively, p=0.02).

Comparison Of Cesarean Section For Non-reassuring Fetal

Heart Sound

	NORMAL AFI GROUP(141 CASES)	BORDERLINE AFI GROUP(94 CASES)	P-VALUE
Cesarean section for non-reassuring fetal heart sound	16(28.7%)	24(43.6%)	0.038
Average birth weight	3120gm	2850gm	

Frequency of Cesarean section due to non-reassuring fetal heart rate was significantly higher in borderline AFI group compared to normal AFI (43.6% vs. 28.7%, respectively, $p=0.038$).

Comparison Of Meconium Stained Amniotic Fluid And 5 Min Apgar Score <7

	NORMAL AFI GROUP(141 CASES)	BORDERLINE AFI GROUP(94 CASES)	P-VALUE
MECONIUM STAINED AMNIOTIC FLUID	19(14.1%)	16(17.2%)	0.63
APGAR SCORE of <7(%)	8(6.2%)	9(9.6%)	0.14

There was no significant differences for meconium staining between normal and borderline AFI groups (14.1% vs. 17.2%, respectively, $p=0.63$). And frequency of 5-min Apgar score <7 did not have significant differences between normal and borderline AFI groups (6.2% vs. 9.6%; respectively, $p=0.14$).

Comparison Of Umbilical Artery pH At Birth

	NORMAL AFI GROUP	BORDERLINE AFI GROUP
Umbilical artery pH	7.28±0.12	7.21±0.14
Umbilical artery pH<7(%)	11(7.8%)	10(11.2%)
NICU ADMISSION(%)	9(6.8%)	9(10.5%)

Mean of the umbilical artery pH in normal group was significantly higher than borderline group (7.28% vs. 7.21%, $p<0.001$), but there was no difference in incidence of umbilical artery pH <7 between two groups (11.2% vs. 7.8%, respectively, $p=0.38$).

There was no significant difference in NICU admission between two study groups (6.8% vs. 10.5%; respectively, $p=0.17$). There was no case of stillbirth in both study groups.

DISCUSSION

Findings of the present study showed significant association between borderline AFI and the majority of adverse perinatal outcomes. Lower gestational age at delivery, higher rate of Cesarean section and lower birth weight in borderline AFI is a common occurrence which may be explained by earlier and higher rate of intervention. This explanation does not correspond with Wood's study that showed no difference in the rate of fetal intolerance of labor. The results of present study is not consistent with Phelan et al who reported no significant differences for fetal distress and Apgar scores in borderline group in comparison with normal amniotic fluid.

Jeng et al demonstrated similar results in measures of outcomes of meconium staining, cesarean section for non-reassuring fetal heart rate and 5 min Apgar score <7 in borderline AFI. While Baron et al reported no significant difference between meconium staining, Cesarean section for fetal distress, birth weight > 2500 gram, 5 min Apgar score <7 and NICU admission.

Gumus and colleagues reported higher rate of meconium staining that is not in agreement with the present study.

Petrozella et al showed that higher rate of fetal malformations in borderline AFI, but there was not found any malformation in recent study. Contradictory results in different studies may be explained by variation in study design and patient selection and physician's anxiety regarding decreased amniotic fluid. There is no consensus for fetal testing and no specific protocol for prenatal care in these pregnancies.

CONCLUSION

In conclusion, findings of present study suggest that pregnancies with

borderline AFI are at the risk of adverse perinatal outcomes. According to this fact, these pregnancies should be observed carefully by frequent fetal assessment, intrapartum fetal monitoring and neonatal care. Considering no consensus for fetal testing, timely intervention and intrapartum fetal monitoring; there is still need for more studies. Studies using color Doppler assessment of cerebroplacental ratio is valuable in this group of pregnancies.

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