

**ORIGINAL ARTICLE**

**STUDY ON PERINATAL OUTCOME IN TERM OLIGOHYDRAMNIOS**

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**ABSTRACT**

**Objective(s):** We aimed to evaluate the predictive value of amniotic fluid index (AFI<5) for adverse perinatal outcome in terms of age group, meconium staining, mode of delivery, birth weight and APGAR scores. **Design:** A Prospective Study **Setting:** In a Single Hospital. **Method(s):** This was a prospective study of 300 antenatal women booked at RMMCH during the years 2012-2014 with estimated gestational age >37weeks. The women's history, clinical examination recorded, and AFI were measured and the perinatal outcome was compared between two groups, i.e., AFI <5 and AFI >5. **Statistical Analysis:** Chi square ( $\chi^2$ ) test was carried out at 5% ( $p=0.05$ ) level of significance to test the homogeneity of the group with respect to the distribution of patients over different classes of a characteristic interest. **Result(s):** The cesarean section rate for fetal distress, grade three meconium stained liquor, APGAR score <7 at 5-min was higher in patients with oligohydramnios ( $p=0.05, 0.0001, 0.001$ , respectively). There was no significant difference in age distribution of patients and the birth weight between the both the groups ( $p=0.14, 0.6845$  respectively). **Conclusion:** Oligohydramnios has a significant correlation with cesarean section for fetal distress, grade three meconium staining and with APGAR <7 at 5minutes.

**Keywords:** Grade three meconium stained liquor, Birth weight, Age group, mode of delivery, APGAR scores.

**1.INTRODUCTION**

Amniotic fluid provides a protected milieu for the growing fetus, cushioning the fetus against mechanical injury and biological injury, supplying nutrients, and facilitating growth and movement. In addition, its bacteriostatic action helps prevent infection of the intra-amniotic environment. Clinical estimation of amniotic fluid volume is an important part of fetal assessment as variation in its amount has been related to a variety of pregnancy complications. Quantification of amniotic fluid is an important component of the biophysical profile in ultrasound evaluation of fetal wellbeing, especially in the third trimester. Antenatal tests use amniotic fluid volume as a fundamental assessment of chronic in utero stress. Links have been found between decreased amniotic fluid volume and still births, fetal anomaly, abnormal fetal heart rate tracings (FHR) in labour, increase in caesarean section for fetal distress, and possibly fetal acidosis. In the present study, amniotic fluid quantification image was done by the four-quadrant technique as described by Phelan et al. To determine AFI and we sought to determine if an

antepartum AFI of 5cm or less is a predictor of adverse perinatal outcome in terms of meconium staining, mode of delivery, birth weight, age, APGAR scores.

**Fig.1 POTTER'S FACIES**



Figure 56.2. The facies in Potter syndrome.

**Literature survey**

Crowley used subjective criteria to evaluate amniotic fluid volume in pregnancies after 42week, looking for the presence

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or absence of anechoic space between fetal limbs and uterine wall, as well as between limbs and the fetal trunk. *Philipson and colleagues* used the subjective criteria of paucity of amniotic fluid, crowding of the fetal parts, and “poor fluid/fetal interspace”.

Projecting these criteria to a theoretical study population in predicting small for gestational age (SGA) infants, the sensitivity was 15.5% and positive predictive value was 39.5%. *Bottoms and associates* subsequently compared a five-tiered subjective evaluation (oligohydramnios, decreased, normal, increased, hydramnios) to an objective measurement of maximum vertical pocket diameter, the latter measured with the transducer held at a right angles to the sagittal plane of the maternal abdomen.

Using small for gestation age infants as an abnormal end point, the sensitivity and positive predictive values were similar between the two techniques (32% vs. 31%, and 83% vs. 82%, respectively). Similarly, *Goldstein and Filly* also demonstrated good correlation between subjective and objective evaluations of amniotic fluid volume. Various ultrasound techniques evolved as a result, for the semi-quantitative assessment of amniotic fluid which included measurement of single deepest vertical pocket, two-diameter pocket, and the amniotic fluid index.

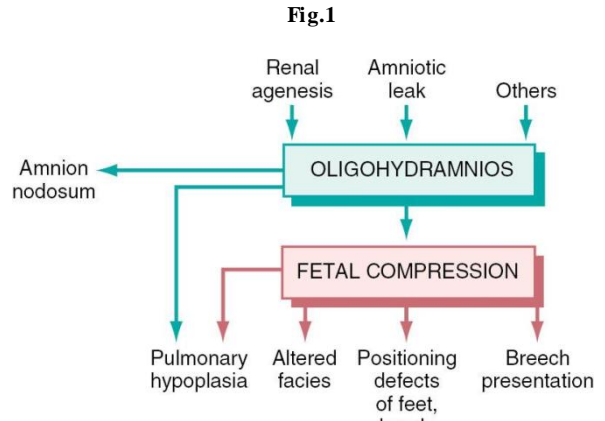
The first method was described by *Chamberlain et al* in 1984, a few years later, *Phelan* proposed amniotic fluid index (AFI) as a more objective and reproducible method as it estimates the amniotic fluid in four quadrants. The dye dilution test is considered the gold standard for assessment of AFI. This is an invasive technique requiring amniocentesis, and therefore not suitable for clinical practice which often needs repeated evaluation.

## 2.MATERIAL AND METHODS

The present study was a prospective study carried out at the RMMCH , Chidambaram. The study participants included 300 booked antenatal women registered at RMMCH with gestational age >37weeks, admitted for delivery over a 2year duration from 2012-2014. Inclusion criteria were women with a singleton, with AFI 5 or less than 5cms, nonanomalous fetus with intact membranes at the time of antepartum testing. Women with premature rupture of membranes, with known fetal anomalies or chromosomal anomalies, , gestational diabetes, Rh incompatibility, placental anomlies, and multiple pregnancy were excluded from the study.

On admission, a detailed history was taken, and a clinical exam was performed and gestational age assessed. Amniotic fluid index was determined using the *Phelan’s* technique within 7 days of delivery or at the onset of labor after informed written consent. Non stress test (NST) was performed for all patients. Women were divided into two groups based on their AFI (done within 7 days of delivery): Group 1- AFI<5; Group 2- AFI>5.

A note was made of meconium staining of amniotic fluid, the ultimate mode of delivery, birth weight, APGAR score at 5 minutes and their age group. Determined by statistical analysis done using chi-square test which were used in appropriate places.



**Fig.2 Amniotic Band Sequence**



## 3.RESULTS

Out of the 300 patients, the mean maternal age was found to be insignificant with p value of 0.14 between both the groups. 44 (29.3%) women in group 1 and 11 (7.3%) in group 2 had grade three meconium stained liquor. The difference was found to be significant (p=0.0001). APGAR score <7 at 5min was noted in 114(76%) women in group 1 and 73(51.3) women in group 2 (p=0.001). The difference was found to be significant. Caesarean section for fetal distress was performed in 70(61.11%) in group 1 women and for 55(53.85%) women in group 2. The difference was found to be significant at 0.05 level. Birth weight of <2.5kg in group 1 was found to be 57(38%) & 58(38.7%) of women in group 2 in which the difference was insignificant.

**Table 2**

Maternal age	AFI 5 OR <5	AFI >5	p Value
Cesarean section for fetal distress	70 (61.11%)	55 (53.85%)	0.0549
Grade three meconium stained liquor	44 (29.3%)	22 (7.3%)	0.0001
APGAR at 5minutes	127 (84.7%)	73 (48.7%)	0.001
Birth weight	57 (38%)	58 (38.7%)	0.6845

#### 4.DISCUSSION

In the present study, grade three meconium stained liquor was present in 44(29.3%) of the patients in group 1 and 11(7.3%) in group 2., and the difference was not significant ( $p=0.0001$ ). The cesarean section rate for fetal distress was higher in group 1 with AFI  $<5$ , i.e., 61.11% as compared to 53.85% for group 2, and the difference was statistically significant ( $p=0.05\%$ ). A study conducted by Baron et al showed that grade three meconium stained liquor occurred significantly less often in the oligohydramnios group as compared to the normal AFI group. A study by Voxman et al concluded that there was no difference between the groups with regard to grade three meconium stained liquor. *Chauhan et al* in their meta-analysis (1999) found that intrapartum AFI  $<5$  was associated with increased risk of caesarean section for fetal distress (pooled RR = 1.7), which was similar to our study. *Rutherford et al* found an inverse relationship between amniotic fluid index and caesarean section for fetal distress.

In the current study, Birth weight of  $<2.5\text{kg}$  in group 1 was found to be 57(38%) & 58(38.7%) of women in group 2 in which the difference was insignificant. *Locatelli et al* reported that in uncomplicated term pregnancies with oligohydramnios, the presence of an AFI  $<5$  independently increased the risk for a SGA (small for gestational age) infant. *Morris et al* found that 60% of babies were of LBW in the group with AFI  $<5$ , indicating that oligohydramnios had an association with growth restriction. A study by *Rutherford et al* showed that when the AFI was  $<5$ (36%), pregnancies resulted in infants with intra uterine growth restriction (IUGR).

In the present study, APGAR score  $<7$  at 5min was noted in 114(76%) women in group 1 and 73(51.3) women in group 2 ( $p=0.001$ ). The difference was found to be significant. *Chauhan et al* reported in their meta-analysis that antepartum AFI of  $<5\text{cm}$  was associated with a 5-min APGAR score  $<7$  (pooled RR -1.8, 95% CI 1.1-2.6). A study by *Driggers et al* reported a 5-min Apgar score  $<7$  in 3.8% patients in an oligohydramnios group versus 4.6% in the normal AFI group, and concluded that there was no significant difference. A study by *Grubb et al* found that the 5-min score  $<7$  was seen in 13% patients with AFI  $>5$  versus 5% in the normal AFI group.

#### 5.CONCLUSION

In the present study, a significant correlation was found in perinatal outcome in terms of increased cesarean delivery (particularly for fetal distress), APGAR  $<7$  at 5minutes, grade three meconium stained liquor. However, there was no difference in the age group and low birth weight babies between the groups.

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